REVISED

PRELIMINARY PDI RESULTS REPORT

for

ELLIS PROPERTY SUPERFUND SITE

EVESHAM TWP., BURLINGTON COUNTY, NEW JERSEY

For submittal to

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
TRENTON, NJ
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Prepared by

The Louis Berger Group, Inc.
Morristown, NJ 07960

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1.0 PROJECT DESCRIPTION

The Louis Berger Group, Inc. (Berger) has been contracted by the New Jersey Department of Environmental Protection (NJDEP) to perform Remedial Design Services at multiple sites throughout the state (NJDEP Term Contract A-54678). The site to be investigated under this Pre-Design Investigation (PDI) is the Ellis Property Superfund Site, located at 150 Sharp Road in Evesham Township, Burlington County, New Jersey (henceforth referred to as the "Site"). Figure 1 shows the Site location. Additionally, a more detailed Site plan illustrating the property features is presented as Figure 2. The following subsections present the scope and objectives of the PDI, an overview of the history and current status of the Site, and a summary of previous site investigations.

1.1 SCOPE AND OBJECTIVES

The PDI is being implemented in accordance with the approved PDI Workplan (Berger/PMK, 2006) in a phased approach. This Preliminary PDI Results Report (the Report) documents the investigation activities and findings for the initial stage. At this stage, the purpose is to further delineate the source(s) and extent of contamination in soil/groundwater and evaluate the presence of dense nonaqueous phase liquids (DNAPLs) such that additional recommendation about the installation of new monitoring wells and/or replacement wells can be made. The next phase of the PDI would include the installation of new/replacement wells and further groundwater sampling. The PDI findings will facilitate further evaluation of applicable remedial alternatives, and selection and design of an effective and efficient remedial action.

The Report summarizes the site background and history; the understanding of the nature and extent of site-related contamination, and existing data gaps; describes the PDI field activities for the initial stage and associated findings; and provides the conclusions and recommendations for further investigations needed.

1.2 HISTORY OF OPERATIONS AND INVESTIGATIONS

A chronology of site operations, previous investigations and regulatory directives related to the Site is presented as Table 1.

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This property was originally used as a dairy farm until acquired by Irving Ellis in 1968 (Weston, 1986). Following the property acquisition, approximately 4 of the 36 acres were utilized in drum reconditioning operations. Surficial spills and discharges in association with drum reconditioning and chemical storage are believed to have contributed to the observed contamination of soil and groundwater at the Site with chlorinated solvents and metals.

In September 1980, an anonymous tip to the NJDEP caused the Department to visit the Site. During this site visit, numerous corroded and leaking drums were observed on-site in addition to dead and stressed vegetation in the vicinity of drum storage locations. Site operations ceased in the late 1970's. Remedial Investigations were completed by Weston in 1992, including groundwater and soil sampling. A quarterly groundwater monitoring program has been in place since 1999.

A Record of Decision (ROD) was filed in 1992, requiring the excavation of impacted soil and installation of a groundwater recovery, treatment and discharge system. Soils were subsequently excavated in 1997. The groundwater treatment system was installed and put to operation in 2000. This system consists of a trench installed near the eastern edge of the Site with two extraction points (MH-1 and MH-2), two extraction wells (PW-1 and PW-2), a treatment plant, and a re-injection trench. Water is pumped from the extraction points and it is then treated prior to its re-injection on the western edge of the Site. The general locations of the groundwater extraction/re-injection trenches and treatment building are presented on Figures 2 and 3.

The treatment processes used are solids settling by gravity; coagulation/flocculation and co-precipitation for metal removal; sludge dewatering; and volatile organic compounds (VOCs) removal via air stripping. Although the system was designed to operate at approximately five gallons per minute (gpm) with a peak flow of 15 gpm, the current system functions at approximately six to ten gpm due to system flow-through (due to the abundant presence of solids) and re-injection rate constraints (water cannot infiltrate as quickly as the system can extract/treat it).

In addition to the groundwater treatment system, a total of 38 monitoring wells and 14 piezometers currently aid in the monitoring of local groundwater flow and contaminant migration. These wells are screened in three distinct formations underlying the Site at the following intervals: shallow wells (in Hornerstown Formation approximately 10-20 feet bgs); intermediate wells (in Navesink Formation approximately 50-60 feet bgs); and deep wells (in Wenonah-Mount Laurel Formation approximately 90-100 feet bgs). Figure 2 presents the locations of the existing monitoring wells for the entire Site and Figure 3 presents the locations of the existing monitoring wells within the source area.

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2.0 SITE DESCRIPTION

The Site is situated at 150 Sharp Road in Evesham Township, Burlington County, New Jersey (Figure 1). The Site is located in the Coastal Plain Physiographic Province, which is characterized by flat terrain separated by low rolling hills of modest relief. Nearly all 36 acres are undeveloped with gently sloping elevations.

2.1 TOPOGRAPHY

The Site is located in the Coastal Plain Physiographic Province, which is characterized by flat terrain separated by low rolling hills of modest relief. The Site is gently sloping with elevations ranging from approximately 59 to 67 feet above mean sea level (amsl) to the west dropping to approximately 52 feet amsl to the east.

2.2 GEOLOGY AND HYDROGEOLOGY

The Site is underlain by the Hornerstown Formation, which is a maximum of 20 feet thick in the region and consists of "glauconitic sand with dark green clay matrix". The thickness and composition of the Hornerstown was confirmed through investigative drilling activities conducted since the mid-1980's. The Hornerstown Formation is underlain by the Navesink Formation. The Navesink is characterized as "clayey glauconitic sand to glauconitic, micaceous, sandy clay (clay matrix is black)" and is approximately 40 feet thick. The underlying Mount Laurel Formation (at approximately 60 to 65 feet bgs) is a major source of potable water for domestic wells in the region.

A cone penetrometer test (CPT) investigation was completed in September 2003, to map the shallow subsurface stratigraphy. The results of the study indicated the presence of a sand stratum (1 to 8 feet thick) along the direction of regional groundwater flow (toward the east), which could potentially serve as a preferential pathway for contaminant migration (Handex, 2003).

Regional groundwater is first encountered in the surficial deposits at an elevation of approximately 48 to 67 feet amsl across the Site (May 2007). Based on field observations, the regional groundwater flow is from west to east across the Site toward the wetland area, down gradient from the Site. Downward vertical gradients were measured across the Site during previous field investigations and were also confirmed by the recent groundwater level measurements conducted in March 2007. The results of a pumping test that was conducted at

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MW12 in August 1995 indicate that the hydraulic conductivity of the Hornerstown formation was approximately 1.0×10^{-2} cm/sec, or equivalently, 3 feet per day (Acres, 1998).

Based on boring logs, the Hornerstown Formation exhibits a higher hydraulic conductivity than the underlying Navesink Formation, the result of silt and clay layers mixed throughout the lower unit. Below, the Mount Laurel Formation is known to exhibit a quality yield and has been used as a source aquifer for domestic wells in the area.

Based on a review of available data from the NJDEP Geographic Information Systems (GIS) (available online at the NJDEP website), there is a Classification Exception Area (CEA) implemented for the dissolved groundwater impacts at the Site.

2.3 WETLANDS AND SURFACE WATER

The available NJDEP GIS data indicates that much of the Site is mapped as wetlands. In particular, the eastern portions of the Site, beyond the extraction trench installed in association with the on-site remediation system and downgradient of the suspected contaminant source areas, are more than 12 acres of Herbaceous Wetlands. Surface water from the wetlands and surrounding areas contributes to Sharps Run approximately ¼ mile north of the Site, which flow to the east and empties to the Southwest Branch of Rancocas Creek to the northeast of Medford, New Jersey.

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3.0 NATURE AND EXTENT OF CONTAMINATION

This section discusses the potential sources of contamination that are associated with the historic operations at the Site, the extent of contamination, the likely contaminant pathways and affected media, the potential receptors of the contamination, and the data gaps that should be filled to properly address the contamination.

3.1 POTENTIAL SOURCES AND EXTENT OF CONTAMINATION

The results of previous investigations conducted at the Site indicate that surficial spills and discharges in association with drum reconditioning and chemical storage have contributed to the observed contamination of soil and groundwater at the Site with chlorinated solvents and metals. Based on the understanding that no drums are currently present on Site, and the contaminated soil has reportedly been excavated and removed from the Site, it is assumed that there are no ongoing primary sources of chlorinated solvents to impact soils, i.e., there is no current dumping or discharge actually occurring. Contaminated soils had reportedly been excavated in March 1983 and subsequently in 1997 as a result of a Record of Decision (ROD) issued in 1992, suggesting that any ongoing impact to groundwater due to residual soil contamination would have also been eliminated.

Based on a review of the groundwater monitoring results from November 1999 to September 2005 (Table 2), it appears that there are multiple source areas of TCE contamination at the site. The primary potential source area in the shallow zone appears to be in the vicinity of MW-2 and MW-6 as relatively high concentrations persist and indicates there is residual contamination that serves as an ongoing source of groundwater contamination. A statistical analysis (Mann Whitney U-Test) of the TCE concentrations detected at MW-2 and MW-6 during the most recent eight quarterly events (October 2003 to September 2005) illustrates that TCE levels have not decreased with time at either MW-2 or MW-6 during this time period. Additionally extraction well PW-2, which is located between MW-2 and MW-6, exhibited varying concentrations (see Table 3), which were persistently detected at elevated levels for TCE in 2006 and 2007, ranging from 24,800 ppb to 33,600 ppb. These high concentrations in the dissolved phase in groundwater suggest the potential existence of DNAPLs in the surrounding saturated zones.

Another potential source area, based on previous investigations, is in the vicinity of extraction well PW-1, which has had elevated concentrations of TCE in the influent ranging from 8,590 ppb to 11,800 ppb.

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The intermediate and deep wells at the Site show minimal effect of the contamination measured within the shallow wells above. Since 1999, only two minor exceedances of TCE (at DW-2 and DW-6) have been detected in all of the deep wells in the immediate vicinity of the Site. Slight exceedance of TCE has been detected at only IW-6 within the intermediate zone since the October 2004 sampling event. It is suspected that poor well construction could potentially have resulted in the impacts detected in these wells.

While the vertical extent of TCE groundwater contamination is believed to be delineated, elevated concentrations of TCE in shallow groundwater continue to be detected in extraction well MH-1 in the trench as well as MW-18 and MW-19 beyond the trench.

3.2 CONTAMINANT PATHWAYS AND AFFECTED MEDIA

Contaminants released to the subsurface at the Site would have initially affected soil. Contaminants released from above-ground sources in these areas would impact surface soils before affecting subsurface soils via gravity. Small spills and leaks slowly migrate down through soil in the vadose zone to the water table with precipitation infiltration.

Previous CPT investigation results suggest the presence of a sand channel approximately along the west-east direction and immediate to the north of MW-2 (Handex, 2003), and it is consistent with Geoprobe investigation results (Acres, 1997) with regard to the depth and interval of the sand channel. The sand channel appears to serve as a preferential pathway that facilitates contaminant transport to the east. This is evidenced partially by the higher contaminant concentrations in MH-1 (as compared to MH-2) resulting from the contribution from the upgradient source (around MW-2 and MW-6) through the sand channel.

The groundwater at the Site is currently being treated by an active pump and treat system. Based on previous field investigations, natural groundwater on-site flows to the east.

3.3 POTENTIAL RECEPTORS

Three local townships (Medford, Evesham and Mt. Laurel) have municipal supply wells in the general vicinity of the Site. Two of these supply wells are located within three miles of the Site. However, based on the information obtained from the previous studies, these wells are reportedly pumping from the Raritan - Magothy Formation, and are not expected to cause any appreciable effect on the groundwater on Site. Water pumped at these supply locations is routinely sampled for numerous contaminants, including TCE, which has not been detected to date. It is believed

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that the Wenonah-Mount Laurel Formation is a potential receptor while the underlying Raritan - Magothy Formation is not considered to be a potential receptor at this time. Additional potential receptors include the wetlands located on the eastern side of the extraction trench and Sharps Run to the north-northeast.

3.4 DATA GAPS

Based on the review of previous investigations, the following are the general data gaps to be addressed by the PDI activities (both the initial phase and later phase(s)):

- The source areas of elevated chlorinated solvent concentrations (MW-2, MW-6, PW-1, and PW-2 areas) need to be further investigated to delineate and quantify these source areas and to evaluate if any residual/free-phase product (DNAPL) is present and its distribution;

- Stratigraphy on the site, especially in the vicinity of MW-2, MW-6, PW-1, and PW-2, needs to be further investigated to identify/verify the existence of a "sand channel" that may be acting as a preferential pathway;

- Groundwater quality along and beneath the "sand channel" should be investigated.

- Monitoring wells MW-2 and MW-5 (and any other monitoring wells, if applicable) may not be screened at the proper depth intervals and have to be evaluated and potentially replaced. Additionally, the network of monitoring wells in the wetlands has to be increased (to monitor groundwater impacts in the vicinity of monitoring wells MW-18, MW-19 and MW-20). Installation of new/replacement monitoring wells and sampling of all monitoring wells will be conducted based on the findings by the initial phase of the PDI.

- Additional information associated with operation of the Treatment Plant should be collected. This would include information regarding the protocol for monitoring any treated groundwater that will potentially be discharged to the wetlands. Additional evaluation of the groundwater treatment plant will be deferred until the field investigation work has been completed.

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4.0 FIELD ACTIVITIES AND FINDINGS

A summary of the various field activities that have been performed for the initial phase of the PDI is presented as follows:

- Investigated the stratigraphy in the vicinity of MW-2, MW-6, PW-1, and PW-2 through Cone-Penetrating Test (CPT) to identify/verify the existence of a "sand channel" that may be acting as a preferential pathway.

- Delineated source areas of chlorinated solvent contamination and evaluated the potential presence of any residual/free-phase product (DNAPL). The preferential pathway for contamination migration was investigated by utilizing a Membrane Interface Probe (MIP).

- Investigated groundwater quality along the suspected sand channel and contamination source areas through collection of groundwater samples via hydropunch points installed next to selected MIP investigation locations.

- Investigated soil quality along the suspected sand channel and contamination source areas through collection of soil samples via Geoprobe points installed next to selected MIP investigation locations.

The following are task-specific sections detailing the implementation of each of the above mentioned field activities. A summary of all field sampling is presented as Tables 4 and 5, and the sampling locations are shown on Figure 3.

All sampling and investigation activities were performed in accordance with N.J.A.C. 7:26E; New Jersey Technical Requirements for Site Remediation (NJDEP, 2005), the New Jersey Field Sampling Procedures Manual (NJDEP, 2005), Alternative Groundwater Sampling Techniques Guide (NJDEP, 1994), where applicable, and other relevant regulation and guidance for conducting investigations at contaminated sites. The task-specific descriptions of the field activities are supplemented by procedures outlined in the Programmatic and Site-Specific Quality Assurance Program Plans (QAPPs). A site-specific health and safety plan (SSHASP) and site-specific QAPP Addendum, were also developed after the PDI Workplan was approved by the NJDEP. All field work was performed in accordance with the contract Programmatic Health and Safety Plan (PHASP) and SSHASP.

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4.1 CPT-MIP INVESTIGATION

The CPT investigation was utilized at the Site in order to further investigate the location of the sand stratum. ConeTec Incorporation was retained to perform the CPT work from May 14th, 2007 to May 18th, 2007. The investigation was conducted across a majority of the site. The investigation locations are presented on Figure 3. Initially, investigation was performed at 48 boring locations. Based on the preliminary investigative results, 11 additional locations were selected to be investigated in the source areas as well as the suspected sand channel. All locations were investigated to a depth ranging from approximately 21 to 34 feet and were backfilled upon completion using soil cuttings and cement-bentonite grout.

The CPT work was conducted using a 20-ton CPT truck rig. The rig was equipped with two 15 cm^2 cone penetrometers (including 500 psi pore water pressure transducers). For the CPT work, soil parameters, including cone bearing / tip resistance (Qc), sleeve friction (Fs), both of which are used to calculate the friction ratio (Rf), and pore water pressure (U) were continuously measured, at five-centimeter intervals, as the cone penetrometer was advanced into the ground, in accordance with ASTM D5778-95. An onboard data acquisition system in a support truck allowed for real-time evaluation of the CPT data, including soil behavior type (SBT) to assist decisions about investigation depths.

The Membrane Interface Probe (MIP) investigation was conducted by Columbia Technologies LLC concurrently with the CPT investigation. The MIP probe was approximately 12-inches (30 cm) in length and 1.5-inches (3.8 cm) in diameter. The probe was driven into the ground at the nominal rate of one foot per minute using the ConeTec CPT rig. The MIP device used a heated, semi-permeable membrane, installed in the wall of the probe, to collect vapor-phase VOC samples from the subsurface materials adjacent to the probe. The VOC sample was transferred to the surface through a tube using an inert carrier gas (nitrogen) for chemical analysis by PID/FID/ECD detectors. The output signal from the detectors was captured by a MIP data logging system installed on a MIP Field Computer. Conductivity, speed, detector data and temperature are displayed continuously in real time during each push of the probe. In addition, the data logs were printed for display and analysis following the data logging run and also exported to common spreadsheet software for further analysis using Columbia's SmartData Solutions™ technology.

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4.2 HYDROPUNCH GROUNDWATER INVESTIGATION

Based on the findings of the CPT/MIP investigation, discrete groundwater sampling was performed at target depth intervals with high MIP-ECD readings alongside the MIP investigation locations. A total of 34 MIP investigation locations were sampled for the laboratory confirmatory analysis of VOCs. As a QA/QC check, some locations/intervals that had low or non-detect MIP-ECD/PID/FID readings were also selected for groundwater sampling. The groundwater sampling and analysis are summarized in Table 4.

To collect the samples, a stainless steel grab sampler was advanced using the CPT drilling rig to the target sampling depth and groundwater in the aquifer matrix was allowed to flow into the sampler through an exposed 2-foot screen. A bailer was then used to collect the groundwater sample from the sampler. The sampler was decontaminated before it was moved to the next sampling depth or location. Up to four groundwater samples were collected at each location, depending on the MIP results and groundwater recovery.

4.3 DIRECT-PUSH SOIL INVESTIGATION

Based on the findings of the CPT/MIP investigation, soil sampling was performed at target depth intervals with high MIP-ECD readings alongside the MIP investigation locations. A total of 35 MIP investigation locations were further sampled for the laboratory confirmatory analysis of VOCs. As a QA/QC check, some locations/intervals that had low or non-detect MIP-ECD/PID/FID readings were also selected for soil sampling. The soil sampling and analysis are summarized in Table 5.

To collect the samples, borings were advanced with direct-push drilling equipment in 4-foot intervals and continuous cores of soil were recovered via disposable acetate sleeves. All soil intervals were visually inspected for evidence of contamination and field screened for organic vapors with a PID. The soils were also classified according to the Burmister Soil Classification System.

Geotechnical samples were collected from select soil borings to evaluate the physical properties of the soil. Five (5) samples were collected and analyzed for grain size and hydrometer by ASTM D422. Three (3) additional samples were collected and analyzed for Total Organic Carbon (TOC).

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4.4 SITE SURVEY AND MAPPING

The first phase of survey was conducted on June 14, 2007 for all CPT/MIP and all sampling locations in this phase of the PDI. These locations were surveyed by a Professional Land Surveyor, licensed in the state of New Jersey. All horizontal data on the survey map is plotted in the New Jersey State Plane Coordinate System (NAD83), and vertical elevations in the North American Geodetic Vertical Datum (NAGVD88).

4.5 FINDINGS AND DISCUSSIONS

The following subsections present the findings for the initial PDI activities. The details of CPT and MIP investigations and findings are presented as Appendices A and B, respectively. The hydropunch groundwater analytical results are summarized in Table 6 and the soil analytical results are summarized in Table 7. The soil boring logs from the 2007 direct-push soil sampling are provided as Attachment C and the summary of soil and groundwater lab analytical data is provided as Attachment D.

4.5.1 CPT Investigation Findings

The CPT data were collected to determine the subsurface stratigraphy. The CPT's soil behavior type (SBT) classification (refer to SBT logs in the CPT Investigation Report) identified 7 different soil types at the Site: gravelly sand, sand, silty sand, sandy silt, clayey silt, silty clay and clay. These soil types are stratified in three different layers: the sand stratum by grouping together gravelly sand, sand, and silty sand with limited lenses of sandy silt, the unconsolidated clay layer with lenses of sand (primarily at the ground surface) and clayey silt above the sand stratum (together defined as the Hornerstown Formation), and the consolidated clay and clayey silt layer below the sand stratum (defined as the Navesink Formation). The SBT results are generally consistent with the findings based on soil boring logs (see Attachment C).

Figure 4 shows the thickness of the sand stratum at each CPT location based on the CPT sounding results. Sand stratum cross sections (with relevant monitoring wells) are also shown as Figures 5A through 5G. The locations of those cross sections are shown on Figure 4.

Figures 4 and 5 illustrate the presence of the sand stratum (1 to 9 feet thick), the top of which starts at an elevation of approximately 48 to 51 feet above mean sea level (amsl) or 8 to 15 feet bgs (see Figures 5A through 5G). The sand stratum stretches consistently along the east-west direction while it tapers off moving from north to south. The results appear to be consistent with those of the previous CPT investigation conducted by Handex (Handex, 2003).

4.5.2 MIP Investigation Findings

Figure 6 (also refer to Figure 2 of Attachment B) shows the plan view (preliminary) of the contamination distribution based on MIP results in the area of investigation. Figure 6 indicates that contamination resides primarily in the vicinities of PW-1, PW-2, MW-2 and MW-6. The contamination source appears to be contained from P1 to P37 to the north and from P55 to P59 to the southeast.

Generally, a PID reading on the order of 1 x 10e7 (uV) would be expected from a free-phase NAPL according to the MIP subcontractor (i.e., Columbia Technologies LLC). Based on the MIP results, it appears that no free-phase NAPL is present at any of the locations investigated. The highest MIP readings were recorded at location P22, which (PID readings) are about 1/3 to 1/2 what would be expected from a free-phase NAPL.

The MIP results (refer to Figures 4 to 7 of Attachment B) also suggest that, vertically, contamination is primarily present in the lower portion of the sand stratum and the top 5 to 10 feet of the clay layer beneath except in the vicinity of boring location P22 where the residual contaminant source exits at a relatively shallow depth and in the vicinity of boring locations P5 and P53, where contaminants were detected deeper into the clay layer (up to 15 feet).

4.5.3 Groundwater Investigation Findings

Groundwater samples were collected from a total of 34 MIP investigation locations for the laboratory confirmatory analysis of VOCs. The groundwater analytical results are summarized in Table 6 and the groundwater TCE results are shown on Figure 7. Figures 8A through 8F show the groundwater TCE distribution relative to the sand stratum.

As indicated by Table 6, TCE was observed to exceed the GWQS of 1 ug/l in all the groundwater samples collected. In addition, 1,1-dichloroethylene (1,1-DCE) was observed to exceed the GWQS of 1 ug/l in the groundwater samples collected at locations P14 (one of the two samples), P16, P24, P55, and P61; cis-1,2-dichloroethene (cis-DCE) was observed to exceed the GWQS of 70 ug/l in the groundwater samples collected at locations P4, P6, P11, P12, P53, P55, and P58; and tetrachloroethene (PCE) was observed to exceed the GWQS of 1 ug/l in the groundwater samples collected at locations P56 and P60.

The NJDEP *Technical Requirements for Site Remediation* defines contamination source areas as concentrations in groundwater that are greater than 1% solubility [N.J.A.C 7:26E-2.1(a)(11)(i)]. Based on this definition (and note that 1% of TCE solubility is approximately 12,800 ppb), the estimated horizontal extent of the source area is shown on Figure 7, which is generally consistent

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with the MIP results. As indicated by Figure 7, the groundwater contamination source is present primarily in the middle of the site and has traveled downgradient to the east. Note that some residual contaminant source is also found at the boring location P56 close to which a former boiler room and drums existed historically.

Figures 8A through 8F indicate that, consistent with MIP results, the groundwater contamination is primarily present in the lower portion of the sand stratum (i.e., 10 to 15 feet bgs or 50 feet amsl) and the upper portion (approximately 5 to 10 feet) of the Navesink Formation below (i.e., 20 to 25 feet bgs or 40 feet amsl). However, the residual contaminant source exits relatively shallow (from approximately 55 feet amsl) in the vicinity of boring location P22 while it has moved deeper (to approximately 35 feet amsl) into the clay layer in the vicinity of boring locations P53 and P5. Vertically, the contamination tends to migrate upward from the Navesink formation to the lower sand stratum as it moves from the P53-P5 area to P58 (see Figures 8E-E' and 8F-F' in particular).

The PDI hydropunch groundwater analytical results are also compared with the historic monitoring results. The highest PDI hydropunch groundwater TCE analytical results (10,000 ppb level) in the residual source area are approximately one order of magnitude higher than the recent groundwater monitoring well sample results (1,000 ppb level) since 2003 (see Table 2). However, the extraction well PW-2 has showed consistently similar levels of TCE concentrations (above 10,000 ppb) in the last two years. This indicates that the residual contamination is potentially trapped in the soil matrix and diluted as it is sampled from the monitoring wells.

Groundwater elevations measured in May 2007 as part of the Monthly System Operations Report conducted by Handex are presented on Figure 9. As indicated by Figure 9, the groundwater flows eastward to the collection trenches, following the local terrain sloping and hydraulic gradient. The groundwater TCE concentration shows a decreasing trend as groundwater flows from the source areas to the east, following the local groundwater gradient.

4.5.4 Soil Investigation Findings

The soil analytical results are summarized in Table 7 and the soil TCE results are shown on Figure 10. Figures 11A through 11F show the soil TCE distribution relative to the sand stratum.

As indicated by Table 7, TCE was the only compound analyzed that exceeded the most stringent New Jersey Soil Cleanup Criteria (NJSCC), i.e., Impact to Groundwater Soil Cleanup Criteria (IGWSCC), of 1 ug/l, in all the soil samples collected at 26 of the 36 boring locations. The highest soil TCE concentration was found in the sample collected at a depth interval of 12 to 14

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feet bgs at boring P21. Compared to the groundwater TCE concentration levels, the soil TCE concentrations are relatively low. Total Organic Carbon (TOC) results for the three soil (clay) samples collected at the top of the Navesink Formation range from 1,400 to 1,720 mg/kg, a very low level in comparison with the TOC range of 0.5% to 5% for typical soil. The low TOC levels indicate that contaminants would not be highly adsorptive to the soil matrix.

Figures 11A through 11F indicate that, consistent with the MIP and groundwater results, the soil contamination is primarily present in the lower portion of the sand stratum (i.e., 10 to 15 feet bgs or 50 feet amsl) and the upper portion (approximately 5 to 10 feet) of the Navesink formation below (i.e., 20 to 25 feet bgs or 40 feet amsl). However, the residual contaminant source exits relatively shallow (from approximately 55 feet amsl) in the vicinity of boring location P22 while it has moved deeper (to approximately 35 feet amsl) into the clay layer in the vicinity of boring locations from P53 to P5. Similarly as discussed for groundwater findings, vertically, the contamination tends to migrate upward from the Navesink formation to the lower sand stratum as it moves from the P53-P5 area to P58 (refer to Figures 11E-E' and 11F-F' in particular). This indicates the combined influence of local groundwater gradient, the groundwater pumping at MH-1, and the preferential pathway formed by the sand channel.

Additionally, five soil samples were collected for the analysis of grain size. A summary of the lab analytical data is provided in Attachment D. As the grain size analysis results indicate, a substantial portion of the soil sample is composed of silt and clay, i.e., approximately 40% to 50%, except for sample from P9, which is 30%. Based on the results, the hydraulic conductivity of the soil (top of Navesink Formation) can be estimated to be likely in the range from 10^{-6} to 10^{-4} cm/s, according to C. W. Fetter (1994).

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5.0 CONCLUSIONS AND RECOMMENDATIONS

This Section presents the conclusions based on the findings of the current CPT/MIP, soil and groundwater investigations, in comparison to historic investigation findings. Recommendations are also provided at the end.

5.1 SUMMARY AND CONCLUSIONS

Summary and conclusions of the results from the initial phase of the PDI are presented as follows:

- CPT results are generally consistent with boring logs and previous CPT investigation findings and confirm the presence of the sand stratum (1 to 9 feet thick), the top of which starts at approximately 48 to 51 feet amsl and increases in thickness moving north from a line connecting MW-6 and MW-8.
- The sand stratum at MW-2 lies between approximately 10 to 16 feet bgs and the clay layer starts from 16 to 18 feet bgs based on the CPT data at boring location P14, the one closest to MW-2 (see Figure 3). Since MW-2 has a screen interval between 6.69 and 16.69 feet bgs, it appears to be screened to the top of the clay layer (Navesink Formation). Additionally, the highest contaminant concentrations are found by this PDI in a relatively shallow zone (10 to 16 feet bgs) in the vicinity of MW-2. As a result, it is believed that MW-2 has a proper screen interval to intersect the primary depth of the contaminant migration pathway.
- The sand stratum at MW-5 is estimated to be between approximately 6 to 13 feet bgs based on the CPT data collected by Handex and extrapolation of the CPT data collected during this PDI. Based on the location of the MW-5 well screen from 1.33 to 11.33 feet bgs, the MW-5 screen is estimated to be 1 to 2 feet above the clay layer (Navesink Formation). Additionally, the contamination appears to travel primarily in the lower portion of the sand stratum and the upper portion of the clay layer as it moves through the vicinity of MW-5. As a result, it appears that the well screen of MW-5 is not intersecting the primary depth of the contaminant migration pathway.

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- The sand stratum at MW-6 lies between approximately 14 to 17 feet bgs based on the CPT data at boring locations P05 and P06, the ones closest to MW-6 (see Figure 3). Since MW-6 has a screen interval between 5.54 and 15.54 feet bgs, it appears to be screened 1 to 2 feet above the top of the clay layer (Navesink Formation). Additionally, the highest contaminant concentrations are found in a relatively deeper zone (15 to 25 feet bgs) in the vicinity of MW-6. As a result, it is believed that the well screen of MW-6 is not intersecting the main contaminant zone.
- The MIP results indicate that no free-phase NAPL is present at any of the locations investigated. The MIP results also suggest that, vertically, contamination is primarily present in the lower portion of the sand stratum (i.e., 10 to 15 feet bgs or 50 feet amsl) and upper portion (approximately 5 to 10 feet) of the clay layer below (i.e., 20 to 25 feet bgs or 40 feet amsl). The residual contamination source appears to be relatively shallow (from approximately 55 feet amsl) around boring location P22, while it has moved deeper (to approximately 35 feet amsl) into the clay layer (up to 15 feet) around boring locations P53 and P5.
- Groundwater analytical results indicate that TCE, 1,1-DCE and cis-DCE were found to exceed the NJDEP GWQS; TCE is the primary contaminant of concern. The TCE distribution suggests that the residual source areas lie in the vicinity of boring locations P22 and P53, and that some residual source is also present in the vicinity of boring location P56. The TCE movement following groundwater flow and the sand channel appears to be a result of the local groundwater gradient, the pumping in the recovery trench and the preferential pathway formed by the sand stratum.
- The highest PDI hydropunch groundwater TCE analytical results (10,000 ppb level) in the residual source area are approximately one order of magnitude higher than the recent groundwater monitoring well sample results (1,000 ppb level) since 2003 (see Table 2). However, the extraction well PW-2 has shown consistently similar level of TCE concentrations (above 10,000 ppb) in the last two years. This indicates that the residual contamination is potentially trapped in the soil matrix and diluted as it is sampled from the monitoring wells.
- Soil analytical results show that TCE is the only compound analyzed that exceeds the IGWSCC and is generally present at relatively low levels compared to the groundwater analytical results. The soil contamination is primarily present in the lower portion of the sand stratum (i.e., 10 to 15 feet bgs or 50 feet amsl) and the upper portion (approximately 5 to 10 feet) of the Navesink formation below (i.e., 20 to 25 feet bgs or 40 feet amsl). However, the residual soil contaminant source exists relatively shallow (from approximately 55 feet amsl) in the vicinity of boring location P22, while it has moved deeper (to approximately 35 feet amsl) into the clay layer in the vicinity of boring

locations P5 and P53. The soil TCE distribution pattern is generally consistent with the findings of the groundwater investigation.

- The groundwater analytical results indicate significant levels of ground water contamination at P42 and P56 (Figure 7). Accordingly, additional horizontal and vertical delineation is warranted in these areas.
- Historical data review suggests that a majority of the contamination was removed by soil excavation in 2001 and that the site contaminants have undergone degradation over time. The contaminant degradation is evidenced by the constant decrease in concentration of PCE (parent product) at monitoring well MW-7, the increase and then decrease of cis-1,2-DCE (degradation daughter product of PCE and TCE) at the extraction points, and the detection and increase of vinyl chloride (degradation daughter product of cis-1,2-DCE) at the extraction points since 2003.

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5.2 RECOMMENDATIONS

Based on the PDI results, Berger recommends additional investigations to be conducted at the Site and further evaluation of proper remedial actions to optimize the existing remedy (i.e., pump & treat) in order to reduce the duration of ongoing treatment and monitoring.

5.2.1 Replacement and New Monitoring Wells

Based on the results of the initial phase of the PDI, it is recommended that MW-5 and MW-6 be replaced and that two (2) additional new monitoring wells be installed. Figure 12 shows the locations of the proposed replacement and new monitoring wells. The replacement well for MW-5 will be installed to a total depth of 15 feet and screened between 5 and 15 feet bgs (or 2 to 3 feet into the Navesink Formation). The replacement well for MW-6 will be installed to a total depth of 20 feet and screened between 10 and 20 feet bgs (or 3 to 5 feet into the Navesink Formation).

The two (2) new monitoring wells are proposed within the investigation area, including one (MW-25) to the east of P55 and one (MW-26) near P56. MW-25 will be used to monitor the groundwater quality at the "edge" of the residual source contaminant plume as shown on Figure 7, and MW-26 will be used to monitor the groundwater quality in the source area surrounding P48 which is not currently being actively monitored. It is recommended that MW-25 be installed to a total depth of 15 feet and screened from 5 to 15 feet bgs (or 2 to 3 feet into the Navesink Formation). MW-26 is recommended to be installed to a total depth of 20 feet and screened from 10 to 20 feet bgs (or 2 feet into the Navesink Formation).

All new wells will be installed using hollow-stem auger drilling techniques. In general, the wells will be constructed with 4-inch diameter, schedule 40, PVC casing threaded into a 10-foot length of 0.01-slotted screen. The annular space between the PVC and the wall of each well boring will be filled with #0 size well sand to a depth corresponding to at least two feet above the well screen. The remaining annular space will be grouted utilizing a tremie pipe. The top of each PVC casing will be equipped with an expandable locking well plug. A protective outer steel casing with a locking cap will be installed over the PVC at each well location.

Following well installation, each new well will be purged and developed with a submersible pump to remove as much sediment from the new well as practical. Well development procedures will be performed until a near turbid-free discharge is achieved, or for a period of up to one hour, assuming that 3 to 5 well volumes are extracted from the well.

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A complete round of water level measurements will be conducted once these wells have been developed. The groundwater samples will be analyzed for TCL Volatiles + 30 via EPA method SOM01.1. Those results, in combination with other findings, will be used to facilitate further evaluation of applicable remedial alternatives, and selection and design of an effective and efficient remedial action.

5.2.2 Additional Delineation

The results of the initial phase of the PDI indicate significant levels of ground water contamination at P42 and P56 (Figure 7). Accordingly, additional horizontal and vertical delineation is warranted in these areas. As a result, it is recommended that up to 16 additional soil borings (8 initial and up to 8 contingent borings) be conducted. The proposed soil boring locations are shown on Figure 12, which are selected based on the similar grid used for the initial phase of the PDI.

At each soil boring location, discrete soil and groundwater sampling will be performed at target depth intervals. To collect the soil samples, borings will be advanced with direct-push drilling equipment (e.g., Geoprobe) in 4-foot intervals and continuous cores of soil will be recovered via disposable acetate sleeves. All soil intervals will be visually inspected for evidence of contamination and field screened for organic vapors with a PID and will be classified according to the Burmister Soil Classification System. Soil samples will be collected from the depth intervals of 8-12, 12-16, 16-20, and 20-24 feet bgs, and be analyzed for VOCs via EPA Method 8260B.

Discrete groundwater samples will be collected from the same locations in accordance with *Alternative Ground Water Sampling Techniques Guide, NJDEP. 1994.* Specifically, the groundwater samples will be collected utilizing direct-push sampling equipment (e.g., Geoprobe Screen Point 15/16 Sampler) or equivalent. Groundwater sampling will be attempted from 4 depth intervals, i.e., 8-12, 12-16, 16-20, and 20-24 feet bgs (based on the previous sampling activities, sufficient groundwater samples may not be able to be collected at all locations and/or intervals), and all collected ground samples will be analyzed for VOCs via EPA Method 8260B.

All sampling activities and additional QA/QC samples will be performed per the New Jersey Field Sampling Procedures Manual (NJDEP, 2005). Upon completion of the sampling activities, locations of the new sampling points will be surveyed for horizontal and vertical location.

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5.2.3 Remedial Alternatives Evaluation

As presented in Section 4.5 and summarized in Section 5.1 of this report, residual contamination source is present in the vicinities of boring locations P22, P53, P58 an P56 (defined as "residual source area") and have been migrating along the groundwater flow and the preferential pathway formed by the sand channel towards the recovery trench to the east (Figures 7 and 12). It appears that the residual contamination in the source area is a continuing source contributing to groundwater contamination. To remove the residual contamination source and potentially reduce the duration of the operation of the existing P&T system, Berger recommends that proper remedial technologies be evaluated which may be potentially applied to the source area to meet this objective.

Based on the applicability to the contaminant types and concentrations, geologic formation, and range of costs, Berger suggests that five (5) remedial technologies be evaluated, which are Enhanced Monitored Natural Attenuation (EMNA), In-Situ Chemical Reduction (via Nano-Iron injection), In-Situ Chemical Oxidation (ISCO), In-Situ Thermal Treatment (via Electrical Resistance Heating [ERH]) and Dual-Phase Extraction (DPE). Those (except DPE) are in-situ technologies which are believed to be more favorable to remediating residual contamination at the Site in a cost-effective manner. For the evaluation, conceptual design and associated order of magnitude cost estimate will be provided for each of those technologies and they will then be compared in order to identify the appropriate one(s) for further bench- and pilot-scale studies prior to full-scale implementation. Berger will also provide conceptual design and cost estimate for the selected technologies for a pilot study at the Site. A draft evaluation report will be prepared and submitted to NJDEP for review, and upon completion of the additional investigations and groundwater sampling as recommended in Section 5.2, the evaluation may be updated as appropriate to incorporate any additional results obtained and submitted as the final evaluation report. The following paragraphs briefly discuss the technologies to be evaluated.

Enhanced Monitored Natural Attenuation (EMNA)

The Enhanced Monitored Natural Attenuation (EMNA) entails the use of Hydrogen Release Material (HRM), such as Hydrogen Release Compound (HRC) and Edible Oil Substrate (EOS), to increase the rate of degradation through an anaerobic process known as reductive dechlorination in which the indigenous microorganisms use the hydrogen released by HRM to progressively remove chlorine atoms from chlorinated hydrocarbon contaminants. A preliminary review of Site groundwater analytical data indicates that the anaerobic reductive dechlorination has been and/or is occurring in recent years as evidenced by the increase in degradation daughter products such as DCE and VC. However, the effectiveness of this alternative is highly dependent upon the distribution of HRM in the subsurface such that contact can be made with

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the contaminants. As a result, its effectiveness could be heavily affected by hydrogeologic condition of the Site. Additionally, the presence of clayey silt and/or silty clay both above and below the sand layer (if HRM is chosen to be injected in those layers) would potentially decrease the distribution efficiency of HRM throughout the impacted saturated soil matrix.

In-Situ Chemical Reduction

The In-situ Chemical Reduction alternative entails the use of Nano-iron to increase the rate of degradation by chemical reduction. Nano-iron (NanoFe) consists of submicron (<10-6 m) nano particles of zero-valent iron. This extremely small size of NanoFe particles entails easier distribution of the materials in the impacted aquifer. The technology is based on the reduction-oxidation process where chlorinated solvents serve as electron acceptors and the Nano-iron serves as the electron donor. The iron donates an electron, thus acting as the reductant in the reaction and removes a chlorine atom from the chlorinated hydrocarbon. Similar to the EMNA alternative, chlorinated solvents such as TCE are reductively dechlorinated into less innocuous (except for vinyl chloride) compounds which would further degrade under either anaerobic or aerobic conditions to ethane, methane and/or carbon dioxide. This technology heavily depends on the distribution of NanoFe in the subsurface such that contact can be made with the contaminants. Some chemical parameters of the impacted aquifer (e.g., pH) may need to be adjusted to improve effectiveness of the technology. However, compared to EMNA, this alternative is more effective for reducing high contaminant concentrations and generally requires a shorter duration to achieve the remediation objective. This technology can also be combined with EMNA to improve its effectiveness.

In-Situ Chemical Oxidation (ISCO)

In-situ chemical oxidation (ISCO) is a process that involves the injection of reactive chemical oxidants into the subsurface for rapid contaminant destruction. This process is most often deployed at sites with relatively high contaminant concentrations in the source area and/or the downgradient plume(s). This technology depends on the distribution of chemicals in the subsurface such that contact can be made with the contaminants. Some chemical parameters of the impacted aquifer (e.g., organics) may lead to excessive consumption of the chemicals. However, compared to EMNA, this alternative is more effective for reducing high contaminant concentrations and generally requires a shorter duration to achieve the remediation objective.

Dual-Phase Extraction

Dual-Phase Extraction (DPE) involves removal of contaminated groundwater and soil vapors from a common extraction well. DPE provides a means to accelerate removal of DNAPL and

dissolved groundwater contamination, to remediate capillary fringe and smear zone soils, and to facilitate removal of vadose zone soil contaminants. The exhaust gases would be treated using vapor phase granular activated carbon. In this application the liquid discharge would be separated into its aqueous and DNAPL, if applicable, fractions through a liquid phase separator. The aqueous phase would be pumped to the existing on-site treatment system and the DNAPL, if any, would be drummed and stored for off site disposal.

Electrical Resistance Heating

Electrical Resistance Heating (ERH) is an in situ thermal technology that passes electrical current among electrodes placed in the subsurface. Electrical resistance generates heat that, if desired, eventually causes water in the subsurface to gently boil. Steam stripping, volatilization and other mechanisms, such as hydrolysis and increased chemical reaction rates, rapidly remediate subsurface contamination (NAPL or aqueous phase). ERH is an effective method for the removal of volatile and semi-volatile contaminants from both the vadose and saturated zones regardless of soil permeability or heterogeneity. While hydraulic permeability and matrix heterogeneities affect remedial technologies that rely on advective flow processes, those geo-system characteristics have no affect on ERH.

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6.0 REFERENCES

Acres, *Design Report Groundwater Remediation/Remedial Design Services, Ellis Property Site, Contract X-20027, 100% Submission*, Acres International Corporation, August 1998.

Acres, *Field Sampling and Testing Report #2*, Acres International Corporation, April 1997.

Berger, *Final Pre-Design Investigation Workplan.* The Louis Berger Group, Inc., November 2005.

Berger, *Final Programmatic Health and Safety Plan.* Louis Berger & Associates, Inc., August 1998

Berger, *Final Programmatic Quality Assurance Program Plan.* Louis Berger & Associates, Inc., November 1998.

Fetter, C.W., *Applied Hydrogeology*, 3rd Edition. Prentice Hall, 1994.

Garden State Remediation Partners, *Conceptual Approach for Pre-Design Investigation for the Source Area, Ellis Property*, Letter-Report, March 4, 2005.

Handex, *Cone Penetrometer Subsurface Investigation Report*, December 2003.

NJDEP, *New Jersey Technical Requirements for Site Remediation*, NJAC 7:26 E, 2005.

NJDEP, *NJDEP Field Sampling Procedures Manual*, August 2005

NJDEP, *Alternative Groundwater Sampling Techniques Guide*, July 1994.

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TABLES

TABLE 1
Ellis Property Superfund Site
Evesham Township, New Jersey
Chronology of Events

Date	EVENT
Prior to 1968	Ellis Property was used as a dairy farm
1968	Property aquired by Irving Ellis
1968 - mid-1980s	Property used for drum reconditioning operations
Sep-80	An anonumous tip to the NJDEP caused the Department to visit the Site
Jun-86	Weston Designers Consultants submitted Report on Background Investigation -The Ellis Property RI/FS
Feb-87	Weston Designers Consultants submitted Field Sampling Plan for Ellis Property RI/FS
Jan-92	John Milner Associates submitted Stage 1A Archeological Survey of the Ellis Property Site
May-92	Silver and Renzi Reporting Service submitted Meeting Report - Ellis Property Superfund Site, at Evesham Township Municipal Building
Sep-92	NJ-Department of Protection and Energy submitted Record Of Decision - Ellis Property
Oct-94	Acres International Corporation submitted Project Work Plan - Soil Remedial Design Investigation - Final
Jan-95	Acres International Corporation submitted Wetlands Delineations and Assessment Plan - Final
Jan-95	Acres International Corporation submitted Project Work Plan - Groundwater Remedial Design Investigation - Final
Sep-95	Acres International Corporation submitted Summary of DNAPL Verification Calculations
Sep-95	Acres International Corporation submitted Stage 1B Archeological Survey of the Ellis Property Site
Oct-95	Acres International Corporation submitted Biological Survey Report - Final
May-96	Groundwater Science and Environmental Technology, Inc. submitted Wetlands Delineations Eastern Boundary of Ellis Property
May-96	Acres International Corporation submitted Field Sampling and Testing Report (Draft and Final)
Mar-97	Acres International Corporation submitted Groundwater Flow Model and Simulation of Withdrawal and Injection Options for Remediation, Volumes 1 and 2
Apr-97	Acres International Corporation submitted Field Sampling and Testing Report # 2
Aug-97	Acres International Corporation submitted Field Sampling and Testing Report # 2
Nov-97	Acres International Corporation submitted One Stop Permit Identification System
Jan-98	Integrated Technical Services, Inc. Proposal for Ellis Property
Jan-98	RMI Environmental, Inc., submitted Bid Form for: Ellis Property Remedial Construction Solicitation X 25189 - Attachment #1
Jan-98	LNT Contracting, Inc., Bid Form for: Ellis Property Remedial Construction Solicitation X 25189 - Attachment #1
Apr-98	Acres International Corporation Groundwater Flow Model and Simulation of Groundwater Remedial Options - Final
Aug-98	Acres International Corporation submitted Groundwater Remediation Bid Specification (100 % Submittal) Volumes 3 - 6
Oct-98	State of NJ -Dept of The Treasury, DEP Bid documents - Ellis Property Groundwater Remediation - groundwater remediation invitation for bid, Volumes 1, 2, 4A and 4C
Oct-98	Acres International Corporation submitted Field Sampling and Testing Report # 3
Dec-98	GHR Consulting Services, Inc. submitted Summary Report (Term Contract X 30327) - Sampling Date: December 2-4,7, 1998
Apr-00	Acres International Corporation submitted Field Sampling and Testing Report # 4
Dec-00	NJDEP Correspondence letter to BET -- Reporting requirements
Jan-01	NJDEP Correspondence letter to Ellis Sites Task Force (ETF) -- Geoprobe investigation, evaluating the influent levels from each extraction points, Wetlands investigation Scope of Work, function of recharge trench, overall financial status and the "road map " on where these issues will lead
Jan-01	Acres Letter to BET -- Environmental Monitoring (EMP) Baseline Vegetation and Groundwater Survey: submittal and responses.
Feb-01	Brinkerhoff Environmental Services, Inc., submitted Quarterly Groundwater Monitoring Report (August, September, October 2000)
Feb-01	Brinkerhoff Environmental Services, Inc., submitted Base Vegetative Community Survey
Feb-01	Brinkerhoff Environmental Services, Inc., submitted Baseline Groundwater Monitoring Report
Mar-01	NJDEP document, Memorandum -- Quarterly Groundwater sampling results (August, September, October 2000), Responses from Bureau of Groundwater Pollution Abatement
Jun-01	Brinkerhoff Environmental Services, Inc., submitted Second Quarterly Groundwater Monitoring Report (November, Dec 2000, and Jan 2001)
Jun-01	O'Brien & Gere of North America submitted Mass Balance Report - Ellis Property

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TABLE 1
Ellis Property Superfund Site
Evesham Township, New Jersey
Chronology of Events

Date	EVENT
Jul-01	Brinkerhoff Environmental Services, Inc., submitted Third Quarter Groundwater Monitoring Report (February, March, April 2001)
Sep-01	NJDEP Correspondence letter to EPA -- Engineer's Estimate of Long Term Remedial Action (LTRA) Costs, years 1 through 10
Oct-01	NJDEP Correspondence letter to EPA -- " Ellis property GW Remediation, Revision No. 1, Record Set" drawings, "Ellis Property, MW data Groundwater Contour Map" for August 2000 thru April 2001
Oct-01	NJDEP Correspondence letter to Ellis Sites Task Force (ETF) -- "Ellis Property GW remediation, Rev 1, record set" drawing, "Ellis Property, Monitoring well data Groundwater Contour Map" for August 2000 thru April 2001
Nov-01	NJDEP Correspondence letter to ETF --Wetlands Investigation Interim Report, Geoprobe Groundwater and Soil Sampling and Testing for the fieldwork performed in August and September 2001.
Dec-01	NJDEP Correspondence letter to Ellis Sites Task Force (ETF) -- Interdivisional Work Request for continuing the Wetland Investigation for TCE.
Dec-01	Memorandum from ETF -- "Alternative Technology for Ellis Site / Two Phase Vacuum Extraction" and "memo from NJDEP" Ellis Property Wetlands Investigation Interim Report and test results
Feb-02	Brinkerhoff Environmental Services, Inc., submitted Fourth Quarter Groundwater Monitoring Report (May thru July 2001)
Feb-02	NJDEP Meeting Minutes for February 14, 2002 -- Discussion on wetland testing, remedial technology including two-phase vapor extraction system
Feb-02	NJDEP Correspondence letter to ETF -- Boring logs, monitoring well logs and documentation, and geologic cross-section
Apr-02	Brinkerhoff Environmental Services, Inc., submitted First Annual Groundwater Monitoring Report (August 2000 through July 2001)
May-02	NJDEP Correspondence letter to Henry Cole & Associates -- Well search through NJDEP, Bureau of Water Allocations
Aug-02	Brinkerhoff Environmental Services, Inc., submitted Wetlands Monitoring Report
Aug-02	NJDEP Memorandum -- Buried Sand Channel Delineation
Nov-02	Brinkerhoff Environmental Services, Inc., submitted Second Annual Groundwater Monitoring Report (August 2001 through July 2002)
Jan-03	GHR Consulting Services, Inc., submitted Summary Report (Term Contract X 30327)- Groundwater, Soil, and Sediment Sampling, Sampling Date: Nov 19-21 2002
Mar-03	NJDEP Meeting minutes for March 6, 2003-- Outlined problem areas within the Site, included potential remedial alternatives
Mar-03	NJDEP Correspondence letter to ETF -- Influent and effluent sampling result for groundwater treatment plant for August 2002 thru 2003
Apr-03	Letter from Henry Cole to NJDEP -- Remedial Selection Process for Ellis Property Superfund Site
Apr-03	NJDEP Correspondence letter to ETF -- Response to August 2002 Report
Apr-03	NJDEP Correspondence letter to ETF -- Response to the Remedial Alternative Recommendation
Jun-03	GHR Consulting Services, Inc., submitted Summary Report (Term Contract X 30327) - April 2003 Groundwater Sampling, Sampling Date: April 23-25,28, 2003
Jul-03	NJDEP Correspondence letter to ETF -- Response to comments regarding the draft outline for the engagement of Acres for the purposed of evaluating, selecting and implementing any alternative technologies by ETF
Jul-03	NJDEP Correspondence letter to EPA -- Metals and Volatile organic compounds analyses for the monitoring wells at site, no results reported
Aug-03	GHR Consulting Services Inc., submitted Summary Report (Term Contract X 30327) - July 2003 Groundwater Sampling, Sampling Date: July 22-24, 2003, 38 wells purged and sampled
Nov-03	GHR Consulting Services, Inc., submitted Summary Report (Term Contract X 30327) - October 2003 Groundwater Sampling, Sampling Date: October 20-23,2003, 38 wells purged and sampled
Dec-03	Handex Practical Environmental Solutions submitted Cone Penetrometer Subsurface Investigation Report
Jan-04	NJDEP Correspondence letter to EPA -- Remedial Action Report
Feb-04	GHR Consulting Services, Inc., submitted Summary Report (Term Contract X 30327)- January 2004 Groundwater Sampling, Sampling Date: January 12-14, 2004, 38 wells purged and sampled

Notes:
NJDEP = New Jersey Department of Environmental Protection
EPSCO = Electronic Parts Specialty Corporation
NJPDES = New Jersey Pollution Discharge Elimination System
DWR = Division of Water Resources
RCRA = Resource Conservation and Recovery Act
DHWM = Division of Hazardous Waste Management
NOV = Notice of Violation
NCAPA = Notice of Civil Administrative Penalty Assessment
RI = Remedial Investigation
FS = Feasibility Study
TCE = trichloroethene
PCE = tetrachloroethene

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TABLE 2

Ellis Property Superfund Site

Evesham Township, New Jersey

Historic Groundwater Analytical Results (TCE, ppb) - Monitoring Wells

	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16A	MW-17	MW-18	MW-19	MW-20	MW-21	MW-22	IW-4	IW-5	IW-6	IW-10	IW-11	IW-13	DW-1	DW-2	DW-3	DW-4	DW-5	DW-6	DW-7	DW-10	DW-11	DW-13
November-99	ND	**61000**	ND	ND	**1.5**	**1700**	**260**	**48**	ND	**1.5**	ND	ND	ND	ND	ND	ND	ND	**11000**	**5.9**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
February-00	ND	**65000**	ND	ND	**400**	**2100**	ND	**78**	ND	**2.8**	ND	ND	ND	ND	ND	ND	ND	**8100**	**0.5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
May-00	ND	**30000**	ND	ND	**360**	**7100**	**140E**	**15**	ND	**97E**	ND	ND	ND	ND	ND	ND	ND	**1600**	**1.2**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
June-00	ND	**39000**	0.41J	ND	**730**	**9500**	**110J**	**16**	ND	**33**	ND	ND	ND	ND	ND	ND	ND	**5100**	**4**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
July-00	ND	**21000**	**1.2**	ND	**760**	**11000**	**170**	**9.3**	ND	**22**	ND	ND	ND	ND	ND	ND	ND	**6500**	**9.6**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
August-00	ND	**36000**	ND	**1.5**	**360**	**27**	**210**	**14000**	ND	**20**	ND	ND	ND	ND	ND	ND	ND	**10000**	**21**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
September-00	ND	**33000**	ND	ND	**320**	**14000**	**140**	**40**	ND	**9**	ND	ND	ND	ND	ND	ND	ND	**13000**	**9.6**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**1.4**	ND	ND	ND	ND	ND	ND	ND	ND
October-00	ND	**37800**	ND	ND	**160**	**20400**	**208**	**130**	ND	**11.2**	ND	ND	ND	ND	ND	ND	ND	**5990**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
November-00	ND	**31100**	ND	ND	**235**	**24700**	**80.5**	**20.4**	ND	**5.8**	ND	ND	ND	ND	ND	ND	ND	**7200**	**6.8**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
December-00	ND	**33100**	ND	ND	**133**	**24400**	**88.1**	**24.3**	ND	ND	ND	ND	ND	ND	ND	ND	ND	**7550**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
January-01	ND	**25600**	ND	ND	**158**	**24500**	**76.6**	**47.8**	ND	ND	ND	ND	ND	ND	ND	ND	ND	**6120**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
February-01	ND	**27800**	ND	ND	ND	**24100**	**55.3**	**23.9**	ND	**42.7**	ND	ND	ND	ND	ND	ND	ND	**3470**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
March-01	ND	**23000**	ND	ND	**67**	**26000**	**37**	**14**	0.1	**7.2**	ND	ND	ND	ND	ND	ND	ND	**2300**	0.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1	0.79	ND	ND	ND	ND	ND	ND	ND	ND
April-01	ND	**19000**	ND	ND	**90**	**31000**	**28**	**8.7**	ND	**11**	ND	ND	ND	ND	ND	ND	ND	**<120.0**	0.45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
May-01	ND	**14000**	ND	ND	**130**	**33000**	**34**	**5.8**	ND	**6.5**	ND	ND	ND	ND	ND	ND	ND	**1700**	**2.9**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
June-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.94	ND	ND	ND	ND	ND	ND	ND	ND
July-01	ND	**9200**	**1.6**	ND	**73**	**30000**	**24**	**2.2**	ND	**2**	ND	ND	ND	ND	ND	ND	ND	**1100**	**6.3**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
August-01	ND	**11000**	ND	ND	**170**	**25000**	**26**	**2**	ND	0.47	ND	ND	ND	ND	ND	ND	ND	**5100**	**3**	ND	ND	ND	ND	ND	0.19	ND	ND	ND	ND	0.7	ND	ND	ND	ND	ND	ND	ND	ND
December-01	ND	**16000**	ND	ND	**190**	**20000**	**10**	**2.7**	ND	0.19	ND	ND	ND	ND	ND	ND	ND	**3600**	**2.9**	ND	ND	ND	ND	ND	0.8	ND	ND	ND	ND	0.6	ND	ND	ND	0.2J	ND	ND	0.1J	ND
March-02	ND	**32000**	ND	ND	**81**	**21000**	**16**	**3.5**	ND	0.33	ND	ND	ND	ND	ND	ND	ND	**200**	**34**	ND	ND	ND	ND	ND	0.7	ND	ND	ND	ND	0.85	ND	ND	ND	0.21J	ND	ND	ND	ND
June-02	ND	**24000**	ND	ND	**110**	**2800**	**15**	**1.4**	ND	0.73	ND	ND	ND	ND	ND	ND	ND	**1300**	**64**	ND	ND	ND	ND	ND	0.14	ND	ND	ND	ND	0.73	ND	ND	ND	**2.1**	ND	ND	ND	ND
April-03[1]	ND	**100**	ND	ND	**2.0J**	**3700**	**3.0J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**51**	**1.0J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
July-03[1]	ND	**160**	ND	ND	**68**	**4800**	**7**	ND	ND	**1J**	ND	ND	ND	ND	ND	ND	ND	**110**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
October-03[2]	ND	**100**	ND	0.28J	**8.3**	**7700**	**6.2**	0.99J	ND	0.43	ND	ND	ND	ND	ND	ND	ND	**180**	0.42J	ND	ND	ND	ND	ND	0.82J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
October-03[2]		**10000**				**12000**	**9.7**			**3.6**								**300**												0.43J								
January-04[1]	ND	**70**	ND	ND	0.60J	**4000**	**3**	0.48J	ND	**0.38J**	ND	ND	ND	ND	ND	ND	ND	**47**	0.5J	ND	ND	ND	0.25J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
April-04[3]	ND	**39/39**	ND	ND	ND	ND	**7.8/2.0**	ND	ND	0	ND	ND	ND	ND	ND	ND	ND	**55/37**	ND	ND	ND	ND	ND	ND	0.61J/0.60J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
June-04[3]	ND	**86/34**	ND	ND	**28/NS**	**8600/3.7J**	**3.1J**	ND	ND	**<1.0/1.1**	ND	ND	ND	ND	ND	ND	ND	**69.0/54.0**	0.26J/0.77J	ND	ND	ND	ND	ND	0.58J/0.78J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
October-04	NS	**7400**	ND	ND	**2.3**	**5000**	**6.7**	ND	ND	ND	ND	NS	NS	ND	ND	ND	ND	**850**	**1.6**	ND	ND	ND	ND	ND	**1**	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	NS
March-05	NS	**2800 D**	ND	ND	**12**	**580 D**	**3 J**	**1 J**	ND	**1 J**	ND	NS	NS	ND	ND	NS	ND	**370 D**	ND	ND	ND	NS	ND	ND	**1 J**	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	NS
July-05	NS	**11500**	ND	ND	**15**	**5900**	**7.1**	0.45	ND	**2.1**	ND	NS	NS	ND	ND	NS	ND	**393**	ND	ND	ND	NS	ND	ND	**2**	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	NS
September-05	NS	**1580**	ND	ND	**117**	**3190**	**11.8**	0.88 J	ND	**2.9**	ND	NS	NS	ND	ND	NS	ND	**2010**	**6.5**	ND	ND	NS	ND	ND	**1.5**	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	NS

Footnotes:

1 - Samples were collected using low-flow purge and should be considered biased low, based on analytical data from October 2003, in which samples were collected from six (6) on-site wells using both standard and low-flow purge. Comparison of those results showed that all samples collected using standard purge method were higher, varying from 1.5X to approximately two (2) orders of magnitude (see Footnote 2).

2 - Analytical results shown with two (2) entries present the low-flow purge collection technique on the upper cell and standard purge collection technique on the lower cell of the slash.

3 - Samples were collected using difussion sampling bags placed at two (2) different depths per monitor well. The first sample result represents the shallower bag and the second result is the lower (higher/lower).

4 - The NJDEP Groundwater Quality Standard for TCE is 1 ppb.

TABLE 3
Ellis Property Superfund Site
Evesham Township, New Jersey
Historic Groundwater Analytical Results (TCE, ppb) - Extraction Points

	Mar-03	Jul-03	Sep-03	Dec-03	Mar-04	Jun-04	Sep-04	Oct-04	Dec-04	Jun-06	Sep-06	Dec-06	Mar-07
PW-1	**410**	**17,000**	**830**	**13,900**	**18,600**	**1,402**	NA	**741**	**284**	**11,800**	**9,220**	**9,980**	**8,590**
PW-2	**220**	**19,800**	**32,000**	**21,200**	**35,500**	**1,708**	NA	**8**	**1,156**	**27,200**	**24,800**	**29,900**	**33,600**
MH-1	**3,500**	**2,600**	**3,200**	**2,400**	**6,430**	**3,738**	**2,097**	**3,167**	**3,561**	**3,580**	**2,240**	**2,860**	**3,850**
MH-2	**37**	**4**	**1,020**	**500**	**850**	**1,027**	**741**	**1,936**	**238**	**40**	**1,010**	**665**	**264**

Footnotes:
1 - The NJDEP Groundwater Quality Standard for TCE is 1 ppb.

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TABLE 4
Ellis Property Superfund Site
Evesham Township, New Jersey
Groundwater Sample Summary Table

Location ID	Sample ID	Lab ID	Sample Depth (ft bgs)			Analytical Parameters	Sampling Method	Date
P-3	P03WB		12.0	-	14.0	TCL VOA+30	Stainless Steel Bailer	06/04/07
	P03WC		14.0	-	16.0	TCL VOA+30	Stainless Steel Bailer	06/04/07
P-4	P04WA		10.0	-	12.0	TCL VOA+30	Stainless Steel Bailer	06/04/07
	P04WB		12.0	-	14.0	TCL VOA+30	Stainless Steel Bailer	06/04/07
	P04WC		18.0	-	20.0	TCL VOA+30	Stainless Steel Bailer	06/04/07
P-5	P05WB		16.0	-	18.0	TCL VOA+30	Stainless Steel Bailer	06/04/07
P-6	P06WB		16.0	-	18.0	TCL VOA+30	Stainless Steel Bailer	06/04/07
	P06WC		18.0	-	20.0	TCL VOA+30	Stainless Steel Bailer	06/04/07
P-9	P09WB		18.0	-	20.0	TCL VOA+30	Stainless Steel Bailer	05/29/07
P-11	P11WB		12.0	-	14.0	TCL VOA+30	Stainless Steel Bailer	06/05/07
P-12	P12WB		12.0	-	14.0	TCL VOA+30	Stainless Steel Bailer	06/05/07
	P12WC		18.0	-	20.0	TCL VOA+30	Stainless Steel Bailer	06/05/07
P-14	P14WA		10.0	-	12.0	TCL VOA+30	Stainless Steel Bailer	05/29/07
	P14WAMS		10.0	-	12.0	TCL VOA+30	Stainless Steel Bailer	05/29/07
	P14WAMSD		10.0	-	12.0	TCL VOA+30	Stainless Steel Bailer	05/29/07
	P14WB		14.0	-	16.0	TCL VOA+30	Stainless Steel Bailer	05/29/07
P-15	P15WB		14.0	-	16.0	TCL VOA+30	Stainless Steel Bailer	05/29/07
P-16	P16WA		14.0	-	16.0	TCL VOA+30	Stainless Steel Bailer	05/29/07
	P16WB		16.0	-	18.0	TCL VOA+30	Stainless Steel Bailer	05/29/07
	P16WC		18.0	-	20.0	TCL VOA+30	Stainless Steel Bailer	05/29/07
	P16WD		20.0	-	22.0	TCL VOA+30	Stainless Steel Bailer	05/29/07
P-17	P17WB		12.0	-	14.0	TCL VOA+30	Stainless Steel Bailer	05/29/07
P-21	P21WA		12.0	-	14.0	TCL VOA+30	Stainless Steel Bailer	05/31/07
	P21WB		16.0	-	18.0	TCL VOA+30	Stainless Steel Bailer	05/31/07
P-22	P22WA		10.0	-	12.0	TCL VOA+30	Stainless Steel Bailer	05/31/07
	P22WB		14.0	-	16.0	TCL VOA+30	Stainless Steel Bailer	05/31/07
	P22WC		16.0	-	18.0	TCL VOA+30	Stainless Steel Bailer	05/31/07
	P22WD*		20.0	-	22.0	Resampled	Stainless Steel Bailer	05/31/07
P-22	P22WD*		20.0	-	22.0	TCL VOA+30	Stainless Steel Bailer	06/05/07
P-23	P23WB*		14.0	-	16.0	Resampled	Stainless Steel Bailer	05/31/07
P-23	P23WB*		14.0	-	16.0	TCL VOA+30	Stainless Steel Bailer	06/05/07
P-24	P24WB		14.0	-	16.0	TCL VOA+30	Stainless Steel Bailer	05/30/07
	DUP01		14.0	-	16.0	TCL VOA+30	Stainless Steel Bailer	05/30/07
P-31	P31WB		12.0	-	14.0	TCL VOA+30	Stainless Steel Bailer	05/31/07
	P31WBMS		12.0	-	14.0	TCL VOA+30	Stainless Steel Bailer	05/31/07
	P31WBMSD		12.0	-	14.0	TCL VOA+30	Stainless Steel Bailer	05/31/07
P-33	P33WB		14.0	-	16.0	TCL VOA+30	Stainless Steel Bailer	05/31/07
P-41	P41WC		18.0	-	20.0	TCL VOA+30	Stainless Steel Bailer	06/05/07
P-42	P42WB		12.0	-	14.0	TCL VOA+30	Stainless Steel Bailer	05/30/07
	P42WD		20.0	-	22.0	TCL VOA+30	Stainless Steel Bailer	05/30/07
P-49	P49WB		8.0	-	10.0	TCL VOA+30	Stainless Steel Bailer	06/04/07
P-50	P50WB		8.0	-	10.0	TCL VOA+30	Stainless Steel Bailer	06/04/07
P-53	P53WC		20.0	-	22.0	TCL VOA+30	Stainless Steel Bailer	06/05/07
	P53WD		24.0	-	26.0	TCL VOA+30	Stainless Steel Bailer	06/05/07
P-54	P54WC		14.0	-	16.0	TCL VOA+30	Stainless Steel Bailer	05/29/07
P-55	P55WB		10.0	-	12.0	TCL VOA+30	Stainless Steel Bailer	06/05/07
	DUP03		10.0	-	12.0	TCL VOA+30	Stainless Steel Bailer	06/05/07
P-56	P56WB		10.0	-	12.0	TCL VOA+30	Stainless Steel Bailer	05/30/07
	P56WC		14.0	-	16.0	TCL VOA+30	Stainless Steel Bailer	05/30/07
P-58	P58WB		10.0	-	12.0	TCL VOA+30	Stainless Steel Bailer	06/05/07
	P58WBMS		10.0	-	12.0	TCL VOA+30	Stainless Steel Bailer	06/05/07
	P58WBMSD		10.0	-	12.0	TCL VOA+30	Stainless Steel Bailer	06/05/07
	P58WC		14.0	-	16.0	TCL VOA+30	Stainless Steel Bailer	06/05/07
P-60	P60WB		12.0	-	14.0	TCL VOA+30	Stainless Steel Bailer	05/30/07
P-61	P61WC		16.0	-	18.0	TCL VOA+30	Stainless Steel Bailer	06/05/07
P-62	P62WB		14.0	-	16.0	TCL VOA+30	Stainless Steel Bailer	05/31/07
	DUP02		14.0	-	16.0	TCL VOA+30	Stainless Steel Bailer	05/31/07

Notes:
- TCL VOA+30 = Target Compound List (TCL) Volatile Organic Compounds (VOCs) +30 (search for 30 non-target tentatively identified compounds (TICs))
- * Samples P22WD and P23WB were resampled due to the presence of excessive sediments

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TABLE 4
Ellis Property Superfund Site
Evesham Township, New Jersey
Groundwater Sample Summary Table

Location ID	Sample ID	Lab ID	Sample Depth (ft bgs)			Analytical Parameters	Sampling Method	Date
QA/QC SAMPLES								
FIELD BLANKS	FB01		---	-	---	TCL VOA+30	Stainless Steel Bailer	5/29/2007
	FB02		---	-	---	TCL VOA+30	Stainless Steel Bailer	5/30/2007
	FB03		---	-	---	TCL VOA+30	Stainless Steel Bailer	5/31/2007
	FB04		---	-	---	TCL VOA+30	Stainless Steel Bailer	6/1/2007
	FB05		---	-	---	TCL VOA+30	Stainless Steel Bailer	6/4/2007
	FB06		---	-	---	TCL VOA+30	Stainless Steel Bailer	6/5/2007
TRIP BLANKS	Trip Blank		---	-	---	TCL VOA+30	Stainless Steel Bailer	5/29/2007
	Trip Blank		---	-	---	TCL VOA+30	Stainless Steel Bailer	5/30/2007
	Trip Blank		---	-	---	TCL VOA+30	Stainless Steel Bailer	5/31/2007
	Trip Blank		---	-	---	TCL VOA+30	Stainless Steel Bailer	6/1/2007
	Trip Blank		---	-	---	TCL VOA+30	Stainless Steel Bailer	6/4/2007
	Trip Blank		---	-	---	TCL VOA+30	Stainless Steel Bailer	6/5/2007

Notes:
- TCL VOA+30 = Target Compound List (TCL) Volatile Organic Compounds (VOCs) +30 (search for 30 non-target tentatively identified compounds (TICs))

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TABLE 5
Ellis Property Superfund Site
Evesham Township, New Jersey
Soil Sample Summary Table

Location ID	Sample ID	Lab ID	Sample Depth (ft bgs)			Analytical Parameters	Sampling Method	Date
P-3	P03SB		12.0	-	14.0	TCL VOA+30	Grab Sample	06/07/07
	P03SBG		12.0	-	14.0	GRAIN SIZE	Grab Sample	06/07/07
	P03SC		14.0	-	16.0	TCL VOA+30	Grab Sample	06/07/07
	P03SD		16.0	-	20.0	TCL VOA+30	Grab Sample	06/07/07
P-4	P04SA		10.0	-	12.0	TCL VOA+30	Grab Sample	06/07/07
	P04SB		12.0	-	14.0	TCL VOA+30	Grab Sample	06/07/07
	P04SC		18.0	-	20.0	TCL VOA+30	Grab Sample	06/07/07
	P04SD		20.0	-	24.0	TCL VOA+30	Grab Sample	06/07/07
P-5	P05SB		16.0	-	18.0	TCL VOA+30	Grab Sample	06/07/07
	P05SC		22.0	-	24.0	TCL VOA+30	Grab Sample	06/07/07
	P05SD		24.0	-	28.0	TCL VOA+30	Grab Sample	06/07/07
P-6	P06SB		10.0	-	12.0	TCL VOA+30	Grab Sample	06/07/07
	P06SC		18.0	-	20.0	TCL VOA+30	Grab Sample	06/07/07
	P06SD		20.0	-	24.0	TCL VOA+30	Grab Sample	06/07/07
P-9	P09SB		18.0	-	20.0	TCL VOA+30	Grab Sample	06/06/07
	P09SBMS		18.0	-	20.0	TCL VOA+30	Grab Sample	06/06/07
	P09SBMSD		18.0	-	20.0	TCL VOA+30	Grab Sample	06/06/07
	P09SBG		18.0	-	20.0	GRAIN SIZE	Grab Sample	06/06/07
P-11	P11SB		12.0	-	14.0	TCL VOA+30	Grab Sample	06/07/07
	P11SC		18.0	-	20.0	TCL VOA+30	Grab Sample	06/07/07
	P11SD		20.0	-	24.0	TCL VOA+30	Grab Sample	06/07/07
P-12	P12SB		12.0	-	14.0	TCL VOA+30	Grab Sample	06/07/07
	P12SC		18.0	-	20.0	TCL VOA+30	Grab Sample	06/07/07
	P12SD		24.0	-	26.0	TCL VOA+30	Grab Sample	06/07/07
P-13A	P13SC		16.0	-	18.0	TCL VOA+30	Grab Sample	06/07/07
	P13SCMS		16.0	-	18.0	TCL VOA+30	Grab Sample	06/07/07
	P13SCMSD		16.0	-	18.0	TCL VOA+30	Grab Sample	06/07/07
	P13SD		20.0	-	24.0	TCL VOA+30	Grab Sample	06/07/07
	DUP04		20.0	-	24.0	TCL VOA+30	Grab Sample	06/07/07
P-14	P14SA		10.0	-	12.0	TCL VOA+30	Grab Sample	06/06/07
	P14SB		14.0	-	16.0	TCL VOA+30	Grab Sample	06/06/07
	DUP03		14.0	-	16.0	TCL VOA+30	Grab Sample	06/06/07
P-15	P15SB		14.0	-	16.0	TCL VOA+30	Grab Sample	06/06/07
	P15SC		18.0	-	20.0	TCL VOA+30	Grab Sample	06/06/07
	P15SCG		18.0	-	20.0	GRAIN SIZE, TOC	Grab Sample	06/06/07
P-16	P16SA		14.0	-	16.0	TCL VOA+30	Grab Sample	06/06/07
	P16SB		16.0	-	18.0	TCL VOA+30	Grab Sample	06/06/07
	P16SC		18.0	-	20.0	TCL VOA+30	Grab Sample	06/06/07
	P16SD		20.0	-	24.0	TCL VOA+30	Grab Sample	06/06/07
P-17	P17SB		12.0	-	14.0	TCL VOA+30	Grab Sample	06/06/07
	P17SC		16.0	-	18.0	TCL VOA+30	Grab Sample	06/06/07
	P17SD		22.0	-	24.0	TCL VOA+30	Grab Sample	06/06/07
P-21	P-21SA		12.0	-	14.0	TCL VOA+30	Grab Sample	06/04/07
	P-21SB		16.0	-	18.0	TCL VOA+30	Grab Sample	06/04/07
	P-21SC		20.0	-	24.0	TCL VOA+30	Grab Sample	06/04/07
P-22	P22SA		10.0	-	12.0	TCL VOA+30	Grab Sample	06/05/07
	P22SB		14.0	-	16.0	TCL VOA+30	Grab Sample	06/05/07
	P22SC		16.0	-	20.0	TCL VOA+30	Grab Sample	06/05/07
	P22SD		20.0	-	24.0	TCL VOA+30	Grab Sample	06/05/07
	DUP01		20.0	-	24.0	TCL VOA+30	Grab Sample	06/05/07
P-23	P23SA		10.0	-	12.0	TCL VOA+30	Grab Sample	06/05/07
	P23SAMS		10.0	-	12.0	TCL VOA+30	Grab Sample	06/05/07
	P23SAMSD		10.0	-	12.0	TCL VOA+30	Grab Sample	06/05/07
	P23SB		14.0	-	16.0	TCL VOA+30	Grab Sample	06/05/07
	P23SC		18.0	-	20.0	TCL VOA+30	Grab Sample	06/05/07

Notes:
- TCL VOA+30 = Target Compound List (TCL) Volatile Organic Compounds (VOCs) +30 (search for 30 non-target tentatively identified compounds (TICs))
- TOC = Total Organic Carbon

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TABLE 5
Ellis Property Superfund Site
Evesham Township, New Jersey
Soil Sample Summary Table

Location ID	Sample ID	Lab ID	Sample Depth (ft bgs)			Analytical Parameters	Sampling Method	Date
P-24	P24SB		14.0	-	16.0	TCL VOA+30	Grab Sample	06/05/07
	P24SC		18.0	-	20.0	TCL VOA+30	Grab Sample	06/05/07
	P24SD		20.0	-	22.0	TCL VOA+30	Grab Sample	06/05/07
P-25	P25SC		16.0	-	18.0	TCL VOA+30	Grab Sample	06/05/07
P-31	P31SB		12.0	-	14.0	TCL VOA+30	Grab Sample	06/04/07
	P31SC		18.0	-	20.0	TCL VOA+30	Grab Sample	06/04/07
	P31SD		20.0	-	24.0	TCL VOA+30	Grab Sample	06/04/07
P-32	P-32SC		18.0	-	20.0	TCL VOA+30	Grab Sample	06/04/07
	P-32SD		20.0	-	24.0	TCL VOA+30	Grab Sample	06/04/07
P-33	P33SB		14.0	-	16.0	TCL VOA+30	Grab Sample	06/04/07
	P33SC		18.0	-	20.0	TCL VOA+30	Grab Sample	06/04/07
	P33SD		22.0	-	24.0	TCL VOA+30	Grab Sample	06/04/07
P-40	P40SC		16.0	-	18.0	TCL VOA+30	Grab Sample	06/06/07
	P40SCMS		16.0	-	18.0	TCL VOA+30	Grab Sample	06/06/07
	P40SCMSD		16.0	-	18.0	TCL VOA+30	Grab Sample	06/06/07
	DUP02		20.0	-	24.0	TCL VOA+30	Grab Sample	06/06/07
	P40SD		20.0	-	24.0	TCL VOA+30	Grab Sample	06/06/07
P-41	P41SB		12.0	-	14.0	TCL VOA+30	Grab Sample	06/05/07
	P41SC		18.0	-	20.0	TCL VOA+30	Grab Sample	06/05/07
	P41SD		20.0	-	24.0	TCL VOA+30	Grab Sample	06/05/07
P-42	P42SB		12.0	-	14.0	TCL VOA+30	Grab Sample	06/05/07
	P42SC		18.0	-	20.0	TCL VOA+30	Grab Sample	06/05/07
	P42SCG		18.0	-	20.0	GRAIN SIZE, TOC	Grab Sample	06/05/07
	P42SD		20.0	-	24.0	TCL VOA+30	Grab Sample	06/05/07
P-49	P49SB		8.0	-	10.0	TCL VOA+30	Grab Sample	06/07/07
	DUP05		8.0	-	10.0	TCL VOA+30	Grab Sample	06/07/07
	P49SC		12.0	-	14.0	TCL VOA+30	Grab Sample	06/07/07
	P49SD		16.0	-	18.0	TCL VOA+30	Grab Sample	06/07/07
P-50	P50SB		8.0	-	10.0	TCL VOA+30	Grab Sample	06/07/07
	P50SBMS		8.0	-	10.0	TCL VOA+30	Grab Sample	06/07/07
	P50SBMSD		8.0	-	10.0	TCL VOA+30	Grab Sample	06/07/07
P-52	P52SB		16.0	-	18.0	TCL VOA+30	Grab Sample	06/06/07
P-53	P53SC		20.0	-	22.0	TCL VOA+30	Grab Sample	06/06/07
	P53SD		24.0	-	28.0	TCL VOA+30	Grab Sample	06/06/07
P-54	P54SC		14.0	-	16.0	TCL VOA+30	Grab Sample	06/06/07
	P54SD		16.0	-	20.0	TCL VOA+30	Grab Sample	06/06/07
P-55	P55SB		10.0	-	12.0	TCL VOA+30	Grab Sample	06/07/07
	P55SC		14.0	-	16.0	TCL VOA+30	Grab Sample	06/07/07
P-56	P56SB		10.0	-	12.0	TCL VOA+30	Grab Sample	06/06/07
	P56SC		14.0	-	16.0	TCL VOA+30	Grab Sample	06/06/07
	P56SD		16.0	-	20.0	TCL VOA+30	Grab Sample	06/06/07
P-57	P57SC		16.0	-	18.0	TCL VOA+30	Grab Sample	06/04/07
	P57SD		20.0	-	22.0	TCL VOA+30	Grab Sample	06/04/07
P-58	P58SB		10.0	-	12.0	TCL VOA+30	Grab Sample	06/07/07
	P58SC		14.0	-	16.0	TCL VOA+30	Grab Sample	06/07/07
	P58SD		16.0	-	20.0	TCL VOA+30	Grab Sample	06/07/07
P-60	P60SB		12.0	-	14.0	TCL VOA+30	Grab Sample	06/05/07
	P60SC		16.0	-	20.0	TCL VOA+30	Grab Sample	06/05/07
	P60SD		20.0	-	24.0	TCL VOA+30	Grab Sample	06/05/07
P-61	P61SC		16.0	-	18.0	TCL VOA+30	Grab Sample	06/06/07
	P61SCG		16.0	-	18.0	GRAIN SIZE, TOC	Grab Sample	06/06/07
	P61SD		20.0	-	24.0	TCL VOA+30	Grab Sample	06/06/07
P-62	P62SB		14.0	-	16.0	TCL VOA+30	Grab Sample	06/04/07
	P62SC		20.0	-	22.0	TCL VOA+30	Grab Sample	06/04/07

Notes:
- TCL VOA+30 = Target Compound List (TCL) Volatile Organic Compounds (VOCs) +30 (search for 30 non-target tentatively identified compounds (TICs))
- TOC = Total Organic Carbon

R2-0003382

TABLE 6
ELLIS PROPERTY SUPERFUND SITE
Evesham Township, New Jersey
Groundwater Analytical Results Summary Table

	Location ID	P03			P04				P05			P06			P09	P11	P12			P13		P14		P15	P16			
	Sample ID	P03WB	P03WC	P03WD	P04WA	P04WB	P04WC	P04WD	P05WB	P05WC	P05WD	P06WB	P06WC	P06WD	P09WB	P11WB	P12WB	P12WC	P12WD	P13WC	P13WD	P14WA	P14WB	P15WB	P16WA	P16WB	P16WC	P16WD
	Lab Sample ID	712489	712490	-	712491	712492	712493	-	712494	-	-	712495	712496	-	711821	712615	712923	712924	-	-	-	711819	711820	711818	711814	711815	711816	711817
	Sample Date	6/1/2007	6/1/2007	6/1/2007	6/1/2007	6/1/2007	6/1/2007	6/1/2007	6/1/2007	6/1/2007	6/1/2007	6/1/2007	6/1/2007	6/1/2007	5/29/2007	6/4/2007	6/5/2007	6/5/2007	6/5/2007	6/4/2007	6/4/2007	5/29/2007	5/29/2007	5/29/2007	5/29/2007	5/29/2007	5/29/2007	5/29/2007
	Sample Interval (ft)	12-14	14-16	16-18	10-12	12-14	18-20	20-22	16-18	20-22	24-26	10-12	18-20	20-22	18-20	12-14	12-14	18-20	24-26	16-18	20-22	10-12	14-16	14-16	14-16	16-18	18-20	20-22
VOC	**GWQS**																											
1,1,2-Trichloro-1,2,2-trifluoroethane	NC	30 U	6.5 U	NC	66 J	65 U	220 U	NC	280 U	NC	NC	5 U	54 U	NC	5 U	370 U	5 U	400 U	NC	NC	NC	45 U	12 U	380 U	11 U	9.8 U	5 U	5 U
1,1-Dichloroethane	50	30 U	6.5 U	NC	260 U	65 U	220 U	NC	280 U	NC	NC	5 U	54 U	NC	5 U	370 U	5 U	400 U	NC	NC	NC	45 U	12 U	380 U	**2 J**	**9 J**	**16**	**5.1**
1,1-Dichloroethylene	1	30 U	6.5 U	NC	260 U	65 U	220 U	NC	280 U	NC	NC	5 U	54 U	NC	5 U	370 U	1 J	400 U	NC	NC	NC	45 U	**3.5 J**	380 U	**4.3 J**	**10**	**15**	**4.4 J**
Acetone	6000	59 U	13 U	NC	520 U	130 U	440 U	NC	550 U	NC	NC	10 U	110 U	NC	**2.4 J**	730 U	10 U	800 U	NC	NC	NC	90 U	**5.5 J**	770 U	22 U	20 U	**2.1 J**	**2.3 J**
Benzene	1	30 U	6.5 U	NC	260 U	65 U	220 U	NC	280 U	NC	NC	5 U	54 U	NC	5 U	370 U	5 U	400 U	NC	NC	NC	45 U	12 U	380 U	11 U	9.8 U	5 U	5 U
Chlorobenzene	50	30 U	6.5 U	NC	260 U	65 U	220 U	NC	280 U	NC	NC	5 U	54 U	NC	5 U	370 U	5 U	400 U	NC	NC	NC	45 U	12 U	380 U	11 U	9.8 U	5 U	5 U
cis-1,2-Dichloroethene	70	30 U	**2.2 J**	NC	260 U	**22 J**	**150 J**	NC	**56**	NC	NC	**1 J**	**810**	NC	**2.1 J**	**78 J**	**4.9 J**	**200**	NC	NC	NC	**10 J**	**23**	380 U	**16**	**20**	**26**	**18**
Tetrachloroethene	1	30 U	6.5 U	NC	260 U	65 U	220 U	NC	280 U	NC	NC	5 U	54 U	NC	5 U	370 U	5 U	400 U	NC	NC	NC	45 U	12 U	380 U	11 U	9.8 U	5 U	5 U
Trichloroethene	1	**3500 D**	**760 D**	NC	**33000 D**	**8400 D**	**28000 D**	NC	**35000 D**	NC	NC	**210 D**	**7100 D**	NC	**130**	**50000 D**	**640 D**	**59000 D**	NC	NC	NC	**5700 D**	**1400 D**	**49000 D**	**1300 D**	**1200 D**	**460 D**	**420 D**
Trichlorofluoromethane	2000	30 U	6.5 U	NC	260 U	65 U	220 U	NC	280 U	NC	NC	5 U	54 U	NC	5 U	370 U	5 U	400 U	NC	NC	NC	45 U	12 U	380 U	**3.5 J**	9.8 U	5 U	5 U
Xylene (Total)	1000	30 U	6.5 U	NC	260 U	65 U	220 U	NC	280 U	NC	NC	5 U	54 U	NC	5 U	370 U	5 U	400 U	NC	NC	NC	45 U	12 U	380 U	11 U	9.8 U	5 U	5 U

	Location ID	P17			P21		P22				P23			P24				P25	P31			P32		P33		P40	
	Sample ID	P17WB	P17WC	P17WD	P21WA	P21WB	P22WA	P22WB	P22WC	P22WD	P23WA	P23WB	P23WC	P24WB	DUP01	P24WC	P24WD	P25B	P31WB	P31WC	P31WD	P32WC	P32WD	P33WB	P33WC	P40WB	P40WD
	Lab Sample ID	711813	-	-	712386	712387	712382	712383	712384	712928	-	712929	-	712251	712253	-	-	-	712389	-	-			712388	-	-	-
	Sample Date	5/29/2007	5/29/2007	5/29/2007	5/31/2007	5/31/2007	5/31/2007	5/31/2007	5/31/2007	6/5/2007	6/5/2007	6/5/2007	6/5/2007	5/30/2007	5/30/2007	5/30/2007	5/30/2007	5/30/2007	5/31/2007	5/31/2007	5/31/2007	5/31/2007	5/31/2007	5/31/2007	5/31/2007	6/4/2007	6/4/2007
	Sample Interval (ft)	12-14	16-18	22-24	12-14	16-18	10-12	14-16	16-18	20-22	10-12	14-16	18-20	14-16	14-16	18-20	20-22	16-18	12-14	18-20	20-22	18-20	20-22	14-16	18-20	16-18	20-22
VOC	**GWQS**																										
1,1,2-Trichloro-1,2,2-trifluoroethane	NC	5 U	NC	NC	310 U	5 U	8800 U	28 U	5 U	**1.6 J**	NC	14 U	NC	5 U	5 U	NC	NC	NC	5 U	NC	NC	NC	NC	74 U	NC	NC	NC
1,1-Dichloroethane	50	5 U	NC	NC	310 U	5 U	8800 U	28 U	5 U	5 U	NC	14 U	NC	5 U	5 U	NC	NC	NC	5 U	NC	NC	NC	NC	74 U	NC	NC	NC
1,1-Dichloroethylene	1	5 U	NC	NC	310 U	5 U	8800 U	28 U	5 U	5 U	NC	14 U	NC	**1.1 J**	**1.1 J**	NC	NC	NC	5 U	NC	NC	NC	NC	74 U	NC	NC	NC
Acetone	6000	10 U	NC	NC	630 U	**2.4 J**	18000 U	55 U	10 U	10 U	NC	28 U	NC	10 U	10 U	NC	NC	NC	10 U	NC	NC	NC	NC	150 U	NC	NC	NC
Benzene	1	5 U	NC	NC	310 U	5 U	8800 U	28 U	5 U	5 U	NC	14 U	NC	5 U	5 U	NC	NC	NC	5 U	NC	NC	NC	NC	74 U	NC	NC	NC
Chlorobenzene	50	5 U	NC	NC	310 U	5 U	8800 U	28 U	5 U	5 U	NC	14 U	NC	5 U	5 U	NC	NC	NC	5 U	NC	NC	NC	NC	74 U	NC	NC	NC
cis-1,2-Dichloroethene	70	**1.5 J**	NC	NC	310 U	**3.3 J**	8800 U	28 U	**9.5**	5 U	NC	14 U	NC	**1.4 J**	**1.5 J**	NC	NC	NC	**10**	NC	NC	NC	NC	74 U	NC	NC	NC
Tetrachloroethene	1	5 U	NC	NC	310 U	5 U	8800 U	28 U	5 U	5 U	NC	14 U	NC	5 U	5 U	NC	NC	NC	5 U	NC	NC	NC	NC	74 U	NC	NC	NC
Trichloroethene	1	**490 D**	NC	NC	**41000 D**	**170**	**1100000 D**	**3200 D**	**560 D**	**160**	NC	**1700 D**	NC	**590 D**	**570 D**	NC	NC	NC	**64**	NC	NC	NC	NC	**11000 D**	NC	NC	NC
Trichlorofluoromethane	2000	5 U	NC	NC	310 U	5 U	8800 U	28 U	5 U	**1.4 J**	NC	14 U	NC	5 U	5 U	NC	NC	NC	**6.6**	NC	NC	NC	NC	74 U	NC	NC	NC
Xylene (Total)	1000	5 U	NC	NC	310 U	5 U	8800 U	28 U	5 U	5 U	NC	14 U	NC	5 U	5 U	NC	NC	NC	5 U	NC	NC	NC	NC	74 U	NC	NC	NC

Notes:

Only results above method detection limits are shown and all results are presented in ug/l (ppb)
GWQS = New Jersey Groundwater Quality Standard, Nov. 2005
NC = No Criteria
J = Compound detected below the quantitation limit
U = Compound was not detected
NC = Groundwater sampling was attemped, but no sample was retrieved.
D = Sample was diluted
Bold = Concentration exceeds method detection limit
Shaded = Concentration meets or exceeds GWQS

TABLE 6
ELLIS PROPERTY SUPERFUND SITE
Evesham Township, New Jersey
Groundwater Analytical Results Summary Table

	Location ID	P41		P42			P49			P50	P52	P53		P54		P55			P56			P57		P58		
	Sample ID	P41WC	P41WD	P42WB	P42WC	P42WD	P49WB	P49WC	P49WD	P50WB	P52WB	P53WC	P53WD	P54WC	P54WD	P55WB	DUP03	P55WC	P56WB	P56WC	P56WD	P57WC	P57WD	P58WB	P58WC	P58WD
	Lab Sample ID	712612	-	712249	-	712250	712488	-	-	712487	-	712613	712614	711812	711812	712927	712930	-	712247	712248	-	-	-	712925	712926	-
	Sample Date	6/4/2007	6/4/2007	5/30/2007	5/30/2007	5/30/2007	6/1/2007	6/1/2007	6/1/2007	6/1/2007	6/1/2007	6/4/2007	6/4/2007	5/29/2007	5/29/2007	6/5/2007	6/5/2007	6/5/2007	5/30/2007	5/30/2007	5/30/2007	5/30/2007	5/30/2007	6/5/2007	6/5/2007	6/5/2007
	Sample Interval (ft)	18-20	20-22	12-14	18-20	20-22	8-10	12-14	16-18	8-10	16-18	20-22	24-26	14-16	16-18	10-12	10-12	14-16	10-12	14-16	16-18	16-18	20-22	10-12	14-16	16-18
VOC	**GWQS**																									
1,1,2-Trichloro-1,2,2-trifluoroethane	NC	5 U	NC	20 U	NC	5 U	120 U	NC	NC	5 U	NC	140 U	850 U	110 U	NC	32 U	32 U	NC	28 U	110 U	NC	NC	NC	200 U	88 U	NC
1,1-Dichloroethane	50	5 U	NC	20 U	NC	5 U	120 U	NC	NC	5 U	NC	140 U	850 U	110 U	NC	32 U	32 U	NC	28 U	110 U	NC	NC	NC	200 U	88 U	NC
1,1-Dichloroethylene	1	5 U	NC	20 U	NC	5 U	120 U	NC	NC	5 U	NC	140 U	850 U	110 U	NC	**6.2 J**	32 U	NC	28 U	110 U	NC	NC	NC	200 U	88 U	NC
Acetone	6000	**3.6 J**	NC	40 U	NC	**7.1 J**	240 U	NC	NC	10 U	NC	280 U	1700 U	220 U	NC	63 U	63 U	NC	55 U	220 U	NC	NC	NC	400 U	180 U	NC
Benzene	1	5 U	NC	20 U	NC	5 U	120 U	NC	NC	**4.8 J**	NC	140 U	850 U	110 U	NC	32 U	32 U	NC	28 U	110 U	NC	NC	NC	200 U	88 U	NC
Chlorobenzene	50	5 U	NC	20 U	NC	5 U	120 U	NC	NC	**4 J**	NC	140 U	850 U	110 U	NC	32 U	32 U	NC	28 U	110 U	NC	NC	NC	200 U	88 U	NC
cis-1,2-Dichloroethene	70	**5.4**	NC	20 U	NC	5 U	**42**	NC	NC	5 U	NC	**110 J**	**500 J**	**36 J**	NC	**250**	**330**	NC	28 U	110 U	NC	NC	NC	**260**	**250**	NC
Tetrachloroethene	1	5 U	NC	20 U	NC	5 U	120 U	NC	NC	5 U	NC	140 U	850 U	110 U	NC	32 U	32 U	NC	28 U	**30 J**	NC	NC	NC	200 U	88 U	NC
Trichloroethene	1	**120**	NC	**2300 D**	NC	**76**	**14000 D**	NC	NC	**1.8 J**	NC	**18000 D**	**110000 D**	**16000 D**	NC	**4000 D**	**4400 D**	NC	**3200 D**	**14000 D**	NC	NC	NC	**28000 D**	**12000 D**	NC
Trichlorofluoromethane	2000	5 U	NC	20 U	NC	5 U	120 U	NC	NC	5 U	NC	140 U	850 U	110 U	NC	32 U	32 U	NC	28 U	110 U	NC	NC	NC	200 U	88 U	NC
Xylene (Total)	1000	5 U	NC	20 U	NC	5 U	120 U	NC	NC	**5.7**	NC	140 U	850 U	110 U	NC	32 U	32 U	NC	28 U	110 U	NC	NC	NC	200 U	88 U	NC

	Location ID	P60			P61		P62			FB01	FB02	FB03	FB04	FB05	FB06	TRIP BLANK 1	TRIP BLANK 2	TRIP BLANK 1	TRIP BLANK 1	TRIP BLANK 2	TRIP BLANK 2
	Sample ID	P60WB	P60WC	P60WD	P61WC	P61WD	P62WB	DUP02	P62WC	FB01	FB02	FB03	FB04	FB05	FB06	TRIP BLANK 1	TRIP BLANK 2	TRIP BLANK 1	TRIP BLANK 1	TRIP BLANK 2	TRIP BLANK 2
	Lab Sample ID	712252	-	-	712611	-	712390	712391	-	711822	712254	712392A	712497	712616	712931	711823	712617	712255	712498	712393A	712932
	Sample Date	5/30/2007	5/30/2007	5/30/2007	6/4/2007	6/4/2007	5/31/2007	5/31/2007	5/31/2007	5/29/2007	5/30/2007	5/31/2007	6/1/2007	6/4/2007	6/5/2007	5/29/2007	6/4/2007	5/30/2007	6/1/2007	5/31/2007	6/5/2007
	Sample Interval (ft)	12-14	18-20	20-22	16-18	20-22	14-16	14-16	20-22												
VOC	**GWQS**																				
1,1,2-Trichloro-1,2,2-trifluoroethane	NC	5 U	NC	NC	12 U	NC	5 U	5 U	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	50	5 U	NC	NC	12 U	NC	5 U	5 U	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethylene	1	5 U	NC	NC	**3.5 J**	NC	5 U	5 U	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	6000	10 U	NC	NC	24 U	NC	10 U	10 U	NC	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	1	5 U	NC	NC	12 U	NC	5 U	5 U	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	50	5 U	NC	NC	12 U	NC	5 U	5 U	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
cis-1,2-Dichloroethene	70	**3.5 J**	NC	NC	**6.1 J**	NC	5 U	5 U	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	1	**1.8 J**	NC	NC	12 U	NC	5 U	5 U	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene	1	**150**	NC	NC	**1400 D**	NC	**25**	**24**	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichlorofluoromethane	2000	**2.3 J**	NC	NC	12 U	NC	5 U	5 U	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (Total)	1000	5 U	NC	NC	12 U	NC	5 U	5 U	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U

Notes:
Only results above method detection limits are shown and all results are presented in ug/l (ppb)
GWQS = New Jersey Groundwater Quality Standard, Nov. 2005
NC = No Criteria
J = Compound detected below the quantitation limit
U = Compound was not detected
NC = Groundwater sampling was attemped, but no sample was retrieved.
D = Sample was diluted
Bold = Concentration exceeds method detection limit
Shaded = Concentration meets or exceeds GWQS

TABLE 7
ELLIS PROPERTY SUPERFUND SITE
Evesham Township, New Jersey
Soil Analytical Results Summary Table

			Location ID	P-3			P-4				P-5			P-6			P-9	P-11			P-12			P-13A			P-14		P-14
			Sample ID	P03SB	P03SC	P03SD	P04SA	P04SB	P04SC	P04SD	P05SB	P05SC	P05SD	P06SB	P06SC	P06SD	P09SB	P11SB	P11SC	P11SD	P12SB	P12SC	P12SD	P13SC	P13SD	DUP04	P14SA	P14SB	DUP03
			Lab Sample ID	713236	713237	713238	713228	713229	713230	713231	713225	713226	713227	713222	713223	713224	712995	713219	713220	713221	713216	713217	713218	713214	713215	713248	712993	712994	713002
			Sample Date	6/7/2007	6/7/2007	6/7/2007	6/7/2007	6/7/2007	6/7/2007	6/7/2007	6/7/2007	6/7/2007	6/7/2007	6/7/2007	6/7/2007	6/7/2007	6/6/2007	6/7/2007	6/7/2007	6/7/2007	6/7/2007	6/7/2007	6/7/2007	6/7/2007	6/7/2007	6/7/2007	6/6/2007	6/6/2007	6/6/2007
			Sample Interval (ft)	12-14	14-16	16-20	10-12	12-14	18-20	20-24	16-18	22-24	24-28	10-12	18-20	20-24	18-20	12-14	18-20	20-24	12-14	18-20	24-26	16-18	20-24	20-24	10-12	14-16	14-16
VOC	**NRDCSCC**	**RDCSCC**	**IGWSCC**																										
Acetone	1000	1000	100	**0.59 JB**	**0.5 JB**	**0.58 JB**	**1 B**	0.012 U	**0.84 B**	**1 JB**	**0.99 B**	**0.72 JB**	**0.83 B**	0.011 U	**0.8 B**	**0.79 B**	**0.011**	**0.89 B**	**0.76 B**	**1 B**	**0.0061 J**	**0.75 B**	**0.98 JB**	**0.59 JB**	**0.56 JB**	**0.52 JB**	**0.55 J**	0.012 U	**0.62 J**
Benzene	13	3	1	0.34 U	0.36 U	0.33 U	0.4 U	0.006 U	0.38 U	0.6 U	0.43 U	0.37 U	0.35 U	0.0057 U	0.38 U	0.37 U	0.0051 U	0.37 U	0.37 U	0.4 U	0.0057 U	0.37 U	0.53 U	0.38 U	0.38 U	0.35 U	0.34 U	0.006 U	0.38 U
Carbon Disulfide	NC	NC	NC	0.34 U	0.36 U	0.33 U	0.4 U	0.006 U	0.38 U	0.6 U	0.43 U	0.37 U	0.35 U	0.0057 U	0.38 U	0.37 U	0.0051 U	0.37 U	0.37 U	0.4 U	0.0057 U	0.37 U	0.53 U	0.38 U	0.38 U	0.35 U	0.34 U	0.006 U	0.38 U
Chloroform	28	19	1	0.34 U	0.36 U	0.33 U	0.4 U	**0.012 B**	0.38 U	0.6 U	0.43 U	0.37 U	0.35 U	**0.014B**	0.38 U	0.37 U	**0.004 JB**	0.37 U	0.37 U	0.4 U	**0.0024 JB**	0.37 U	0.53 U	0.38 U	0.38 U	0.35 U	0.34 U	**0.0091 B**	0.38 U
cis-1,2-Dichloroethene	1000	79	1	0.34 U	0.36 U	0.33 U	0.4 U	0.006 U	**0.077 J**	**0.55 J**	0.43 U	**0.19 J**	**0.45**	0.0057 U	0.38 U	**0.19 J**	0.0051 U	0.37 U	0.37 U	0.4 U	0.0057 U	**0.19 J**	**0.66**	0.38 U	**0.12 J**	**0.075 J**	0.34 U	0.006 U	0.38 U
Methyl Acetate	NC	NC	NC	**0.6**	**0.55**	**0.49**	**0.53**	0.006 U	**0.55**	**0.54 J**	**0.62**	**0.42**	**0.5**	0.0057 U	**0.48**	**0.51**	0.0051 U	**0.5**	**0.54**	**0.46**	0.0057 U	**0.5**	**0.59**	**0.55**	**0.6**	**0.53**	**0.54**	0.006 U	**0.43**
Toluene	1000	1000	500	0.34 U	0.36 U	0.33 U	0.4 U	0.006 U	0.38 U	0.6 U	0.43 U	0.37 U	0.35 U	0.0057 U	0.38 U	0.37 U	0.0051 U	0.37 U	0.37 U	0.4 U	0.0057 U	0.37 U	0.53 U	0.38 U	0.38 U	0.35 U	0.34 U	0.006 U	0.38 U
Trichloroethene	54	23	1	**4.1**	**0.64**	**0.62**	**3.7**	**0.017**	**19 D**	**74 D**	**3.7**	**24 D**	**28 D**	**0.0041 J**	**5.9**	**17 D**	**0.088**	**16 E**	**20 D**	**7.3**	0.0057 U	**16 D**	**64 D**	**3.1**	**9.9**	**6.6**	**3.5**	**0.0082**	**2**
Xylene (Total)	1000	410	67	0.34 U	0.36 U	0.33 U	0.4 U	0.006 U	0.38 U	0.6 U	0.43 U	0.37 U	0.35 U	0.0057 U	0.38 U	0.37 U	0.0051 U	0.37 U	0.37 U	0.4 U	0.0057 U	0.37 U	0.53 U	0.38 U	0.38 U	0.35 U	0.34 U	0.006 U	0.38 U
TOC																													
Total Organic Carbon	NC	NC	NC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

			Location ID	P-15		P-16				P-17			P-21			P-22					P-23			P-24			P-25
			Sample ID	P15SB	P15SC	P16SA	P16SB	P16SC	P16SD	P17SB	P17SC	P17SD	P21SA	P21SB	P21SC	DUP01	P22SA	P22SB	P22SC	P22SD	P23SA	P23SB	P23SC	P24SB	P24SC	P24SD	P25SC
			Lab Sample ID	712991	712992	712987	712988	712989	712990	712984	712985	712986	712655	712656	712657	712800	712782	712783	712784	712785	712786	712801	712802	712790	712791	712792	712793
			Sample Date	6/6/2007	6/6/2007	6/6/2007	6/6/2007	6/6/2007	6/6/2007	6/6/2007	6/6/2007	6/6/2007	6/4/2007	6/4/2007	6/4/2007	6/5/2007	6/5/2007	6/5/2007	6/5/2007	6/5/2007	6/5/2007	6/5/2007	6/5/2007	6/5/2007	6/5/2007	6/5/2007	6/5/2007
			Sample Interval (ft)	14-16	18-20	14-16	16-18	18-20	20-24	12-14	16-18	22-24	12-14	16-18	20-24	20-24	10-12	14-16	16-20	20-24	10-12	14-16	18-20	14-16	18-20	20-22	16-18
VOC	**NRDCSCC**	**RDCSCC**	**IGWSCC**																								
Acetone	1000	1000	100	**0.52 J**	**0.45 J**	**4.5 J**	**0.54 J**	**0.013**	**0.0086 J**	**0.014**	**0.33 J**	**0.68 J**	**0.69 J**	**0.45 J**	**0.0048 J**	**0.011**	0.01 U	**0.57 J**	**0.0079 J**	**0.0082 J**	**0.57 J**	**0.39 J**	**0.012**	**0.46 J**	**0.42 J**	**0.46 J**	0.011 U
Benzene	13	3	1	0.31 U	0.28 U	2.4 U	0.35 U	0.005 U	0.0052 U	0.0062 U	0.42 U	**0.16 J**	0.48 U	0.29 U	0.0047 U	0.0054 U	0.0052 U	0.35 U	0.0049 U	0.0051 U	0.43 U	0.28 U	0.0048 U	0.31 U	0.3 U	0.34 U	0.0056 U
Carbon Disulfide	NC	NC	NC	0.31 U	0.28 U	2.4 U	0.35 U	0.005 U	0.0052 U	**0.0048 J**	0.42 U	0.66 U	0.48 U	0.29 U	0.0047 U	0.0054 U	0.0052 U	0.35 U	0.0049 U	0.0051 U	0.43 U	0.28 U	**0.0019 J**	0.31 U	0.3 U	0.34 U	0.0056 U
Chloroform	28	19	1	0.31 U	0.28 U	2.4 U	0.35 U	**0.0087 B**	**0.0076 B**	**0.011 B**	0.42 U	0.66 U	0.48 U	0.29 U	**0.0076 B**	**0.0061 B**	**0.0031 JB**	0.35 U	**0.0047 JB**	**0.0065 B**	0.43 U	0.28 U	**0.0093 B**	0.31 U	0.3 U	0.34 U	**0.0071 B**
cis-1,2-Dichloroethene	1000	79	1	0.31 U	0.28 U	2.4 U	**0.12 J**	**0.007**	0.0052 U	0.0062 U	0.42 U	**0.25 J**	0.48 U	0.29 U	0.0047 U	0.0054 U	0.0052 U	0.35 U	**0.0019 J**	0.0051 U	0.43 U	0.28 U	0.0048 U	0.31 U	0.3 U	0.34 U	0.0056 U
Methyl Acetate	NC	NC	NC	**0.46**	**0.39**	**4.6**	**0.57**	0.005 U	0.0052 U	0.0062 U	**0.14 J**	**0.57 J**	**0.84**	**0.6**	0.0047 U	0.0054 U	0.0052 U	**0.42**	0.0049 U	0.0051 U	**0.52**	**0.39**	0.0048 U	**0.5**	**0.45**	**0.51**	0.0056 U
Toluene	1000	1000	500	0.31 U	0.28 U	2.4 U	0.35 U	0.005 U	0.0052 U	0.0062 U	0.42 U	**0.22 J**	0.48 U	0.29 U	0.0047 U	0.0054 U	0.0052 U	0.35 U	0.0049 U	0.0051 U	0.43 U	0.28 U	0.0048 U	0.31 U	0.3 U	0.34 U	0.0056 U
Trichloroethene	54	23	1	**0.86**	**4.6**	**80**	**7.9**	**0.35**	**0.044**	**0.037**	**5.5**	**75 D**	**98 D**	**0.48**	**0.022**	**0.041**	**0.064**	**4.3**	**0.066**	**0.04**	**0.5**	**0.75**	**0.1**	**4.1**	**1.9**	**3.1**	0.0056 U
Xylene (Total)	1000	410	67	0.31 U	0.28 U	2.4 U	0.35 U	0.005 U	0.0052 U	0.0062 U	0.42 U	**0.18 J**	0.48 U	0.29 U	0.0047 U	0.0054 U	0.0052 U	0.35 U	0.0049 U	0.0051 U	0.43 U	0.28 U	0.0048 U	0.31 U	0.3 U	0.34 U	0.0056 U
TOC																											
Total Organic Carbon	NC	NC	NC	N/A	1400 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note:
Only results above method detection limits are shown and all results are presented in mg/kg (ppm)
NRDCSCC = New Jersey Non-Residential Direct Contact Soil Cleanup Criteria (May,1999)
RDCSCC = New Jersey Residential Direct Contact Soil Cleanup Criteria (May, 1999)
IGWSCC = New Jersey Impact to Ground Water Soil Cleanup Criteria (May, 1999)
NC = No Criteria
U = Compound was not detected above metod detection limit
J = Indicates an estimated value
B = Compound was detected in the lab method blank at a level above the reporting limit
D = Sample was diluted
N/A = Not Analyzed
Bold = Concentration exceeds method detection limit
Shaded = Concentration meets or exceeds one of soil cleanup criteria

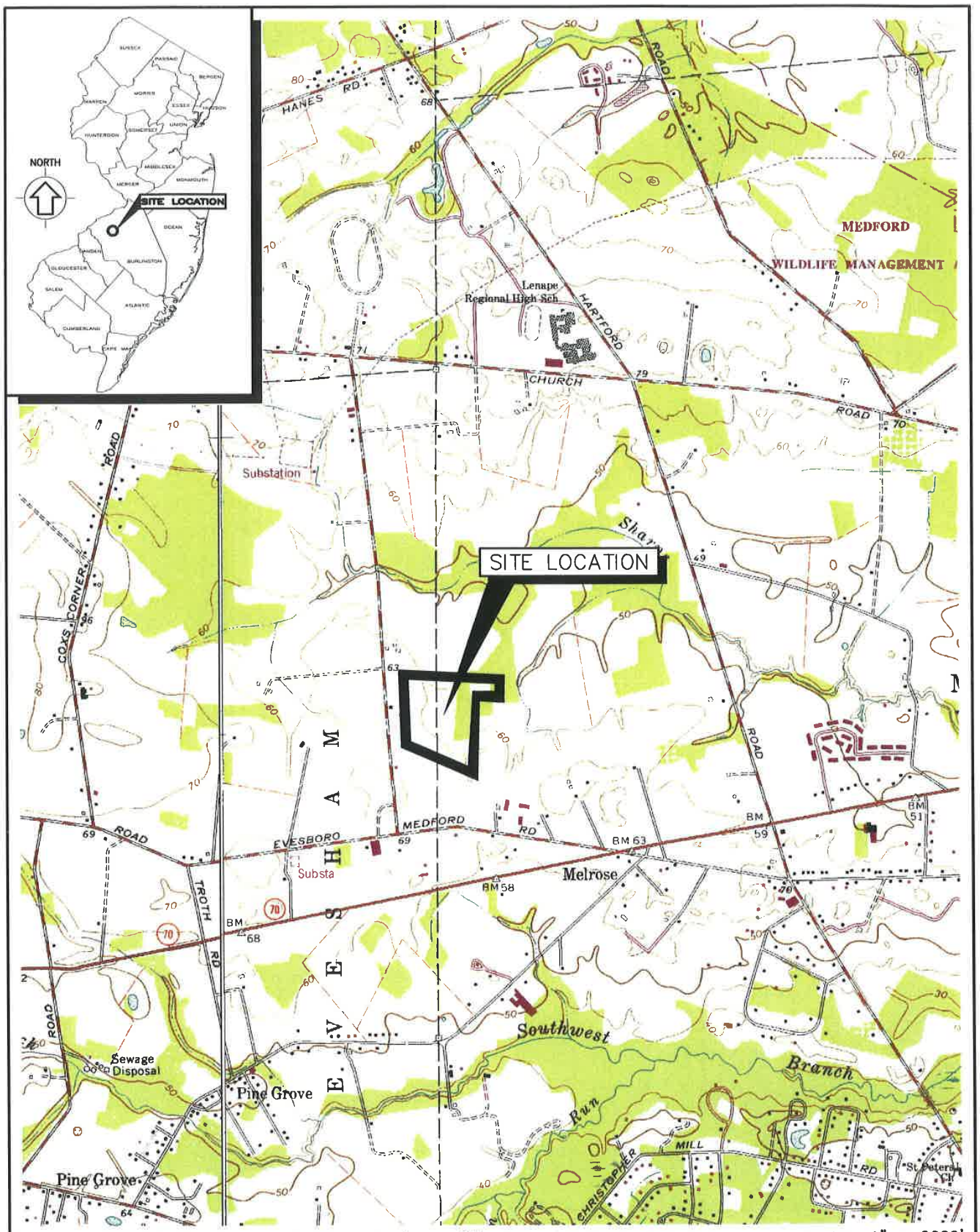
TABLE 7
ELLIS PROPERTY SUPERFUND SITE
Evesham Township, New Jersey
Soil Analytical Results Summary Table

			Location ID	P-31			P-32		P-33			P-40			P-41			P-42			P-49				P-50
			Sample ID	P31SB	P31SC	P31SD	P32SC	P32SD	P33SB	P33SC	P33SD	P40SC	P40SD	DUP02	P41SB	P41SC	P41SD	P42SB	P42SC	P42SD	P49SB	DUP05	P49SC	P49SD	P50SB
			Lab Sample ID	712650	712652	712651	712648	712649	712645	712646	712647	712957	712958	713001	712797	712798	712799	712794	712795	712796	713240	713249	713241	713242	713239
			Sample Date	6/4/2007	6/4/2007	6/4/2007	6/4/2007	6/4/2007	6/4/2007	6/4/2007	6/4/2007	6/6/2007	6/6/2007	6/6/2007	6/5/2007	6/5/2007	6/5/2007	6/5/2007	6/5/2007	6/5/2007	6/7/2007	6/7/2007	6/7/2007	6/7/2007	6/7/2007
			Sample Interval (ft)	12-14	20-24	18-20	18-20	20-24	14-16	18-20	22-24	16-18	20-24	20-24	12-14	18-20	20-24	12-14	18-20	20-24	8-10	8-10	12-14	16-18	8-10
VOC	**NRDCSCC**	**RDCSCC**	**IGWSCC**																						
Acetone	1000	1000	100	0.012 U	**0.56 J**	**0.51 J**	**0.49 J**	**0.59 J**	**0.39 J**	**0.45 J**	**0.46 J**	**0.48 J**	**0.48 J**	**0.55 J**	**0.0043 J**	**0.46 J**	**0.42 J**	**0.54 J**	**0.0074 J**	**0.0076 J**	**0.0077 J**	**0.01 J**	**0.48 JB**	**0.53 JB**	**0.0049 J**
Benzene	13	3	1	0.0058 U	0.36 U	0.35 U	0.35 U	0.35 U	0.25 U	0.33 U	0.34 U	0.36 U	0.36 U	0.4 U	0.0055 U	0.34 U	0.33 U	0.39 U	0.0054 U	0.0053 U	0.0073 U	0.0053 U	0.33 U	0.33 U	0.005 U
Carbon Disulfide	NC	NC	NC	0.0058 U	0.36 U	0.35 U	0.35 U	0.35 U	0.25 U	0.33 U	0.34 U	0.36 U	0.36 U	0.4 U	0.0055 U	0.34 U	0.33 U	0.39 U	0.0054 U	0.0053 U	0.0073 U	0.0053 U	0.33 U	0.33 U	0.005 U
Chloroform	28	19	1	0.0058 U	0.36 U	0.35 U	0.35 U	0.35 U	0.25 U	0.33 U	0.34 U	0.36 U	0.36 U	0.4 U	0.0055 U	0.34 U	0.33 U	0.39 U	**0.012 B**	**0.012 B**	**0.014 B**	**0.01 B**	0.33 U	0.33 U	**0.013 B**
cis-1,2-Dichloroethene	1000	79	1	**0.0028 J**	0.36 U	**0.085 J**	**0.22 J**	**0.08 J**	0.25 U	0.33 U	0.34 U	0.36 U	**0.13 J**	**0.09 J**	0.0055 U	0.34 U	0.33 U	0.39 U	0.0054 U	0.0053 U	**0.0041 J**	**0.0045 J**	**0.12 J**	**0.12 J**	0.005 U
Methyl Acetate	NC	NC	NC	0.0058 U	**0.48**	**0.46**	**0.37**	**0.44**	**0.36**	**0.33**	**0.38**	**0.4**	**0.42**	**0.43**	0.0055 U	**0.52**	**0.43**	**0.54**	0.0054 U	0.0053 U	0.0073 U	0.0053 U	**0.49**	**0.48**	0.005 U
Toluene	1000	1000	500	0.0058 U	0.36 U	0.35 U	0.35 U	0.35 U	0.25 U	0.33 U	0.34 U	0.36 U	0.36 U	0.4 U	0.0055 U	0.34 U	0.33 U	0.39 U	0.0054 U	0.0053 U	0.0073 U	0.0053 U	0.33 U	0.33 U	0.005 U
Trichloroethene	54	23	1	**0.011**	**2.8**	**5.9**	**19 D**	**5.4**	**0.68**	**3.3**	**1.9**	**3.8**	**13**	**13**	**0.39**	**1.3**	**0.68**	**0.44**	**0.033**	**0.012**	**0.35**	**0.41**	**4.9**	**3.9**	0.005 U
Xylene (Total)	1000	410	67	0.0058 U	0.36 U	0.35 U	0.35 U	0.35 U	0.25 U	0.33 U	0.34 U	0.36 U	0.36 U	0.4 U	0.0055 U	0.34 U	0.33 U	0.39 U	0.0054 U	0.0053 U	0.0073 U	0.0053 U	0.33 U	0.33 U	0.005 U
TOC																									
Total Organic Carbon	NC	NC	NC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**1720**	N/A	N/A	N/A	N/A	N/A	N/A

			Location ID	P-52	P-53		P-54		P-55		P-56			P-57		P-58			P-60			P-61		P-62	
			Sample ID	P52SB	P53SC	P53SD	P54SC	P54SD	P55SB	P55SC	P56SB	P56SC	P56SD	P57SC	P57SD	P58SB	P58SC	P58SD	P60SB	P60SC	P60SD	P61SC	P61SD	P62SB	P62SC
			Lab Sample ID	712998	712996	712997	712982	712983	713243	713244	712999	712960	712980	712643	712644	713245	713246	713247	712787	712788	712789	712981	712959	712653	712654
			Sample Date	6/6/2007	6/6/2007	6/6/2007	6/6/2007	6/6/2007	6/7/2007	6/7/2007	6/6/2007	6/6/2007	6/6/2007	6/4/2007	6/4/2007	6/7/2007	6/7/2007	6/7/2007	6/5/2007	6/5/2007	6/5/2007	6/6/2007	6/6/2007	6/4/2007	6/4/2007
			Sample Interval (ft)	16-18	20-22	24-28	14-16	16-20	10-12	14-16	10-12	14-16	16-20	16-18	20-22	10-12	14-16	16-20	12-14	16-20	20-24	16-18	20-24	14-16	20-22
VOC	**NRDCSCC**	**RDCSCC**	**IGWSCC**																						
Acetone	1000	1000	100	**0.0086 J**	**0.55 J**	**0.58 J**	0.0096 U	**0.44 J**	**0.011**	**0.47 JB**	0.0093 U	0.01 U	**0.018**	**0.44 J**	**0.59 J**	**0.62 JB**	**0.48 JB**	**0.0065 J**	**0.01 J**	**0.55 J**	**0.45 J**	**0.48 J**	**0.47 J**	**0.0086 J**	**0.011**
Benzene	13	3	1	0.0052 U	0.36 U	0.35 U	0.0048 U	0.33 U	0.0048 U	0.33 U	0.0047 U	0.0052 U	0.0051 U	0.28 U	0.39 U	0.31 U	0.32 U	0.0049 U	0.0076 U	0.34 U	0.32 U	0.34 U	0.34 U	0.0058 U	0.0051 U
Carbon Disulfide	NC	NC	NC	0.0052 U	0.36 U	0.35 U	0.0048 U	0.33 U	0.0048 U	0.33 U	0.0047 U	0.0052 U	**0.0066**	0.28 U	0.39 U	0.31 U	0.32 U	0.0049 U	0.0076 U	0.34 U	0.32 U	0.34 U	0.34 U	0.0058 U	**0.0021 J**
Chloroform	28	19	1	**0.012 B**	0.36 U	0.35 U	**0.011 B**	0.33 U	**0.0073 B**	0.33 U	**0.0096 B**	0.0052 U	**0.0032 JB**	0.28 U	0.39 U	0.31 U	0.32 U	**0.009 B**	**0.013 B**	0.34 U	0.32 U	0.34 U	0.34 U	**0.012 B**	**0.011 B**
cis-1,2-Dichloroethene	1000	79	1	0.0052 U	**0.13 J**	**0.32 J**	0.0048 U	0.33 U	0.0048 U	0.33 U	0.0047 U	0.0052 U	0.0051 U	0.28 U	0.39 U	0.31 U	**0.22 J**	0.0049 U	0.0076 U	0.34 U	0.32 U	0.34 U	0.34 U	0.0058 U	0.0051 U
Methyl Acetate	NC	NC	NC	0.0052 U	**0.51**	**0.53**	0.0048 U	**0.49**	0.0048 U	**0.54**	0.0047 U	0.0052 U	0.0051 U	**0.43**	**0.55**	**0.5**	**0.59**	0.0049 U	0.0076 U	**0.52**	**0.46**	**0.5**	**0.34**	0.0058 U	0.0051 U
Toluene	1000	1000	500	0.0052 U	0.36 U	0.35 U	0.0048 U	0.33 U	0.0048 U	0.33 U	0.0047 U	0.0052 U	0.0051 U	0.28 U	0.39 U	0.31 U	0.32 U	0.0049 U	0.0076 U	0.34 U	0.32 U	0.34 U	0.34 U	0.0058 U	0.0051 U
Trichloroethene	54	23	1	0.0052 U	**39 D**	**26 D**	0.0048 U	**2.6**	**0.15**	**1.2**	**0.2**	**0.41**	**0.21**	**3.1**	**4.3**	**1.2**	**21 D**	0.0049 U	**0.11**	**1.9**	**11**	**0.45**	**0.4**	**0.036**	**0.081**
Xylene (Total)	1000	410	67	0.0052 U	0.36 U	0.35 U	0.0048 U	0.33 U	0.0048 U	0.33 U	0.0047 U	0.0052 U	0.0051 U	0.28 U	0.39 U	0.31 U	0.32 U	0.0049 U	0.0076 U	0.34 U	0.32 U	0.34 U	0.34 U	0.0058 U	0.0051 U
TOC																									
Total Organic Carbon	NC	NC	NC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**1710**	N/A	N/A	N/A

Note:
Only results above method detection limits are shown and all results are presented in mg/kg (ppm)
NRDCSCC = New Jersey Non-Residential Direct Contact Soil Cleanup Criteria (May,1999)
RDCSCC = New Jersey Residential Direct Contact Soil Cleanup Criteria (May, 1999)
IGWSCC = New Jersey Impact to Ground Water Soil Cleanup Criteria (May, 1999)
NC = No Criteria
U = Compound was not detected above metod detection limit
J = Indicates an estimated value
B = Compound was detected in the lab method blank at a level above the reporting limit
D = Sample was diluted
N/A = Not Analyzed
Bold = Concentration exceeds method detection limit
Shaded = Concentration meets or exceeds one of soil cleanup criteria

FIGURES



Source: USGS 7.5 Min. Quadrangle, Elizabeth, Jersey City, Orange & Weehawken, N.J. Scale: 1" = 2000'

N.J. Department of Environmental Protection

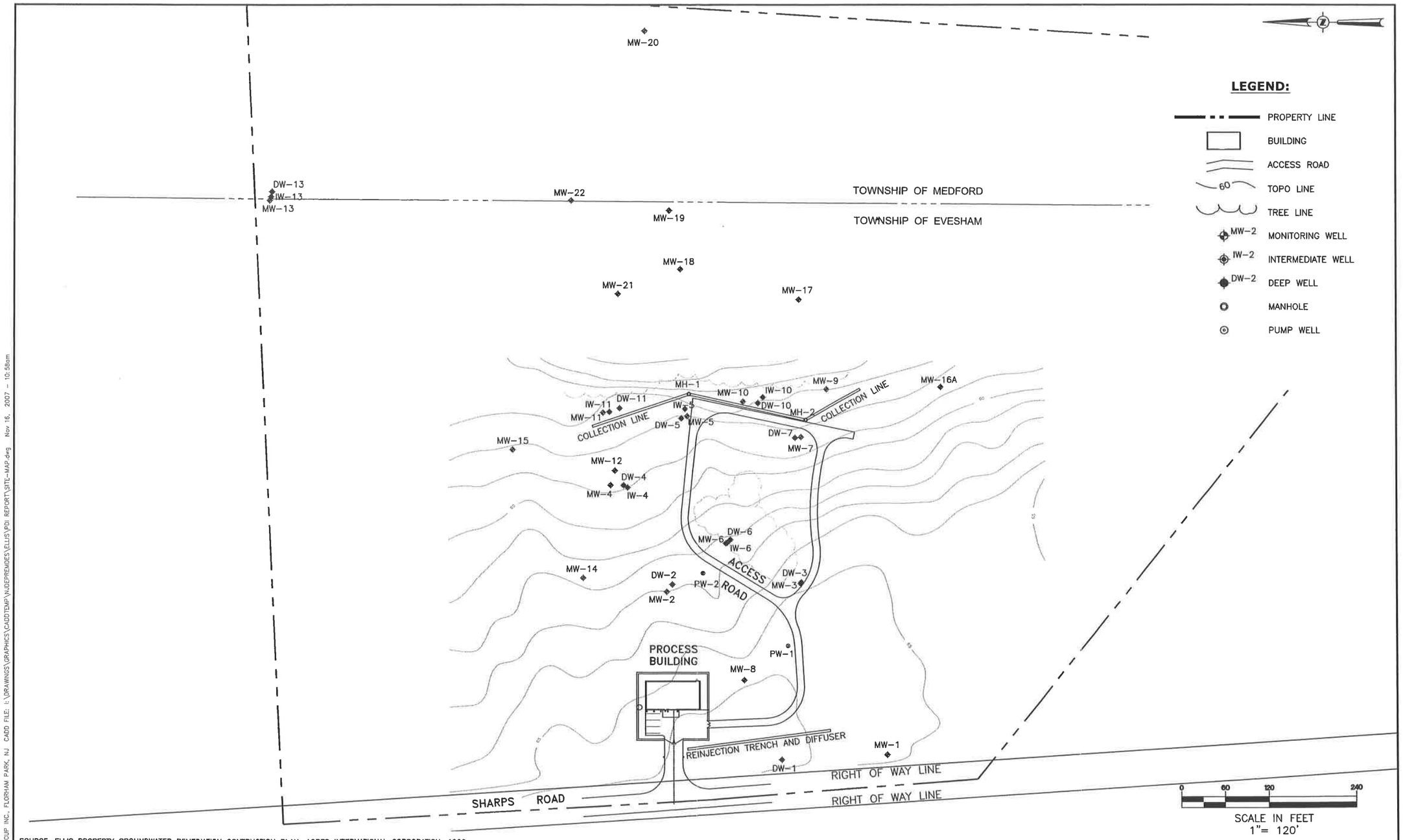
ELLIS PROPERTY SUPERFUND SITE
EVESHAM TOWNSHIP, BURLINGTON COUNTY, NJ
SITE LOCATION MAP
NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mount Kemble Ave
Mirristown, New Jersey

FIGURE 1

THE LOUIS BERGER GROUP INC., FLORHAM PARK, NJ CADD FILE L:\DRAWINGS\GRAPHICS\CADDTEMP\NJDEPREMDES\ELLIS\PDI REPORT\ELLIS-...dwg Nov 29, 2007 - 2:25pm

R2-0003388



SOURCE: ELLIS PROPERTY GROUNDWATER REMEDIATION CONTRUCTION PLAN, ACRES INTERNATIONAL CORPORATION, 1999

N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

GENERAL SITE PLAN

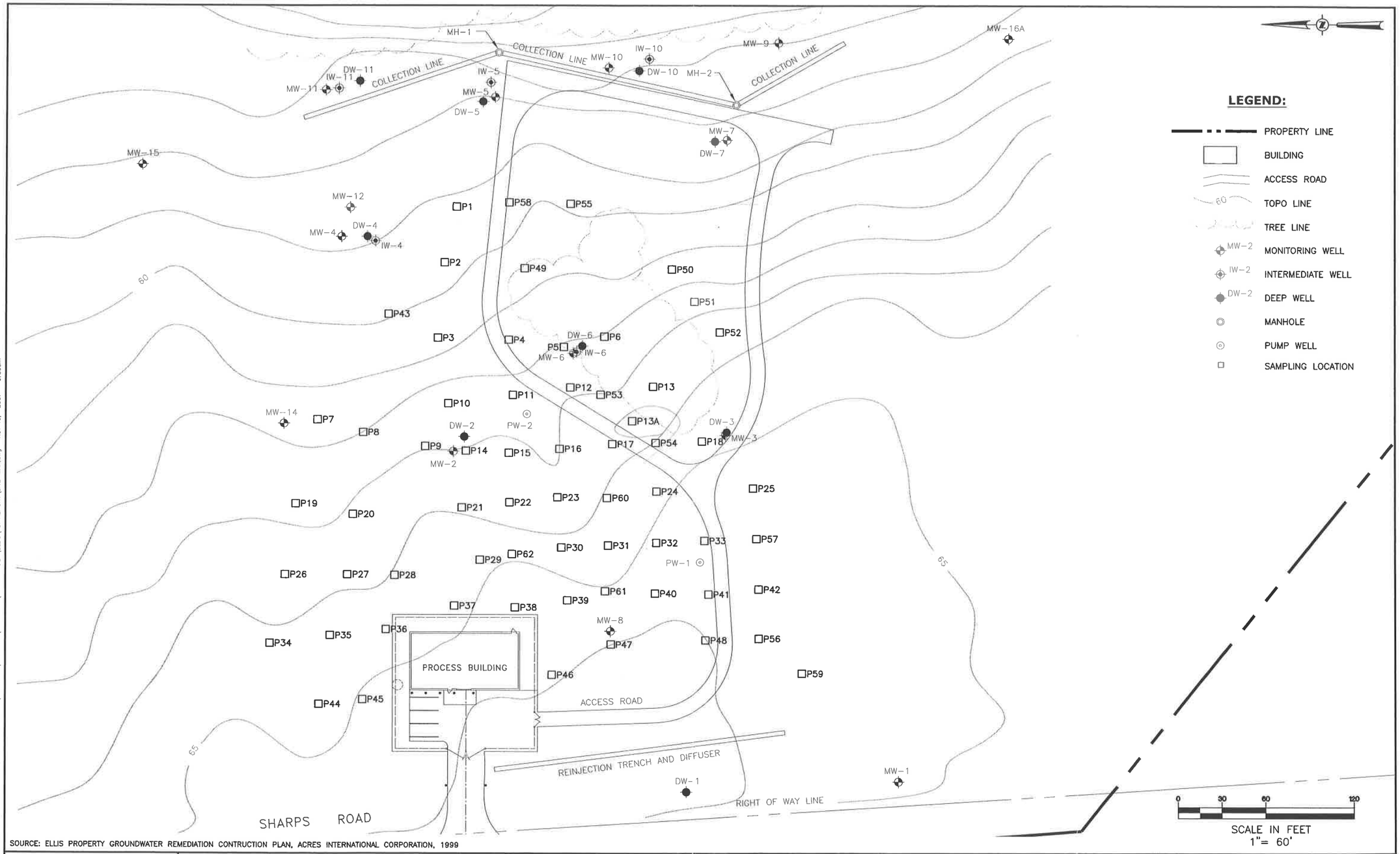
NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mount Kemble Ave
Morristown, New Jersey

FIGURE 2

THE LOUIS BERGER GROUP INC., FLORHAM PARK, NJ CADD FILE: I:\DRAWINGS\GRAPHICS\CADDTEMP\NJDEPREMDES\ELLIS\PDI REPORT\SITE-MAP.dwg Nov 16, 2007 - 10:58am

R2-0003389



SOURCE: ELLIS PROPERTY GROUNDWATER REMEDIATION CONTRUCTION PLAN, ACRES INTERNATIONAL CORPORATION, 1999

N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

PRE-DESIGN INVESTIGATION LOCATIONS PLAN

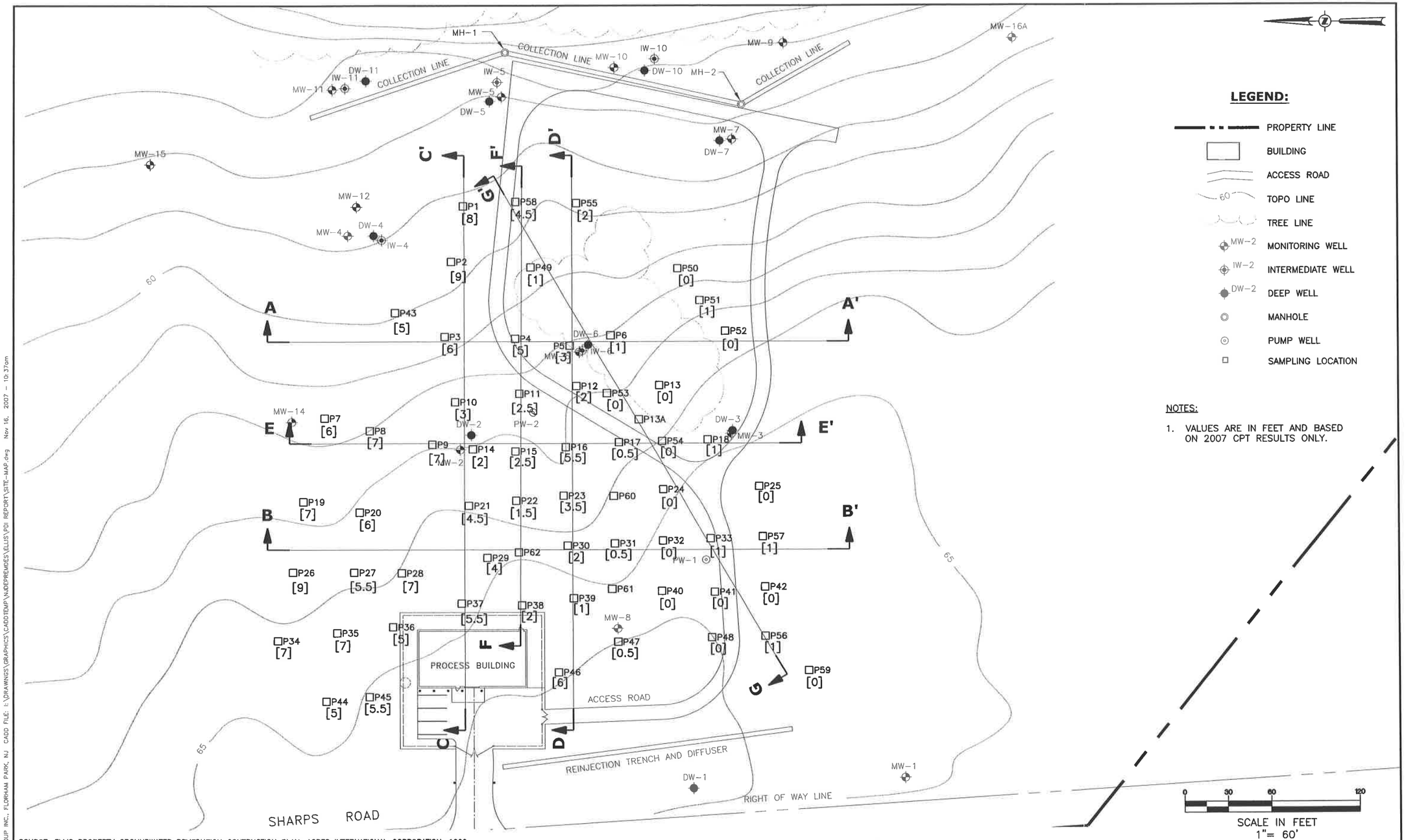
NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mount Kemble Ave
Morristown, New Jersey

FIGURE 3

THE LOUIS BERGER GROUP INC., FLORHAM PARK, NJ CADD FILE: I:\DRAWINGS\GRAPHICS\CADDTEMP\NJDEPREMDES\ELLIS\PDI REPORT\SITE-MAP.dwg Nov 16, 2007 - 9:56am

R2-0003390



SOURCE: ELLIS PROPERTY GROUNDWATER REMEDIATION CONTRUCTION PLAN, ACRES INTERNATIONAL CORPORATION, 1999

N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

SAND STRATUM THICKNESS BASED ON CPT RESULTS

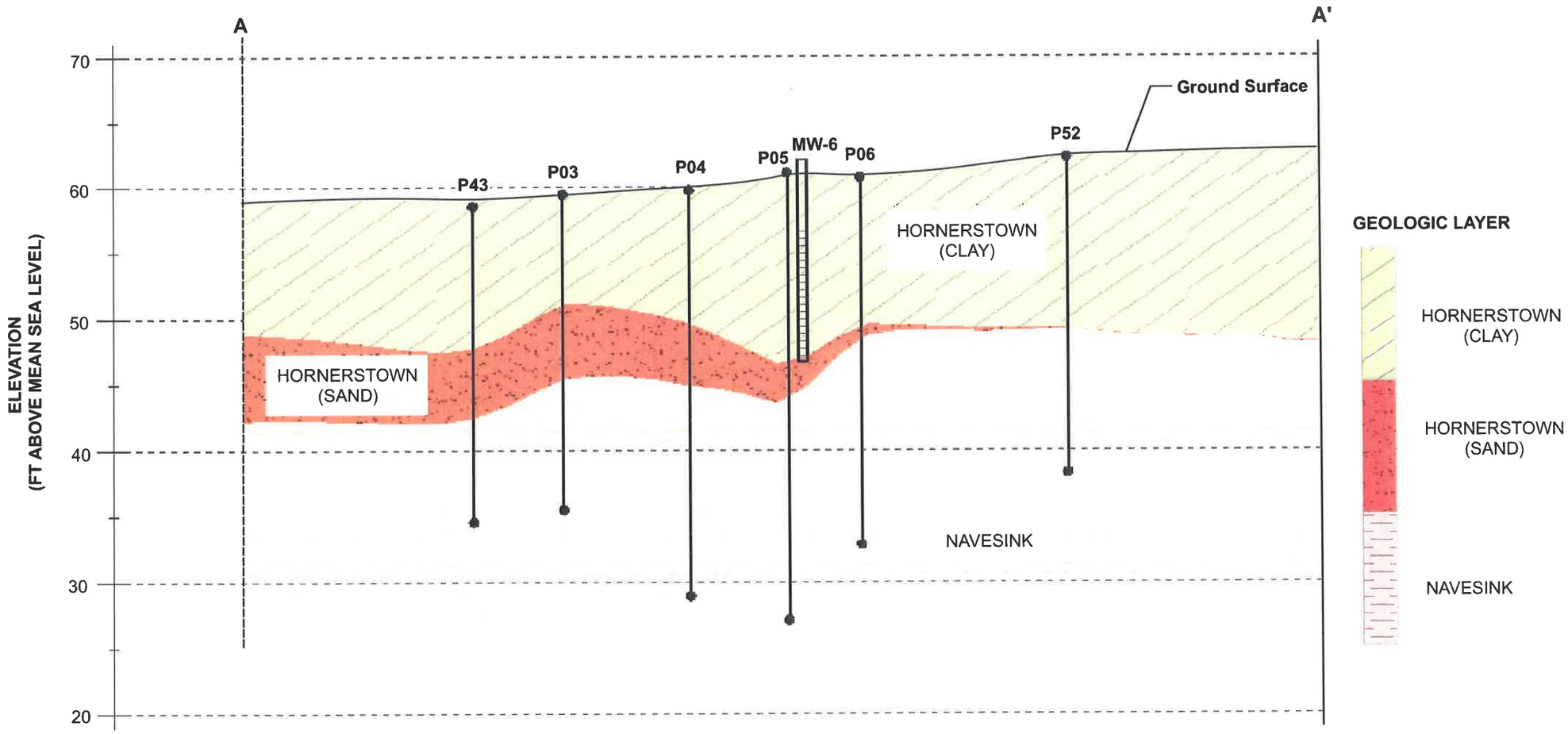
NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mount Kemble Ave
Morristown, New Jersey

FIGURE 4

THE LOUIS BERGER GROUP INC., FLORHAM PARK, NJ CADD FILE: I:\DRAWINGS\GRAPHICS\CADDTEMP\NJDEPREMDES\ELLISYPDI REPORT\SITE-MAP.dwg Nov 16, 2007 - 10:37am

R2-0003391



NOTE:
1. MONITORING WELLS AND SOIL BORINGS SHOWN INCLUDE THOSE WITHIN APPROXIMATE 30 FT DISTANCE FROM A-A'.

I:\GIS_SERVICES\NJDEP\Ellis\MVS-NOV2007\GEO-AA.MXD NOVEMBER 19, 2007

N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

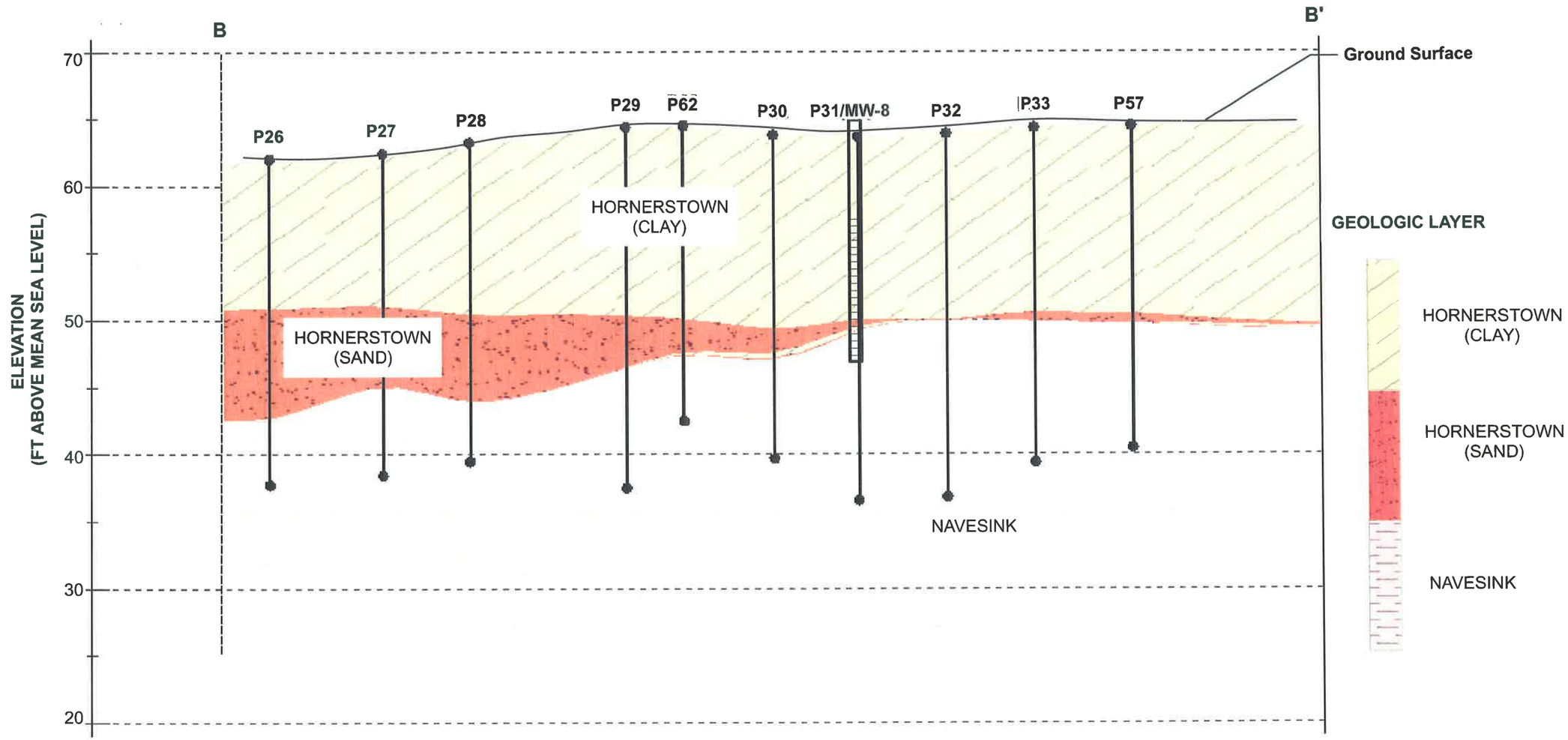
SAND STRATUM CROSS SECTIONS BASED ON CPT RESULTS (A-A')

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 5A

R2-0003392



NOTE:
1. MONITORING WELLS AND SOIL BORINGS SHOWN INCLUDE THOSE WITHIN APPROXIMATE 30 FT DISTANCE FROM B-B'.

I:\GIS_SERVICES\NJ\NJDEP\Ellis\MVS-NOV2007\GEO-BB.MXD NOVEMBER 19, 2007

N.J. Department of Environmental Protection

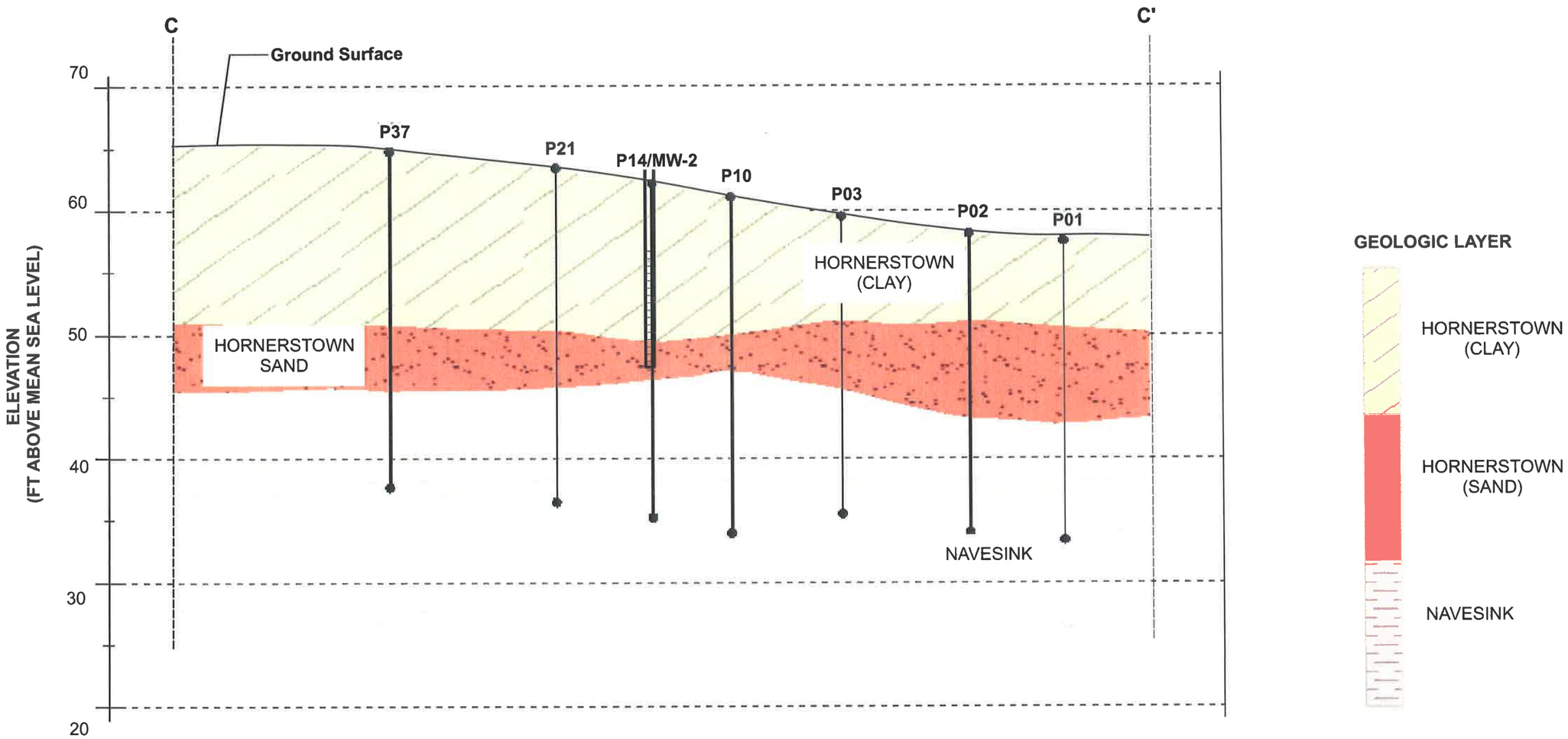
ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

SAND STRATUM CROSS SECTIONS BASED ON CPT RESULTS (B-B')

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 5B



NOTE:
1. MONITORING WELLS AND SOIL BORINGS SHOWN INCLUDE THOSE WITHIN APPROXIMATE 30 FT DISTANCE FROM C-C'.

N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

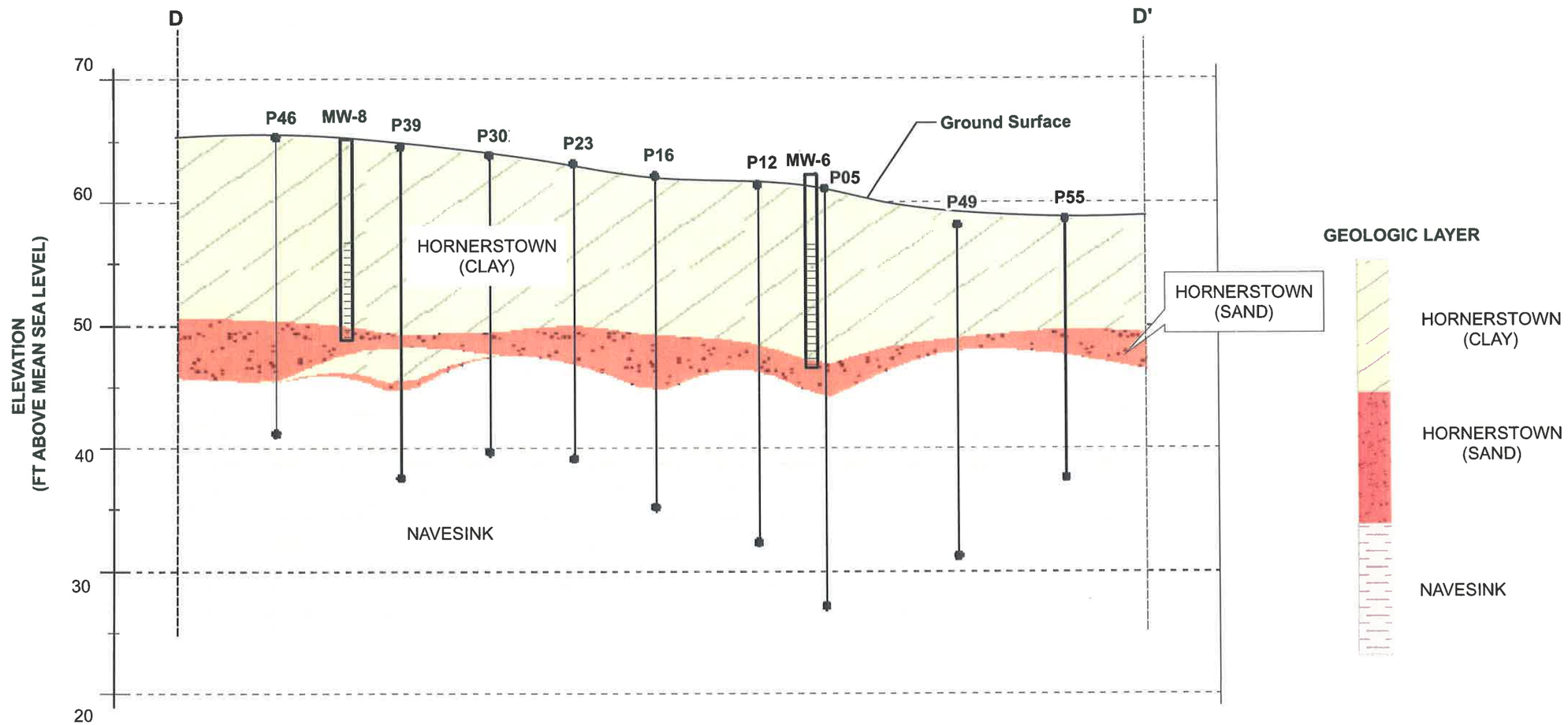
SAND STRATUM CROSS SECTIONS BASED ON CPT RESULTS (C-C')

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 5C

:\GIS_SERVICES\NJ\NJDEP\Ellis\MVS-NOV2007\GEO-CC.MXD NOVEMBER 19, 2007



NOTE:
1. MONITORING WELLS AND SOIL BORINGS SHOWN INCLUDE THOSE WITHIN APPROXIMATE 30 FT DISTANCE FROM D-D'.

N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

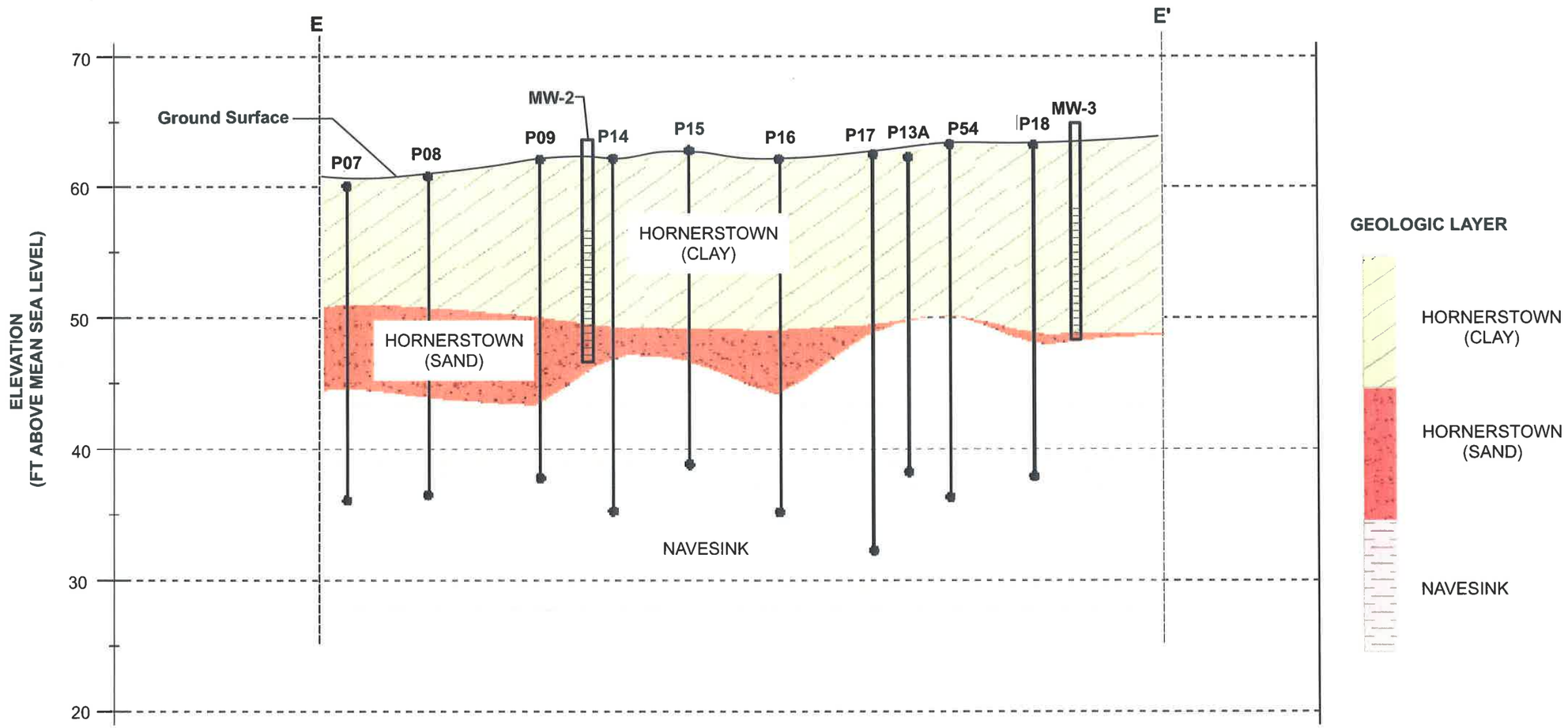
SAND STRATUM CROSS SECTIONS BASED ON CPT RESULTS (D-D')

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 5D

\\GIS_SERVICES\NJN_DEP\Ellis\MVS-NOV2007\GEO-DD.MXD NOVEMBER 19, 2007



NOTE:
1. MONITORING WELLS AND SOIL BORINGS SHOWN INCLUDE THOSE WITHIN APPROXIMATE 30 FT DISTANCE FROM E-E'.

N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

SAND STRATUM CROSS SECTIONS BASED ON CPT RESULTS (E-E')

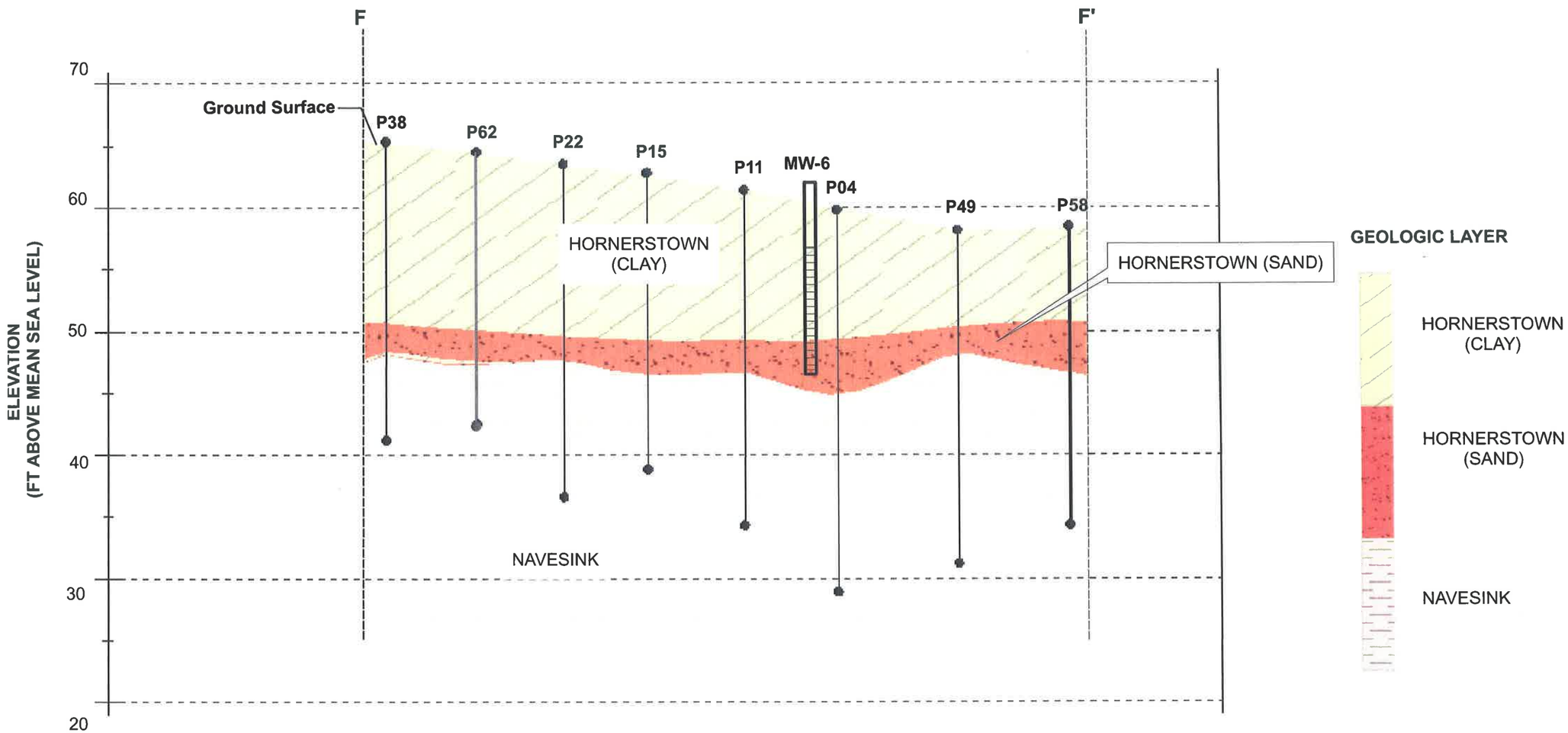
NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 5E

I:\GIS_SERVICES\NJ\NJDEP\Ellis\MVS-NOV2007\GEO-EE.MXD NOVEMBER 19, 2007

R2-0003396



NOTE:
1. MONITORING WELLS AND SOIL BORINGS SHOWN INCLUDE THOSE WITHIN APPROXIMATE 30 FT DISTANCE FROM F-F'.

I:\GIS_SERVICES\NJ\NJDEP\Ellis\MVS-NOV2007\GEO-FF.MXD NOVEMBER 19, 2007

N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

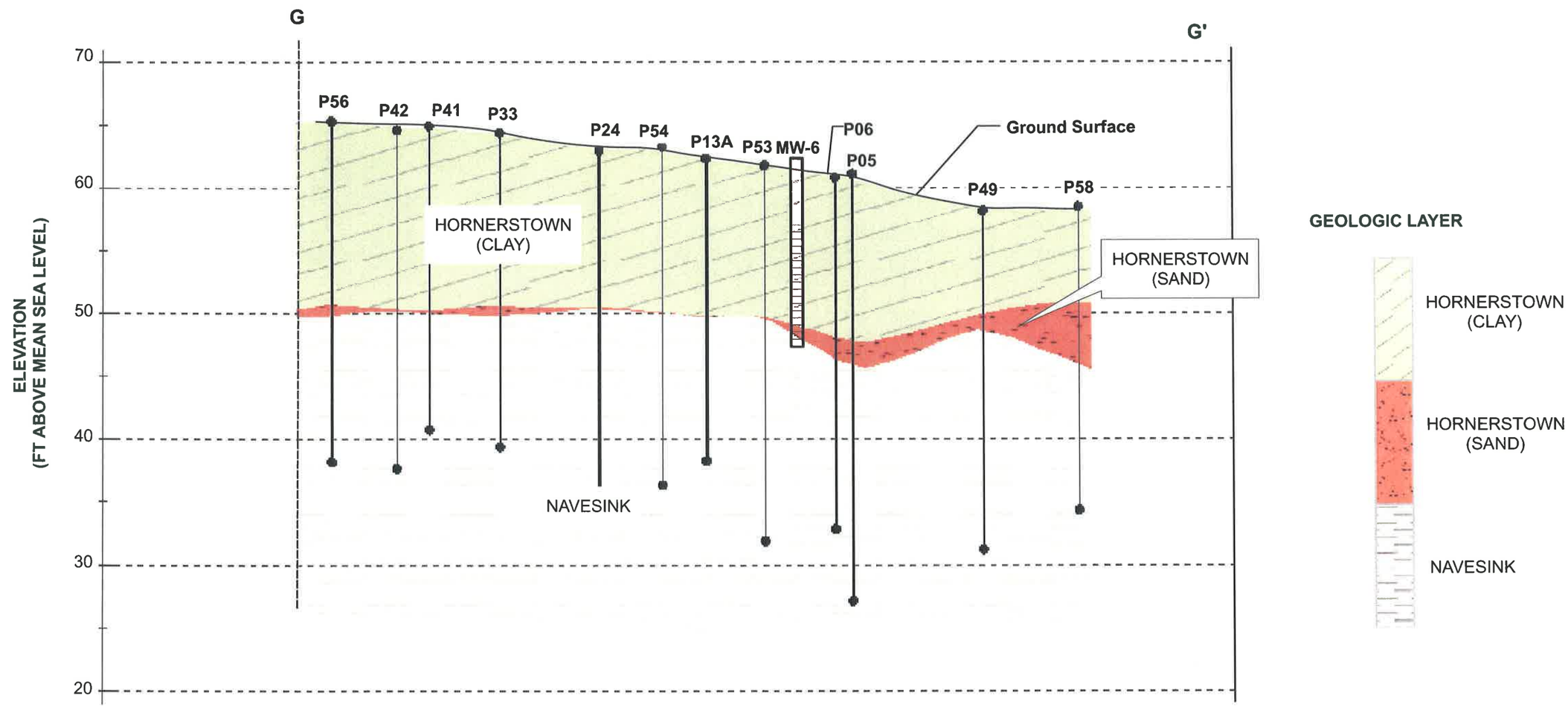
SAND STRATUM CROSS SECTIONS BASED ON CPT RESULTS (F-F')

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 5F

R2-0003397



NOTE:
1. MONITORING WELLS AND SOIL BORINGS SHOWN INCLUDE THOSE WITHIN APPROXIMATE 30 FT DISTANCE FROM G-G'.

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N.J. Department of Environmental Protection

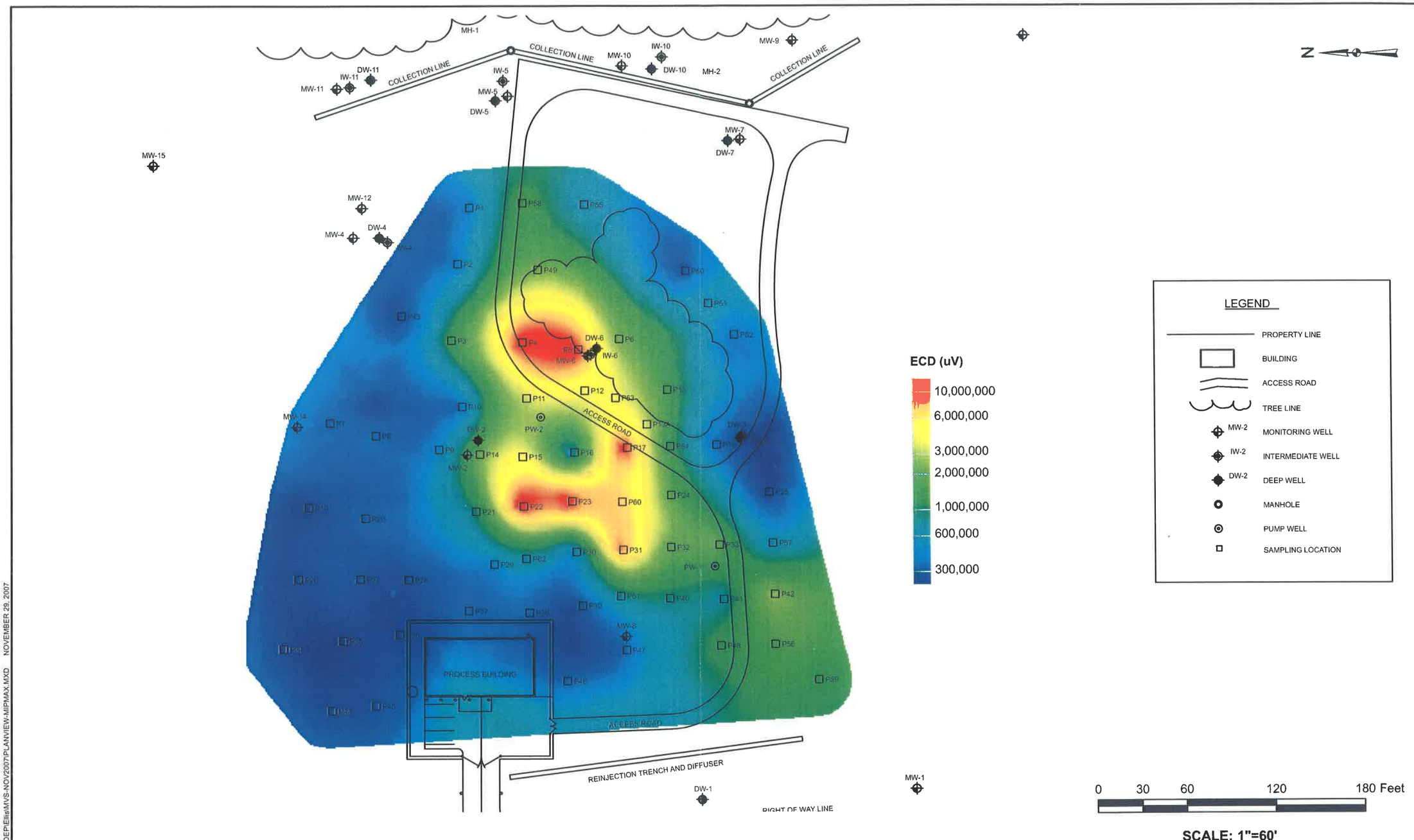
ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

SAND STRATUM CROSS SECTIONS BASED ON CPT RESULTS (G-G')

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 5G



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N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

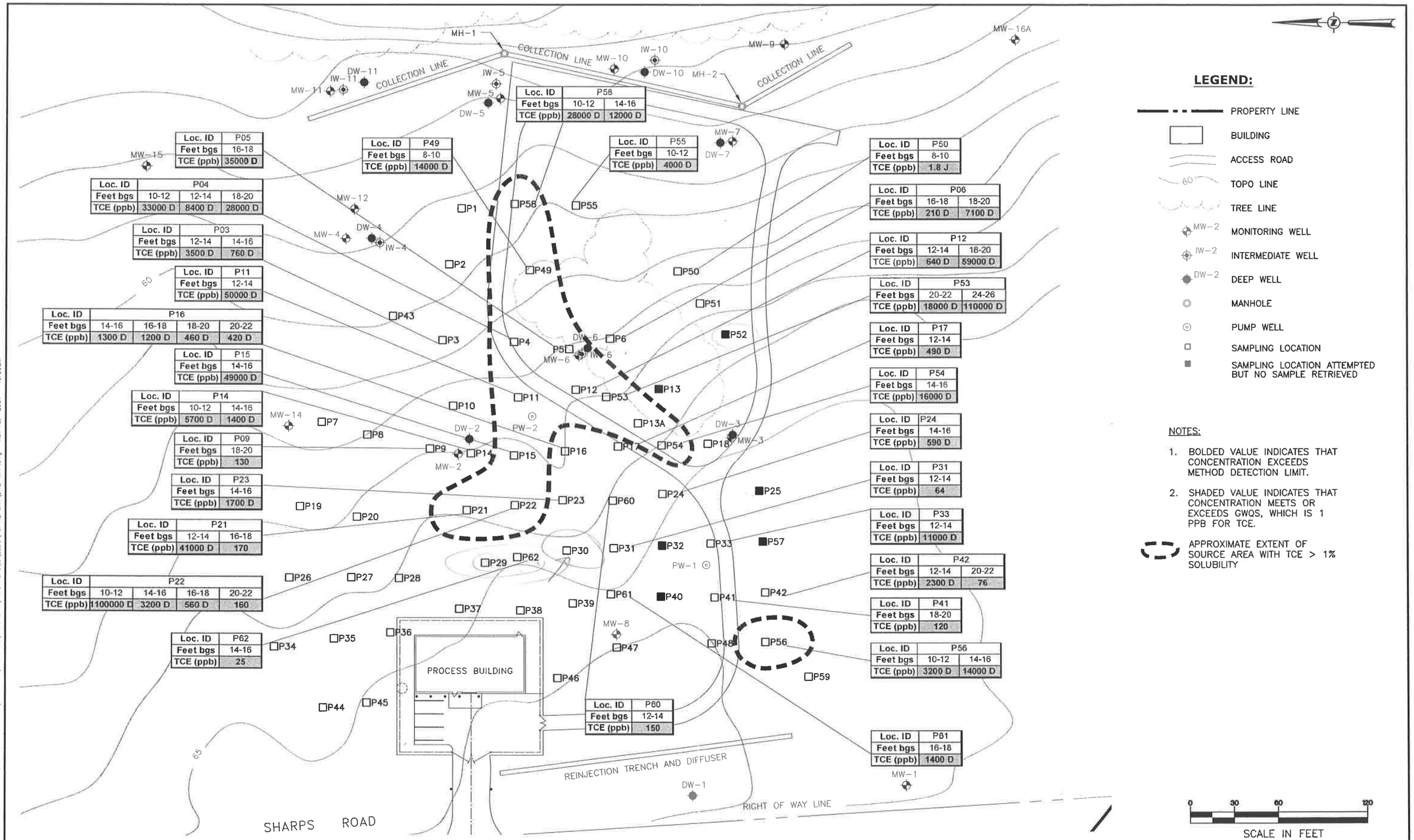
CONTAMINANT DISTRIBUTION (BASED ON MIP DATA)

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 6

R2-0003399



Loc. ID	P58	
Feet bgs	10-12	14-16
TCE (ppb)	28000 D	12000 D

Loc. ID	P05
Feet bgs	16-18
TCE (ppb)	35000 D

Loc. ID	P49
Feet bgs	8-10
TCE (ppb)	14000 D

Loc. ID	P55
Feet bgs	10-12
TCE (ppb)	4000 D

Loc. ID	P04		
Feet bgs	10-12	12-14	18-20
TCE (ppb)	33000 D	8400 D	28000 D

Loc. ID	P03	
Feet bgs	12-14	14-16
TCE (ppb)	3500 D	760 D

Loc. ID	P11
Feet bgs	12-14
TCE (ppb)	50000 D

Loc. ID	P16			
Feet bgs	14-16	16-18	18-20	20-22
TCE (ppb)	1300 D	1200 D	460 D	420 D

Loc. ID	P15
Feet bgs	14-16
TCE (ppb)	49000 D

Loc. ID	P14	
Feet bgs	10-12	14-16
TCE (ppb)	5700 D	1400 D

Loc. ID	P09
Feet bgs	18-20
TCE (ppb)	130

Loc. ID	P23
Feet bgs	14-16
TCE (ppb)	1700 D

Loc. ID	P21	
Feet bgs	12-14	16-18
TCE (ppb)	41000 D	170

Loc. ID	P22			
Feet bgs	10-12	14-16	16-18	20-22
TCE (ppb)	1100000 D	3200 D	560 D	160

Loc. ID	P62
Feet bgs	14-16
TCE (ppb)	25

Loc. ID	P60
Feet bgs	12-14
TCE (ppb)	150

Loc. ID	P50
Feet bgs	8-10
TCE (ppb)	1.8 J

Loc. ID	P06	
Feet bgs	16-18	18-20
TCE (ppb)	210 D	7100 D

Loc. ID	P12	
Feet bgs	12-14	18-20
TCE (ppb)	640 D	59000 D

Loc. ID	P53	
Feet bgs	20-22	24-26
TCE (ppb)	18000 D	110000 D

Loc. ID	P17
Feet bgs	12-14
TCE (ppb)	490 D

Loc. ID	P54
Feet bgs	14-16
TCE (ppb)	16000 D

Loc. ID	P24
Feet bgs	14-16
TCE (ppb)	590 D

Loc. ID	P31
Feet bgs	12-14
TCE (ppb)	64

Loc. ID	P33
Feet bgs	12-14
TCE (ppb)	11000 D

Loc. ID	P42	
Feet bgs	12-14	20-22
TCE (ppb)	2300 D	76

Loc. ID	P41
Feet bgs	18-20
TCE (ppb)	120

Loc. ID	P56	
Feet bgs	10-12	14-16
TCE (ppb)	3200 D	14000 D

Loc. ID	P61
Feet bgs	16-18
TCE (ppb)	1400 D

LEGEND:

- PROPERTY LINE
- BUILDING
- ACCESS ROAD
- 60 TOPO LINE
- TREE LINE
- MW-2 MONITORING WELL
- IW-2 INTERMEDIATE WELL
- DW-2 DEEP WELL
- MANHOLE
- PUMP WELL
- SAMPLING LOCATION
- SAMPLING LOCATION ATTEMPTED BUT NO SAMPLE RETRIEVED

NOTES:

1. BOLDED VALUE INDICATES THAT CONCENTRATION EXCEEDS METHOD DETECTION LIMIT.
2. SHADED VALUE INDICATES THAT CONCENTRATION MEETS OR EXCEEDS GWQS, WHICH IS 1 PPB FOR TCE.

APPROXIMATE EXTENT OF SOURCE AREA WITH TCE > 1% SOLUBILITY

0 30 60 120

SCALE IN FEET
1"= 60'

SOURCE: ELLIS PROPERTY GROUNDWATER REMEDIATION CONTRUCTION PLAN, ACRES INTERNATIONAL CORPORATION, 1999

N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

HYDROPUNCH GROUNDWATER ANALYTICAL RESULTS (TCE)

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mount Kemble Ave
Morristown, New Jersey

FIGURE 7A

THE LOUIS BERGER GROUP INC., FLORHAM PARK, NJ CADD FILE: I:\DRAWINGS\GRAPHICS\CADDTEMP\NJDEPREVIDES\ELLIS\PDI REPORT\SITE-MAP.dwg Nov 16, 2007 - 10:39am

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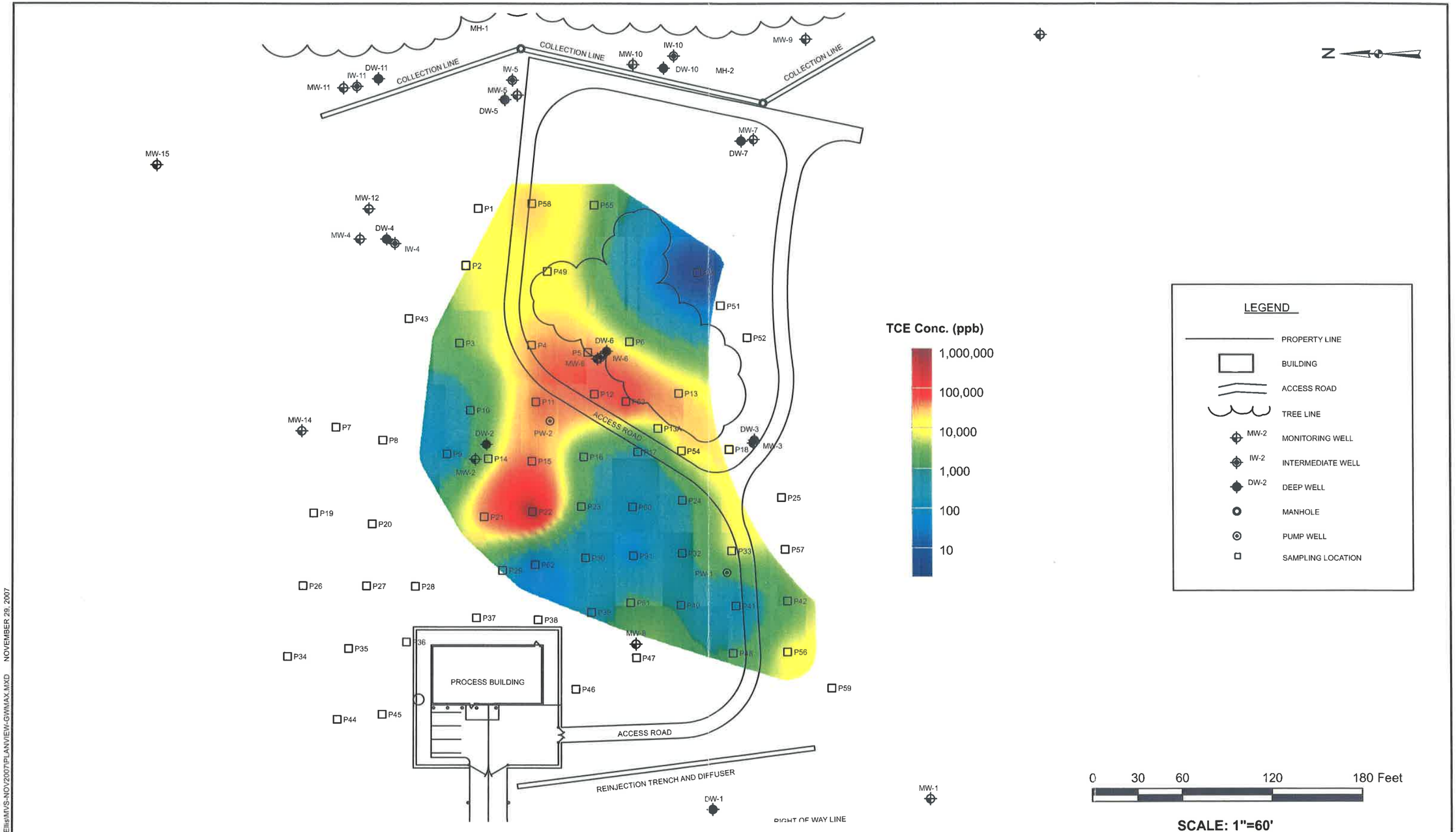

NOTE: 2007 HYDROPONCH SAMPLING RESULTS ONLY.

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N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

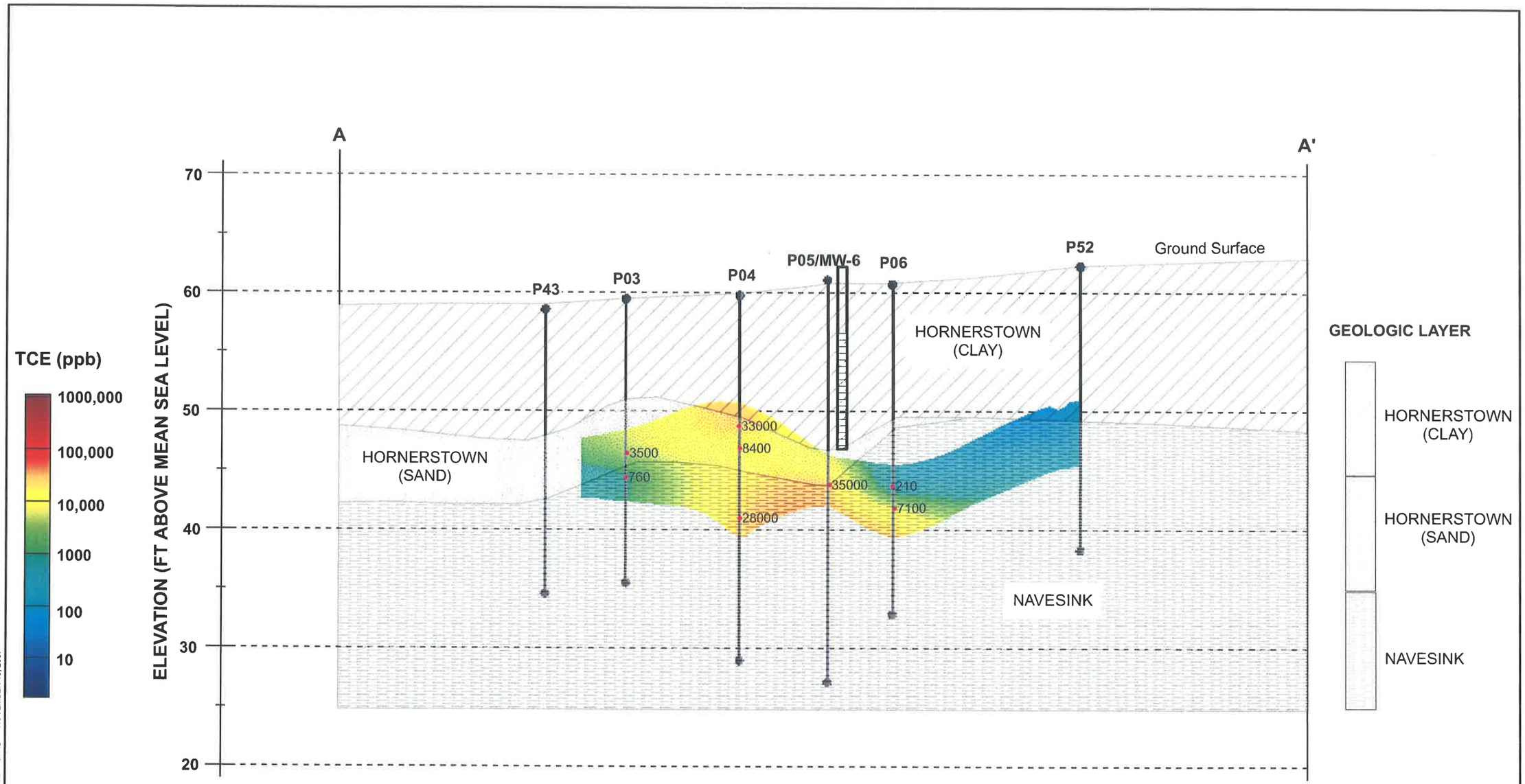
HYDROPUNCH GROUNDWATER ANALYTICAL RESULTS (TCE)

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 7B

R2-0003401



NOTE:
1. MONITORING WELLS AND SOIL BORINGS SHOWN INCLUDE THOSE WITHIN APPROXIMATE 30 FT DISTANCE FROM A-A'.
2. TCE CONCENTRATIONS ARE SHOWN IN PARTS PER BILLION (PPB).
3. 2007 HYDROPONCH SAMPLING RESULTS ONLY.

I:\GIS_SERVICES\NJ\NJDEP\Ellis\MVS-NOV2007\GW-TCE-AA.MXD NOVEMBER 19, 2007

N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

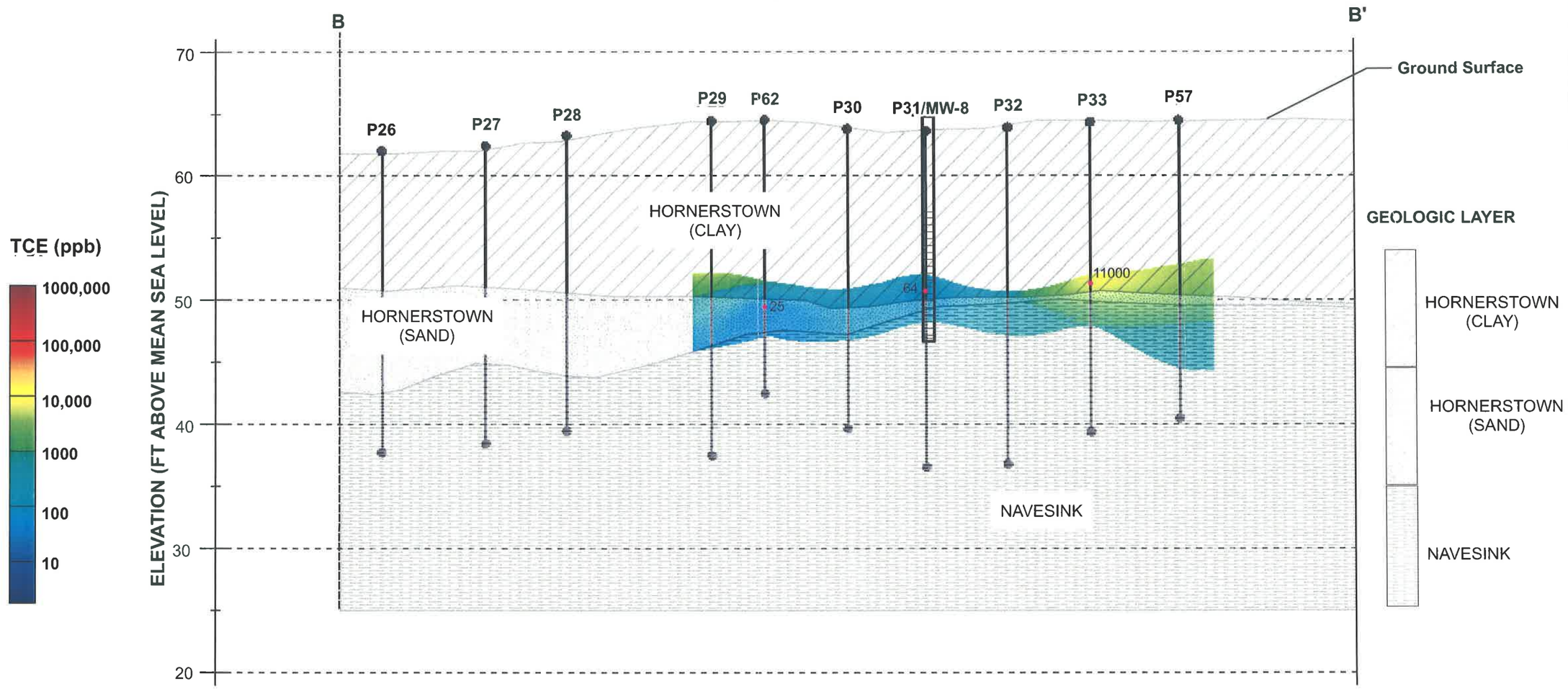
GROUNDWATER TCE DISTRIBUTION (CROSS SECTION A-A')

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 8A

R2-0003402

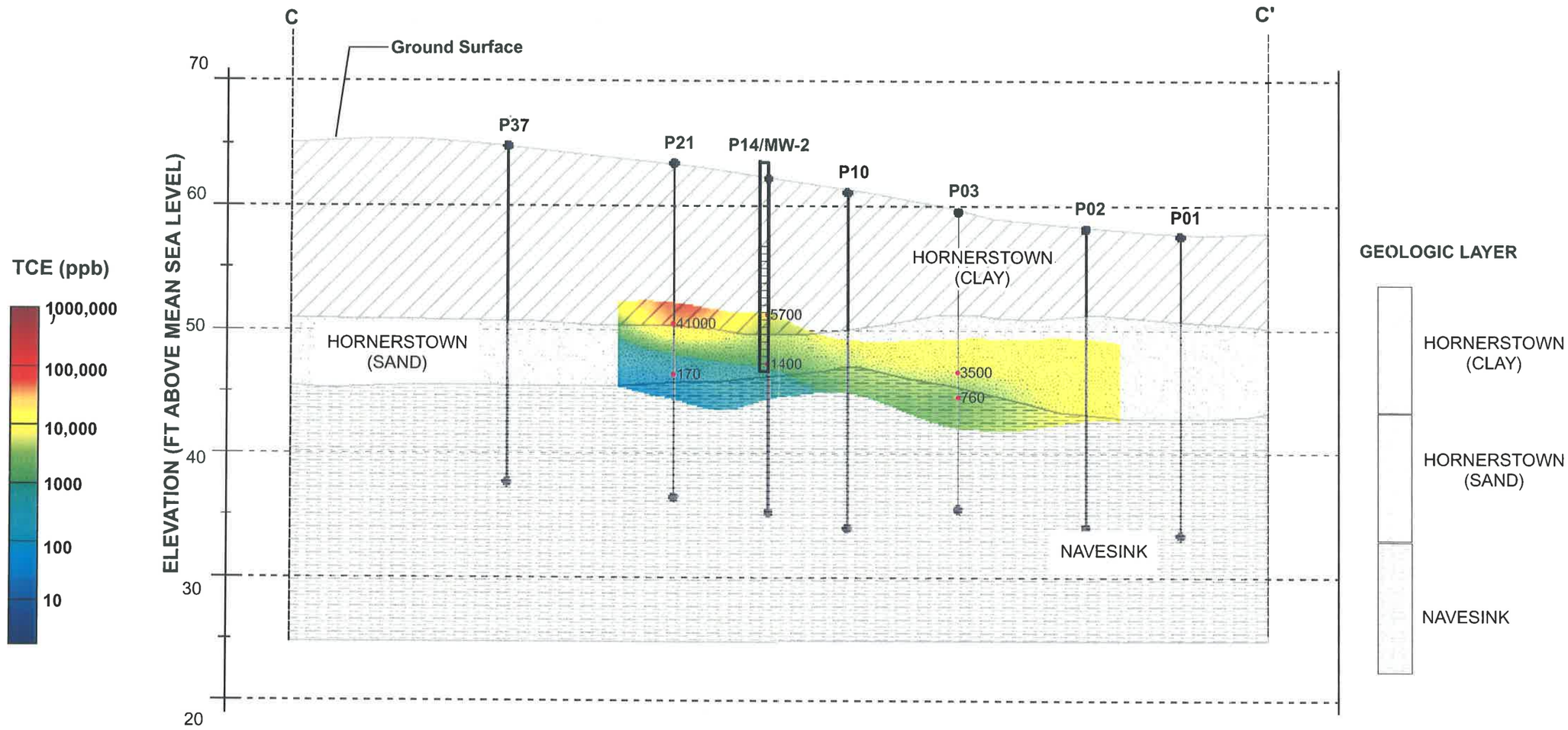


NOTE:
1. MONITORING WELLS AND SOIL BORINGS SHOWN INCLUDE THOSE WITHIN APPROXIMATE 30 FT DISTANCE FROM B-B'.
2. TCE CONCENTRATIONS ARE SHOWN IN PARTS PER BILLION (PPB).
3. 2007 HYDROPONCH SAMPLING RESULTS ONLY.

I:\GIS_SERVICES\NJ\NJDEP\Ellis\MVS-NOV2007\GW-TCE-BB.MXD NOVEMBER 19, 2007

N.J. Department of Environmental Protection	ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY **GROUNDWATER TCE DISTRIBUTION (CROSS SECTION B-B')** NJDEP CONTRACT No. A-54678	The Louis Berger Group, Inc. 412 Mt Kemble Ave Morristown, NJ	FIGURE 8B

R2-0003403



NOTE:
1. MONITORING WELLS AND SOIL BORINGS SHOWN INCLUDE THOSE WITHIN APPROXIMATE 30 FT DISTANCE FROM C-C'.
2. TCE CONCENTRATIONS ARE SHOWN IN PARTS PER BILLION (PPB).
3. 2007 HYDROPONCH SAMPLING RESULTS ONLY.

I:\GIS_SERVICES\NJ\NJDEP\Ellis\MVS-NOV2007\GW-TCE-CC.MXD NOVEMBER 19, 2007

N.J. Department of Environmental Protection

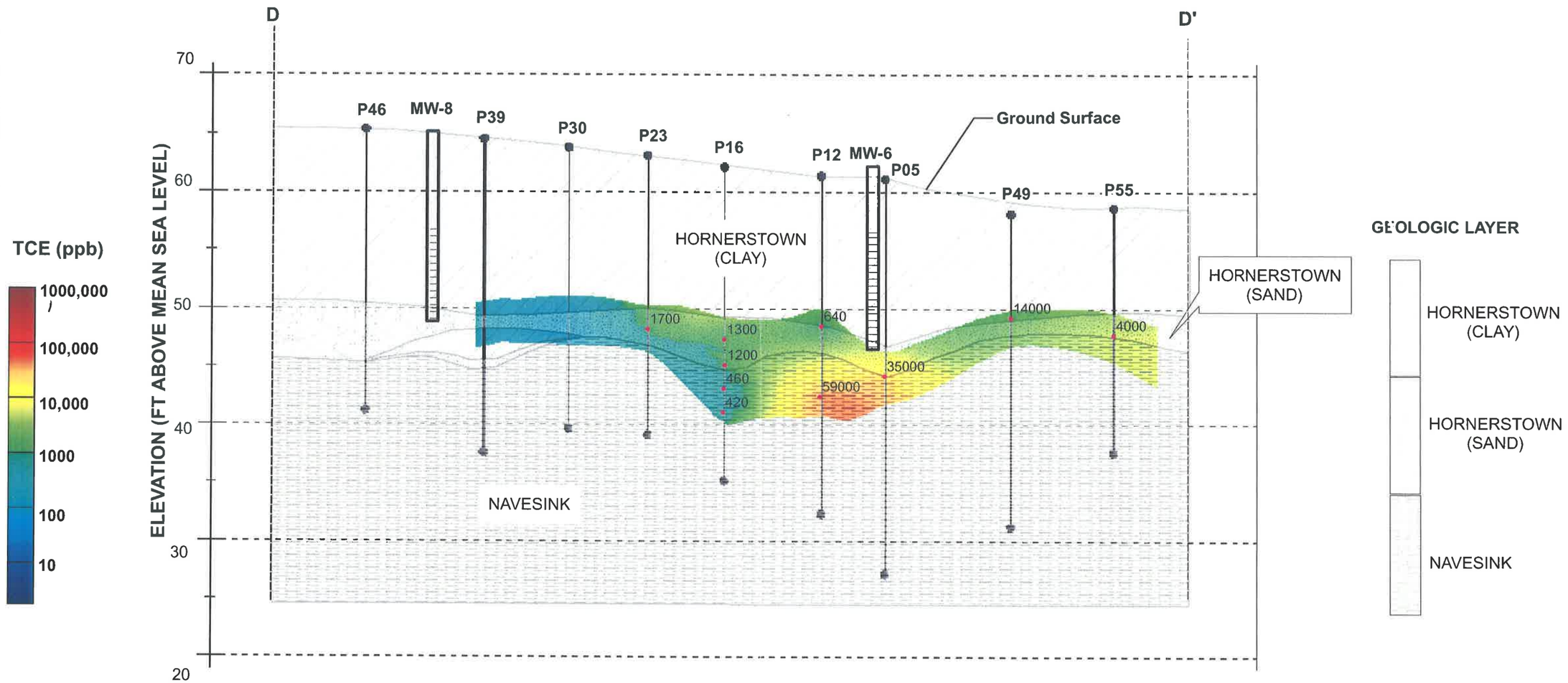
ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

GROUNDWATER TCE DISTRIBUTION (CROSS SECTION C-C')

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 8C



NOTE:
1. MONITORING WELLS AND SOIL BORINGS SHOWN INCLUDE THOSE WITHIN APPROXIMATE 30 FT DISTANCE FROM D-D'.
2. TCE CONCENTRATIONS ARE SHOWN IN PARTS PER BILLION (PPB).
3. 2007 HYDROPONCH SAMPLING RESULTS ONLY.

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N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

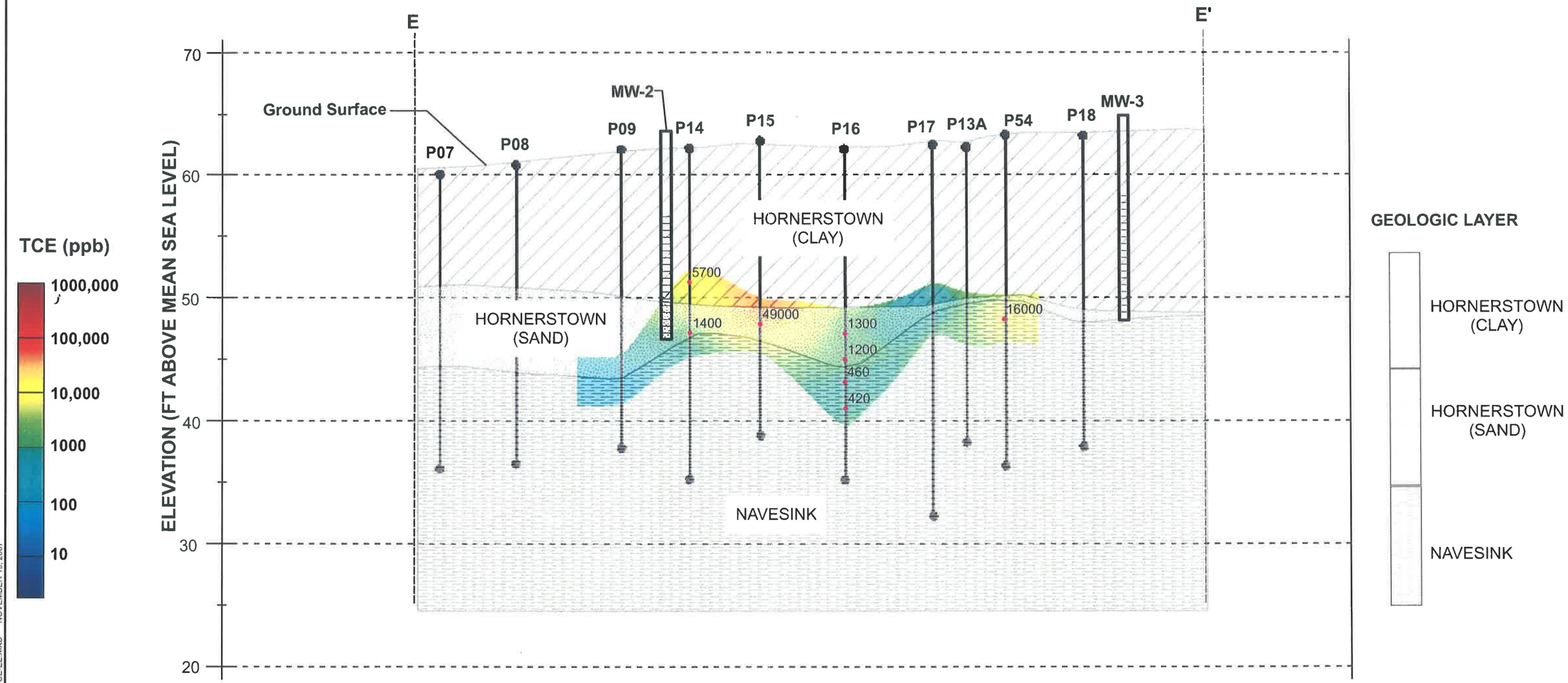
GROUNDWATER TCE DISTRIBUTION (CROSS SECTION D-D')

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 8D

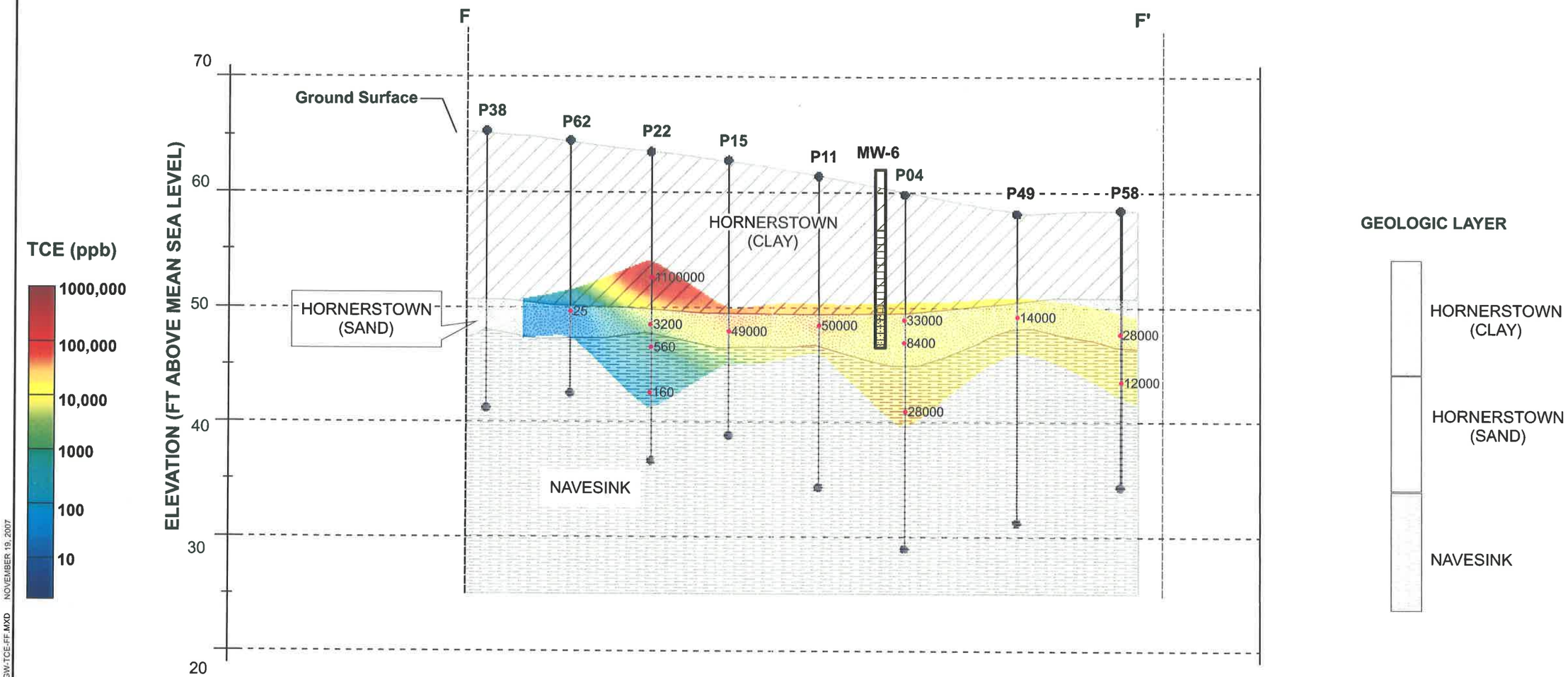
R2-0003405



NOTE:
1. MONITORING WELLS AND SOIL BORINGS SHOWN INCLUDE THOSE WITHIN APPROXIMATE 30 FT DISTANCE FROM E-E'.
2. TCE CONCENTRATIONS ARE SHOWN IN PARTS PER BILLION (PPB).
3. 2007 HYDROPONCH SAMPLING RESULTS ONLY.

I:\GIS_SERVICES\NJ\NJDEP\Ellis\MVS-NOV2007\GW-TCE-EE.MXD NOVEMBER 19, 2007

N.J. Department of Environmental Protection	ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY **GROUNDWATER TCE DISTRIBUTION (CROSS SECTION E-E')** NJDEP CONTRACT No. A-54678	The Louis Berger Group, Inc. 412 Mt Kemble Ave Morristown, NJ	FIGURE 8E



NOTE:
1. MONITORING WELLS AND SOIL BORINGS SHOWN INCLUDE THOSE WITHIN APPROXIMATE 30 FT DISTANCE FROM F-F'.
2. TCE CONCENTRATIONS ARE SHOWN IN PARTS PER BILLION (PPB).
3. 2007 HYDROPONCH SAMPLING RESULTS ONLY.

N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

GROUNDWATER TCE DISTRIBUTION (CROSS SECTION F-F')

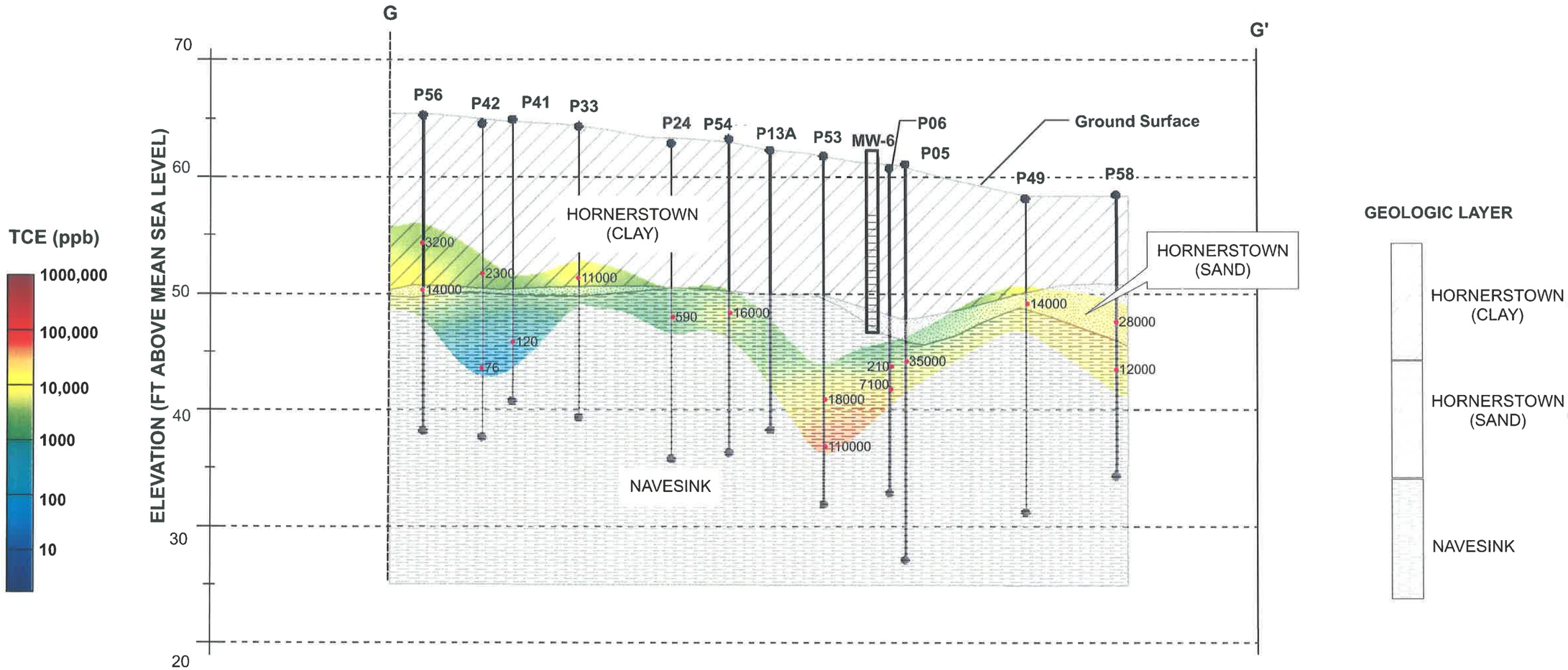
NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 8F

I:\GIS_SERVICES\NJ\NJDEP\Ellis\MVS-NOV2007\GW-TCE-FF.MXD NOVEMBER 19, 2007

R2-0003407



NOTE:
1. MONITORING WELLS AND SOIL BORINGS SHOWN INCLUDE THOSE WITHIN APPROXIMATE 30 FT DISTANCE FROM G-G'.
2. TCE CONCENTRATIONS ARE SHOWN IN PARTS PER BILLION (PPB).
3. 2007 HYDROPONCH SAMPLING RESULTS ONLY.

N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

GROUNDWATER TCE DISTRIBUTION (CROSS SECTION G-G')

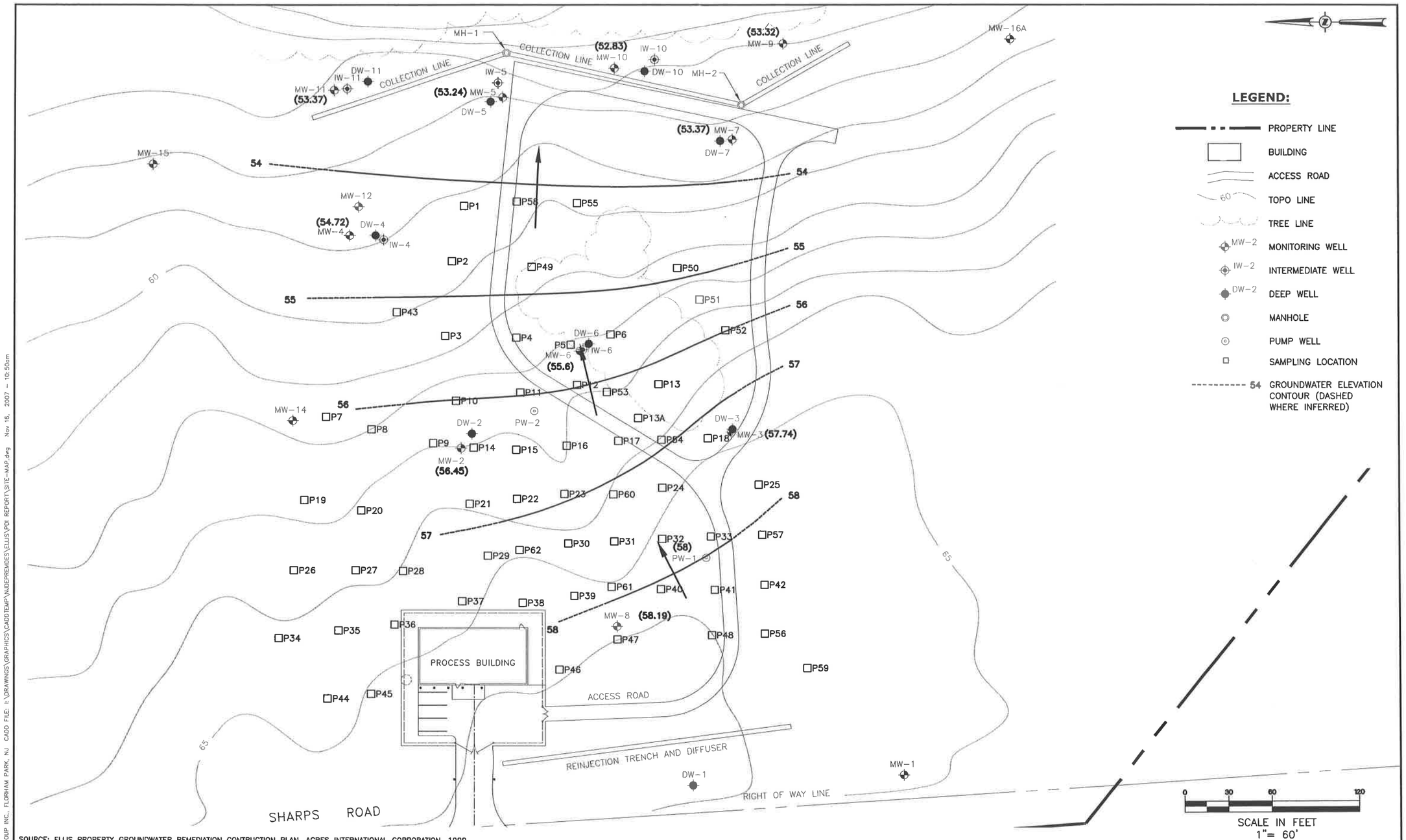
NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 8G

I:\GIS_SERVICES\NJ\NJDEP\Ellis\MVS-NOV2007\GW-TCE-GG.MXD NOVEMBER 19, 2007

R2-0003408



SOURCE: ELLIS PROPERTY GROUNDWATER REMEDIATION CONTRUCTION PLAN, ACRES INTERNATIONAL CORPORATION, 1999

N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

GROUNDWATER ELEVATION CONTOURS MAP - MAY 2007

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mount Kemble Ave
Morristown, New Jersey

FIGURE 9

THE LOUIS BERGER GROUP INC., FLORHAM PARK, NJ CADD FILE: I:\DRAWINGS\GRAPHICS\CADDTEMP\NJDEPRMDES\ELLIS\PDI REPORT\SITE-MAP.dwg Nov 16, 2007 - 10:50am

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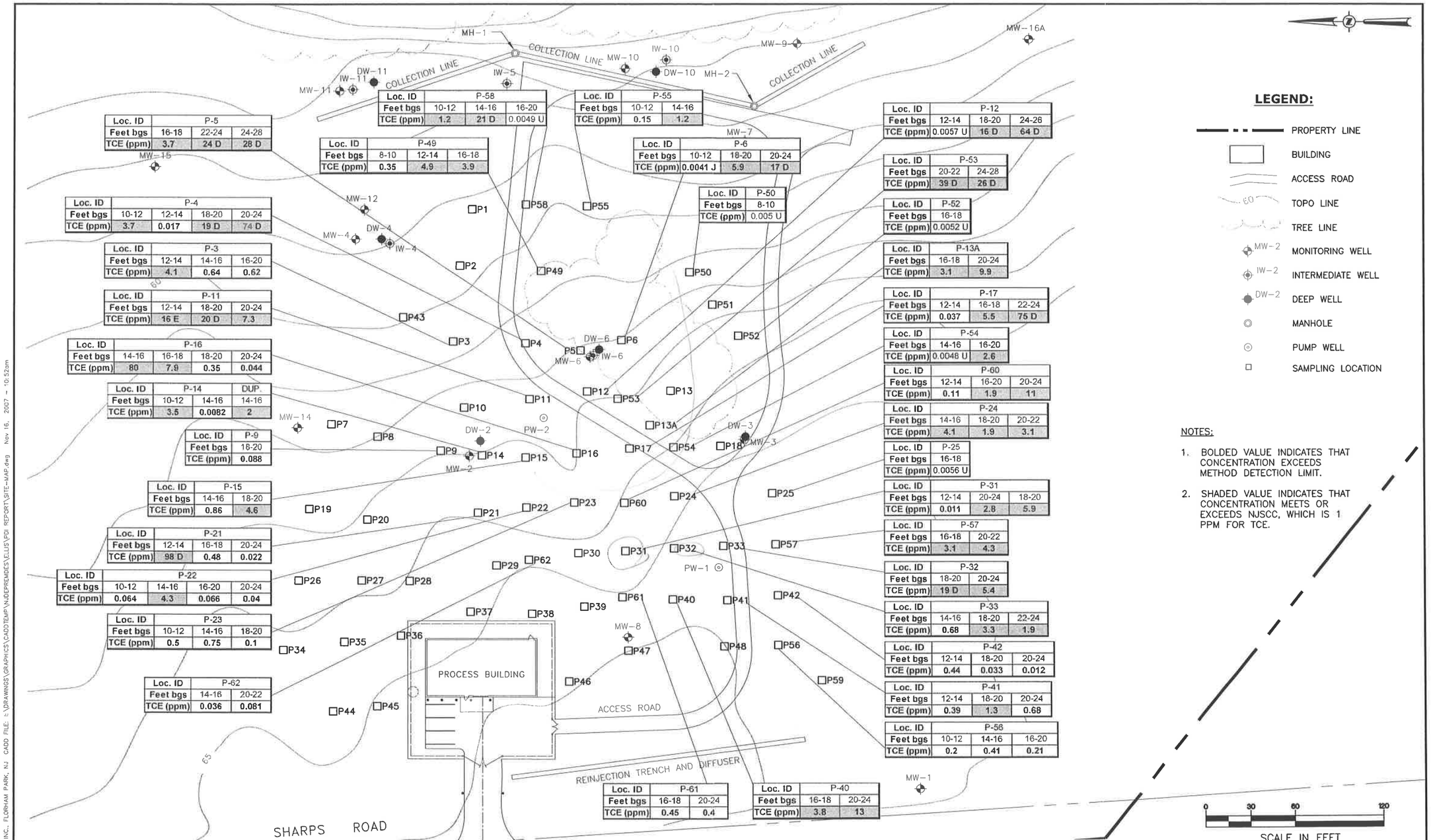

Loc. ID	P-5		
Feet bgs	16-18	22-24	24-28
TCE (ppm)	3.7	24 D	28 D

Loc. ID	P-58		
Feet bgs	10-12	14-16	16-20
TCE (ppm)	1.2	21 D	0.0049 U

Loc. ID	P-55	
Feet bgs	10-12	14-16
TCE (ppm)	0.15	1.2

Loc. ID	P-12		
Feet bgs	12-14	18-20	24-26
TCE (ppm)	0.0057 U	16 D	64 D

Loc. ID	P-49		
Feet bgs	8-10	12-14	16-18
TCE (ppm)	0.35	4.9	3.9

Loc. ID	P-6		
Feet bgs	10-12	18-20	20-24
TCE (ppm)	0.0041 J	5.9	17 D

Loc. ID	P-53	
Feet bgs	20-22	24-28
TCE (ppm)	39 D	26 D

Loc. ID	P-50
Feet bgs	8-10
TCE (ppm)	0.005 U

Loc. ID	P-52
Feet bgs	16-18
TCE (ppm)	0.0052 U

Loc. ID	P-4			
Feet bgs	10-12	12-14	18-20	20-24
TCE (ppm)	3.7	0.017	19 D	74 D

Loc. ID	P-13A	
Feet bgs	16-18	20-24
TCE (ppm)	3.1	9.9

Loc. ID	P-3		
Feet bgs	12-14	14-16	16-20
TCE (ppm)	4.1	0.64	0.62

Loc. ID	P-11		
Feet bgs	12-14	18-20	20-24
TCE (ppm)	16 E	20 D	7.3

Loc. ID	P-17		
Feet bgs	12-14	16-18	22-24
TCE (ppm)	0.037	5.5	75 D

Loc. ID	P-54	
Feet bgs	14-16	16-20
TCE (ppm)	0.0048 U	2.6

Loc. ID	P-16			
Feet bgs	14-16	16-18	18-20	20-24
TCE (ppm)	80	7.9	0.35	0.044

Loc. ID	P-60		
Feet bgs	12-14	16-20	20-24
TCE (ppm)	0.11	1.9	11

Loc. ID	P-14		DUP.
Feet bgs	10-12	14-16	14-16
TCE (ppm)	3.5	0.0082	2

Loc. ID	P-24		
Feet bgs	14-16	18-20	20-22
TCE (ppm)	4.1	1.9	3.1

Loc. ID	P-9
Feet bgs	18-20
TCE (ppm)	0.088

Loc. ID	P-25
Feet bgs	16-18
TCE (ppm)	0.0056 U

Loc. ID	P-15	
Feet bgs	14-16	18-20
TCE (ppm)	0.86	4.6

Loc. ID	P-31		
Feet bgs	12-14	20-24	18-20
TCE (ppm)	0.011	2.8	5.9

Loc. ID	P-21		
Feet bgs	12-14	16-18	20-24
TCE (ppm)	98 D	0.48	0.022

Loc. ID	P-57	
Feet bgs	16-18	20-22
TCE (ppm)	3.1	4.3

Loc. ID	P-32	
Feet bgs	18-20	20-24
TCE (ppm)	19 D	5.4

Loc. ID	P-22			
Feet bgs	10-12	14-16	16-20	20-24
TCE (ppm)	0.064	4.3	0.066	0.04

Loc. ID	P-33		
Feet bgs	14-16	18-20	22-24
TCE (ppm)	0.68	3.3	1.9

Loc. ID	P-23		
Feet bgs	10-12	14-16	18-20
TCE (ppm)	0.5	0.75	0.1

Loc. ID	P-42		
Feet bgs	12-14	18-20	20-24
TCE (ppm)	0.44	0.033	0.012

Loc. ID	P-41		
Feet bgs	12-14	18-20	20-24
TCE (ppm)	0.39	1.3	0.68

Loc. ID	P-62	
Feet bgs	14-16	20-22
TCE (ppm)	0.036	0.081

Loc. ID	P-56		
Feet bgs	10-12	14-16	16-20
TCE (ppm)	0.2	0.41	0.21

Loc. ID	P-61	
Feet bgs	16-18	20-24
TCE (ppm)	0.45	0.4

Loc. ID	P-40	
Feet bgs	16-18	20-24
TCE (ppm)	3.8	13

LEGEND:

- PROPERTY LINE
- BUILDING
- ACCESS ROAD
- TOPO LINE
- TREE LINE
- MW-2 MONITORING WELL
- IW-2 INTERMEDIATE WELL
- DW-2 DEEP WELL
- MANHOLE
- PUMP WELL
- SAMPLING LOCATION

NOTES:

1. BOLDED VALUE INDICATES THAT CONCENTRATION EXCEEDS METHOD DETECTION LIMIT.
2. SHADED VALUE INDICATES THAT CONCENTRATION MEETS OR EXCEEDS NJSCC, WHICH IS 1 PPM FOR TCE.

SOURCE: ELLIS PROPERTY GROUNDWATER REMEDIATION CONTRUCTION PLAN, ACRES INTERNATIONAL CORPORATION, 1999

N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

SOIL ANALYTICAL RESULTS (TCE)

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mount Kemble Ave
Morristown, New Jersey

FIGURE 10A

THE LOUIS BERGER GROUP INC., FLORHAM PARK, NJ CADD FILE: I:\DRAWINGS\GRAPHICS\CADDTEMP\NJDEPRENDES\ELLIS\PDI REPORT\SITE-MAP.dwg Nov 16, 2007 - 10:52am

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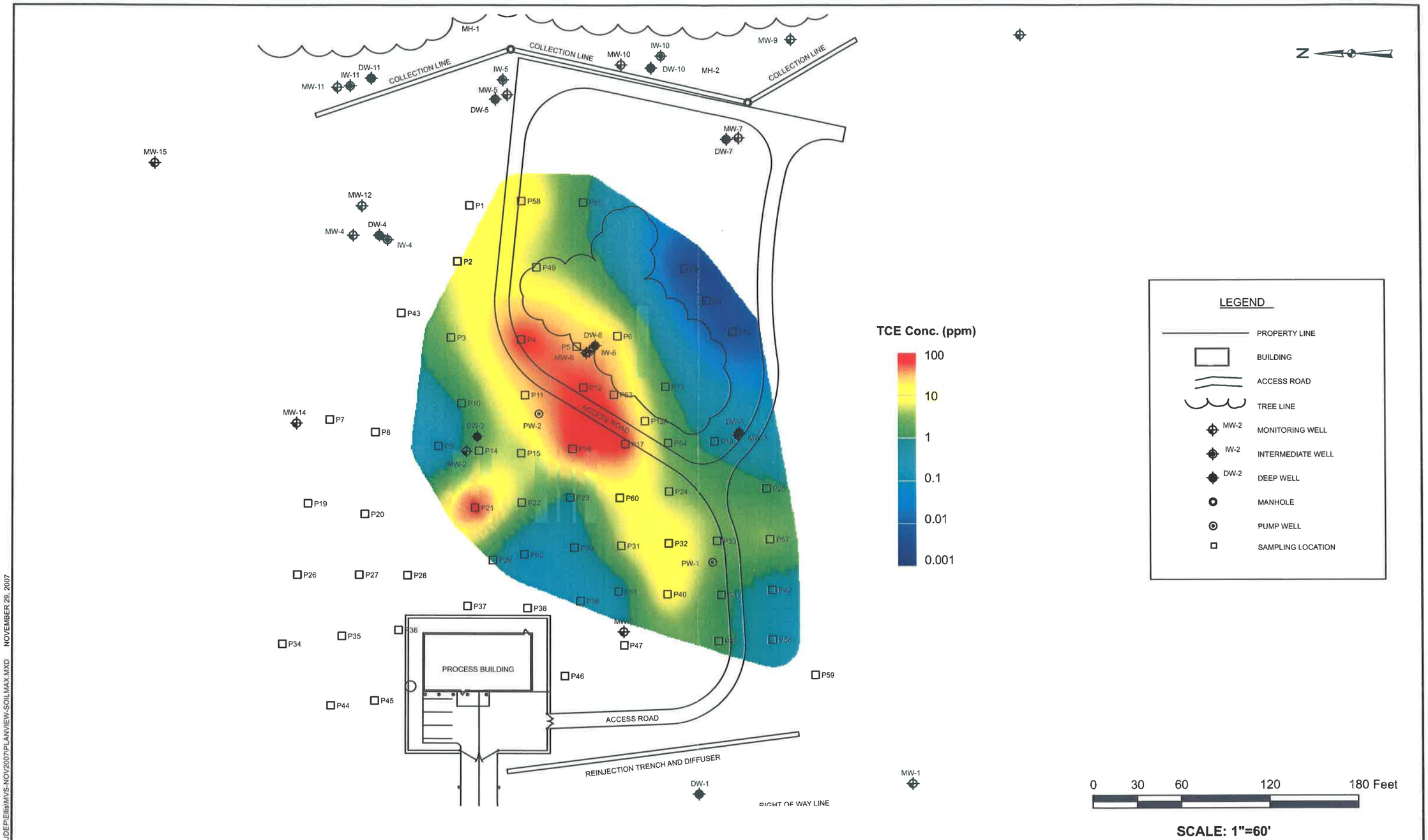

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N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

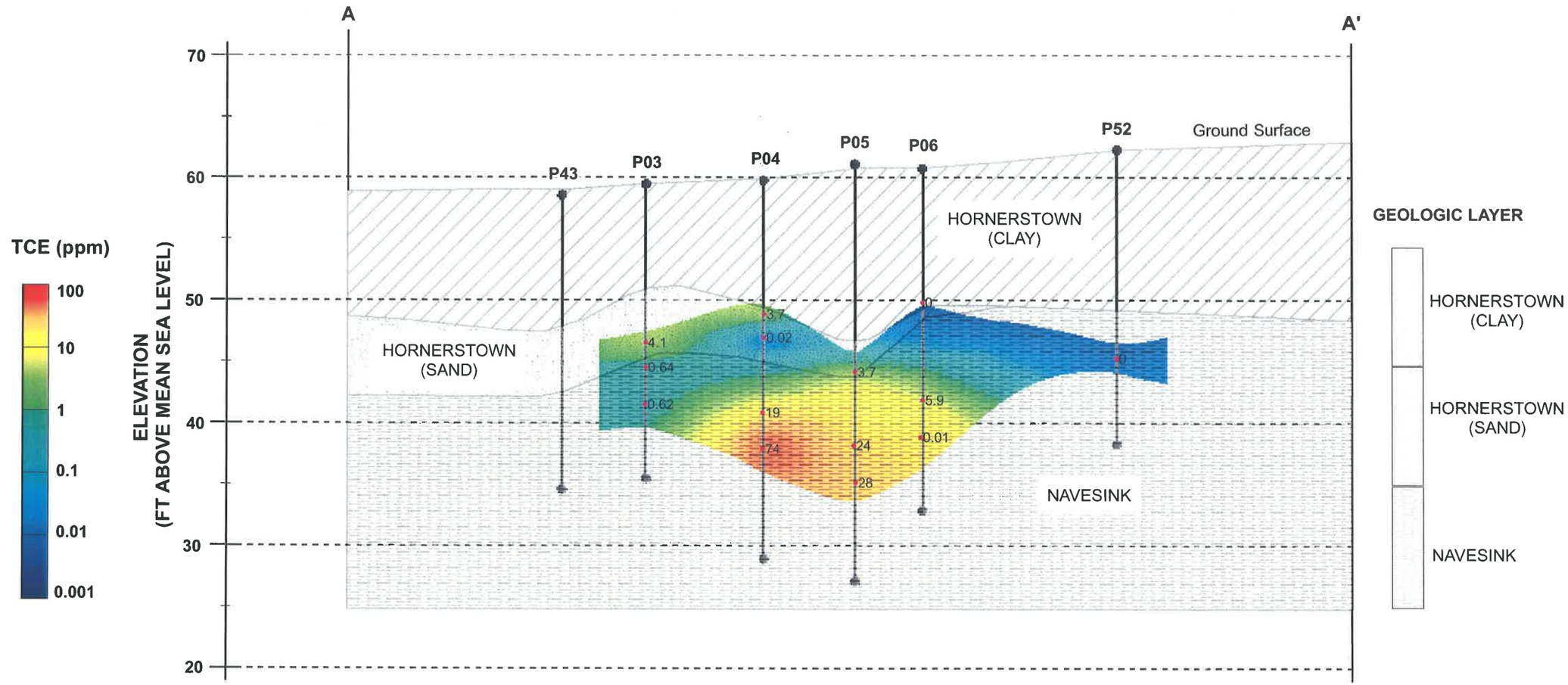
SOIL ANALYTICAL RESULTS (TCE)

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 10B

R2-0003411



NOTE:
1. MONITORING WELLS AND SOIL BORINGS SHOWN INCLUDE THOSE WITHIN APPROXIMATE 30 FT DISTANCE FROM A-A'.
2. TCE CONCENTRATIONS ARE SHOWN IN PARTS PER MILLION (PPM).

I:\GIS_SERVICES\NJ\NJDEP\Ellis\MVS-NOV2007\SOIL-TCE-AA.MXD NOVEMBER 19, 2007

N.J. Department of Environmental Protection

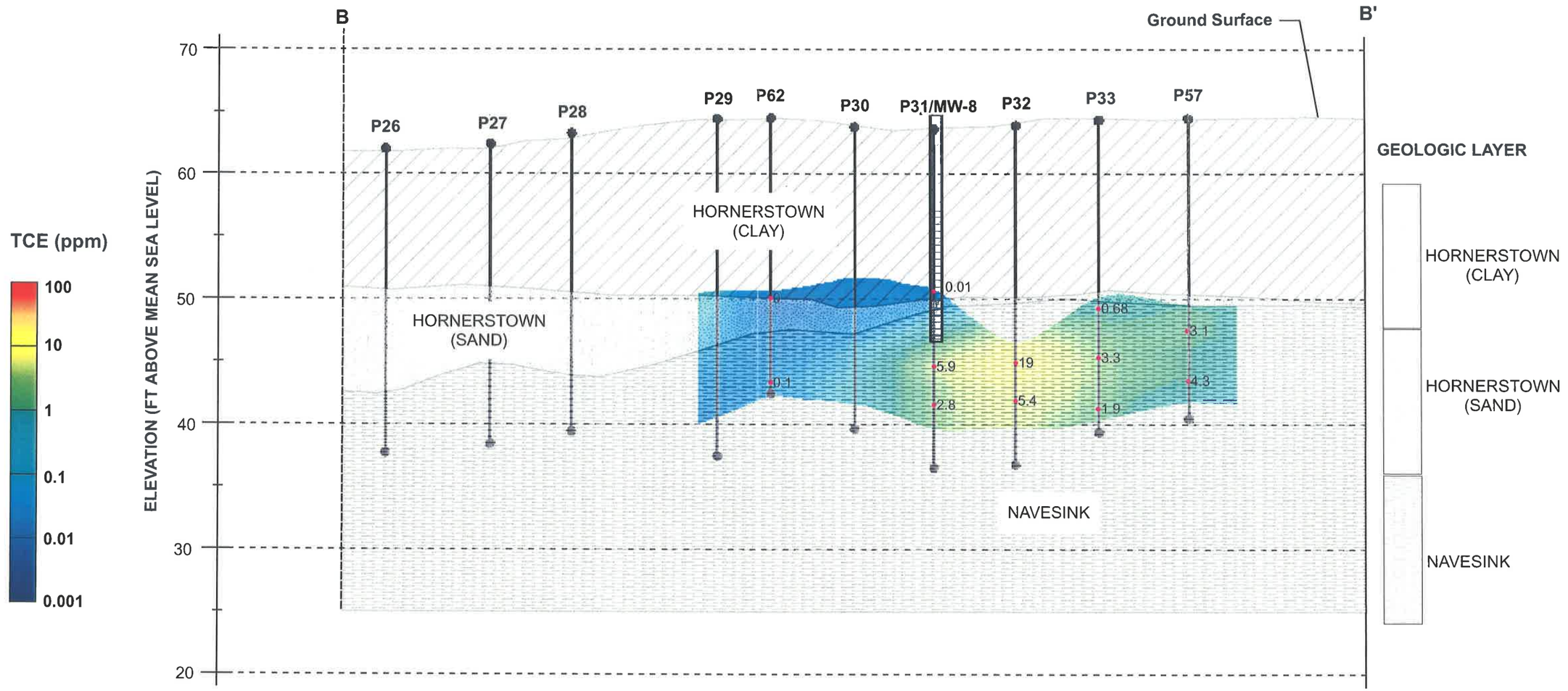
ELLIS PROPERTY SUPERFUND SITE, EVESHAW TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

SOIL TCE DISTRIBUTION (CROSS SECTION A-A')

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 11A



NOTE:
1. MONITORING WELLS AND SOIL BORINGS SHOWN INCLUDE THOSE WITHIN APPROXIMATE 30 FT DISTANCE FROM B-B'.
2. TCE CONCENTRATIONS ARE SHOWN IN PARTS PER MILLION (PPM).

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N.J. Department of Environmental Protection

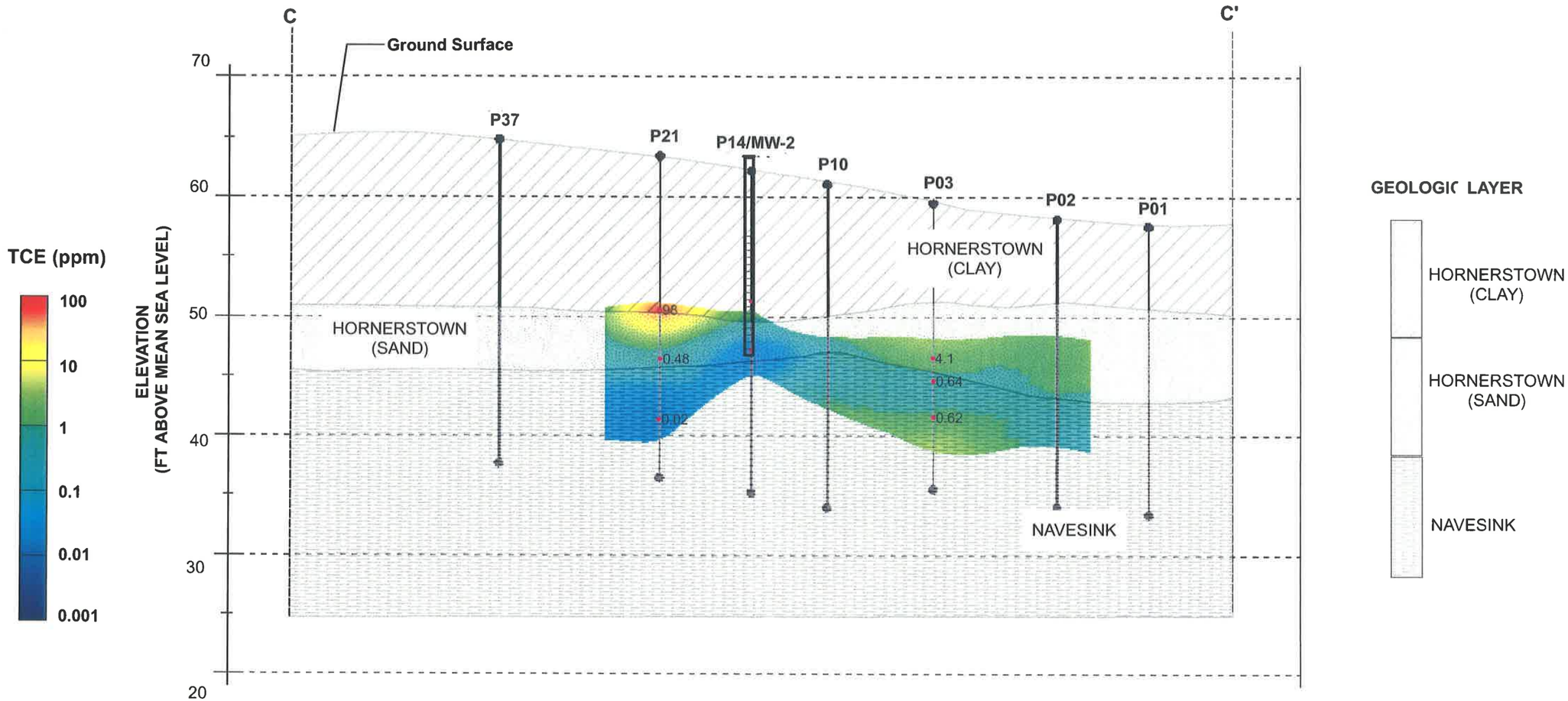
ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

SOIL TCE DISTRIBUTION (CROSS SECTION B-B')

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 11B



NOTE:
1. MONITORING WELLS AND SOIL BORINGS SHOWN INCLUDE THOSE WITHIN APPROXIMATE 30 FT DISTANCE FROM C-C'.
2. TCE CONCENTRATIONS ARE SHOWN IN PARTS PER MILLION (PPM).

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N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

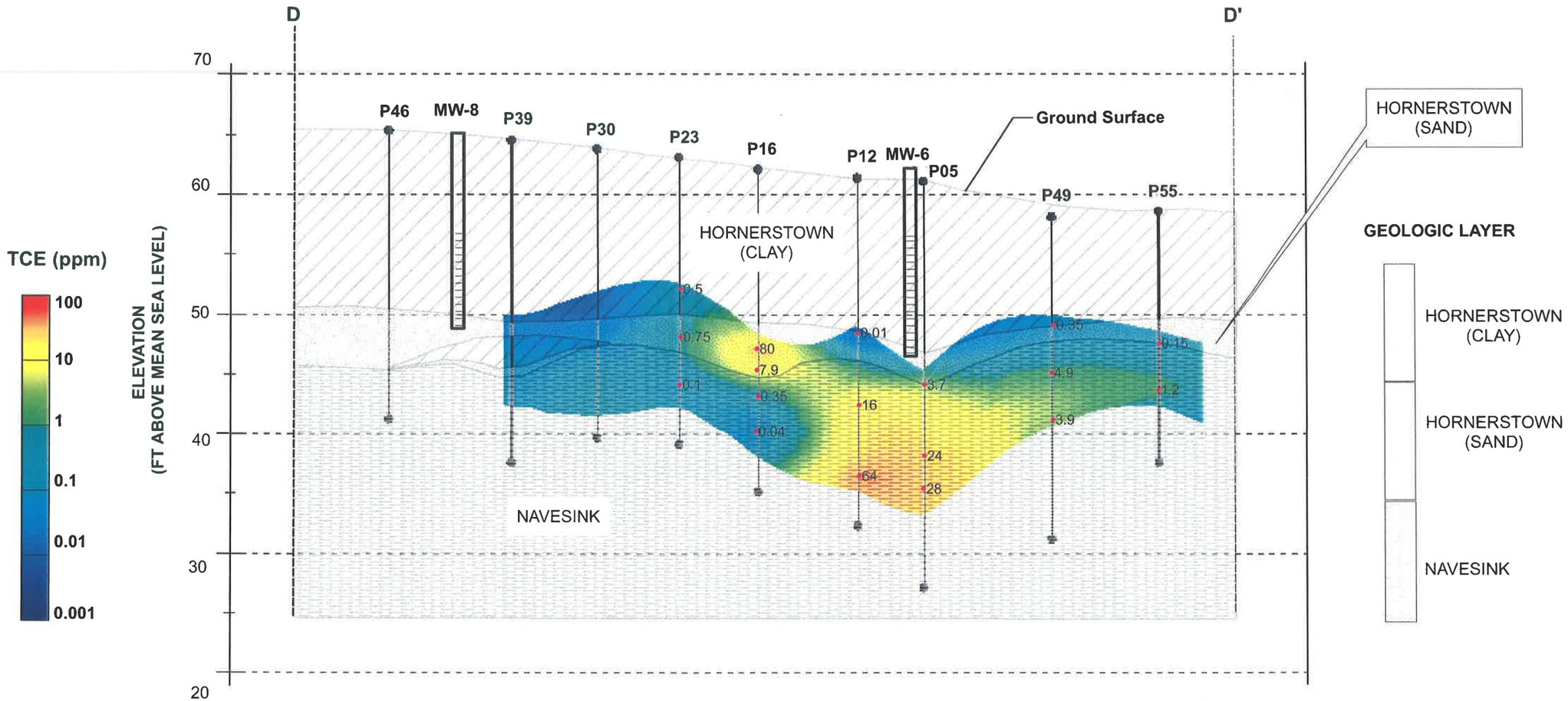
SOIL TCE DISTRIBUTION (CROSS SECTION C-C')

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 11C

R2-0003414



NOTE:
1. MONITORING WELLS AND SOIL BORINGS SHOWN INCLUDE THOSE WITHIN APPROXIMATE 30 FT DISTANCE FROM D-D'.
2. TCE CONCENTRATIONS ARE SHOWN IN PARTS PER MILLION (PPM).

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N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

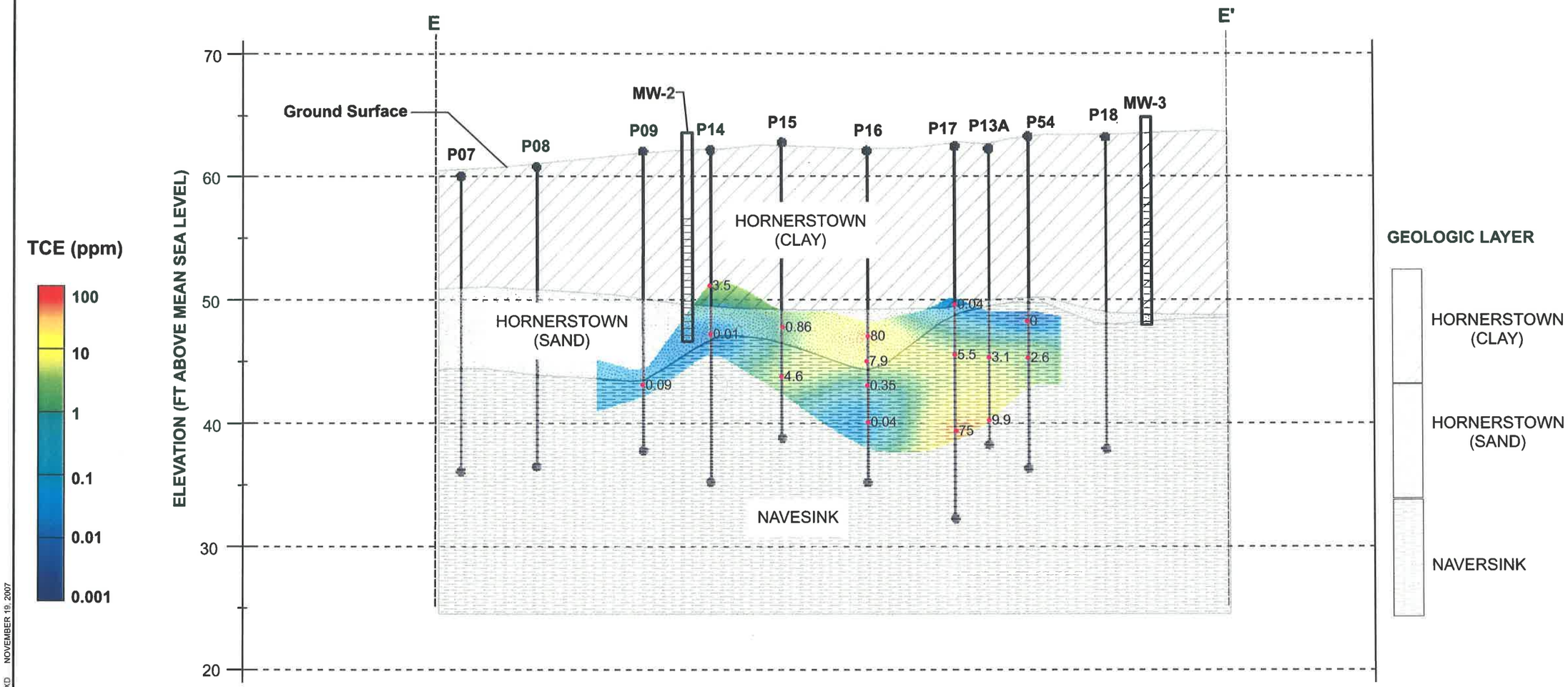
SOIL TCE DISTRIBUTION (CROSS SECTION D-D')

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 11D

R2-0003415



NOTE:
1. MONITORING WELLS AND SOIL BORINGS SHOWN INCLUDE THOSE WITHIN APPROXIMATE 30 FT DISTANCE FROM E-E'.
2. TCE CONCENTRATIONS ARE SHOWN IN PARTS PER MILLION (PPM).

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N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

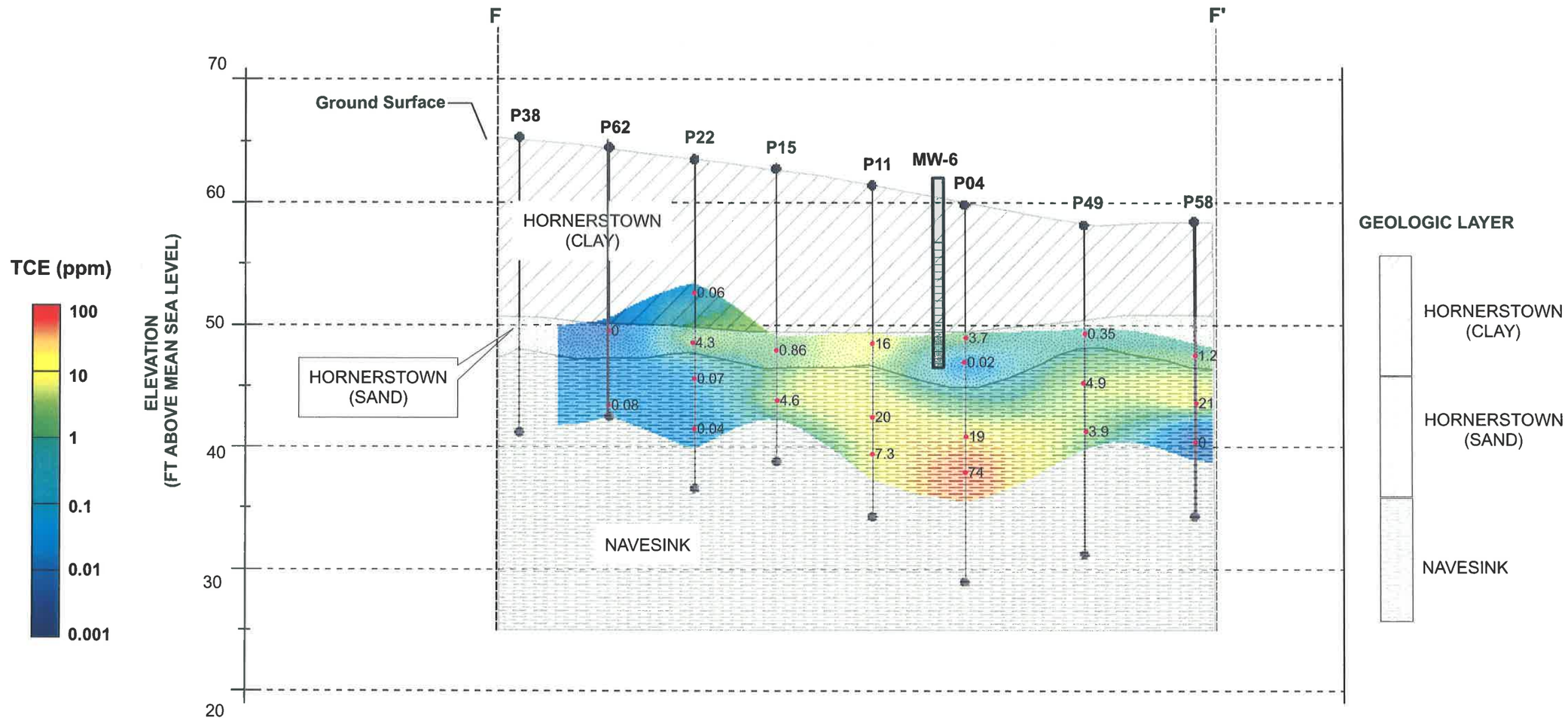
SOIL TCE DISTRIBUTION (CROSS SECTION E-E')

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 11E

R2-0003416



NOTE:
1. MONITORING WELLS AND SOIL BORINGS SHOWN INCLUDE THOSE WITHIN APPROXIMATE 30 FT DISTANCE FROM F-F'.
2. TCE CONCENTRATIONS ARE SHOWN IN PARTS PER MILLION (PPM).

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N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

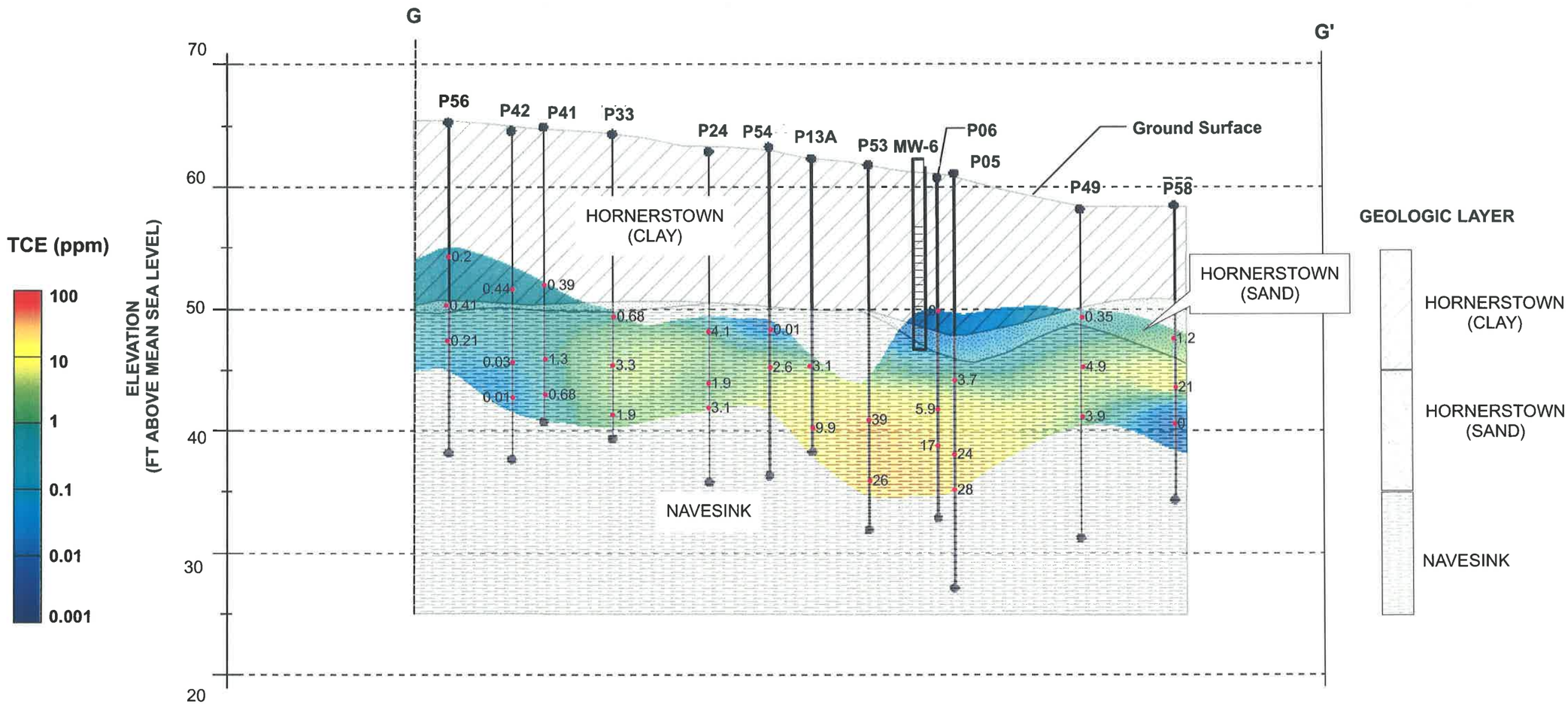
SOIL TCE DISTRIBUTION (CROSS SECTION F-F')

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 11F

R2-0003417



NOTE:
1. MONITORING WELLS AND SOIL BORINGS SHOWN INCLUDE THOSE WITHIN APPROXIMATE 30 FT DISTANCE FROM G-G'.
2. TCE CONCENTRATIONS ARE SHOWN IN PARTS PER MILLION (PPM).

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N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

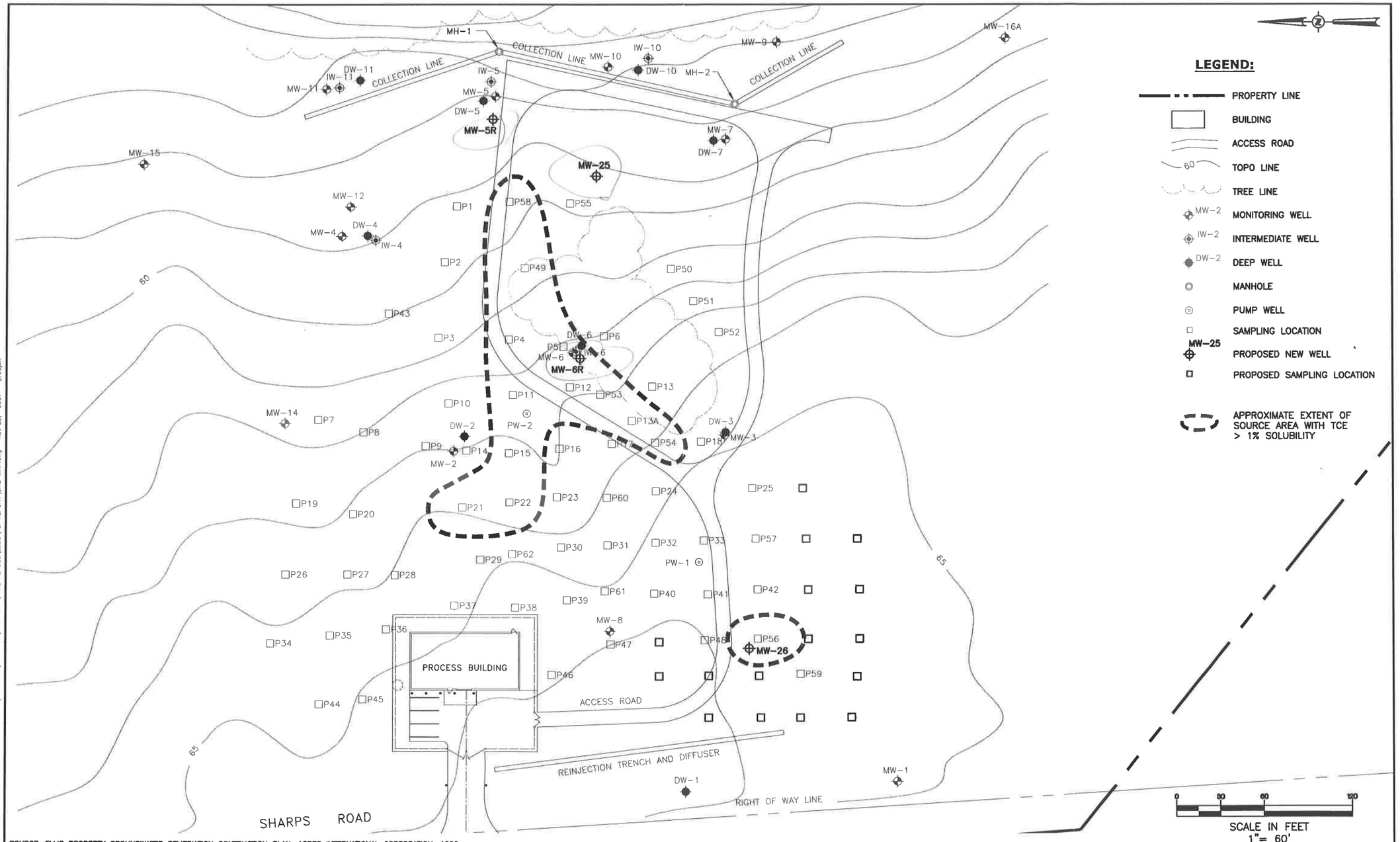
SOIL TCE DISTRIBUTION (CROSS SECTION G-G')

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mt Kemble Ave
Morristown, NJ

FIGURE 11G

R2-0003418



SOURCE: ELLIS PROPERTY GROUNDWATER REMEDIATION CONTRUCTION PLAN, ACRES INTERNATIONAL CORPORATION, 1999

N.J. Department of Environmental Protection

ELLIS PROPERTY SUPERFUND SITE, EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY

PROPOSED MONITORING WELL AND SAMPLING LOCATIONS

NJDEP CONTRACT No. A-54678

The Louis Berger Group, Inc.
412 Mount Kemble Ave
Morristown, New Jersey

FIGURE 12

THE LOUIS BERGER GROUP INC., FLORHAM PARK, NJ CADD FILE: I:\DRAWINGS\GRAPHICS\CADDTEMP\NJDEPREMDES\ELLIS\PDI REPORT\SITE-MAP.dwg Nov 29, 2007 - 2:09pm

R2-0003419

ATTACHMENT A
CPT Investigation Results Report

PRESENTATION OF IN SITU TESTING PROGRAM RESULTS

Ellis Property Superfund Site
Medford, New Jersey

May 14th, thru June 5th, 2007

Prepared for:

Louis Berger Group
Florham Park, New Jersey

Prepared by:

ConeTec Inc.
West Berlin, NJ

June 7th, 2007

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3.2 CONE PLOTS 9
3.3 PORE PRESSURE DISSIPATION TEST RESULTS 9
3.4 CPT DATA PROCESSING 10
3.5 DATA CD 10

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TABLE 1 Summary of CPT Soundings

FIGURES

FIGURE 1 Typical Cone Penetrometer
FIGURE 2 Typical Dissipation Tests

APPENDICES

APPENDIX A CPT Plots
APPENDIX B CPT Data Interpretation Summery Sheets
APPENDIX C Pore Pressure Dissipation Tests

1.0 INTRODUCTION

This report presents the results of a piezo cone penetrometer testing (CPTU) program carried out at the Ellis Property Superfund Site located in Medford, New Jersey. The work was performed under subcontract to Louis Berger Group of Florham Park, New Jersey. The CPTU program took place over a six day period from May 14th, thru May 21st, 2007.

A total of fifty-nine soundings were completed at fifty-nine different sounding locations. The CPT testing was performed to evaluate insitu geotechnical criteria of the soils.

In addition to the CPT's, water samples were taken at thirty-one of the CPT locations and three other additional locations. The water sampling program took place over a six day period from May 29th, thru June 5th, 2007. Soil samples are also being collected by another sub-contractor at various locations.

CPT sounding locations were selected and numbered under the direction and supervision of Louis Berger personnel.

R2-0003423

2.0 FIELD EQUIPMENT AND PROCEDURES

2.1 CONE PENETRATION TESTING

The cone penetrometer tests were carried out using an integrated electronic piezo cone manufactured by ConeTec in Vancouver, Canada. The piezo cone used was a compression model cone penetrometer with a 15 cm^2 tip and a 225 cm^2 friction sleeve. The cone is designed with an equal end area friction sleeve and a tip end area ratio of 0.85. The piezo cone dimensions and the operating procedure were in accordance with ASTM Standard D-5778-95. A diagram of the cone penetrometer used for this project is shown as Figure 1.

Pore pressure filter elements, made of porous plastic, were saturated under a vacuum using glycerin as the saturating fluid. The pore pressure element was six millimeters thick and was located immediately behind the tip (the u_2 location) for all soundings.

The cone was advanced using ConeTec's, unitized, 25-ton CPT truck rig. The following data were recorded onto magnetic media every five centimeters (approximately every two inches) as the cone was advanced into the ground:

- Tip Resistance (qc)
- Sleeve Friction (fs)
- Dynamic Pore Pressure (u_t)

The field data recorded is included on the attached CD (appendix D).

Before each sounding a complete set of analog baseline readings are taken with a multi-meter and compared with the digitized value on the computer screen. This provides a check on the analog to digital conversion board.

Evaluation of the analog baselines is key to consistent readings. The baseline data should be stable and should not wander excessively during the course of a sounding. Baseline data can be used to apply corrections to the cone data where necessary. For this project, the baseline shift from sounding to sounding was small, typically less than 0.1% of full scale, and no data corrections were applied.

R2-0003424

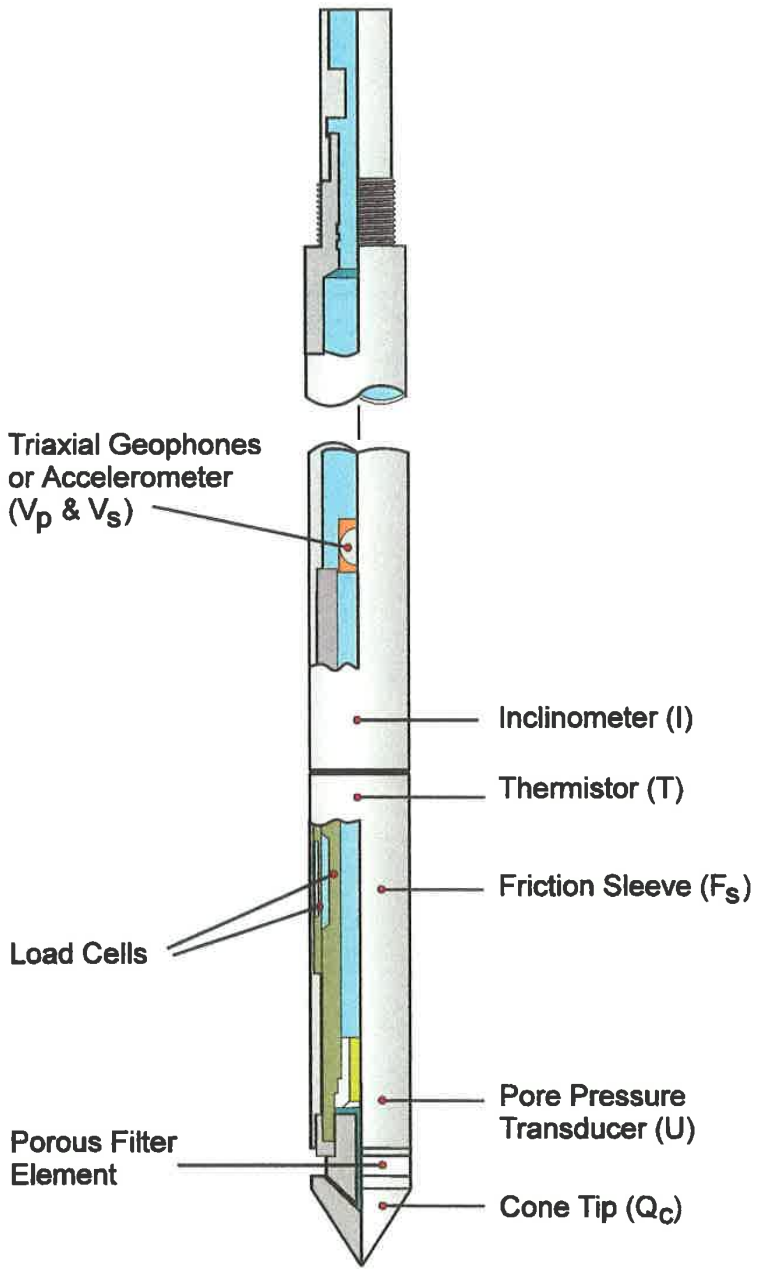


FIGURE 1 - TYPICAL CONE PENETROMETER

R2-0003425

2.2 PORE PRESSURE DISSIPATION TESTS

When cone penetration is stopped, the piezo cone essentially becomes a piezometer. While stopped, pore water pressures are automatically recorded at five-second intervals and the readings are stored in a dissipation file (.ppd). Dissipation data can then be plotted onto a dissipation curve consisting of pore water pressure (u) verses time (t). The shapes of dissipation curves are very useful in evaluating soil type, drainage and in situ static water level.

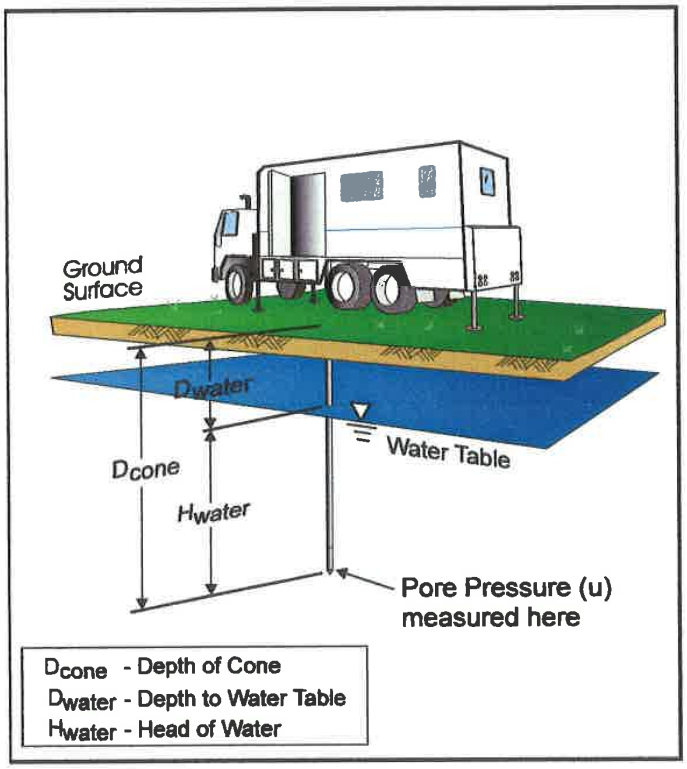
A flat curve that stabilizes quickly (i.e. less than 30 seconds) is typical of a free draining sand. In this case, the final measured pore water pressure is the static in situ water pressure.

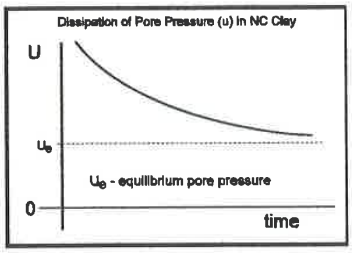
Soils that generate excess dynamic pore water pressure during penetration will dissipate this excess pressure when penetration stops. The shape of the dissipation curve and the time of dissipation can be used to estimate C_h, the coefficient of consolidation that can in turn be used to calculate K_h, the horizontal permeability.

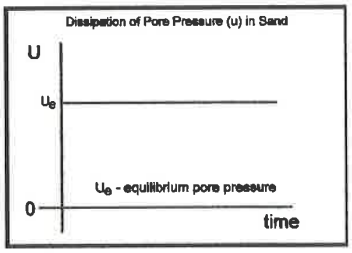
Figure 2 shows some idealized shapes of various pore water pressure dissipation curves. The reader is referred Robertson et. al., 1990 to reference dissipation test data analytical techniques.

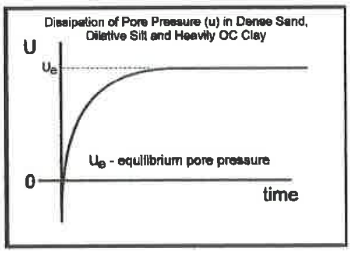
R2-0003426

Estimation of Ground Water Table from CPT Dissipation Tests









Water Table Calculation

$$D_{water} = D_{cone} - H_{water}$$

where $H_{water} = U_e$ (depth units)

Useful Conversion Factors:
1psi = 0.704m = 2.31 feet (water)
1tsf = 0.958 bar = 13.9 psi
1m = 3.28 feet

FIGURE 2 - TYPICAL DISSIPATION TESTS

3.0 CONE PENETRATION TEST DATA AND INTERPRETATION

3.1 ANALYSIS OF PIEZOCONE DATA - GENERAL

A total of fifty-nine CPT soundings, involving 1,506.03 feet of testing, were completed.

The interpretation of cone data is based on the relationship between cone bearing, qc, sleeve friction, fs, and penetration pore water pressure, u. The friction ratio, Rf , (sleeve friction divided by cone bearing) is a calculated parameter which is used to infer soil behavior type. Generally, saturated cohesive soils have low tip resistance, high friction ratios and generate large excess pore water pressures. Cohesionless soils have higher tip resistances, lower friction ratios and do not generate significant excess pore water pressure.

The interpretation of soils encountered on this project was carried out using correlations developed by Robertson et al., 1992. It should be noted that it is not always possible to clearly identify a soil type based on qc, fs and u. Occasionally soils will fall within different soil categories on the classification charts. In these situations, experience and judgment and an assessment of the pore pressure dissipation data should be used to infer the soil behavior type. Computer tabulations of the interpreted soil types along with certain other geotechnical parameters for each cone hole is presented in Appendix B.

Each of the parameters measured in the sounding is discussed briefly below. A detailed explanation of CPTU testing and interpretation of the results can be found in Robertson, 1989.

TIP RESISTANCE (q_c): The resistance to penetration, measured at the cone tip, provides an accurate profile of subsurface strata. The recorded tip resistance is a composite of the penetration resistance of the soils located five to ten cone diameters (7 to 14 inches) in front of and behind the tip. The actual resistance "sensed" by the tip depends on the soil properties and on the relative stiffness of the layers encountered. Tip resistance is often corrected for pore pressure effects when testing in soft saturated cohesive soils.

For this project the correction was made and the tip resistance shown, q_t is the corrected tip resistance.

The correction used is: $q_t = q_c + (1-a)u$

Where:
- q_t = corrected tip resistance
- q_c = measured tip resistance
- a = net area ratio for cone (0.85 for this project)
- u = dynamic pore water pressure measured behind tip

R2-0003428

SLEEVE FRICTION (f_s) The resistance recorded on the friction sleeve, is a measure of the remolded strength of the soil. Values of sleeve friction in very soft soils (such as peat) may fluctuate due to the measured force being small relative to the capacity of the measuring load cell.

FRICTION RATIO (R_f) The ratio of sleeve friction to tip resistance expressed as a percentage, is an indicator of soil type. Cohesive soils generally have friction ratios that are greater than two, while sands and non-plastic silts have friction ratios that are lower than two.

PORE PRESSURE (u) Dynamic pore water pressure is measured during penetration. (dynamic pore water pressure data can be found in the .cor, and .xls files. Static pore water pressure is measured when cone penetration is stopped (static pore water pressure data can be found in the .ppd files). The measured dynamic pore water pressure changes with the location of the porous filter and negative readings are possible when the filter is located behind the tip.

It is important to note that the CPT classifies soil by physical behavior, not by grain size; therefore, the CPT classification should be verified against samples obtained from a conventional drilling program. While the CPT soil classification may not always be accurate in terms of the actual label it applies to a particular soil, it is very accurate in grouping soils with similar mechanical properties.

3.2 CONE PLOTS

The data from each sounding was plotted using the computer program ScreenZ. The plots, plotted with reference to elevation, are included in Appendix A. ScreenZ was developed by ConeTec Inc. and it incorporates soil behavior type (SBT) classification as part of the plot. The soil classification is based on the classification chart reproduced chart in Appendix B.

3.3 PORE PRESSURE DISSIPATION TEST RESULTS

Pore water pressure dissipation data are collected and automatically recorded during pauses in penetration. The pore water pressure data is recorded at five second intervals. Numerous pore water pressure dissipation tests were performed on this project. Those plots can be found in Appendix C.

Both the dynamic and static pore pressure dissipation data is included on the data CD in the .cor and .ppd files, respectively.

R2-0003429

3.4 CPT DATA PROCESSING

The electronic data files were processed using the program CPTSumm. CPTSumm is a program developed by ConeTec to calculate common engineering parameters from CPT data. The processed data file summery sheet is attached in Appendix B. The files (.xls) are also included on the data CD. The calculations used are summarized in the table at the front of the Appendix. Each calculation is derived according to the referenced article.

For this project, the depth to ground water was determined from the dissipation data. The exact depth used is noted in the header of each .xls file found on the enclosed CD.

3.5 DATA CD

One data CD is included in Appendix D. The CD includes all of the CPT, dynamic and static pore water pressure and tabular data.

R2-0003430

5.0 REFERENCES

Robertson, P.K., 1989, "Soil Classification using the Cone Penetration Test", Canadian Geotechnical Journal, vol. 27, pages 151-158.

Robertson, P.K., Sully, J., Woeller, D.G., Lunne, T., Powell, J.M., and Gillespie, D.J., 1992, "Estimating Coefficient of Consolidation from Piezocone Tests", Canadian Geotechnical Journal, vol. 29, pages 539-550.

R2-0003431

CONETEC

TABLE 1 - SUMMARY OF CPTU SOUNDINGS

Job No.: 07-747
Location: Ellis Superfund Site - Medford, NJ
Client: Louis Berger Group
Date: May 14, 15, 16, 17, 18, 21, 2007

Date	CPTU Sounding	File Name	CPT Total Depth (ft)	Water Sample Depth (ft)	Comments
15-May-07	P-1	747cp01.cor	24.11		
15-May-07	P-2	747cp02.cor	24.11		
15-May-07	P-3	747cp03.cor	23.95	12-14, 14-16, 16-18	
15-May-07	P-4	747cp04.cor	30.84	10-12, 12-14, 18-20, 20-22	
14-May-07	P-5	747cp05.cor	33.96	16-18, 20-22, 24-26	
14-May-07	P-6	747cp06.cor	27.89	8-10, 18-20, 20-22	
15-May-07	P-7	747cp07.cor	23.95		
15-May-07	P-8	747cp08.cor	24.28		
15-May-07	P-9	747cp09.cor	24.28	18-20	
17-May-07	P-10	747cp10.cor	27.07		
17-May-07	P-11	747cp11.cor	27.07		
14-May-07	P-12	747cp12.cor	29.04	11-13, 18-20, 24-26	
14-May-07	P-13	747cp13.cor	28.05	16-18, 20-22	
17-May-07	P-14	747cp14.cor	26.90	10-12, 14-16	
17-May-07	P-15	747cp15.cor	23.95	14-16, 18-20	
17-May-07	P-16	747cp16.cor	26.90	14-16, 16-18, 18-20, 20-22	
17-May-07	P-17	747cp17.cor	30.18	12-14, 16-18, 22-24	
14-May-07	P-18	747cp18.cor	25.26		
15-May-07	P-19	747cp19.cor	24.11		
15-May-07	P-20	747cp20.cor	24.11		
17-May-07	P-21	747cp21.cor	26.90	12-14, 16-18, 20-22	
17-May-07	P-22	747cp22.cor	26.90	10-12, 14-16, 16-18, 20-22	
18-May-07	P-23	747cp23.cor	23.95	10-12, 14-16, 18-20	
18-May-07	P-24	747cp24.cor	27.07	14-16, 18-20, 20-22	
18-May-07	P-25	747cp25.cor	24.11	16-18	
15-May-07	P-26	747cp26.cor	24.28		
15-May-07	P-27	747cp27.cor	23.95		
16-May-07	P-28	747cp28.cor	23.79		
18-May-07	P-29	747cp29.cor	26.90		
16-May-07	P-30	747cp30.cor	24.11		
16-May-07	P-31	747cp31.cor	27.07	12-14, 18-20, 20-22	
16-May-07	P-32	747cp32.cor	27.07	18-20, 20-22	
16-May-07	P-33	747cp33.cor	24.93	14-16, 18-20	
16-May-07	P-34	747cp34.cor	23.95		
16-May-07	P-35	747cp35.cor	23.95		
16-May-07	P-36	747cp36.cor	23.95		
18-May-07	P-37	747cp37.cor	27.07		
18-May-07	P-38	747cp38.cor	24.11		
17-May-07	P-39	747cp39.cor	26.90		
17-May-07	P-40	747cp40.cor	27.23	16-18, 20-22	
17-May-07	P-41	747cp41.cor	24.11	18-20, 20-22	
17-May-07	P-42	747cp42.cor	26.90	12-14, 18-20, 20-22	
16-May-07	P-43	747cp43.cor	23.95		
16-May-07	P-44	747cp44.cor	23.95		
16-May-07	P-45	747cp45.cor	24.11		
18-May-07	P-46	747cp46.cor	24.11		
18-May-07	P-47	747cp47.cor	23.95		
18-May-07	P-48	747cp48.cor	26.90		

Date	CPTU Sounding	File Name	CPT Total Depth (ft)	Water Sample Depth (ft)	Comments
21-May-07	P-49	747cp49.cor	26.90	8-10, 12-14, 16-18	
21-May-07	P-50	747cp50.cor	21.00	8-10	
21-May-07	P-51	747cp51.cor	23.95		
21-May-07	P-52	747cp52.cor	23.95	16-18	
21-May-07	P-53	747cp53.cor	29.86	20-22, 24-26	
21-May-07	P-54	747cp54.cor	26.90	14-16, 16-18	
21-May-07	P-55	747cp55.cor	21.00	10-12, 14-16	
21-May-07	P-56	747cp56.cor	27.07	10-12, 14-16, 16-18	
21-May-07	P-57	747cp57.cor	23.95	16-18, 20-22	
21-May-07	P-58	747cp58.cor	24.11	10-12, 12-14, 16-18	
21-May-07	P-59	747cp59.cor	21.16		
30-May-07	P-60			12-14, 18-20, 20-22	water sample only
04-Jun-07	P-61			16-18, 20-22	water sample only
31-May-07	P-62			14-16, 20-22	water sample only
05-Jun-07	P-22			20-22	water sample only
05-Jun-07	P-23			14-16	water sample only
Job Totals:		59	1,506.03		

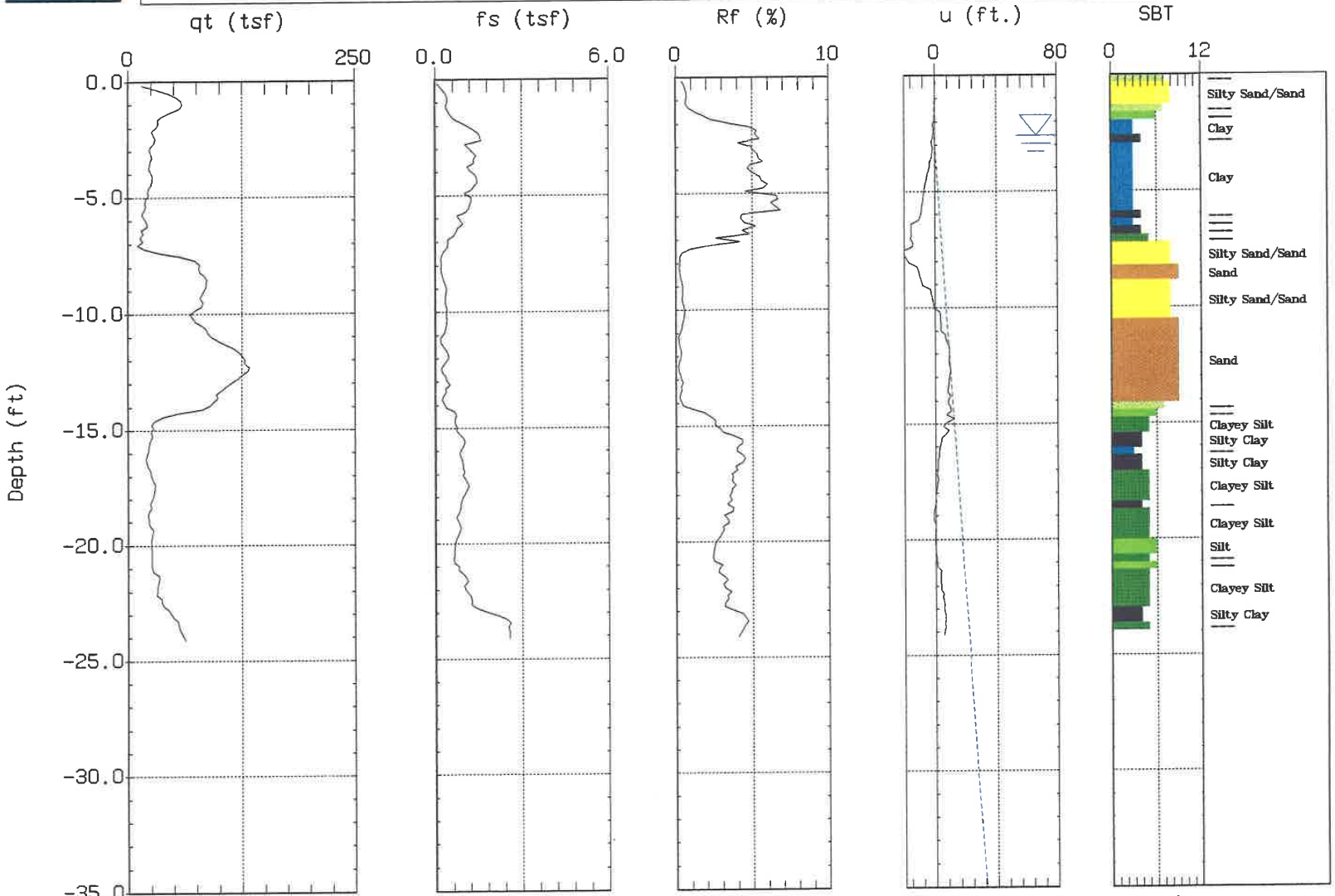
APPENDIX A
CPT Plots

CONETEC

Louis Berger Group

Sounding:P-1
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:15:07 09:12



Max. Depth: 24.11 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

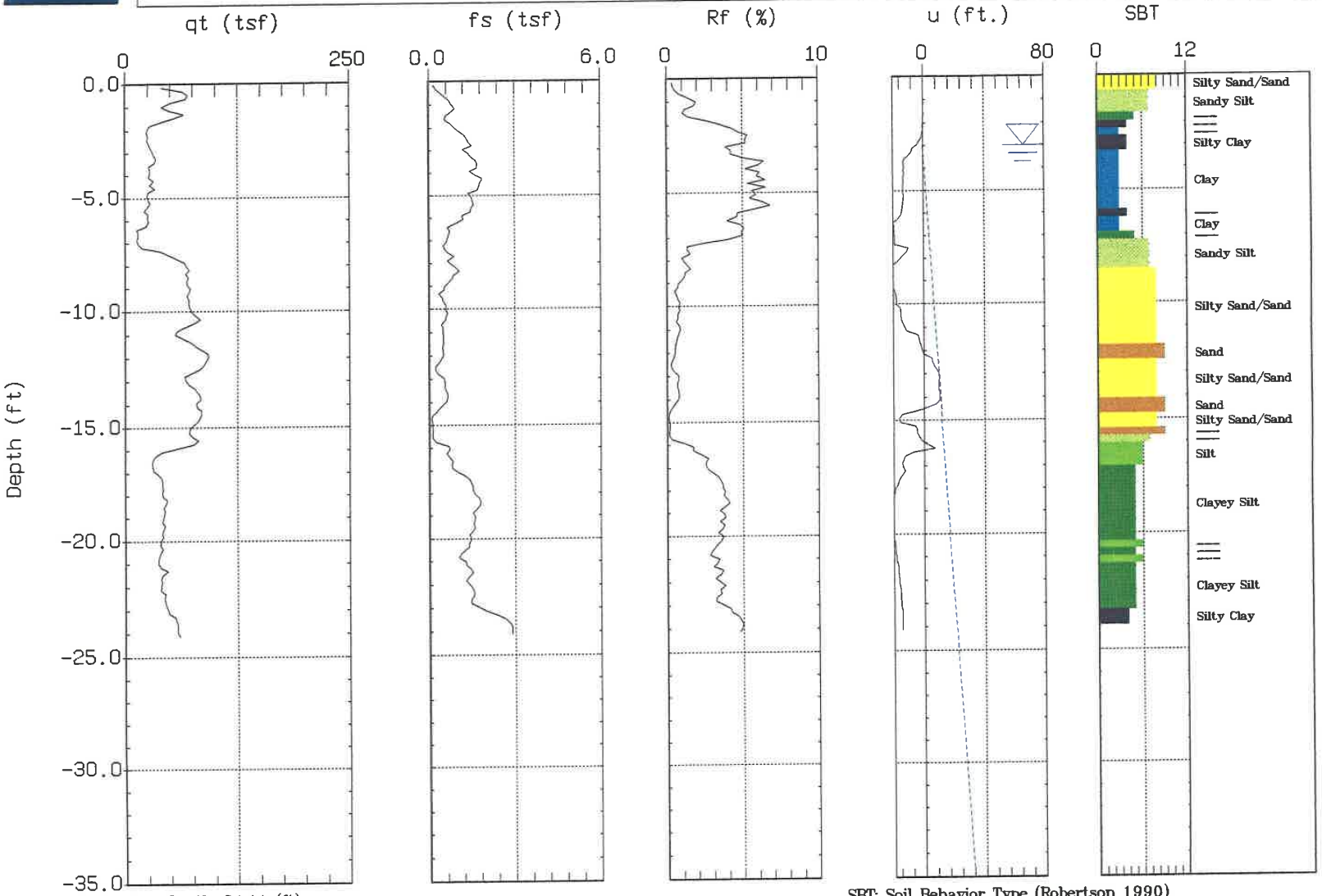
R2-0003435

CONETEC

Louis Berger Group

Sounding:P-2
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:15:07 08:28



Max. Depth: 24.11 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

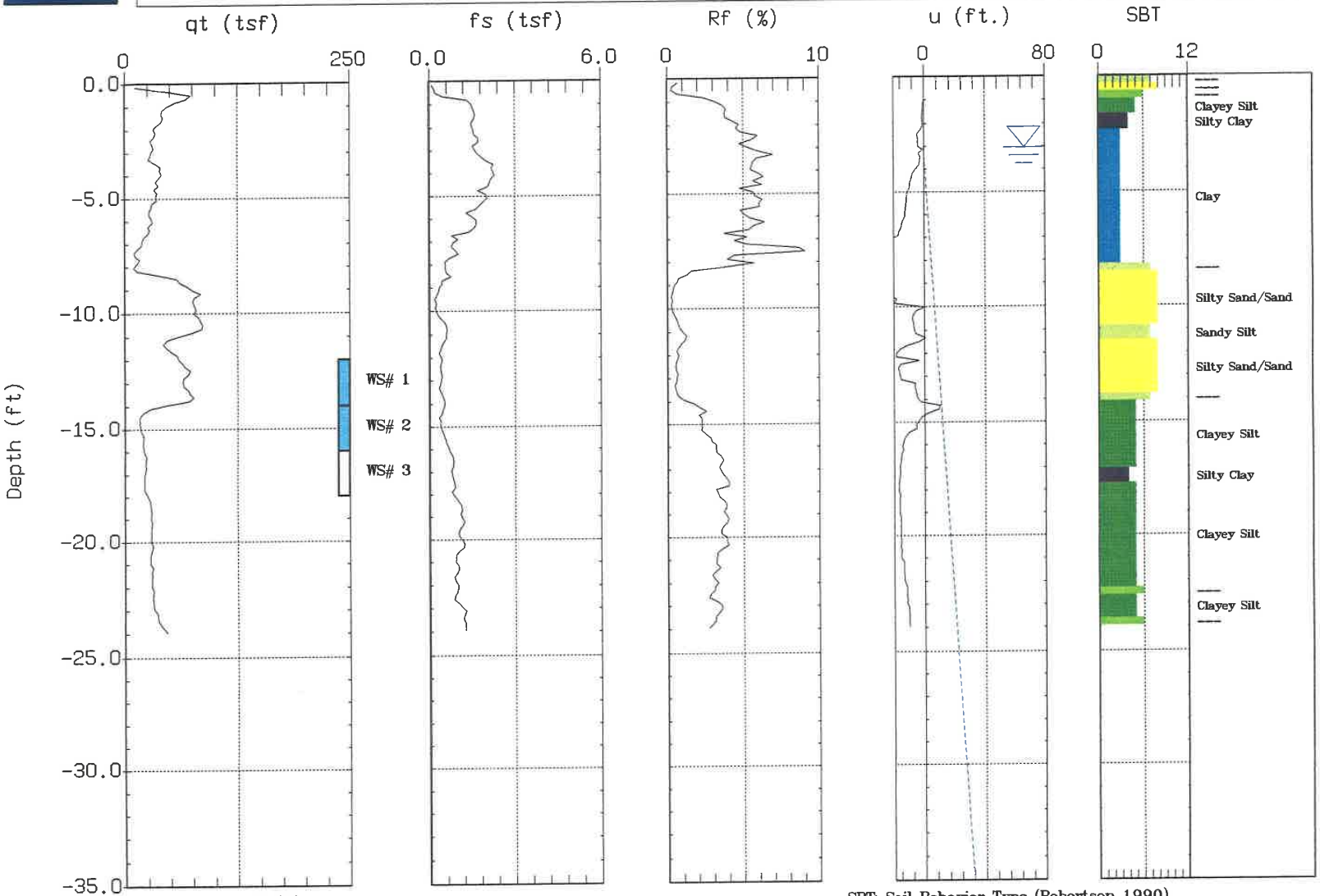
R2-0003436

CONETEC

Louis Berger Group

Sounding:P-3
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:15:07 07:41



Max. Depth: 23.95 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

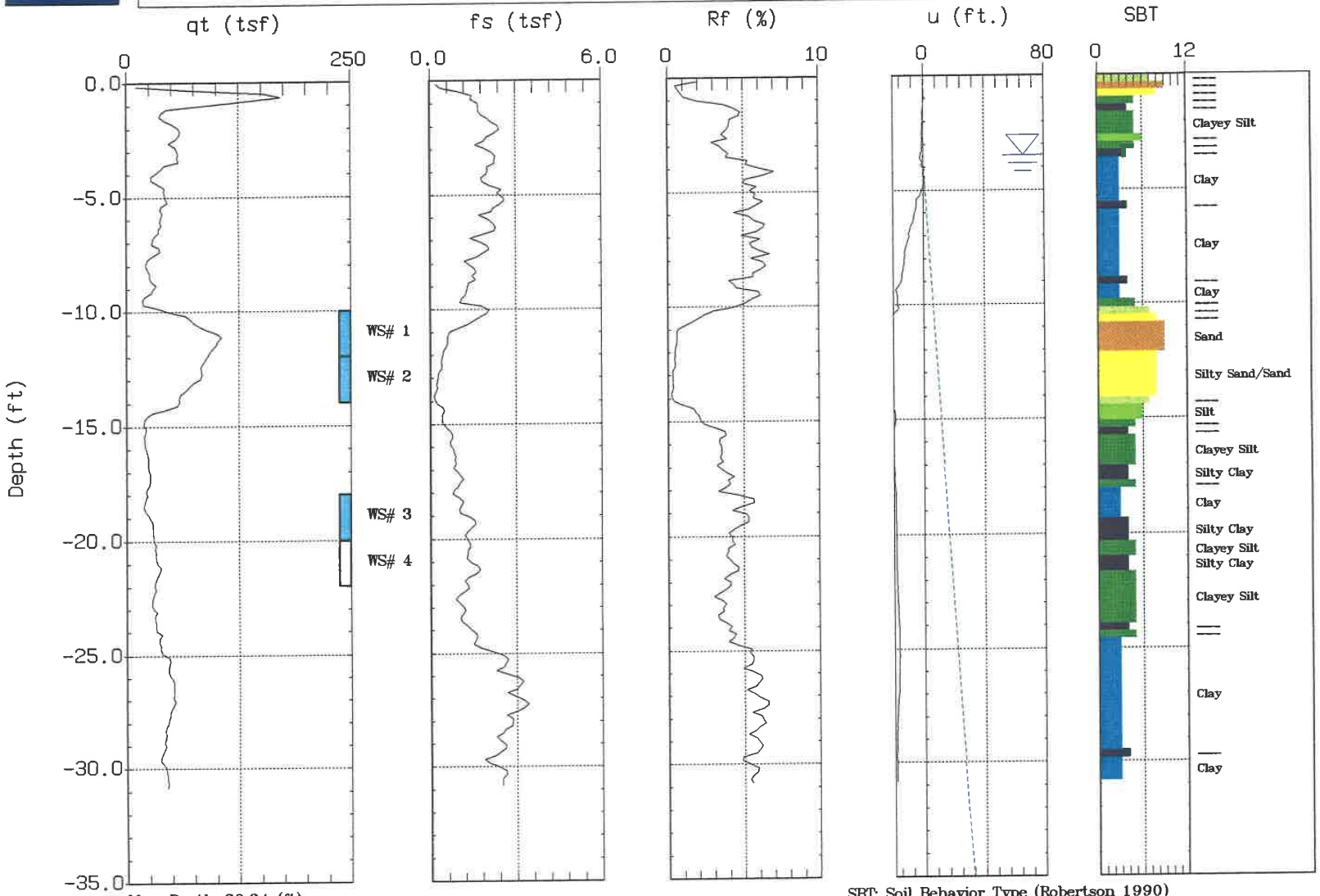
R2-0003437

CONETEC

Louis Berger Group

Sounding:P-4
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:15:07 06:47



Max. Depth: 30.84 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

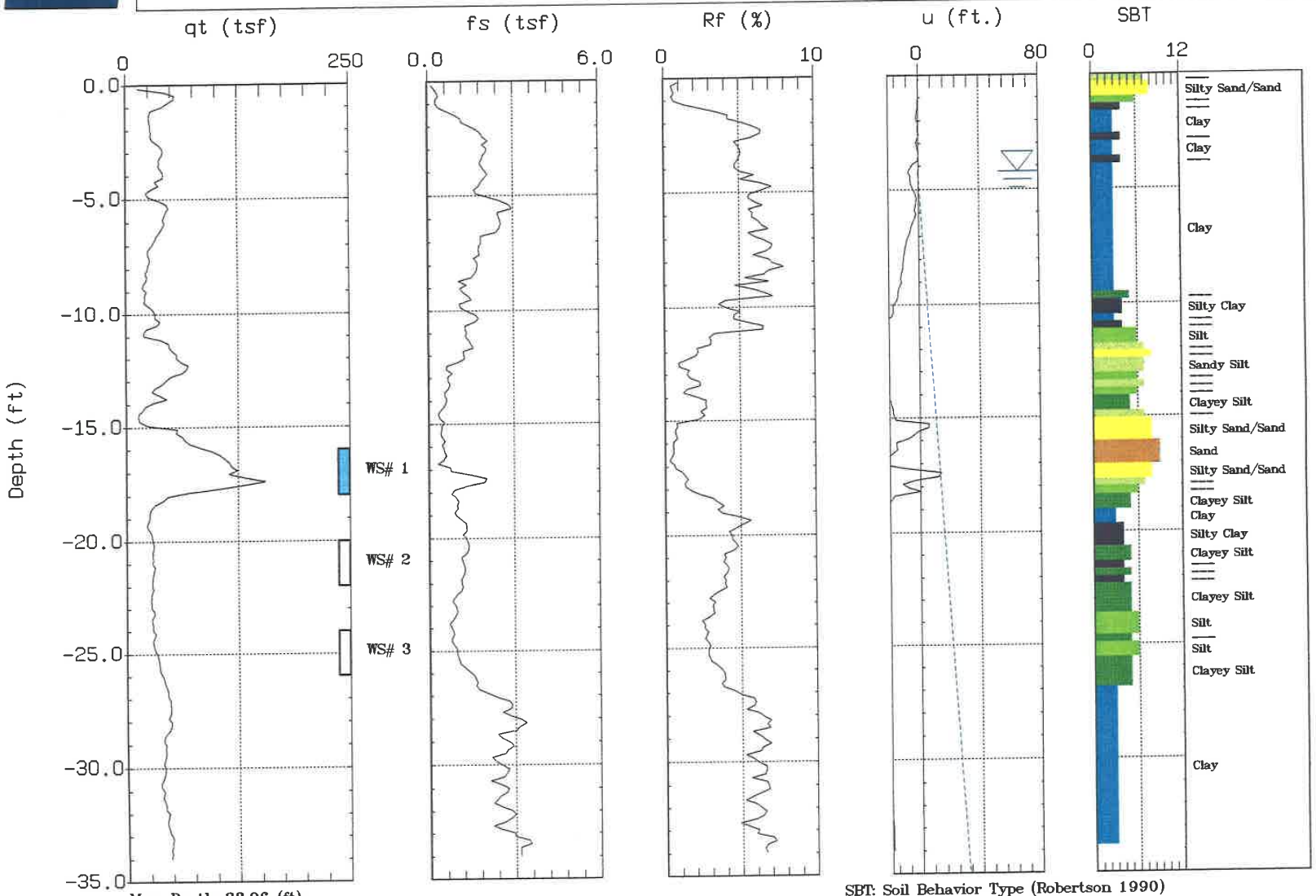
R2-0003438

CONETEC

Louis Berger Group

Sounding:P-5
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:14:07 14:57



Max. Depth: 33.96 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

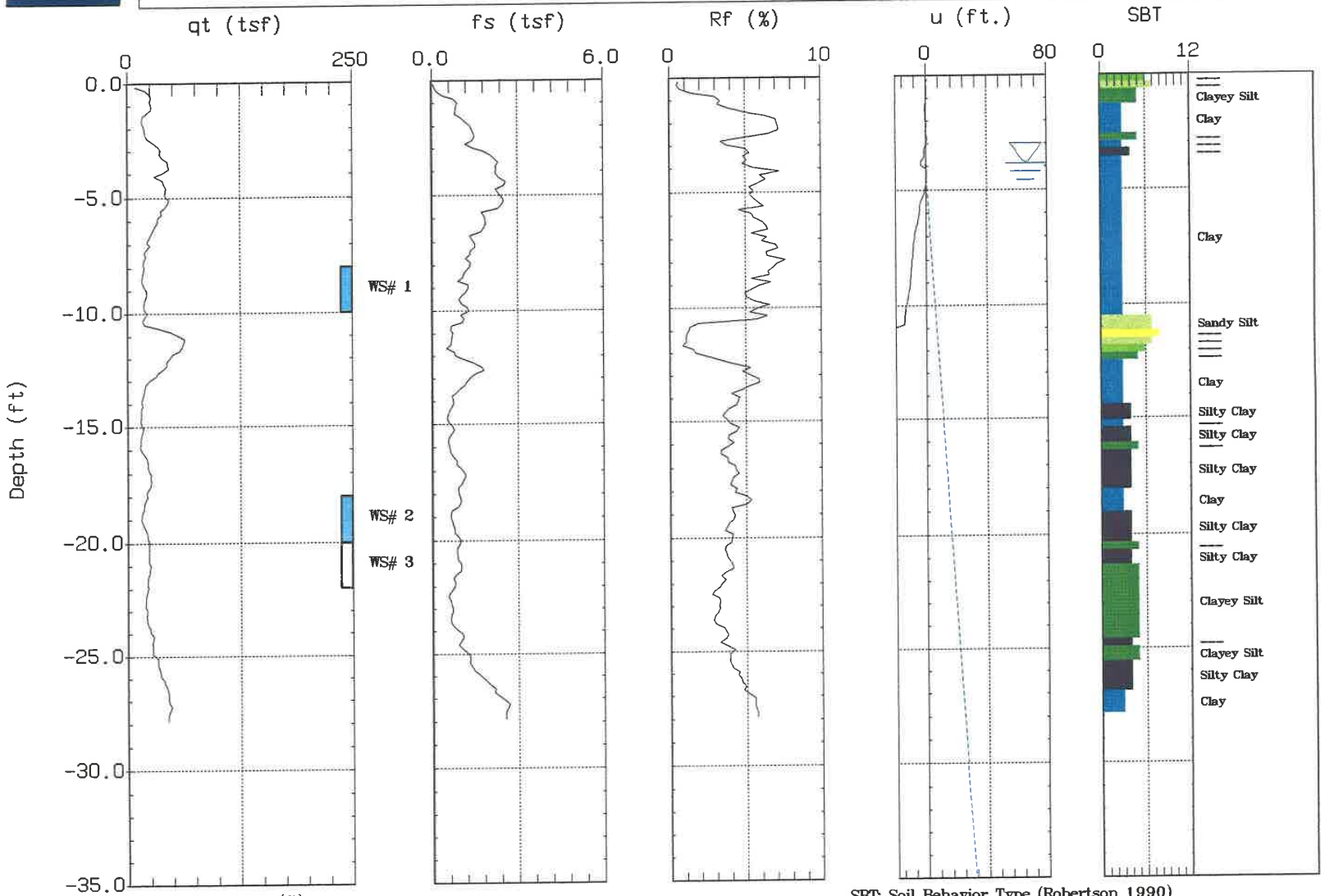
R2-0003439

CONETEC

Louis Berger Group

Sounding:P-6
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:14:07 14:08



Max. Depth: 27.89 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

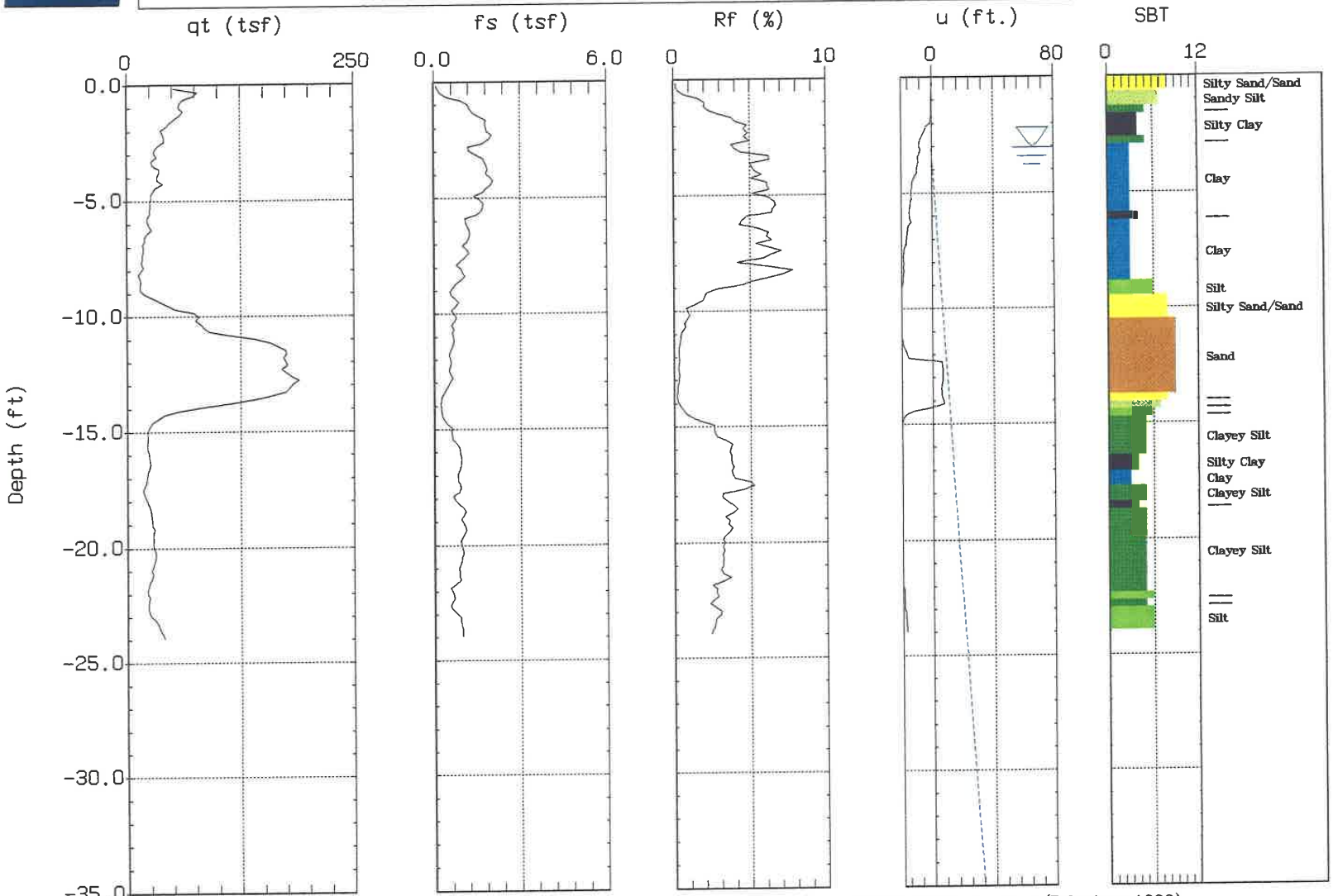
R2-0003440

CONETEC

Louis Berger Group

Sounding:P-7
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:15:07 09:57



Max. Depth: 23.95 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

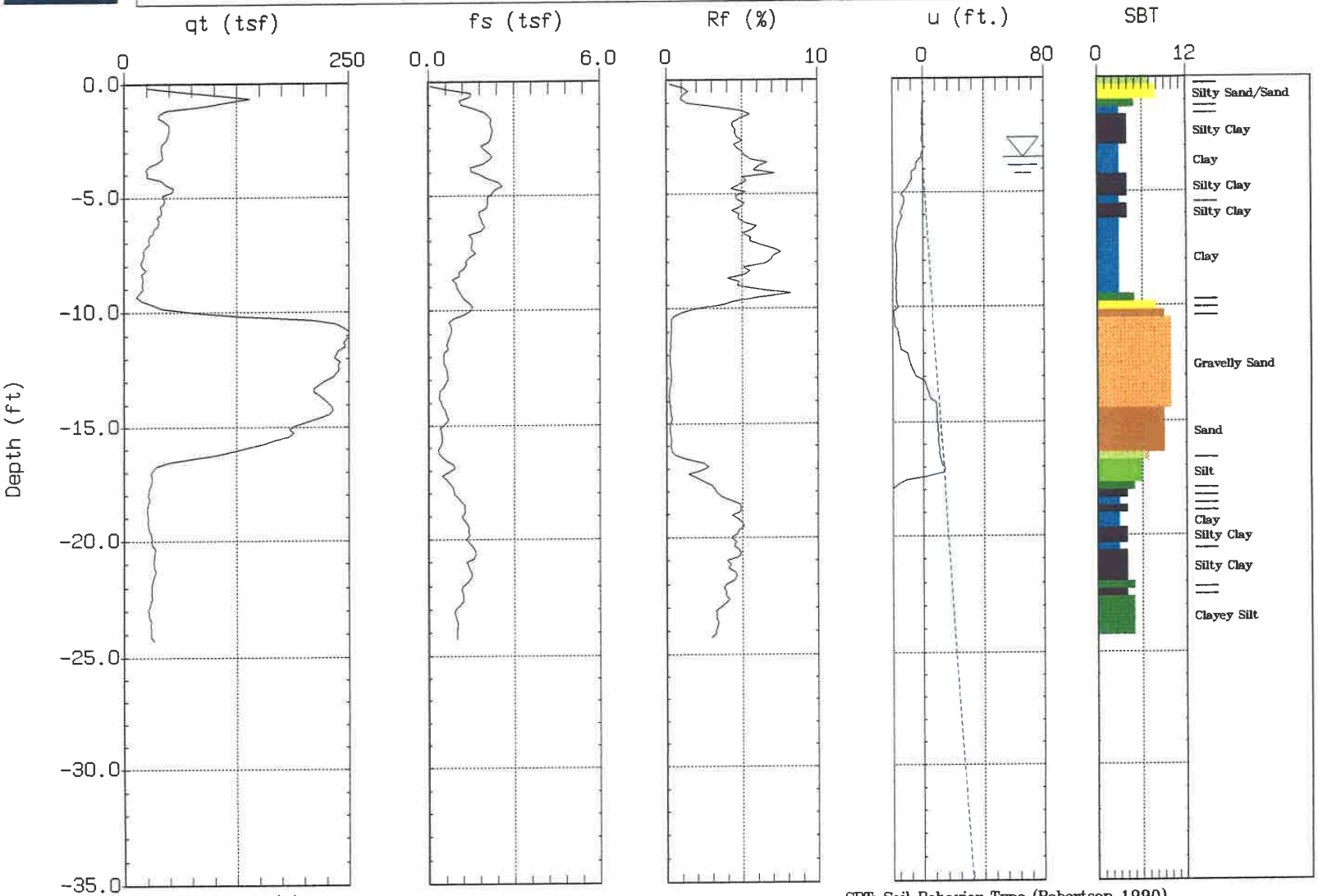
R2-0003441

CONETEC

Louis Berger Group

Sounding:P-8
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:15:07 10:43



Max. Depth: 24.28 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

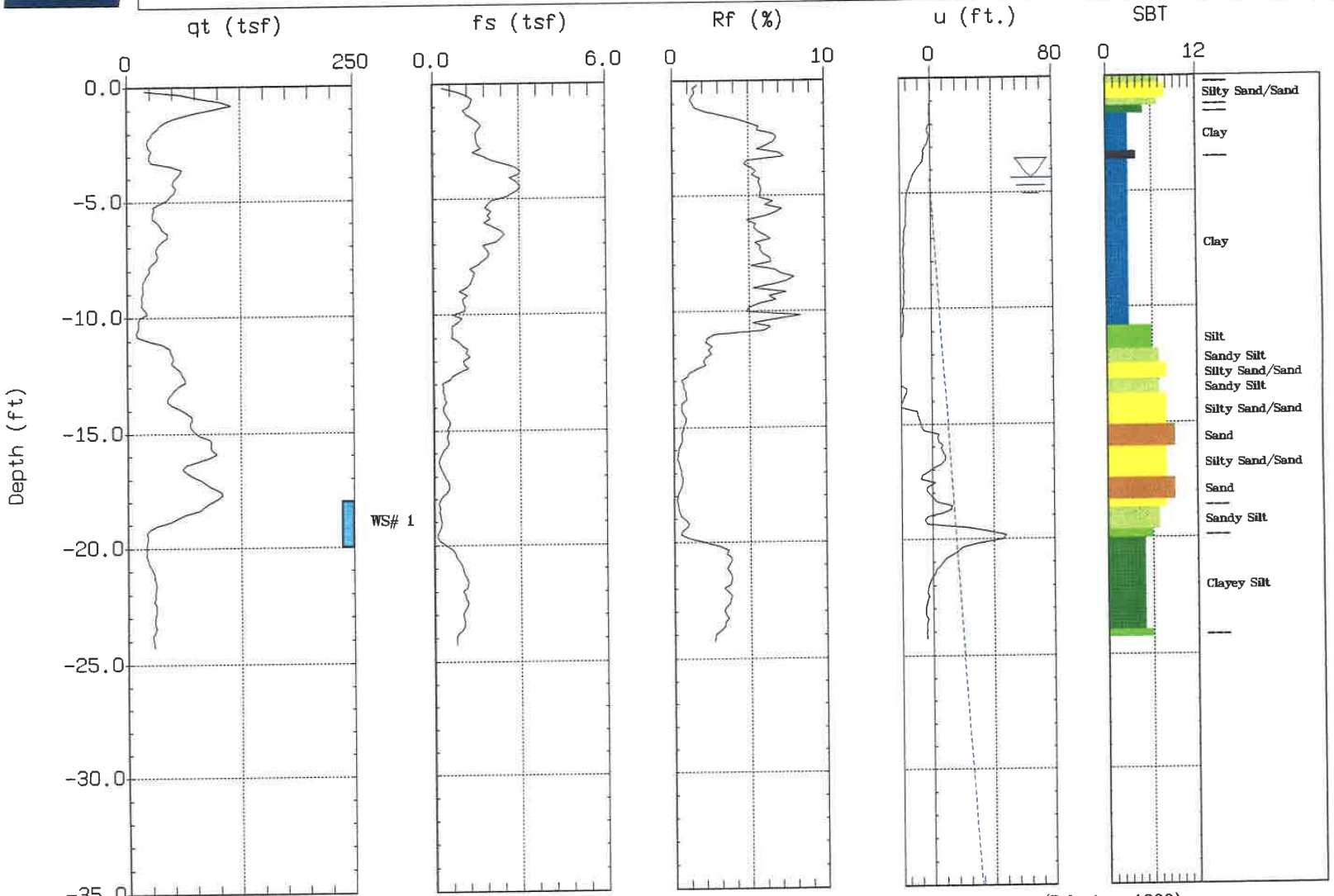
R2-0003442

CONETEC

Louis Berger Group

Sounding:P-9
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:15:07 11:33



Max. Depth: 24.28 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

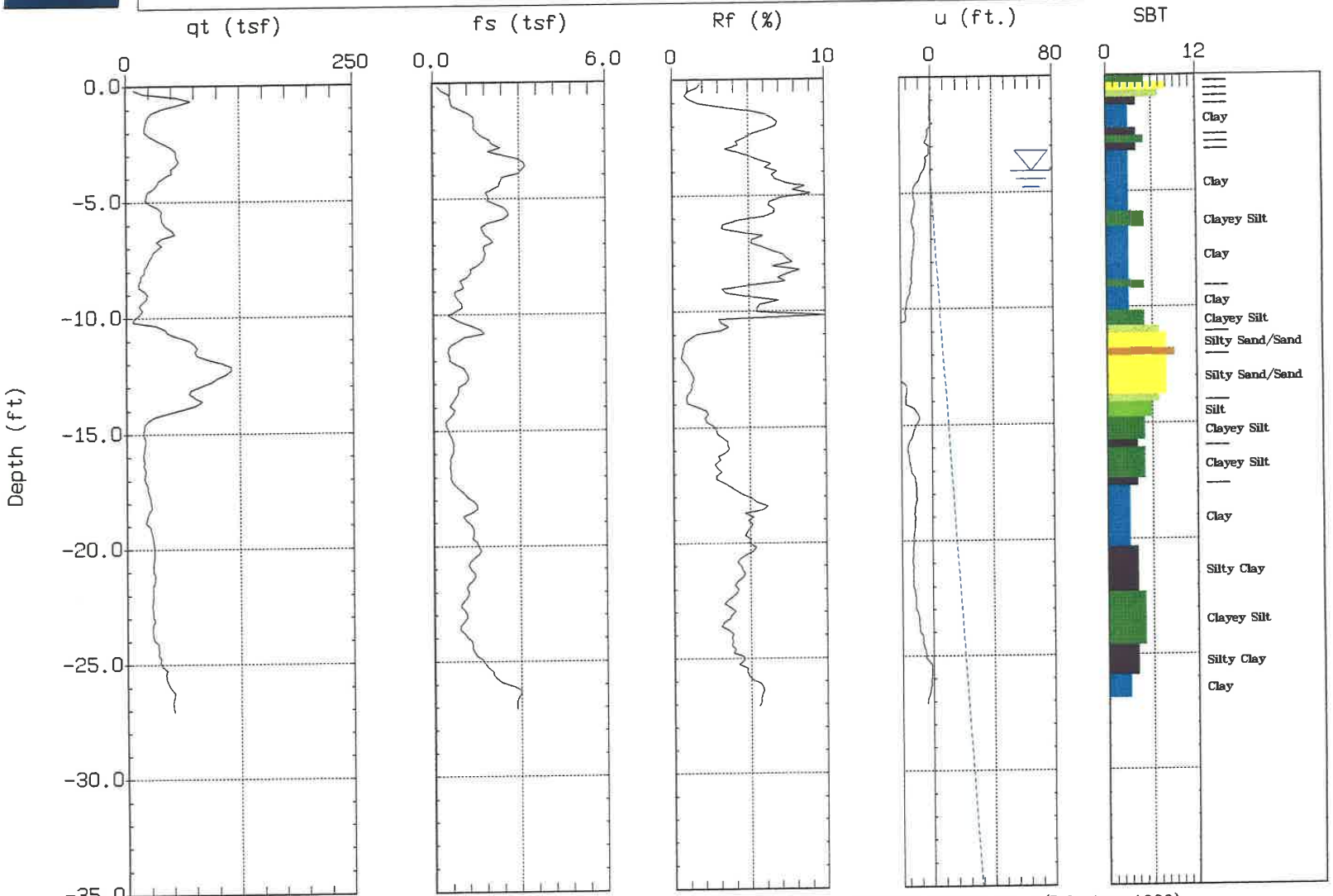
R2-0003443

CONETEC

Louis Berger Group

Sounding:P-10
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:17:07 12:53



Max. Depth: 27.07 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

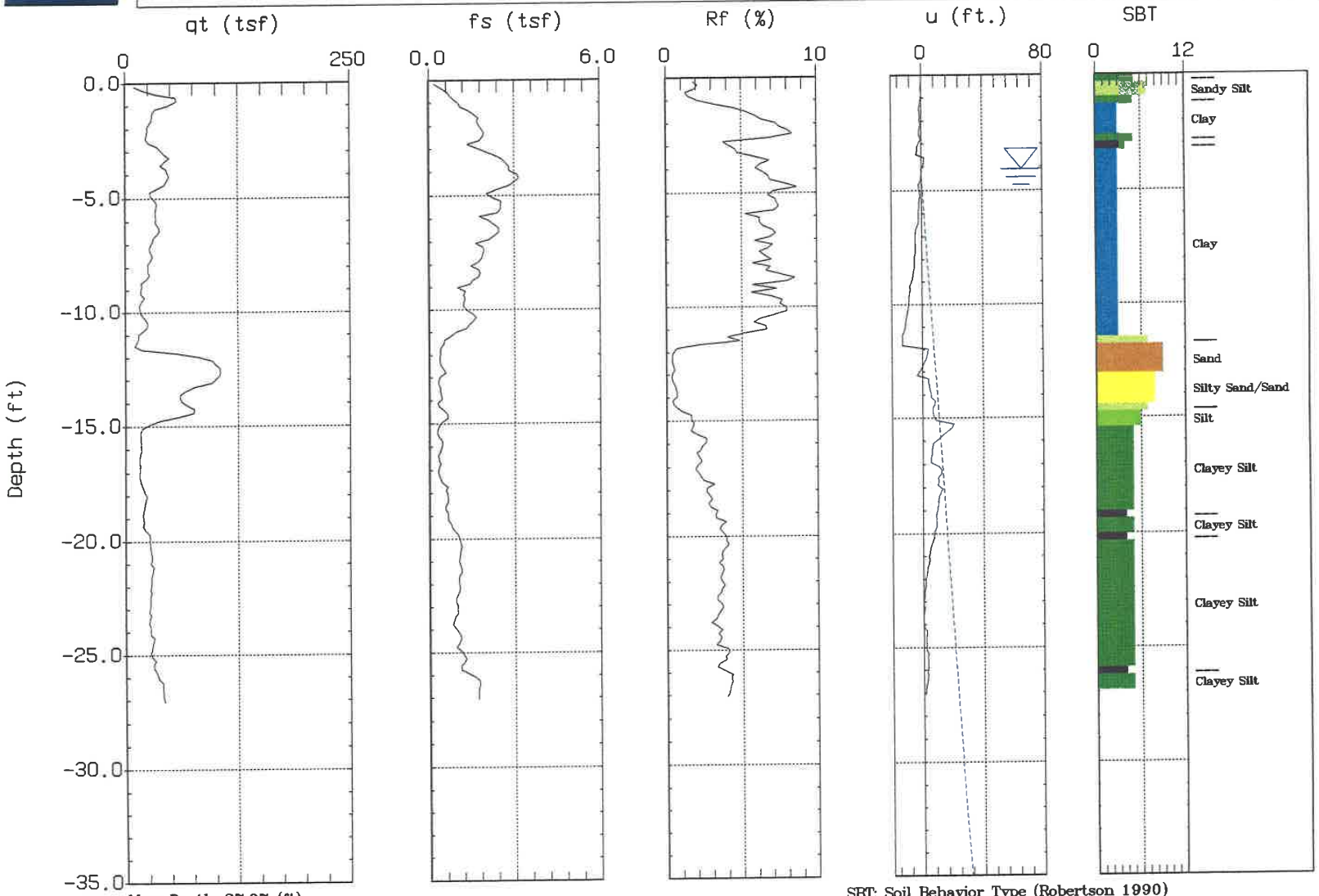
R2-0003444

CONETEC

Louis Berger Group

Sounding:P-11
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:17:07 10:51



Max. Depth: 27.07 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

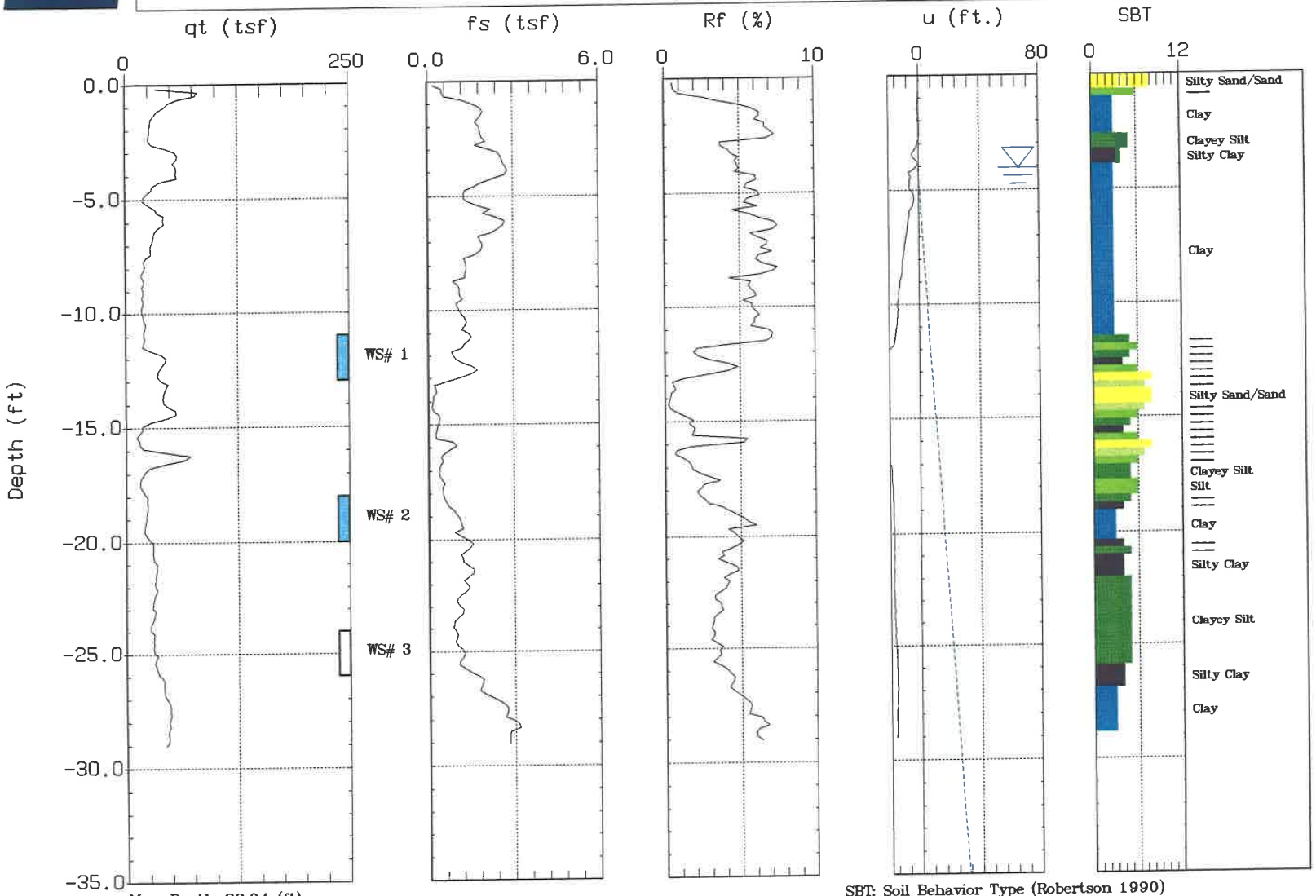
R2-0003445

CONETEC

Louis Berger Group

Sounding:P-12
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:14:07 16:01



Max. Depth: 29.04 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

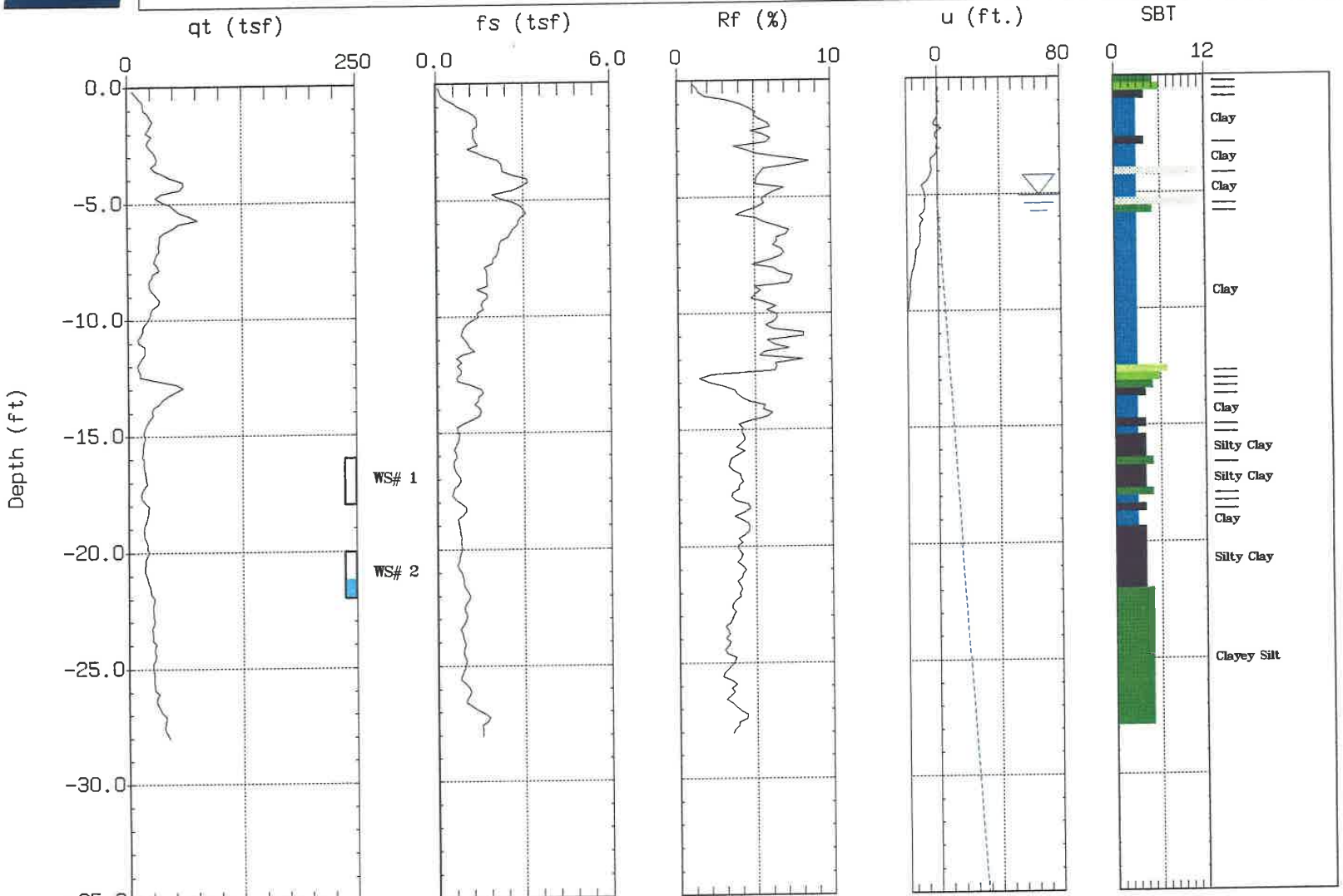
R2-0003446

CONETEC

Louis Berger Group

Sounding:P-13
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:14:07 13:20



Max. Depth: 28.05 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

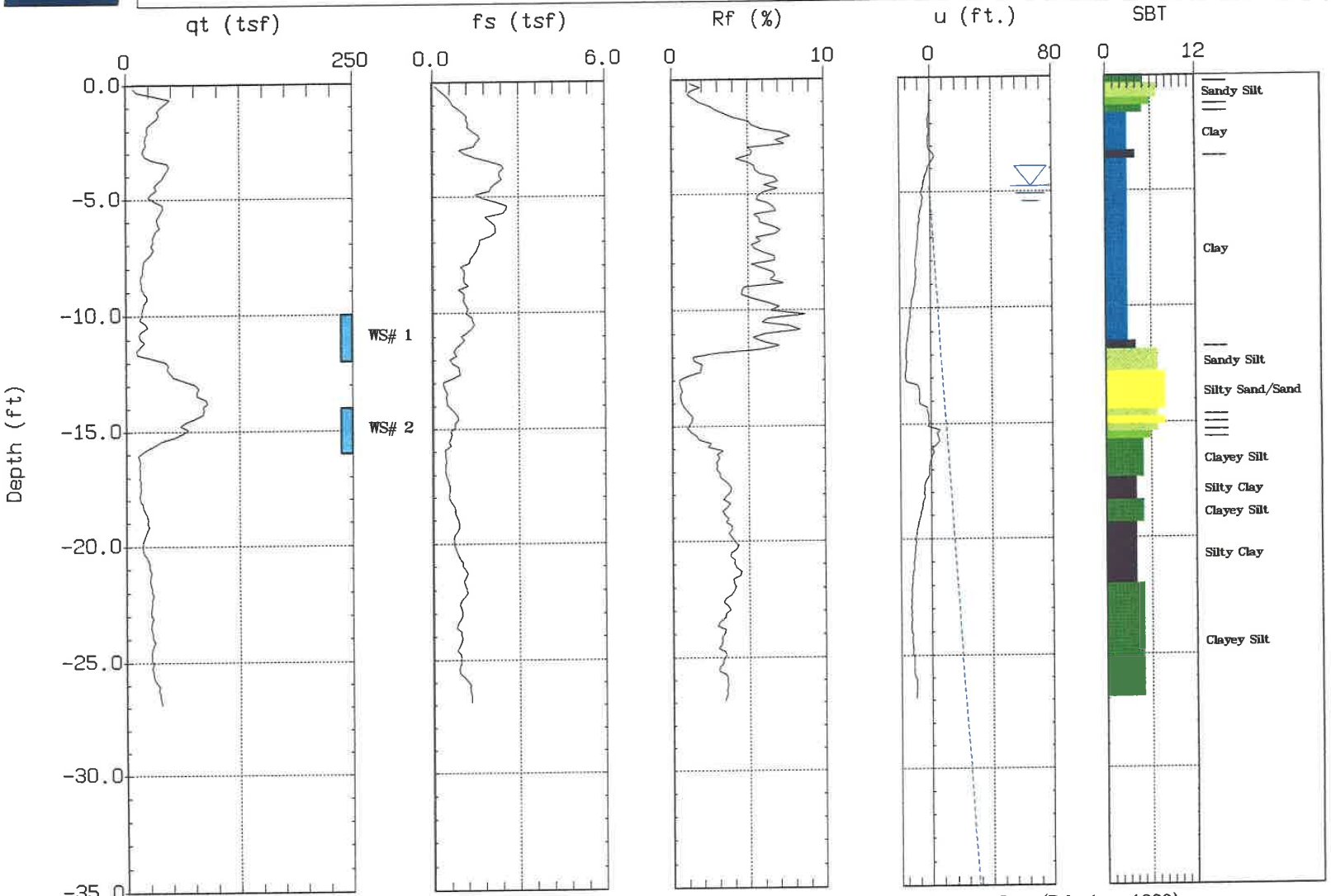
R2-0003447

CONETEC

Louis Berger Group

Sounding:P-14
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:17:07 12:13



Max. Depth: 26.90 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

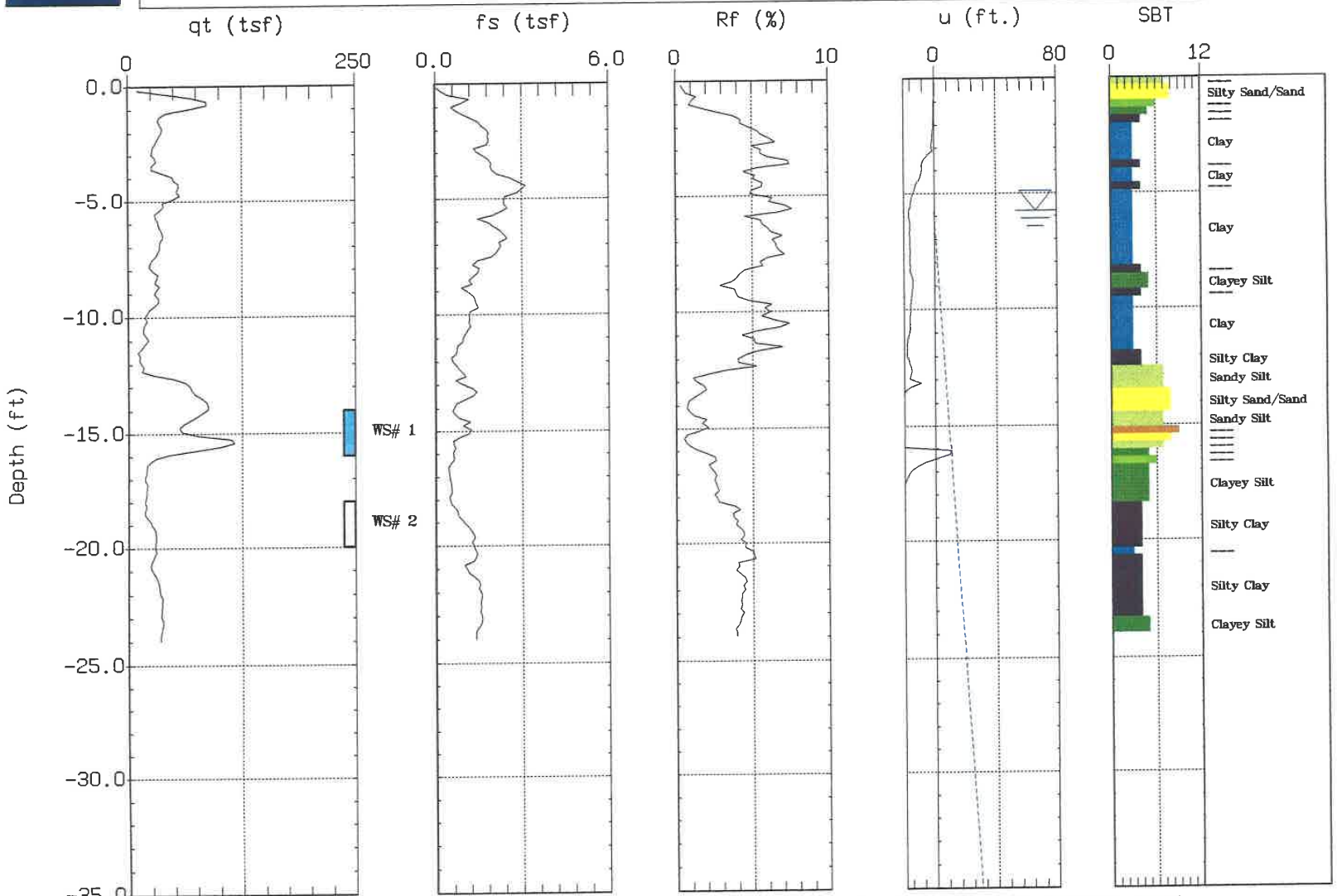
R2-0003448

CONETEC

Louis Berger Group

Sounding:P-15
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:17:07 10:10



Max. Depth: 23.95 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

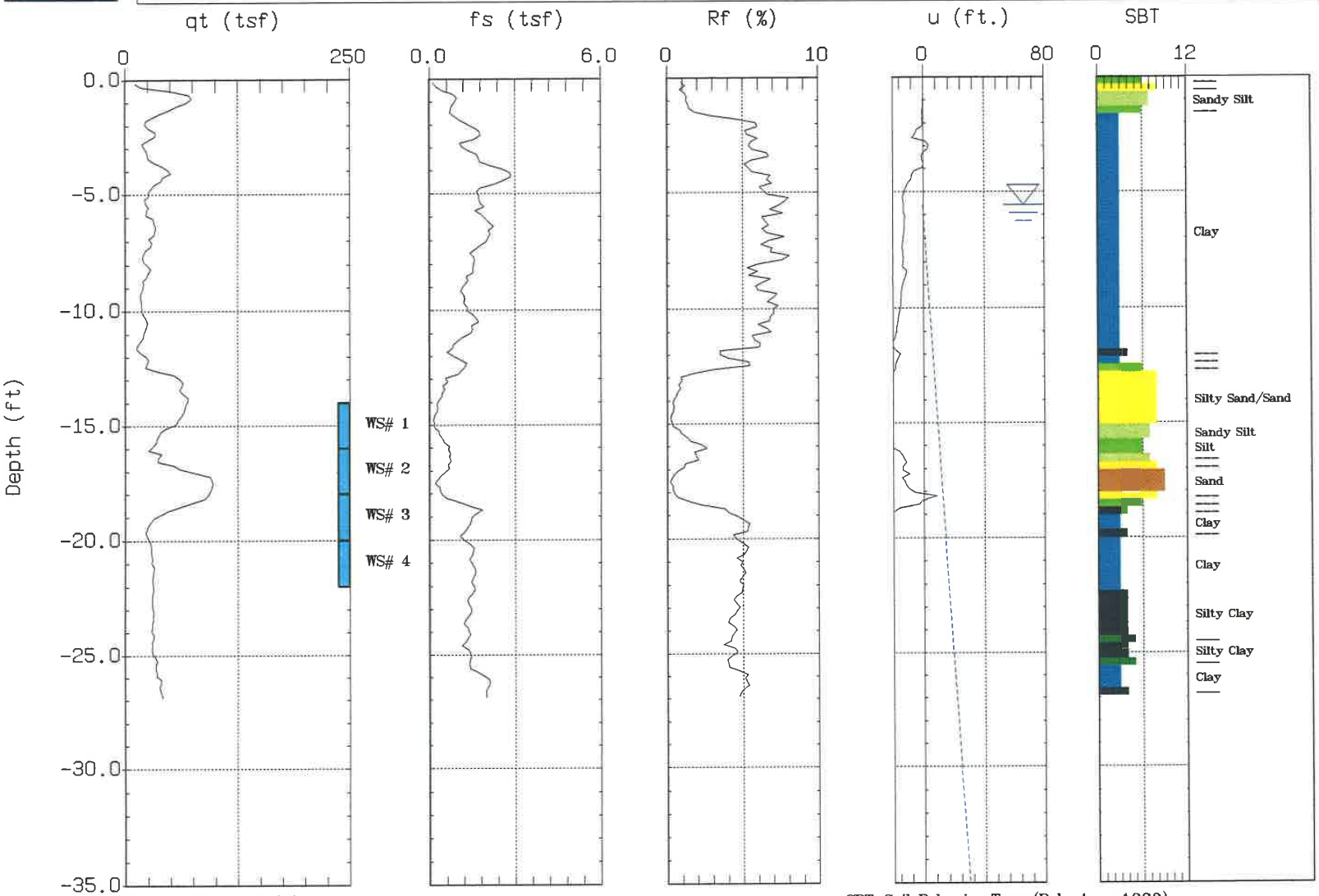
R2-0003449

CONETEC

Louis Berger Group

Sounding:P-16
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:17:07 13:34



Max. Depth: 26.90 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

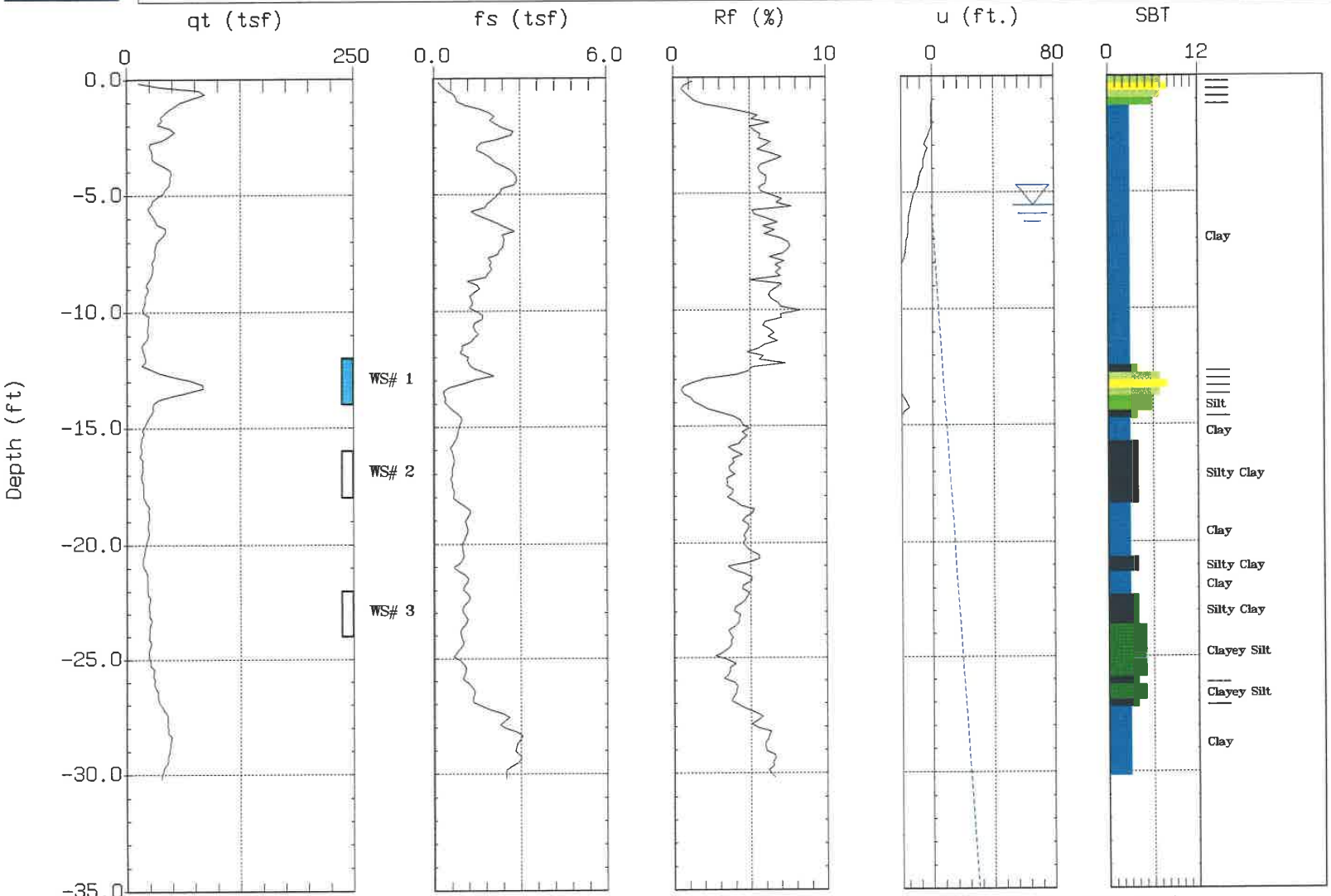
R2-0003450

CONETEC

Louis Berger Group

Sounding:P-17
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:17:07 14:23



Max. Depth: 30.18 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

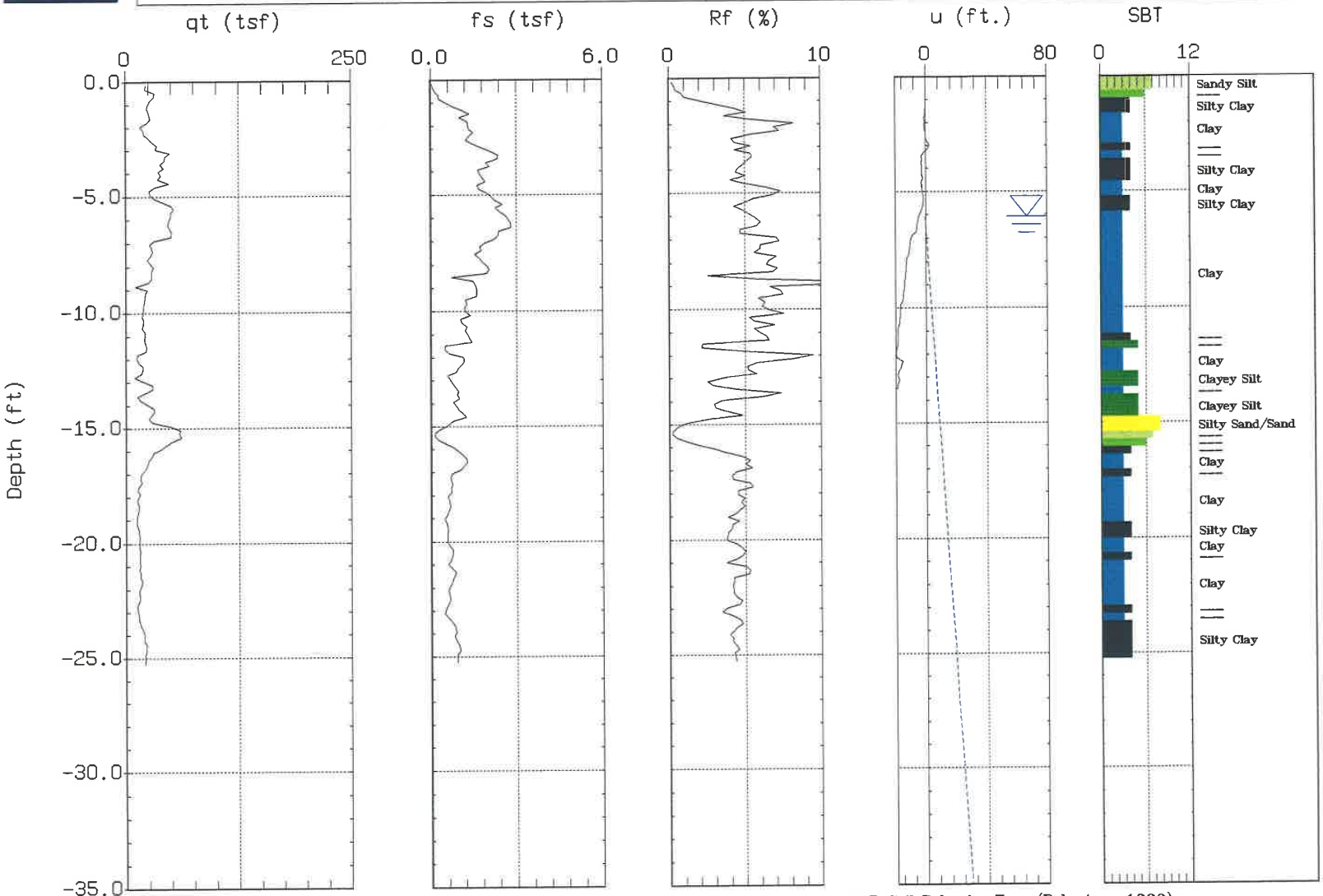
R2-0003451

CONETEC

Louis Berger Group

Sounding:P-18
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:14:07 11:58



Max. Depth: 25.26 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

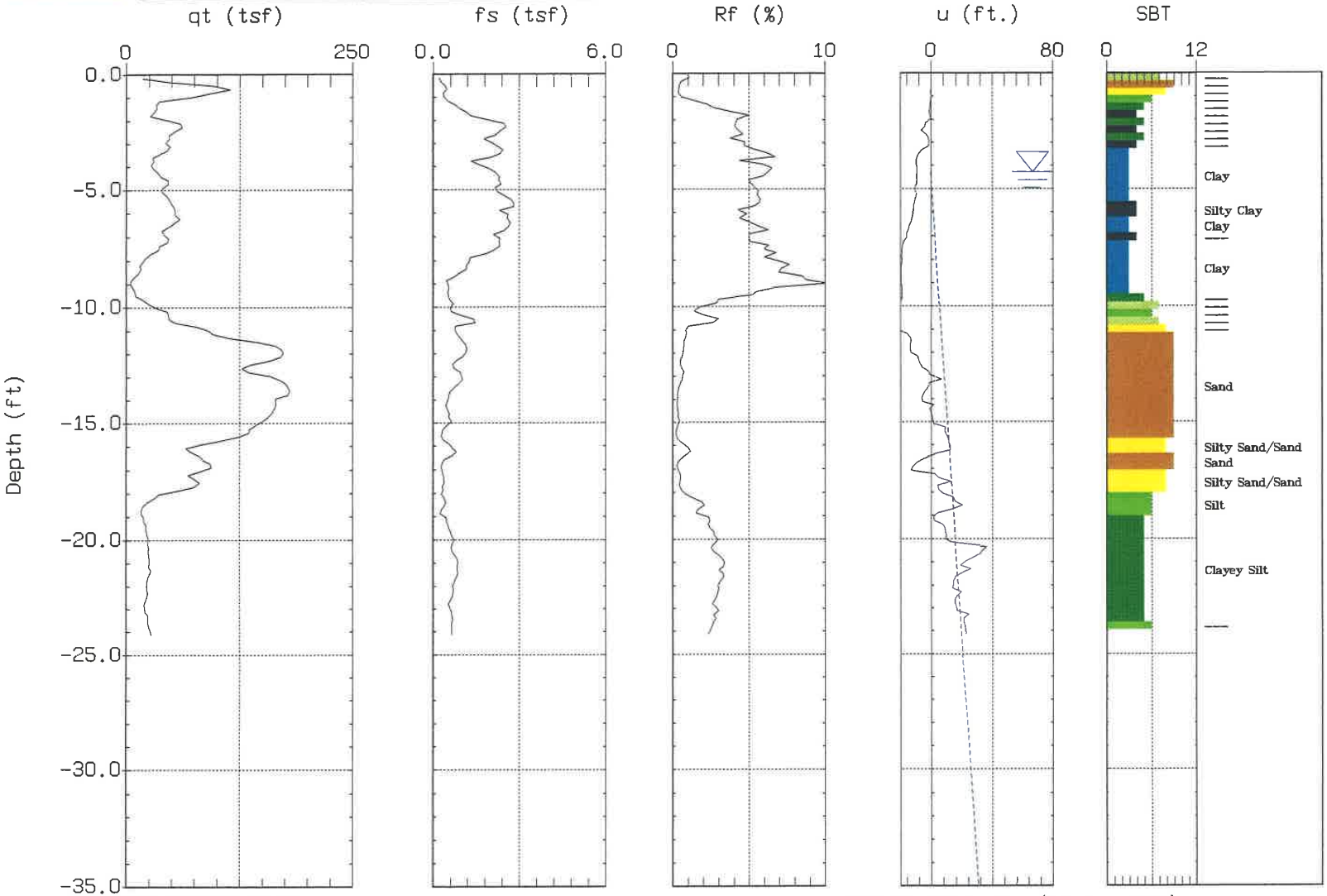
R2-0003452

CONETEC

Louis Berger Group

Sounding:P-19
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:15:07 13:02



Max. Depth: 24.11 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

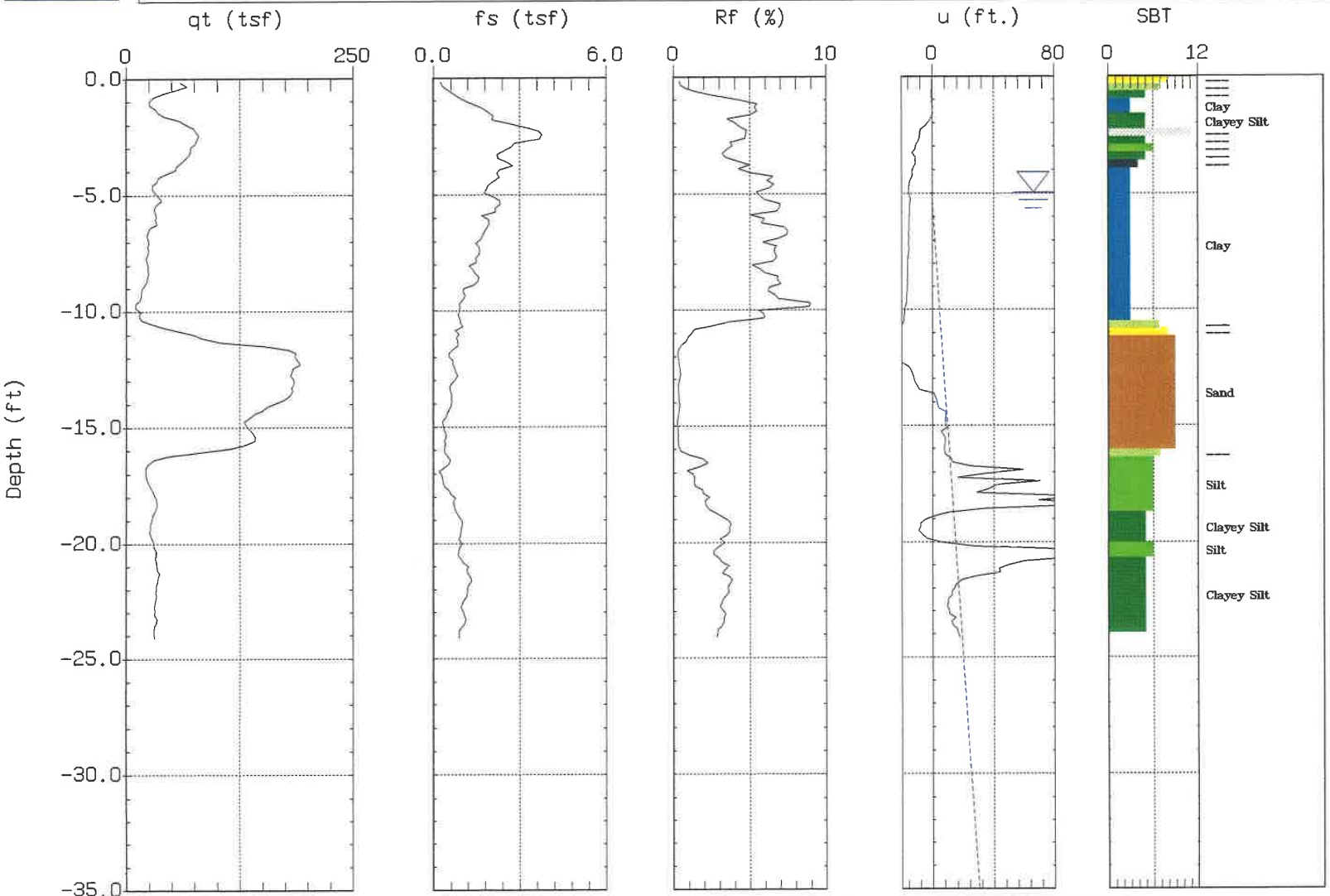
R2-0003453

CONETEC

Louis Berger Group

Sounding:P-20
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:15:07 12:13



Max. Depth: 24.11 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

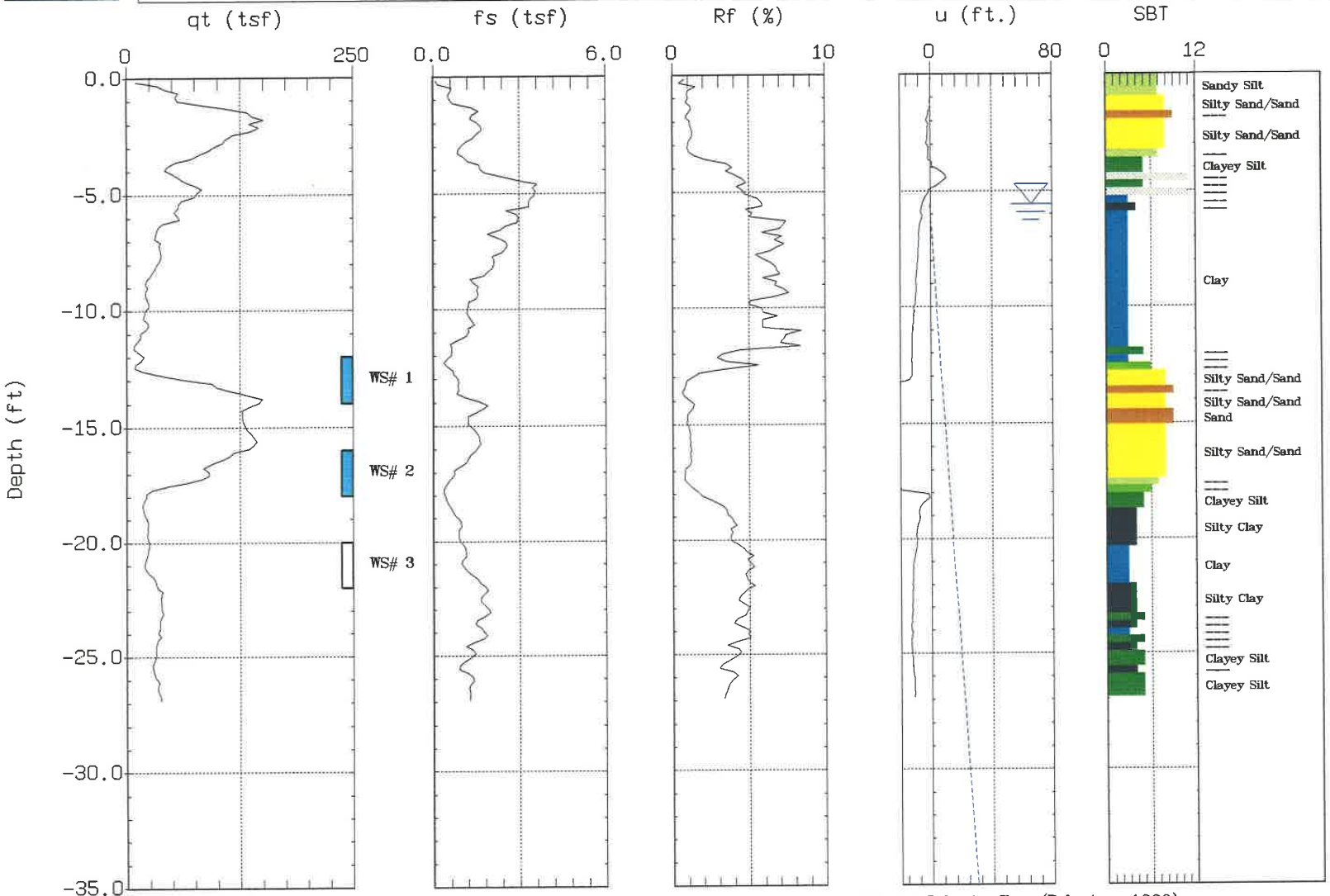
R2-0003454

CONETEC

Louis Berger Group

Sounding:P-21
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:17:07 11:35



Max. Depth: 26.90 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

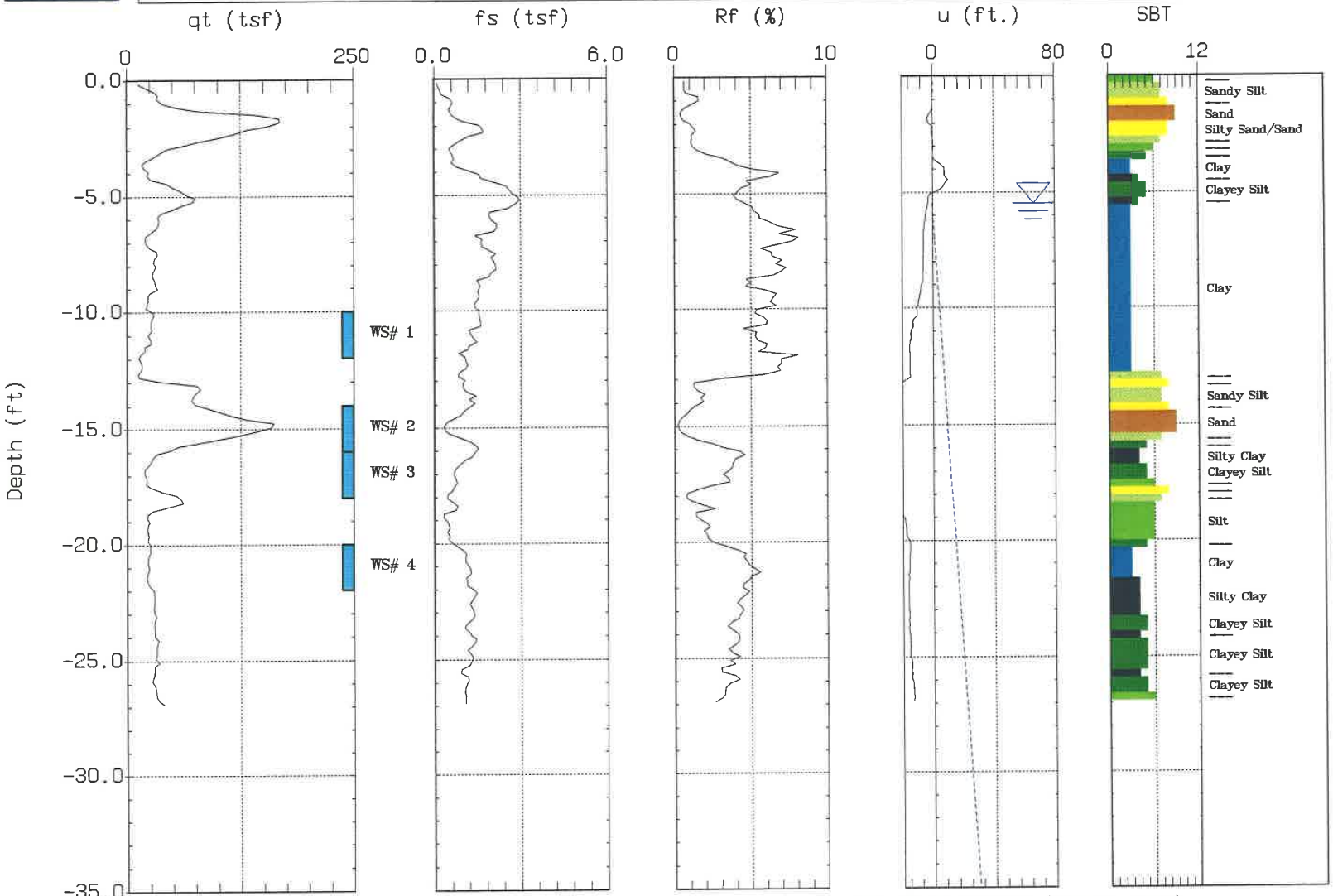
R2-0003455

CONETEC

Louis Berger Group

Sounding:P-22
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:17:07 09:29



Max. Depth: 26.90 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

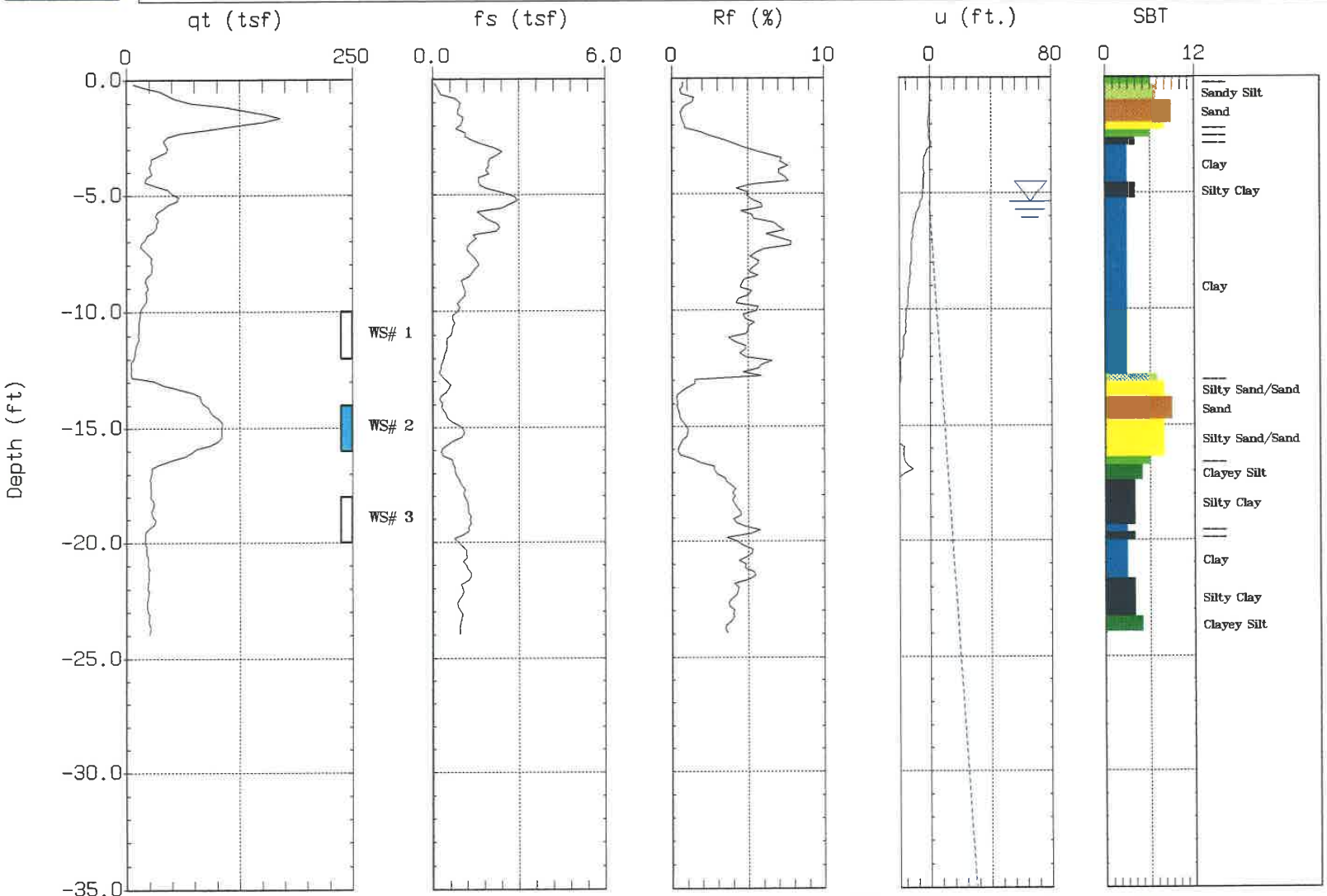
R2-0003456

CONETEC

Louis Berger Group

Sounding:P-23
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:18:07 06:26



Max. Depth: 23.95 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

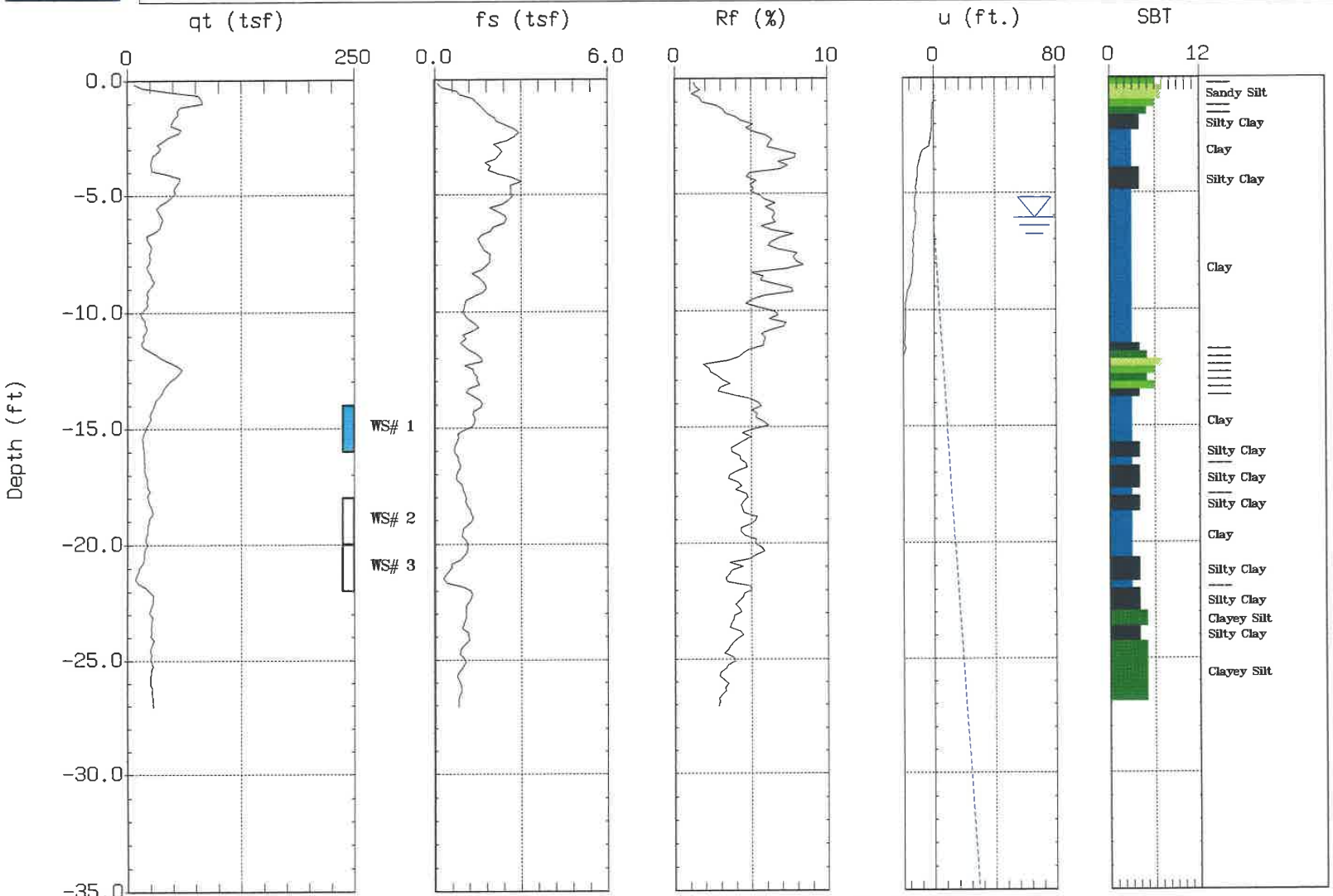
R2-0003457

CONETEC

Louis Berger Group

Sounding:P-24
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:18:07 07:07



Max. Depth: 27.07 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

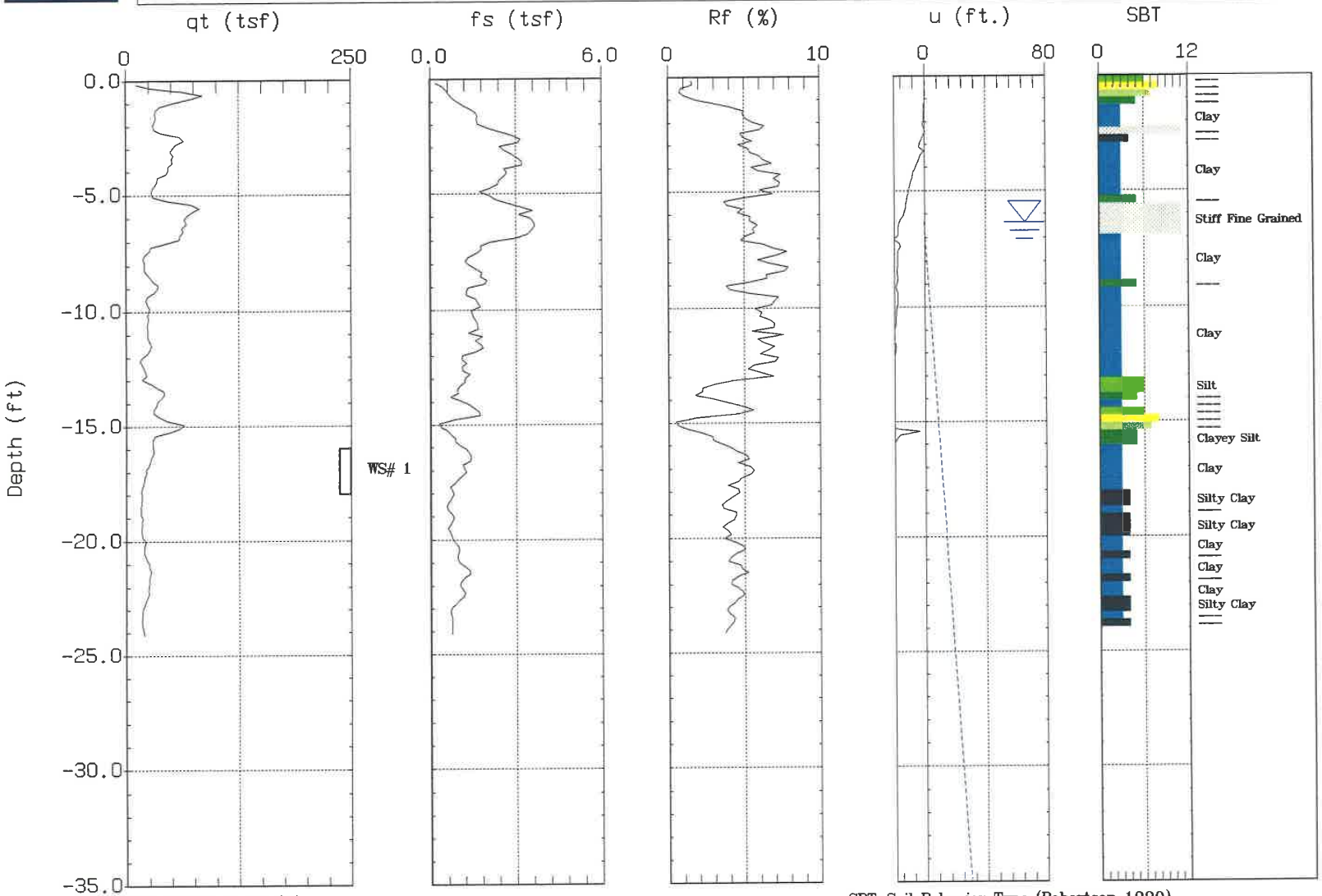
R2-0003458

CONETEC

Louis Berger Group

Sounding:P-25
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:18:07 07:49



Max. Depth: 24.11 (ft)
Depth Inc.: 0.164 (ft)

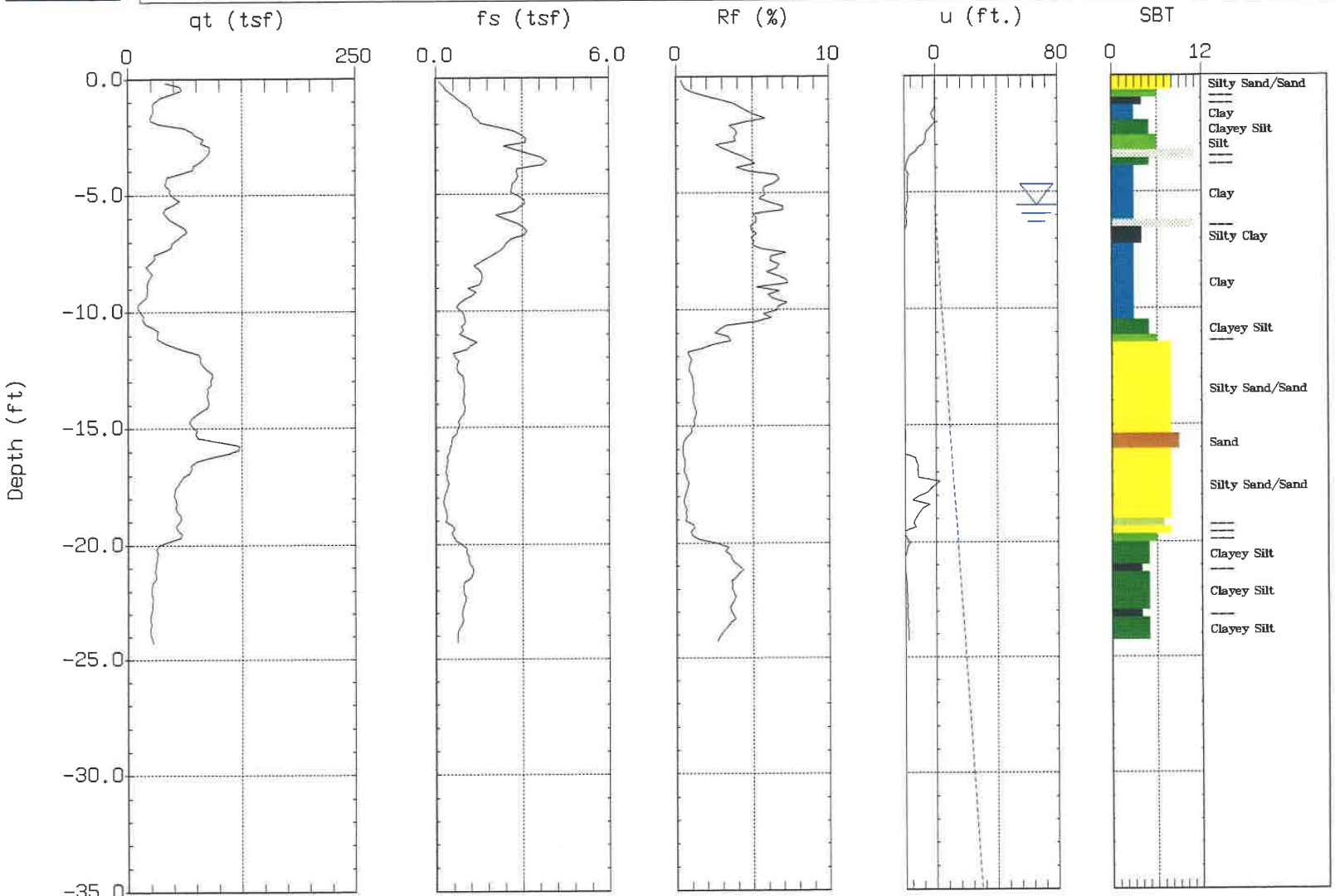
SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

CONETEC

Louis Berger Group

Sounding:P-26
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:15:07 13:44



Max. Depth: 24.28 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

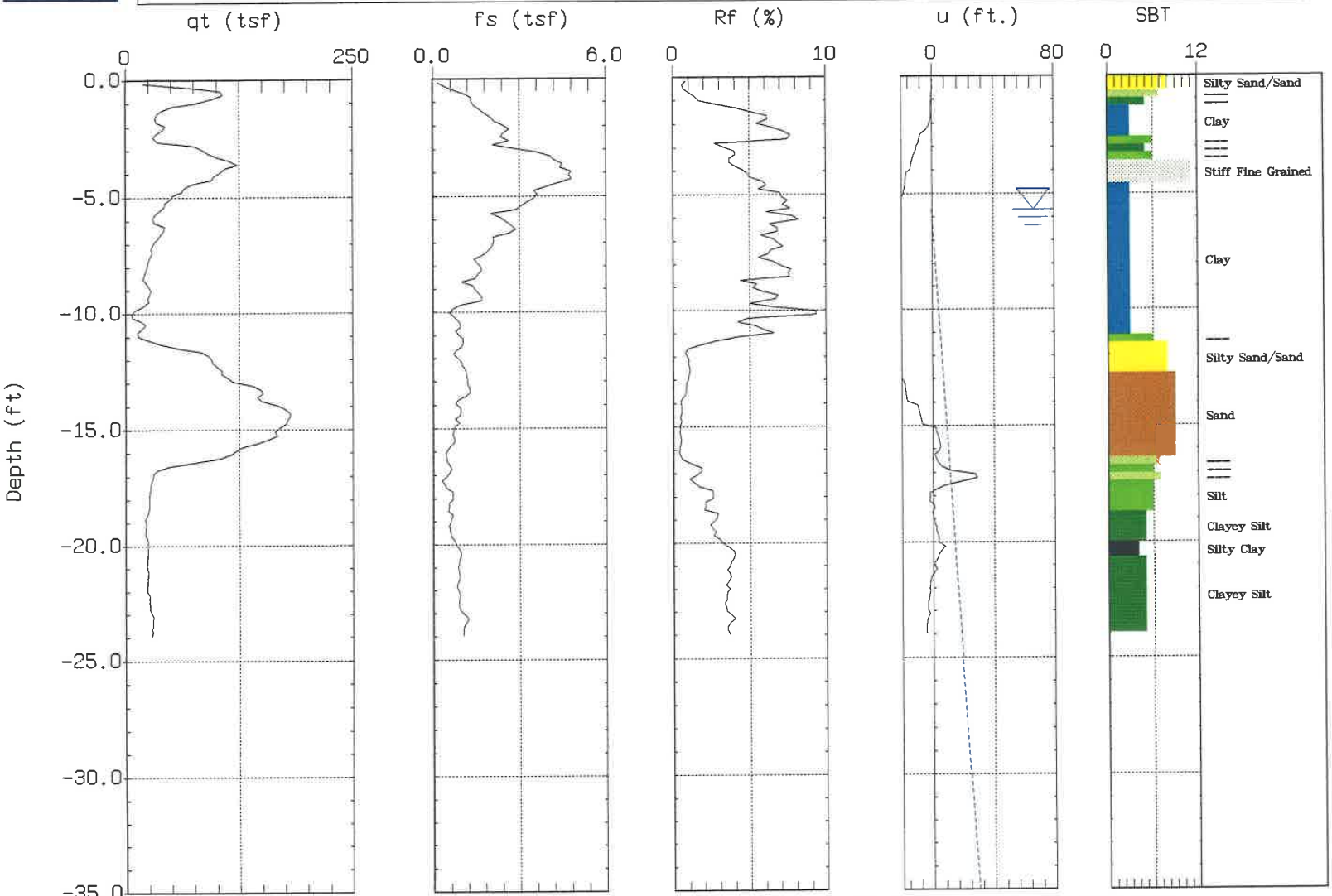
R2-0003460

CONETEC

Louis Berger Group

Sounding:P-27
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:15:07 14:28



Max. Depth: 23.95 (ft)
Depth Inc.: 0.164 (ft)

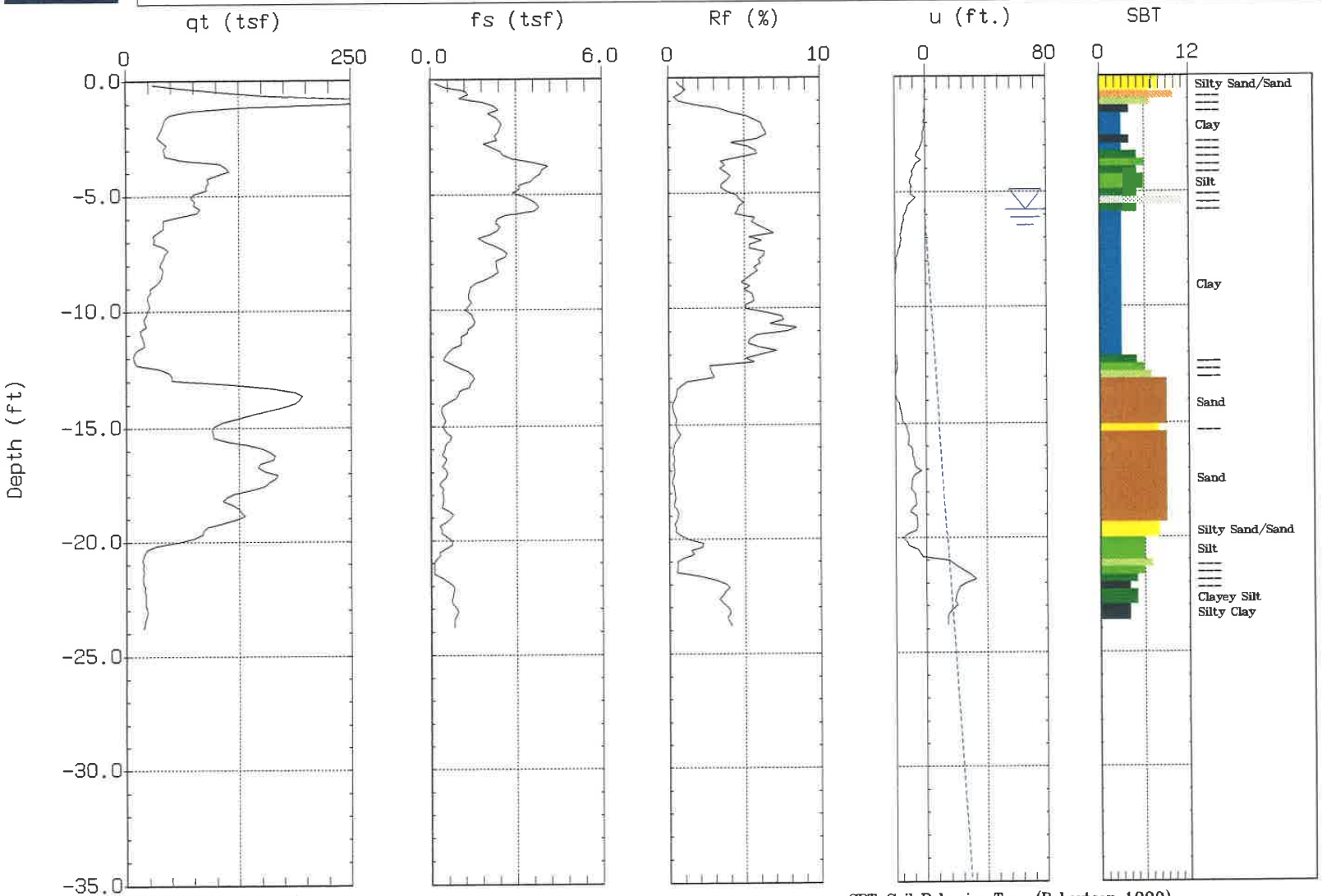
SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

CONETEC

Louis Berger Group

Sounding:P-28
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:16:07 06:44



Max. Depth: 23.79 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

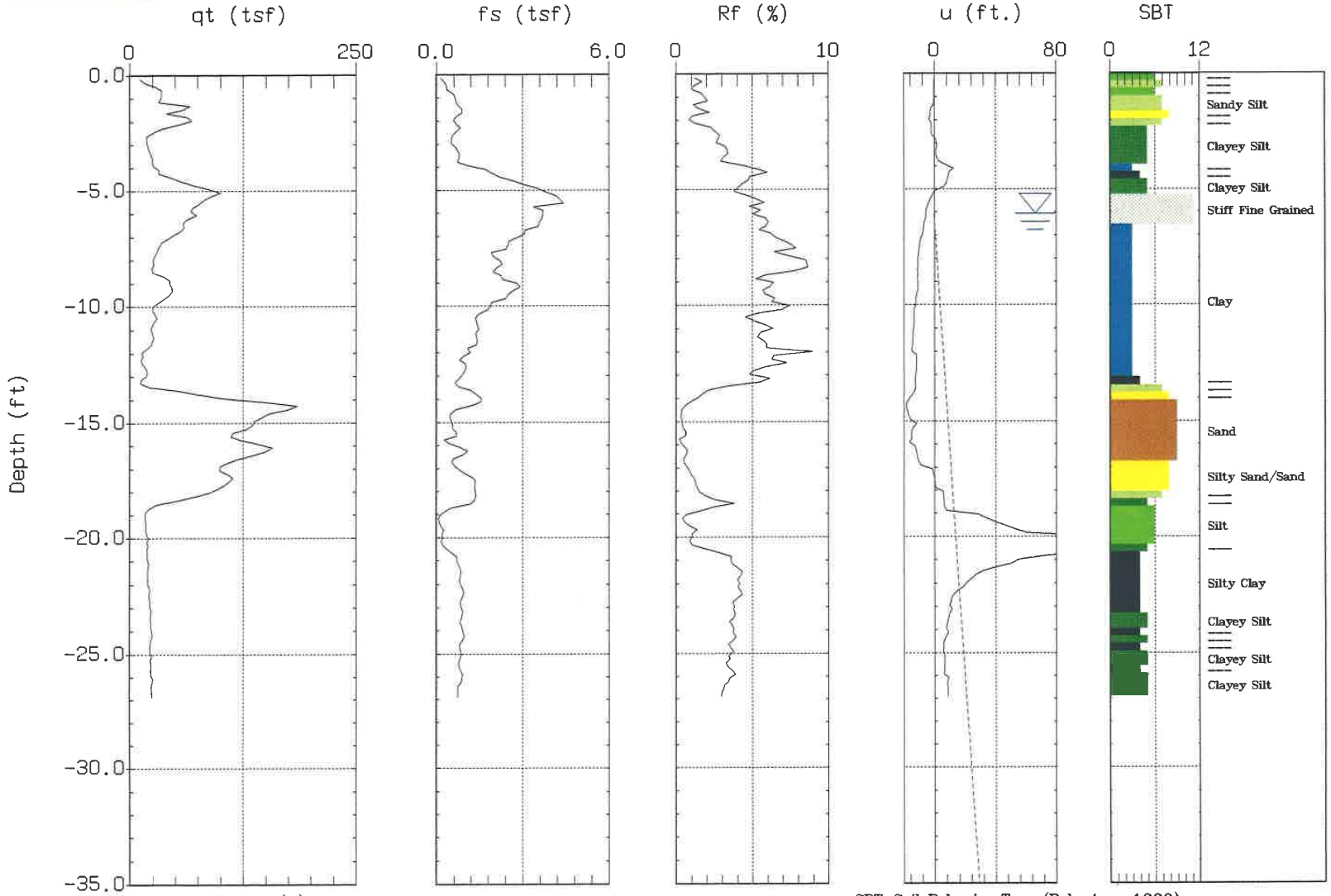
R2-0003462

CONETEC

Louis Berger Group

Sounding:P-29
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:18:07 12:34



Max. Depth: 26.90 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

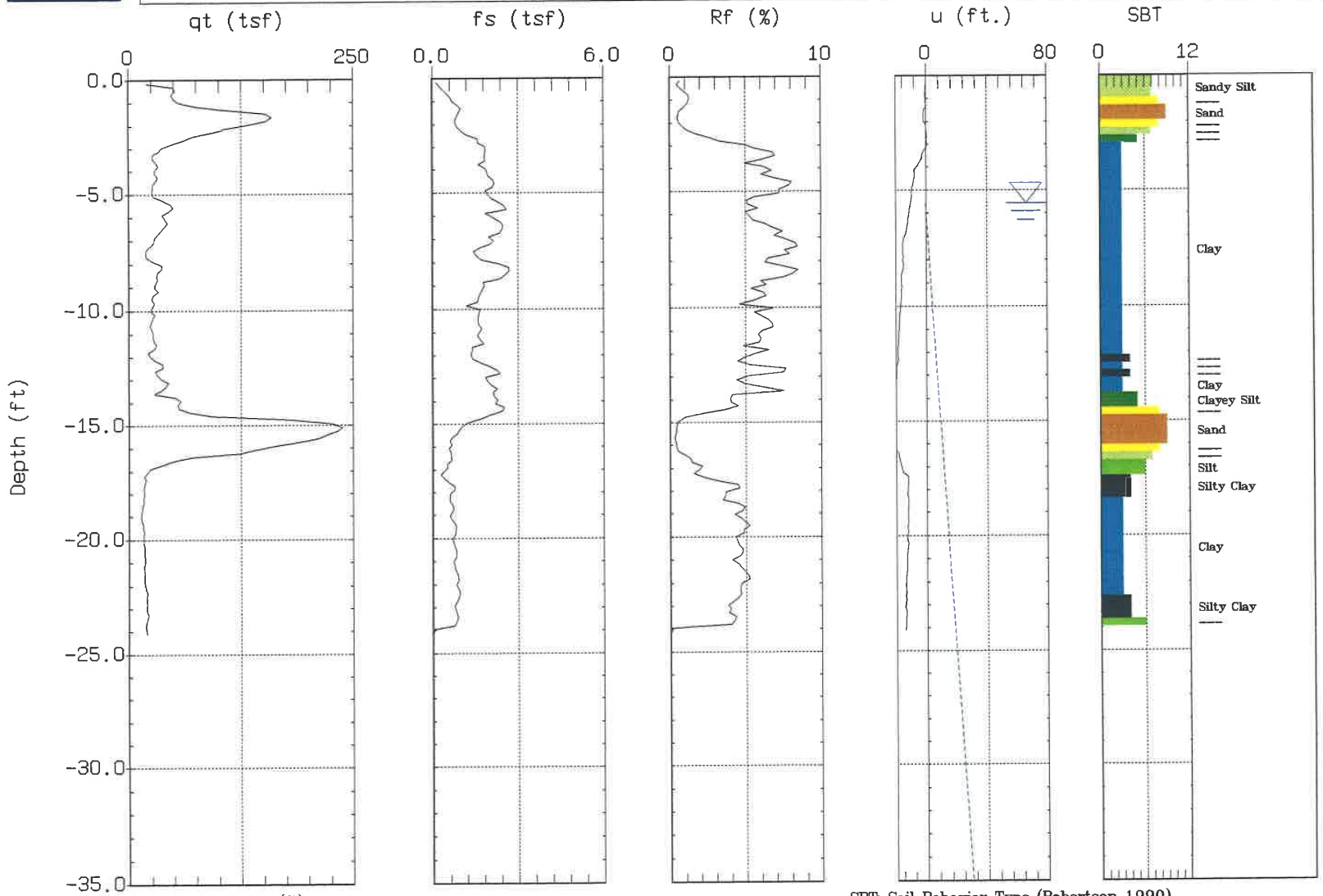
R2-0003463

CONETEC

Louis Berger Group

Sounding:P-30
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:16:07 14:45



Max. Depth: 24.11 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

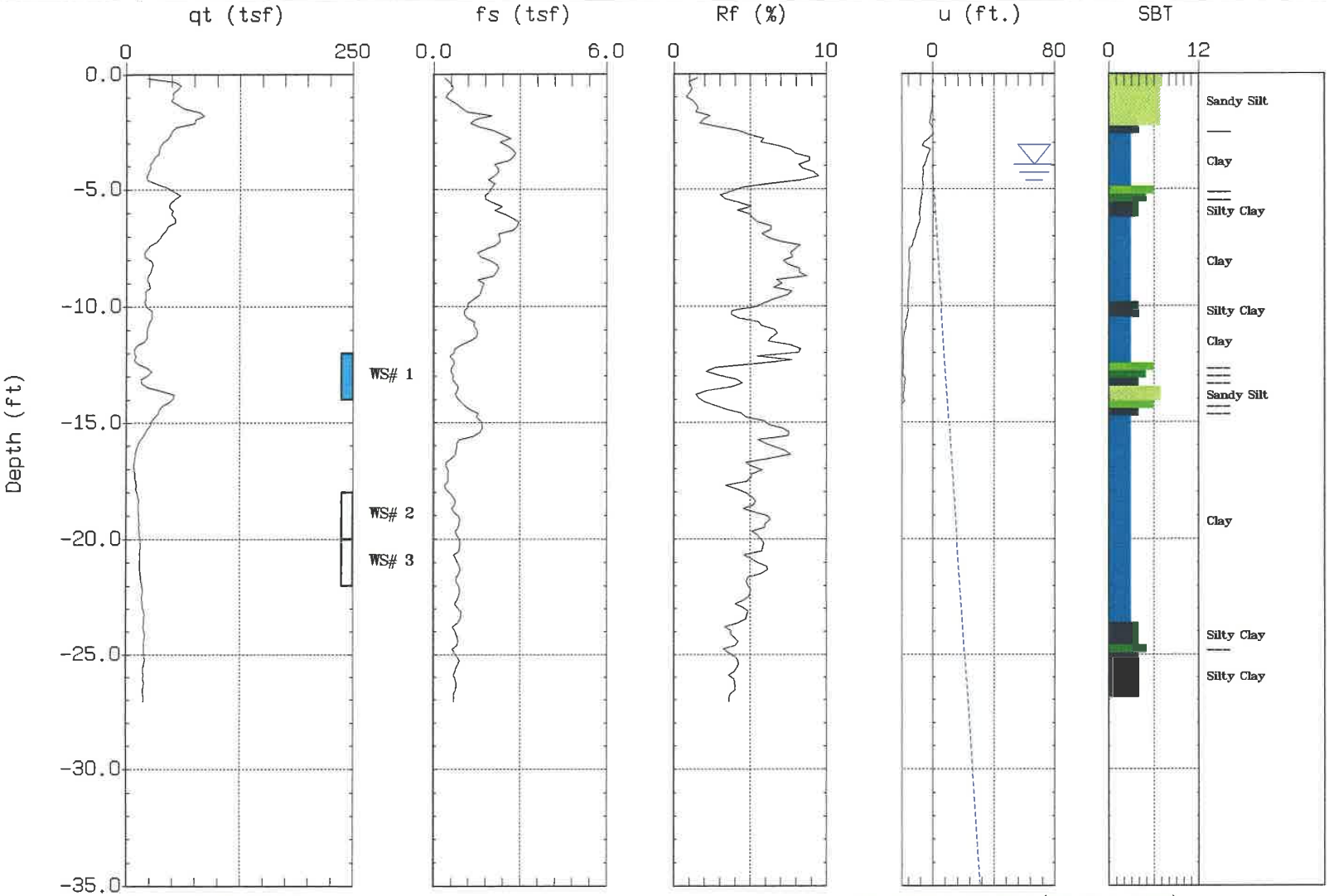
R2-0003464

CONETEC

Louis Berger Group

Sounding:P-31
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:16:07 13:42



Max. Depth: 27.07 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

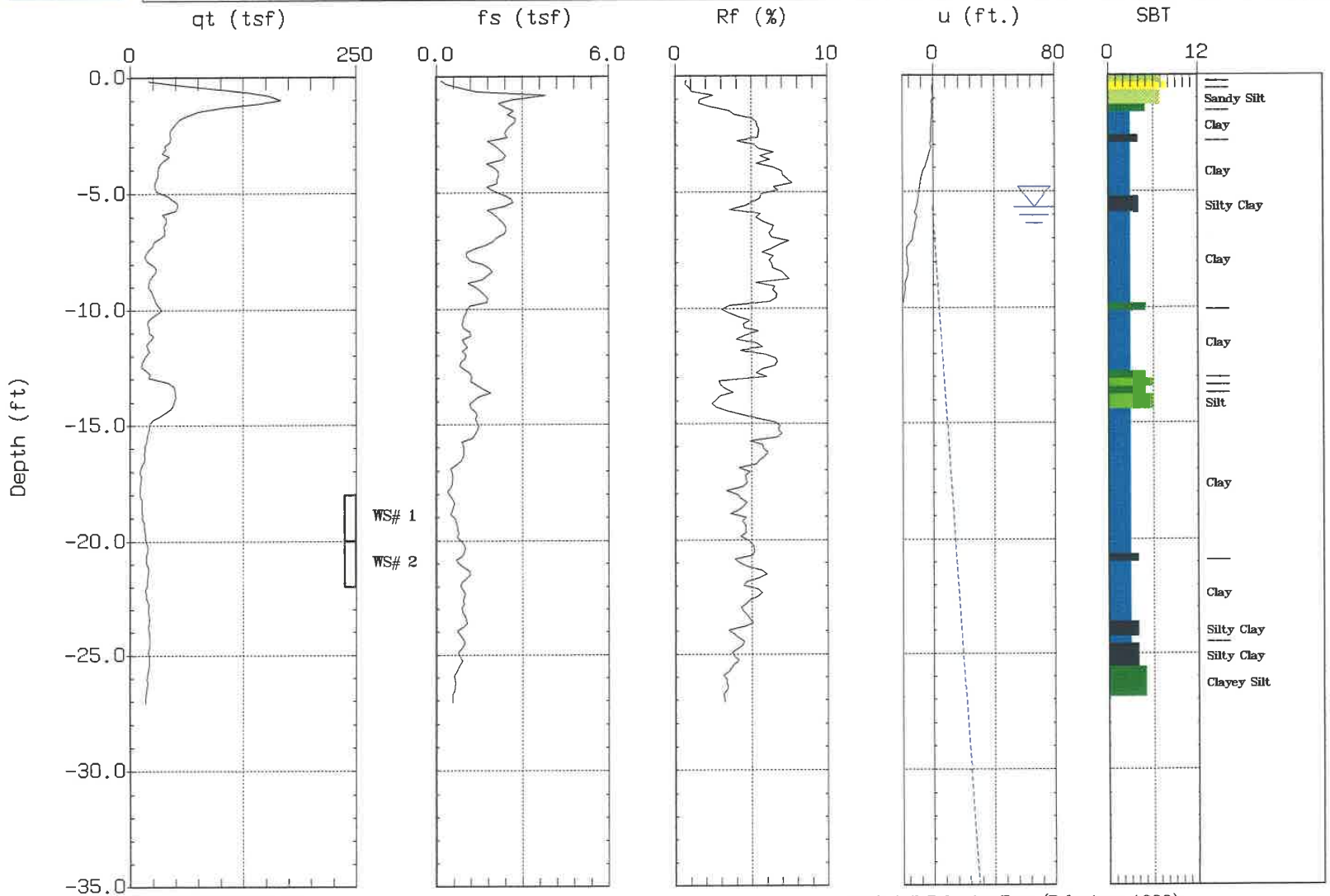
R2-0003465

CONETEC

Louis Berger Group

Sounding:P-32
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:16:07 12:58



Max. Depth: 27.07 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

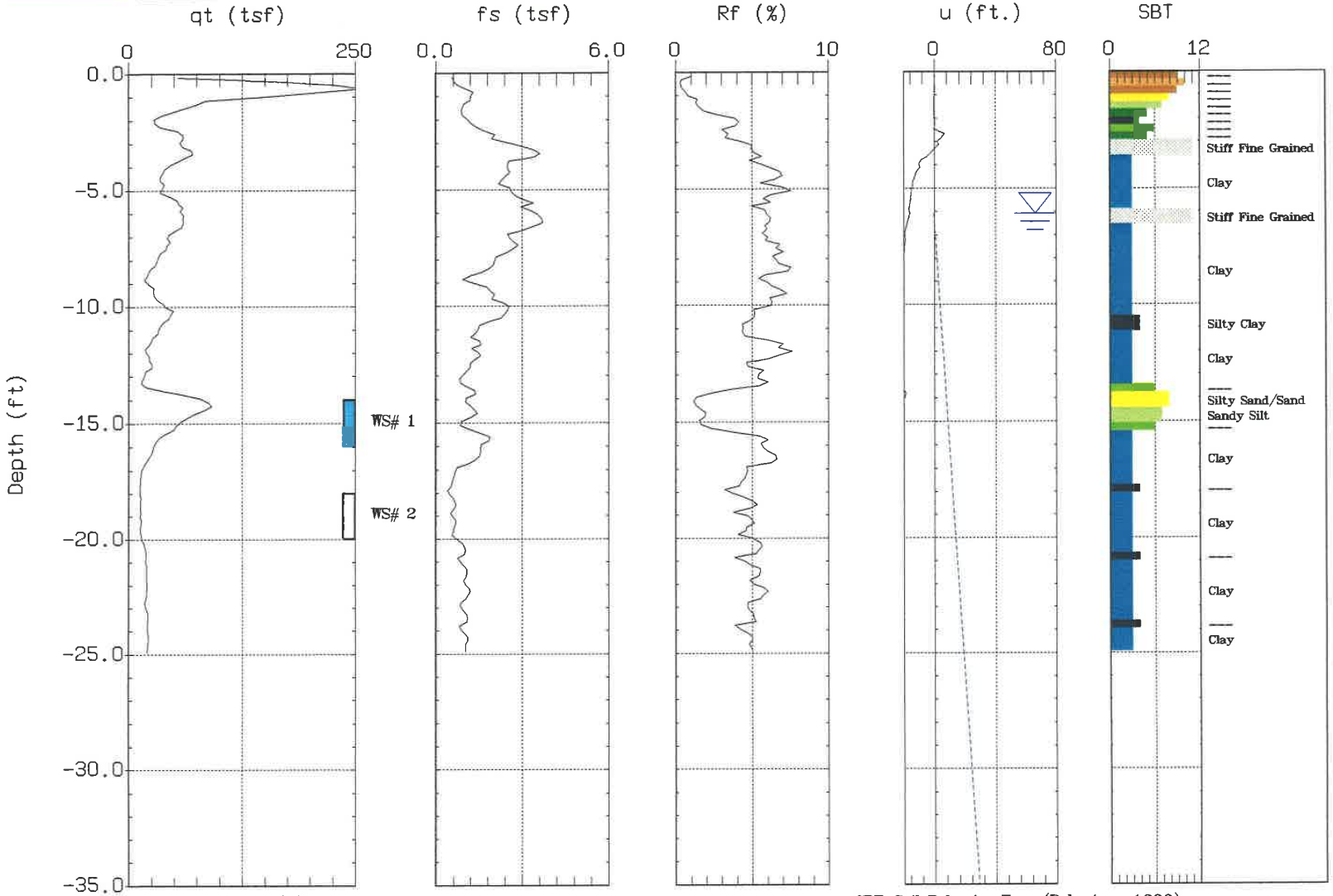
R2-0003466

CONETEC

Louis Berger Group

Sounding:P-33
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:16:07 12:19



Max. Depth: 24.93 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

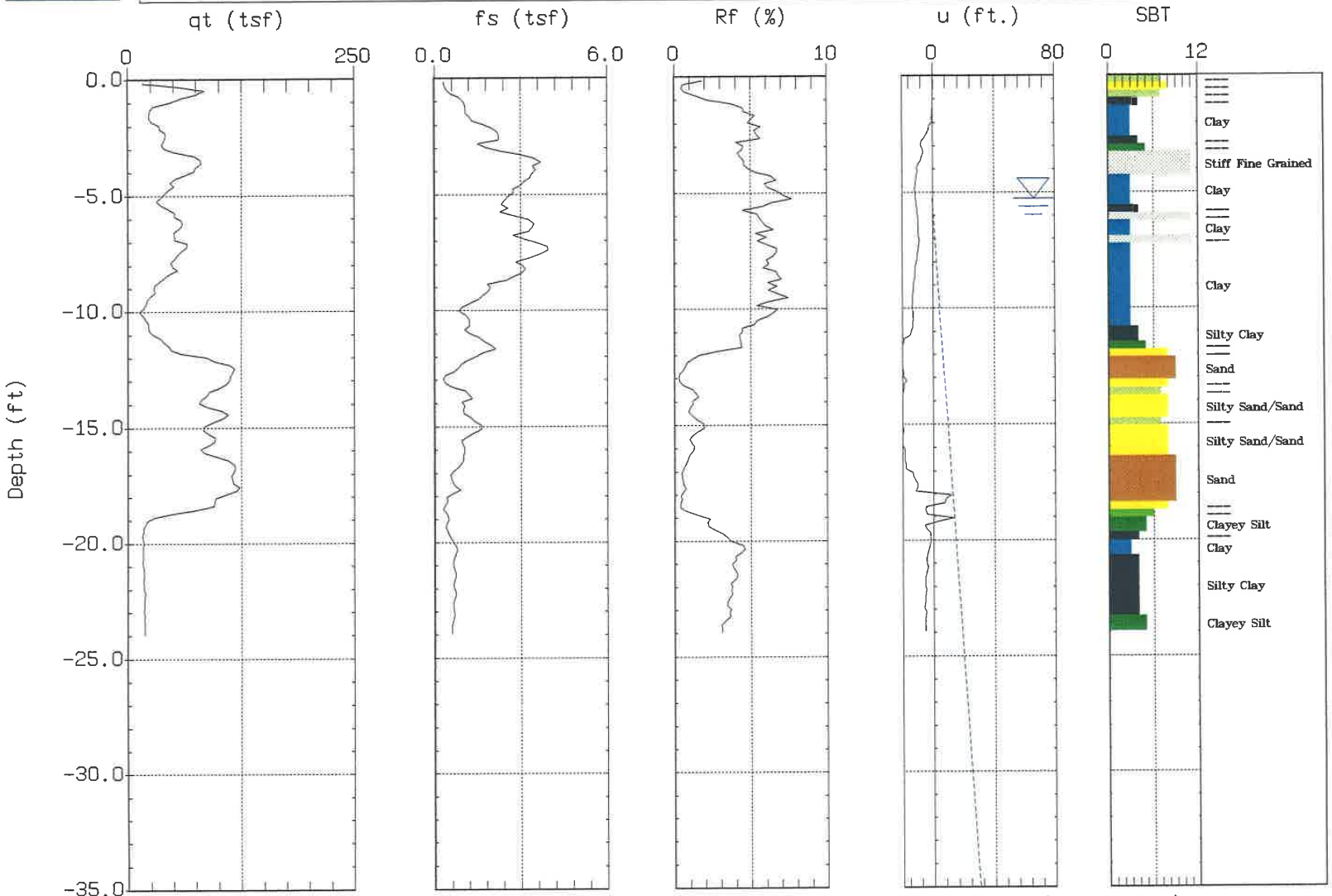
R2-0003467

CONETEC

Louis Berger Group

Sounding:P-34
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:16:07 09:46



Max. Depth: 23.95 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

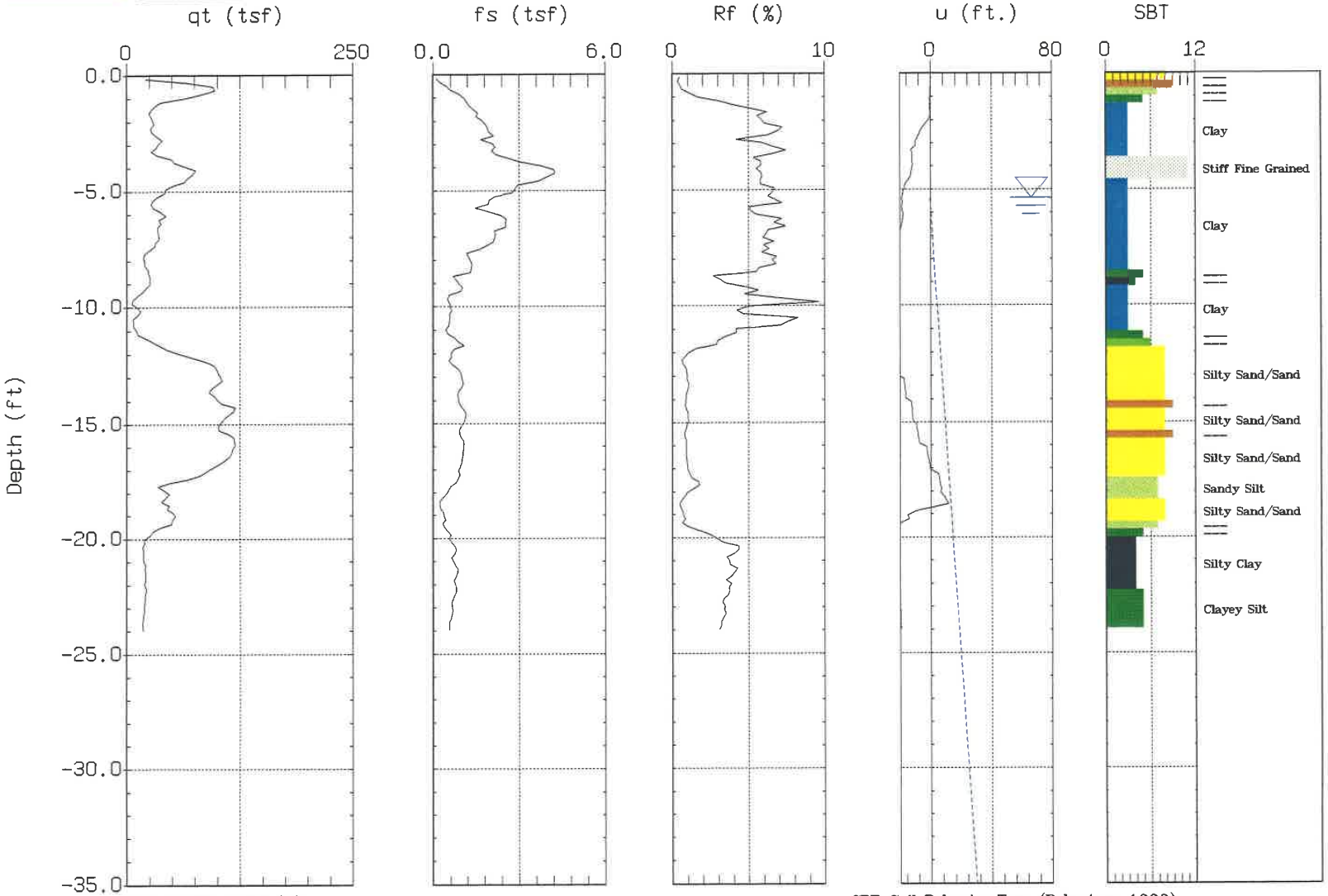
R2-0003468

CONETEC

Louis Berger Group

Sounding:P-35
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:16:07 10:38



Max. Depth: 23.95 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

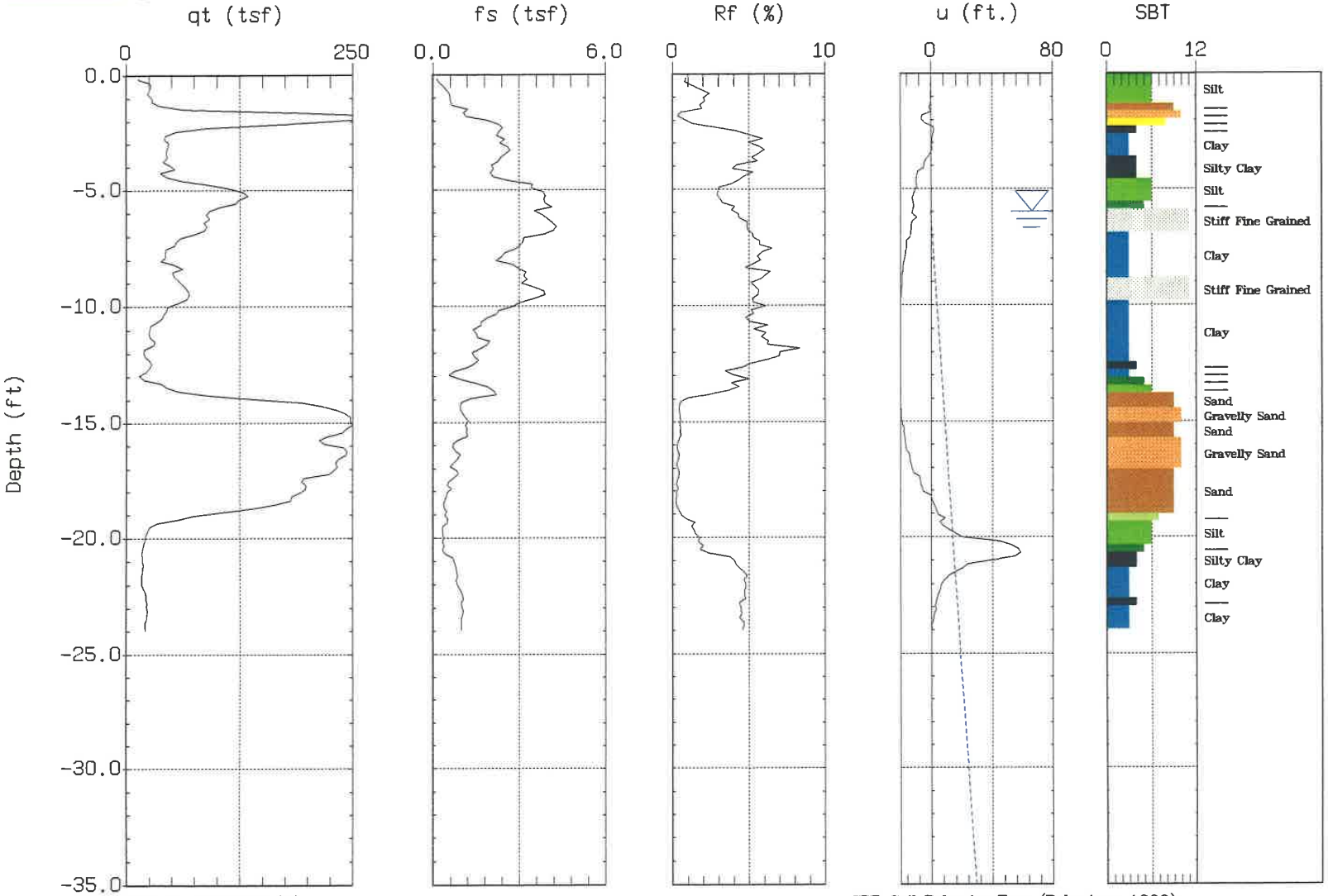
R2-0003469

CONETEC

Louis Berger Group

Sounding:P-36
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:16:07 07:24



Max. Depth: 23.95 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

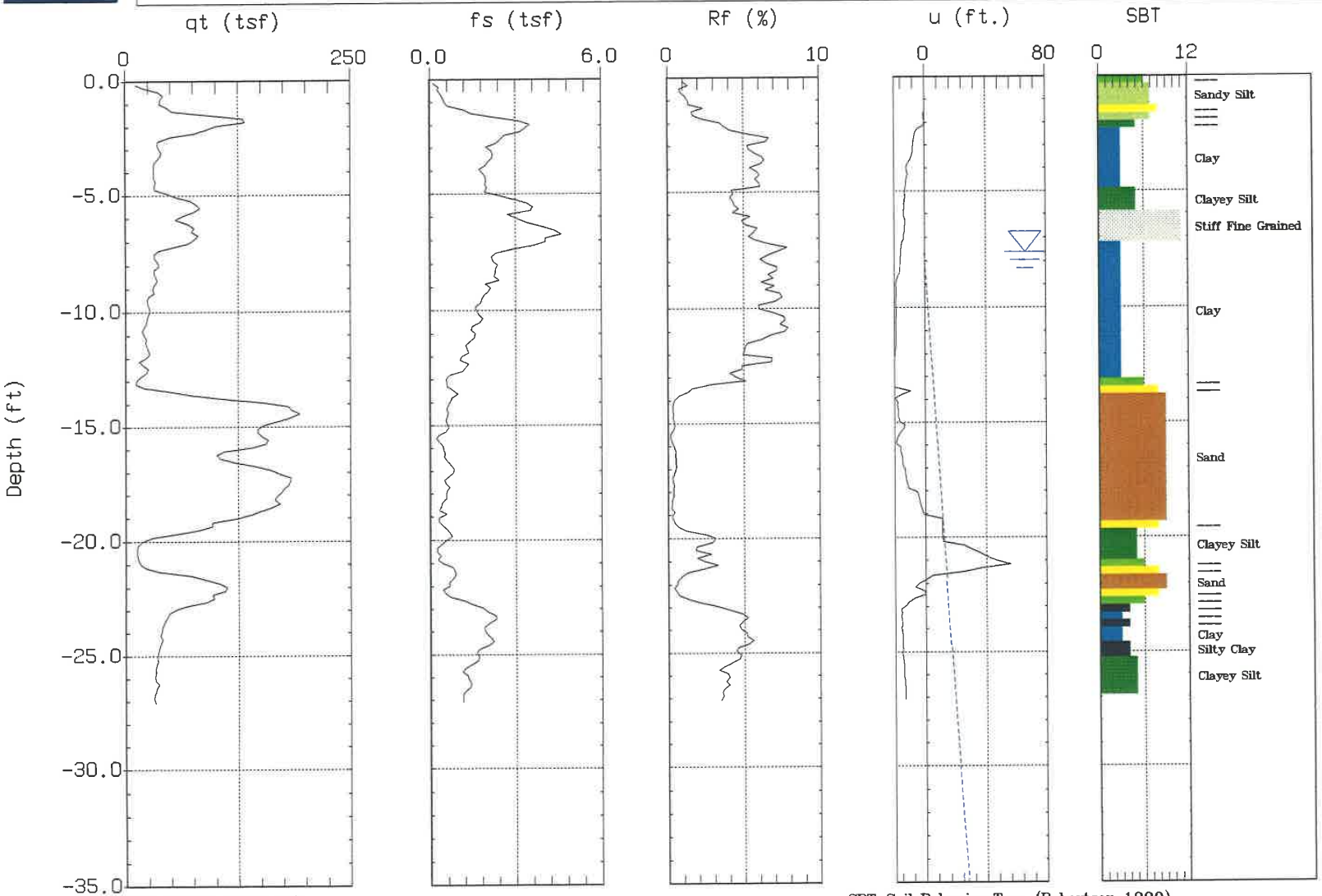
R2-0003470

CONETEC

Louis Berger Group

Sounding:P-37
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:18:07 11:40



Max. Depth: 27.07 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

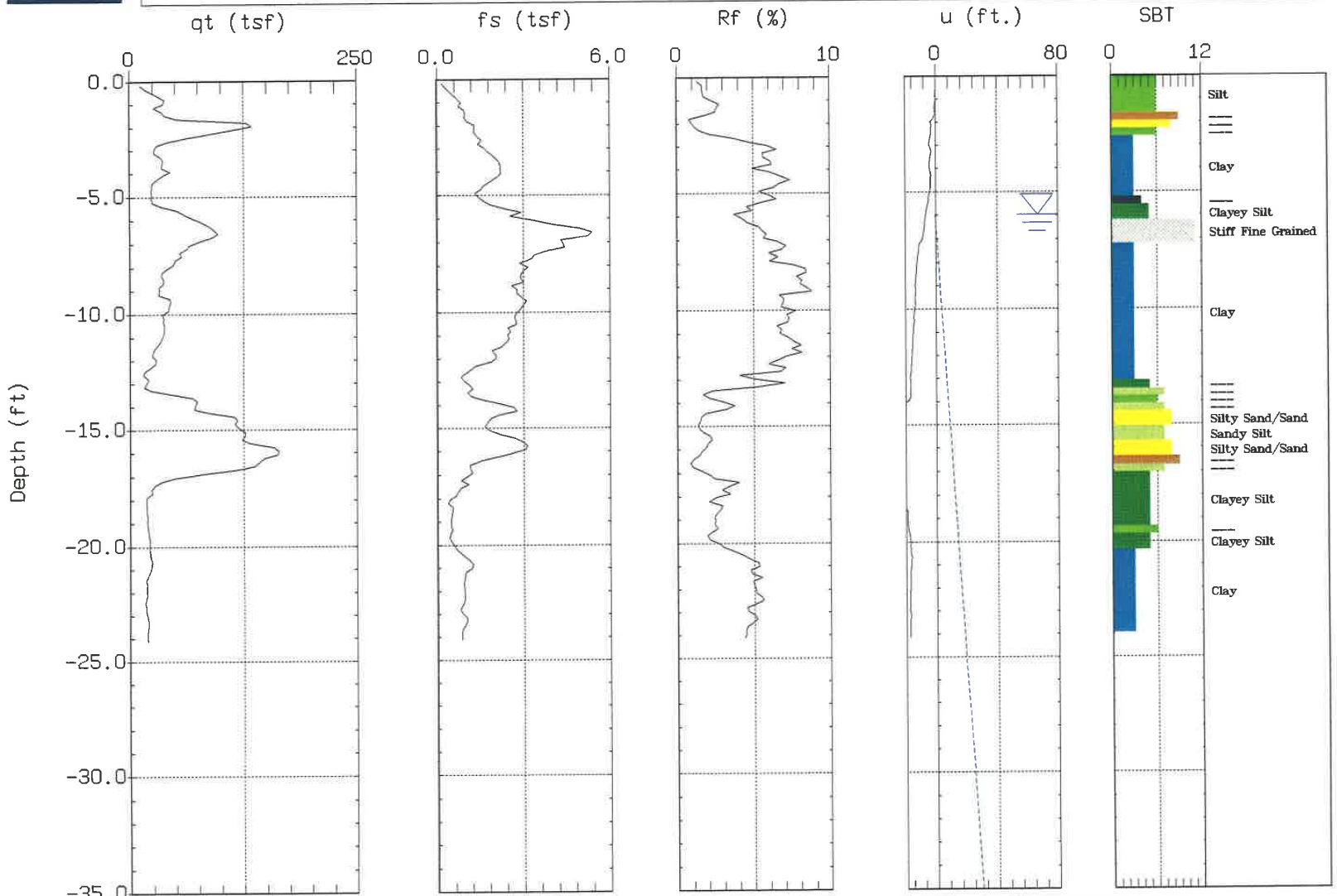
R2-0003471

CONETEC

Louis Berger Group

Sounding:P-38
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:18:07 11:06



Max. Depth: 24.11 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

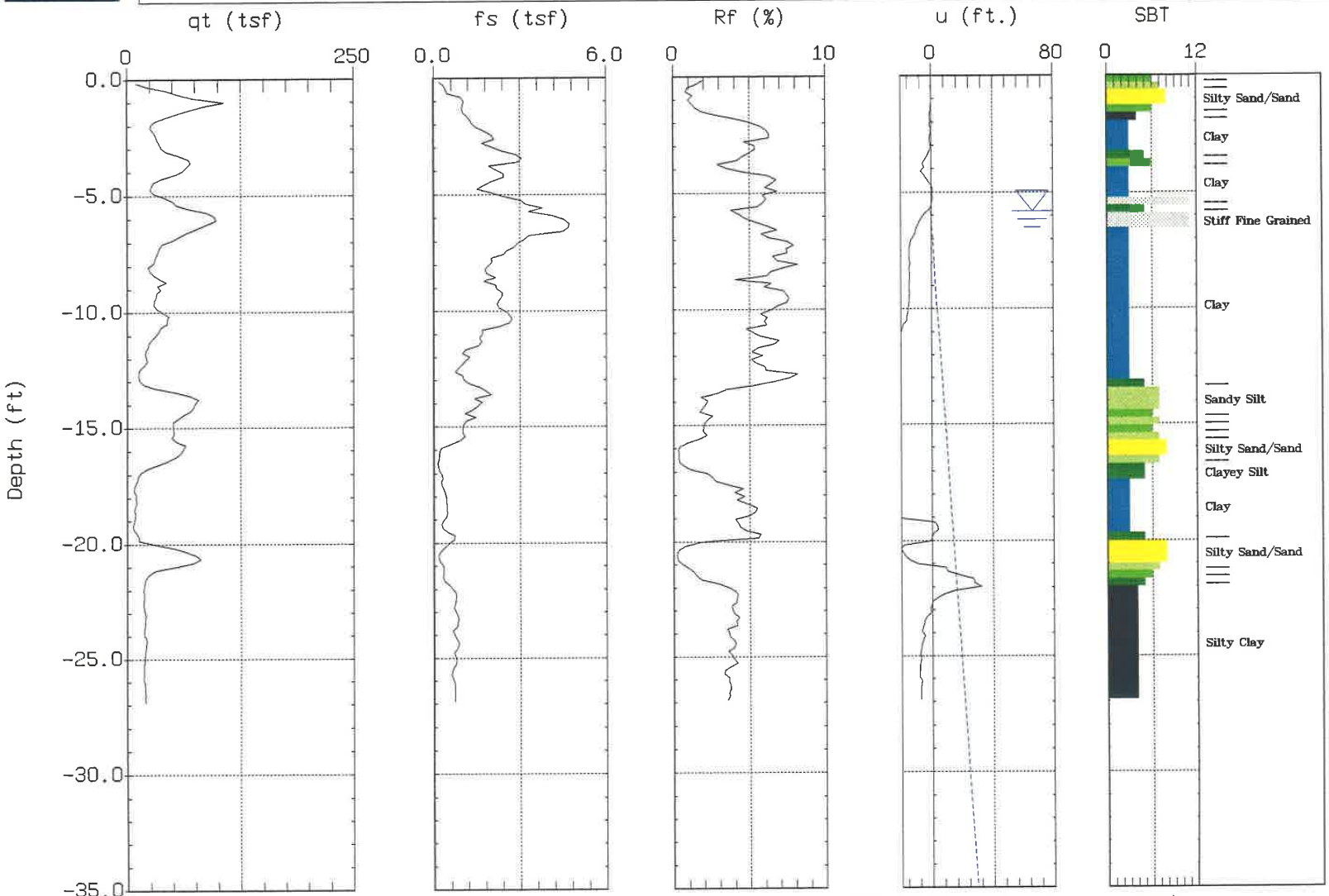
R2-0003472

CONETEC

Louis Berger Group

Sounding:P-39
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:17:07 08:47



Max. Depth: 26.90 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

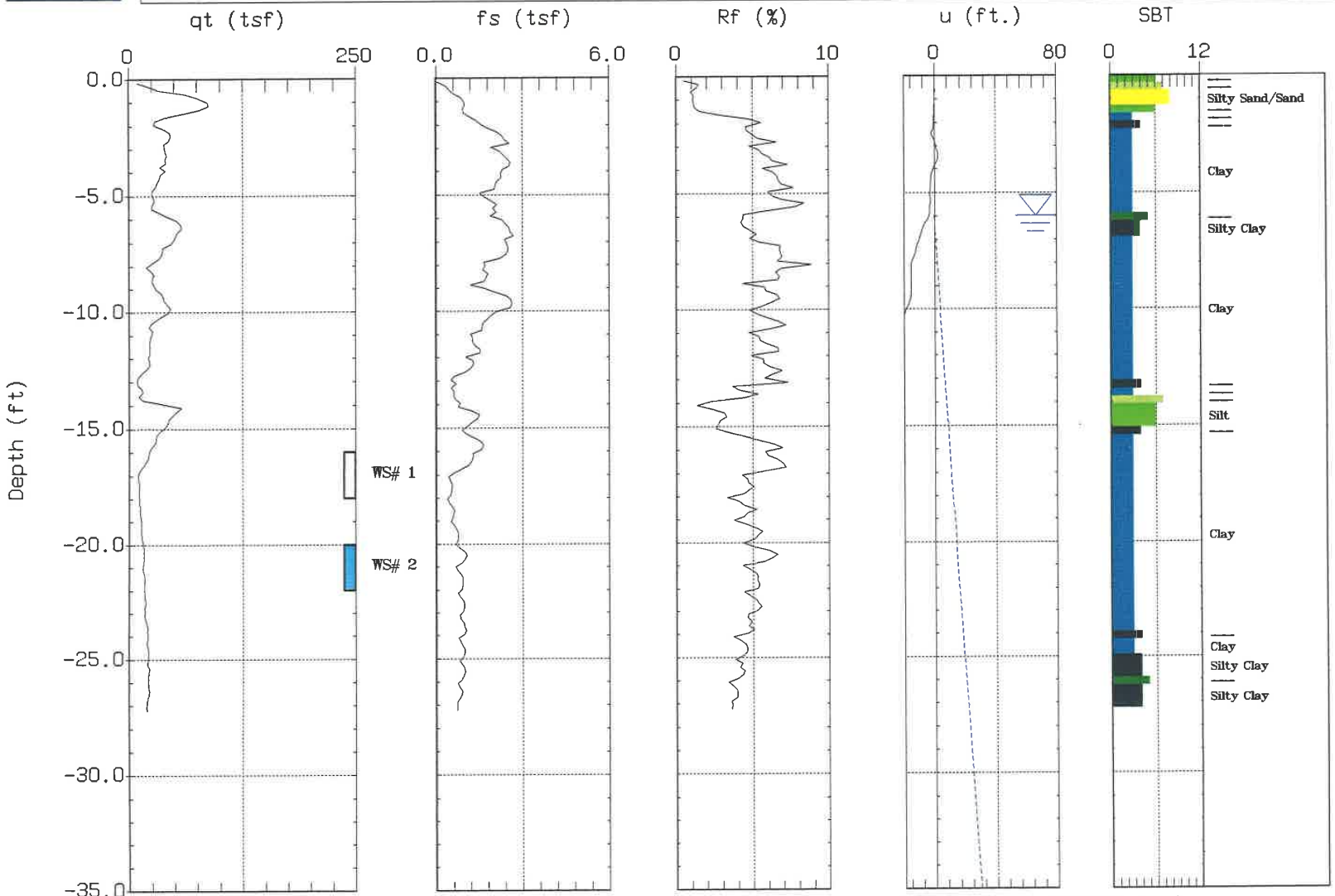
R2-0003473

CONETEC

Louis Berger Group

Sounding:P-40
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:17:07 08:03



Max. Depth: 27.23 (ft)
Depth Inc.: 0.164 (ft)

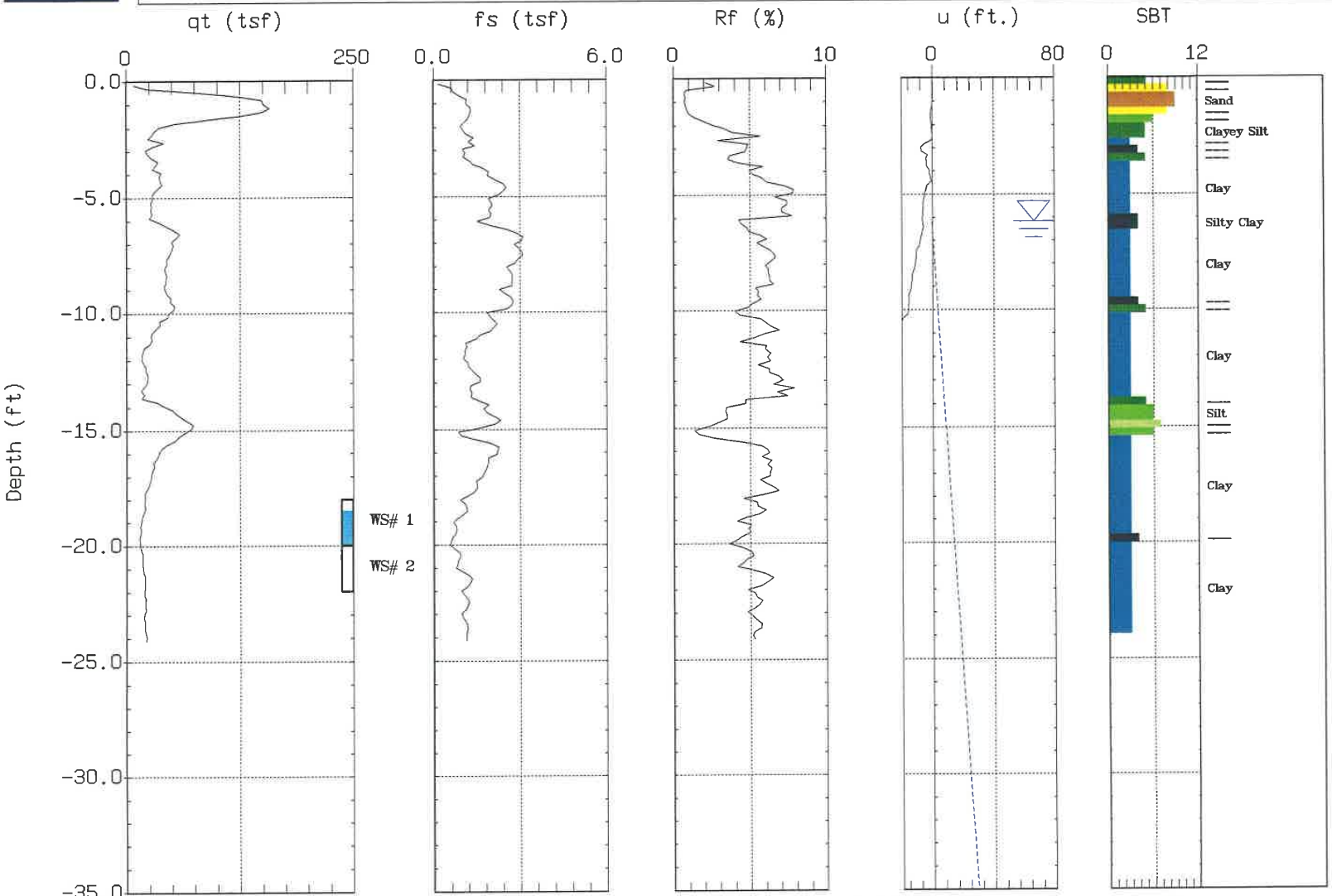
SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

CONETEC

Louis Berger Group

Sounding:P-41
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:17:07 07:23



Max. Depth: 24.11 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

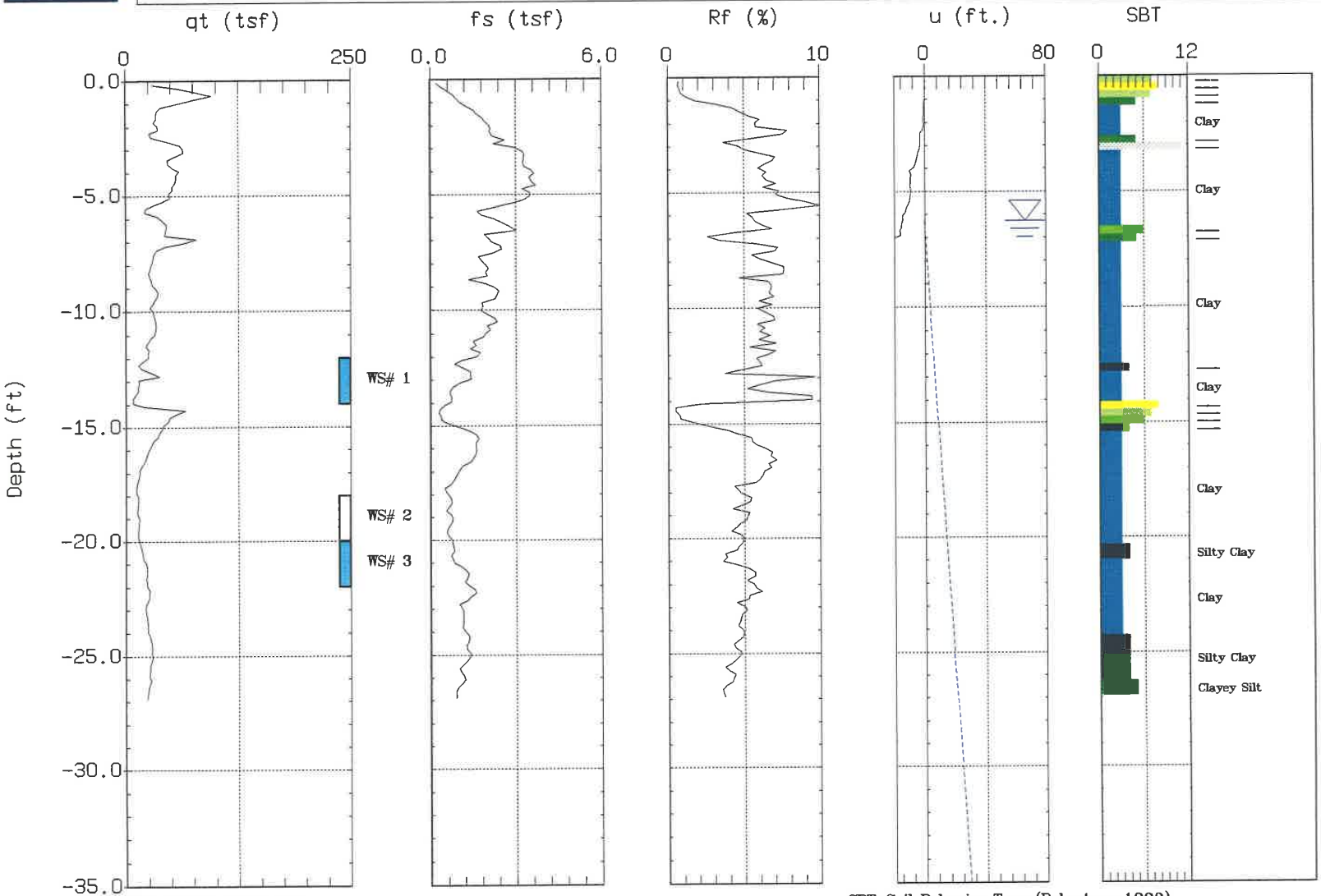
R2-0003475

CONETEC

Louis Berger Group

Sounding:P-42
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:17:07 06:36



Max. Depth: 26.90 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

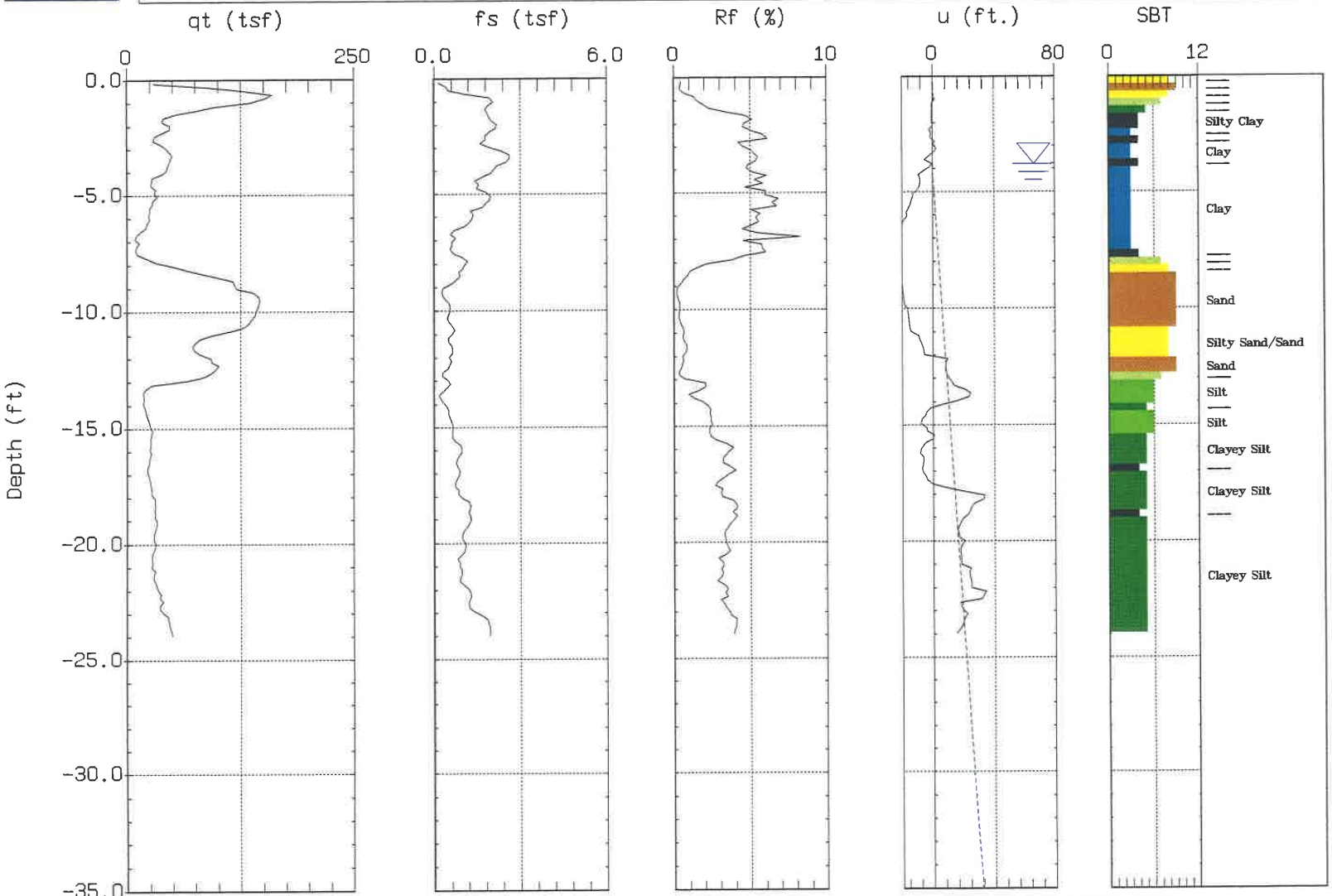
R2-0003476

CONETEC

Louis Berger Group

Sounding:P-43
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:16:07 11:22



Max. Depth: 23.95 (ft)
Depth Inc.: 0.164 (ft)

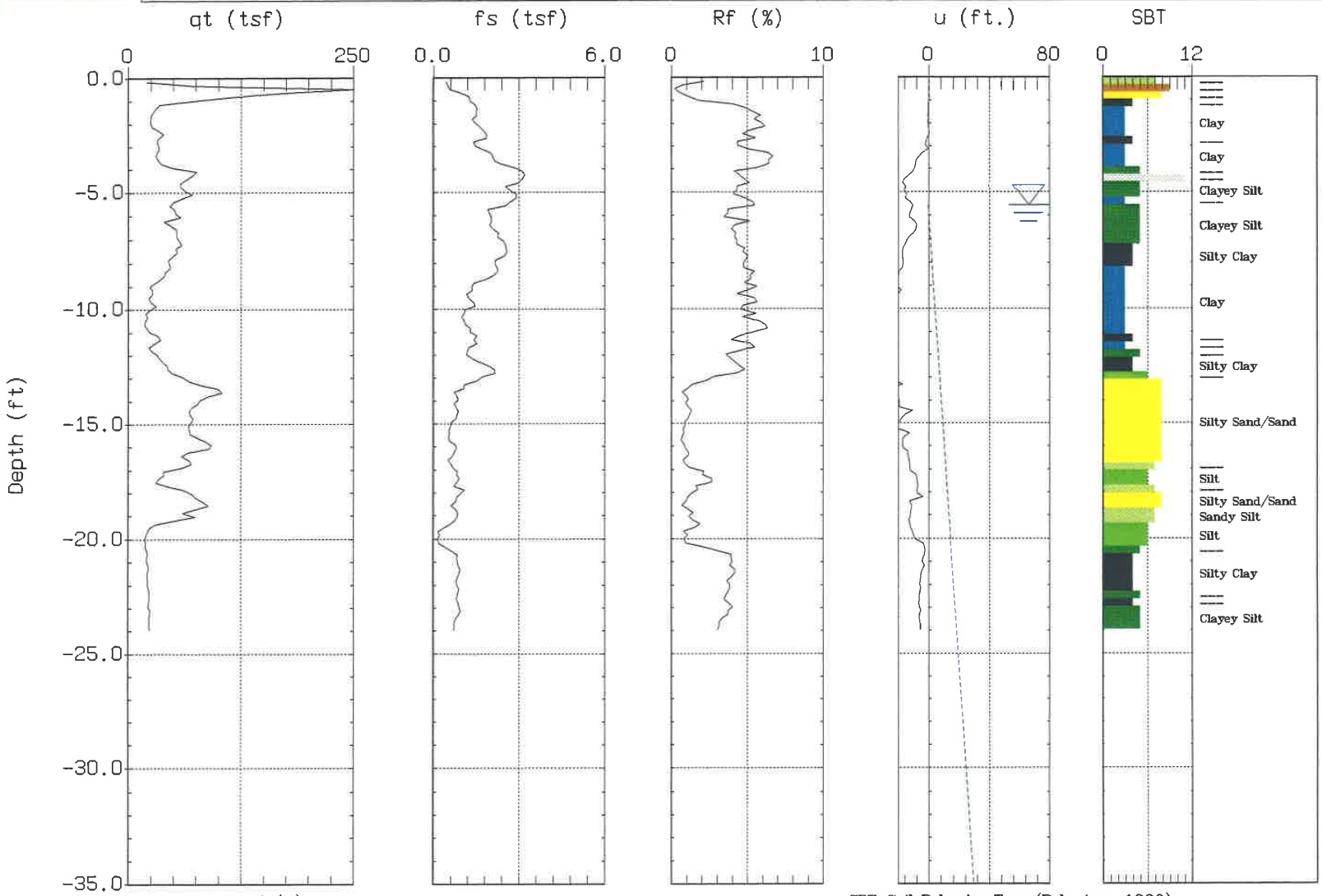
SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

CONETEC

Louis Berger Group

Sounding:P-44
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:16:07 08:54



Max. Depth: 23.95 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

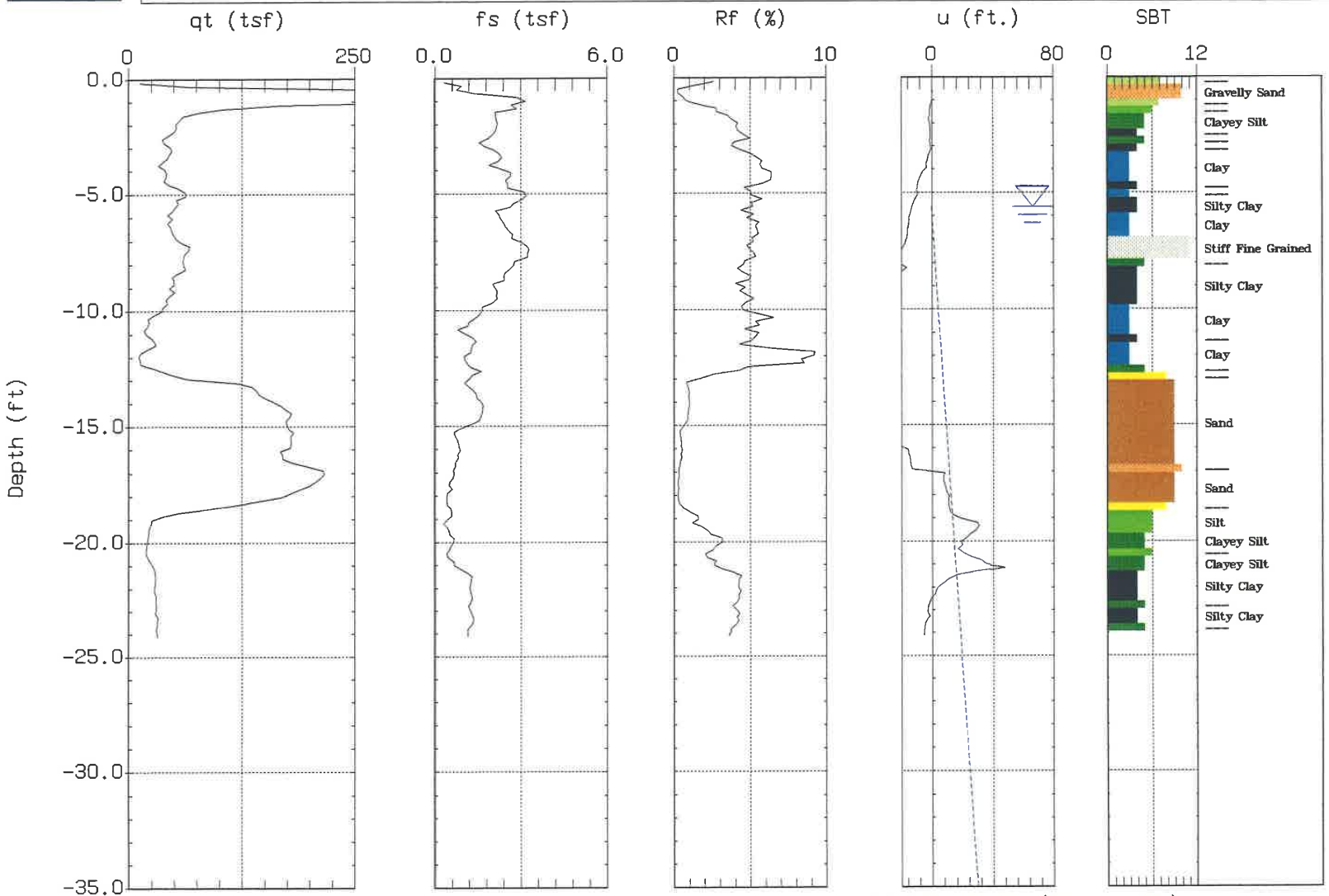
R2-0003478

CONETEC

Louis Berger Group

Sounding:P-45
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:16:07 08:01



Max. Depth: 24.11 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

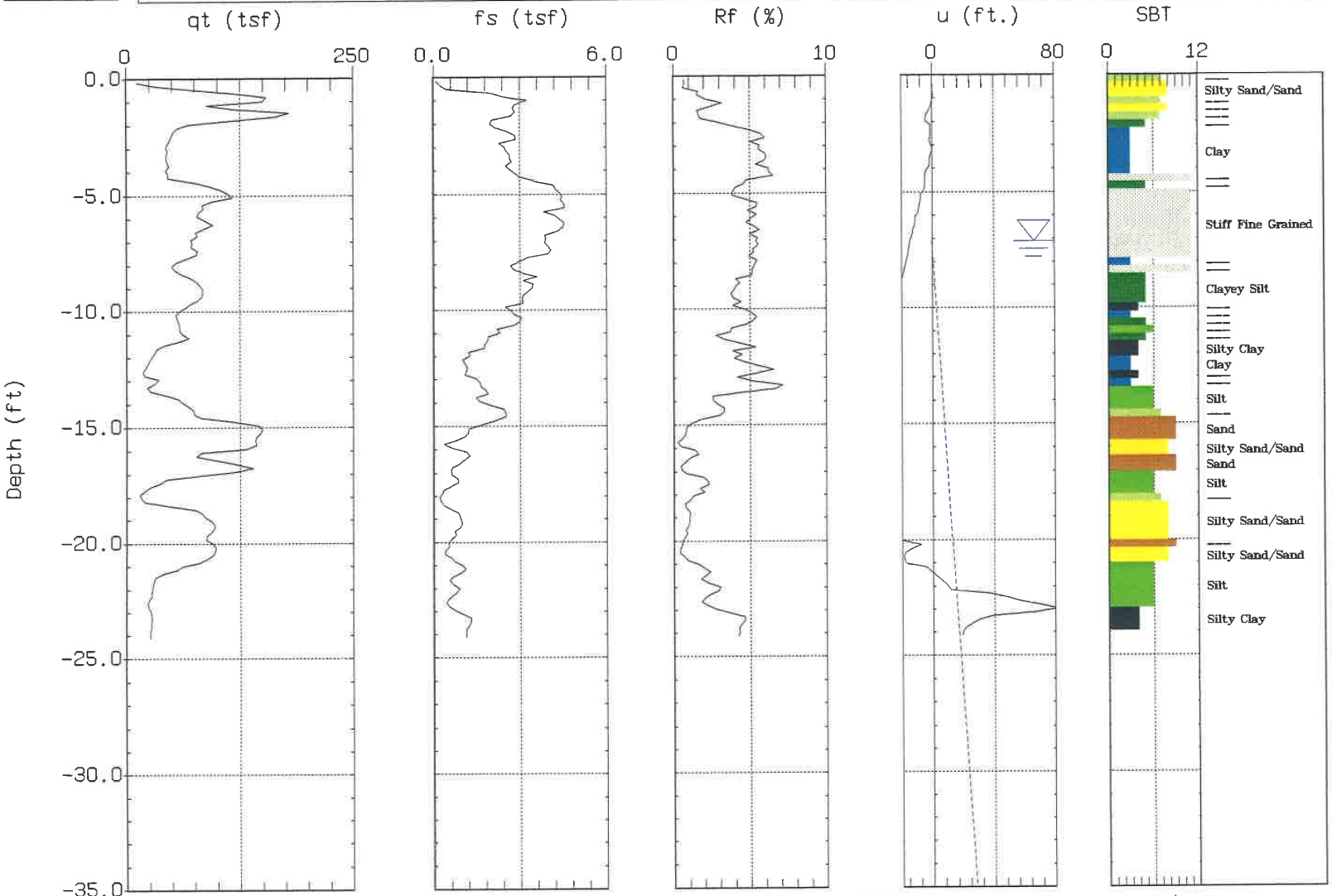
R2-0003479

CONETEC

Louis Berger Group

Sounding:P-46
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:18:07 10:13



Max. Depth: 24.11 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

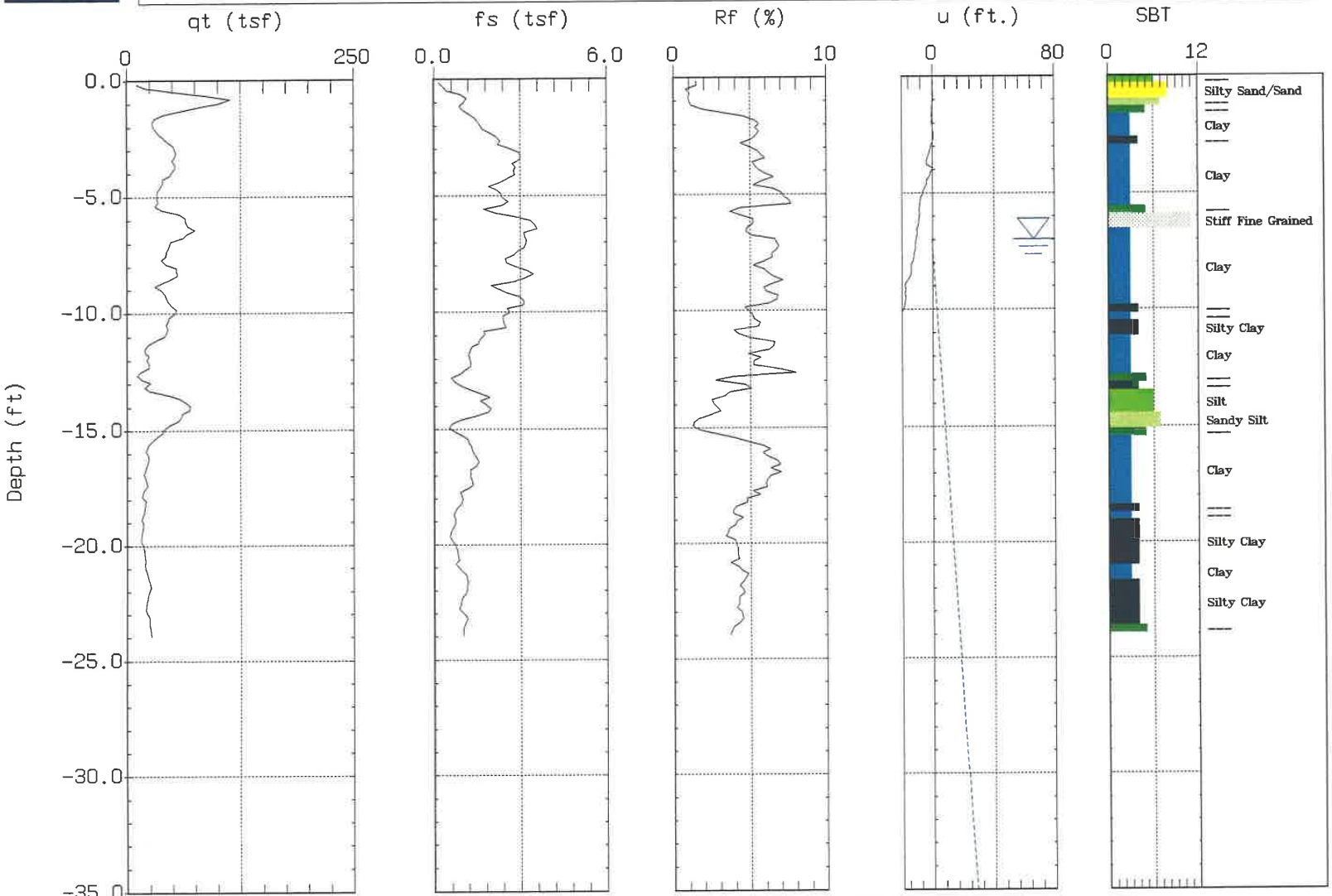
R2-0003480

CONETEC

Louis Berger Group

Sounding:P-47
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:18:07 09:33



Max. Depth: 23.95 (ft)
Depth Inc.: 0.164 (ft)

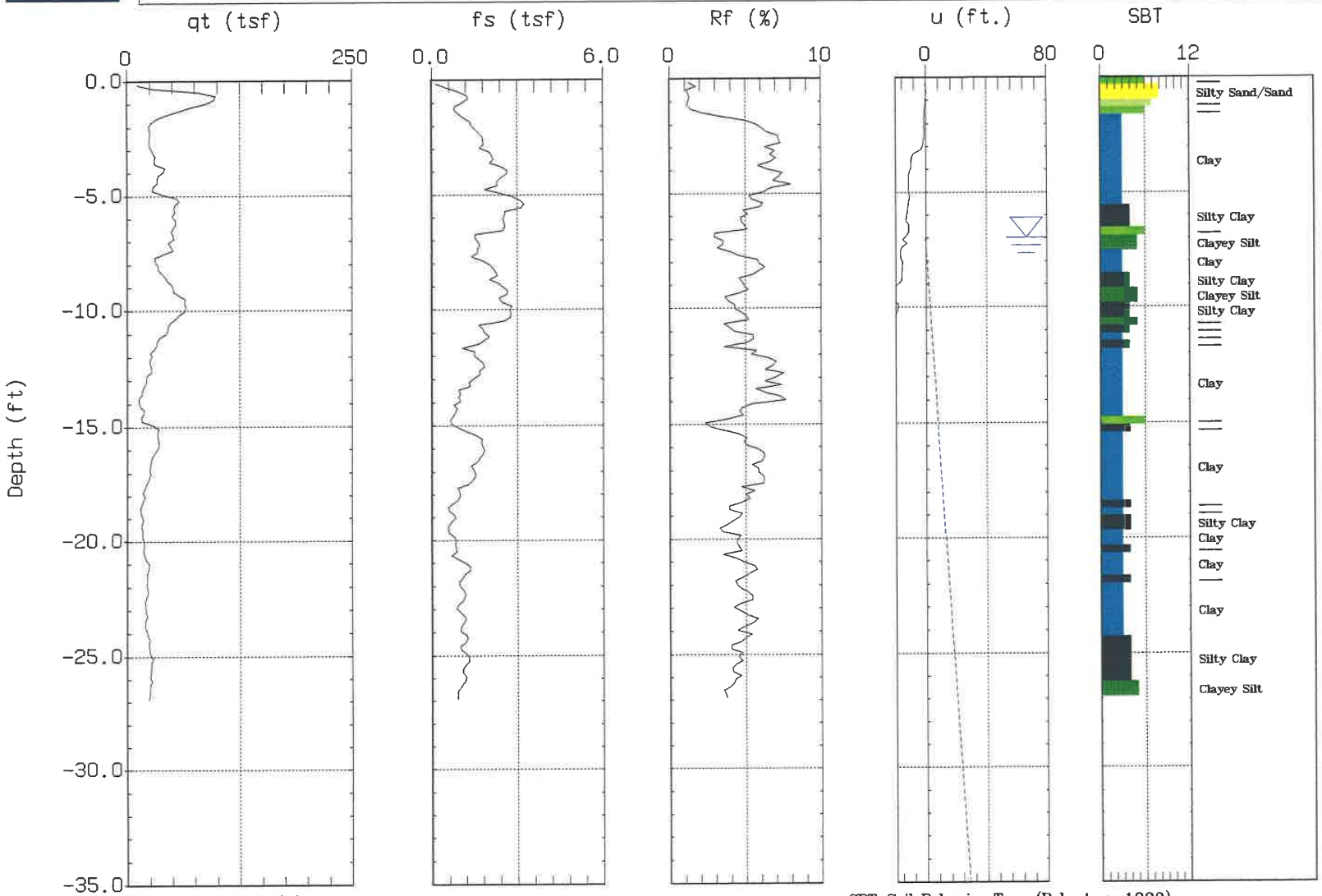
SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

CONETEC

Louis Berger Group

Sounding:P-48
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:18:07 08:48



Max. Depth: 26.90 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

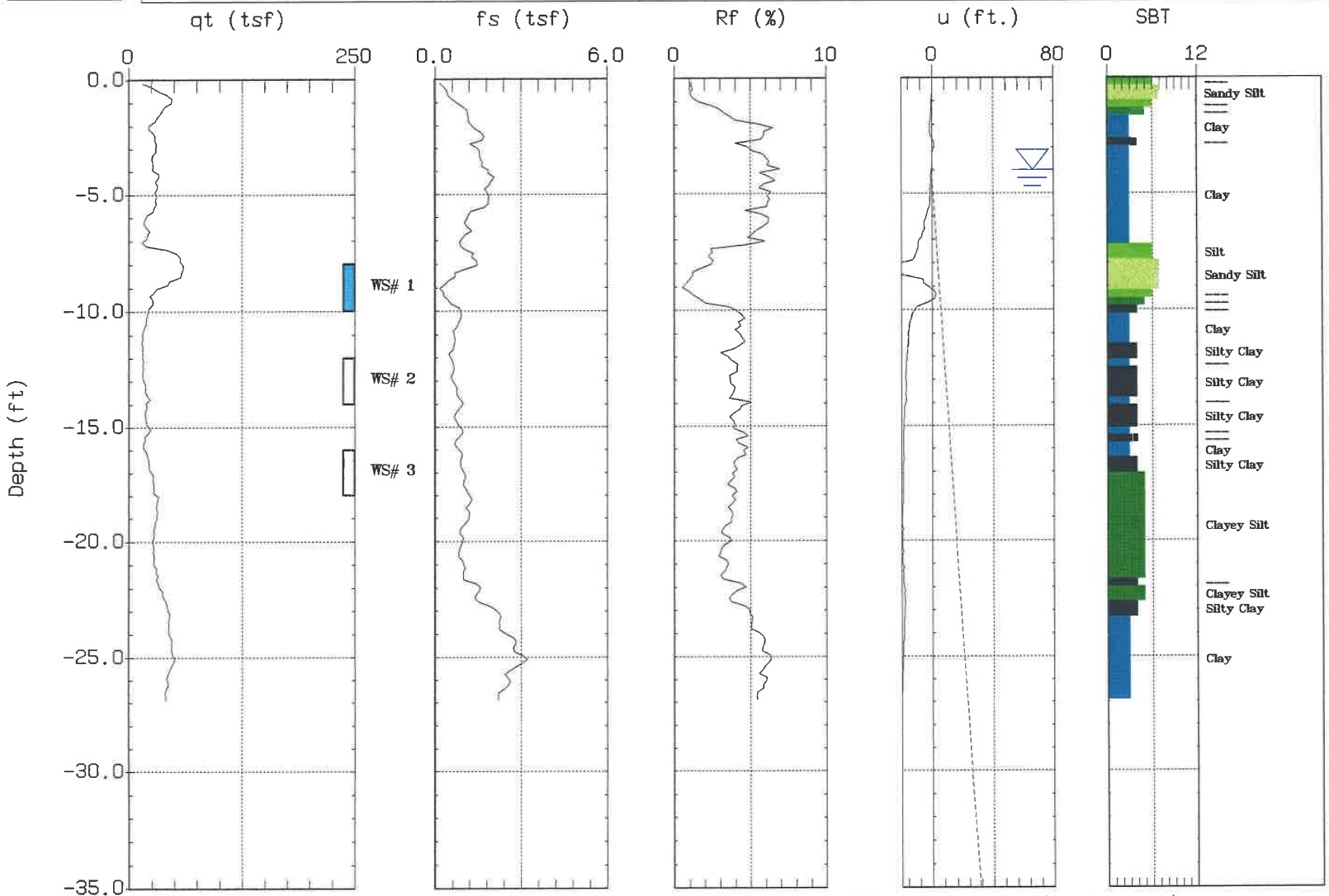
R2-0003482

CONETEC

Louis Berger Group

Sounding:P-49
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:21:07 08:19



Max. Depth: 26.90 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

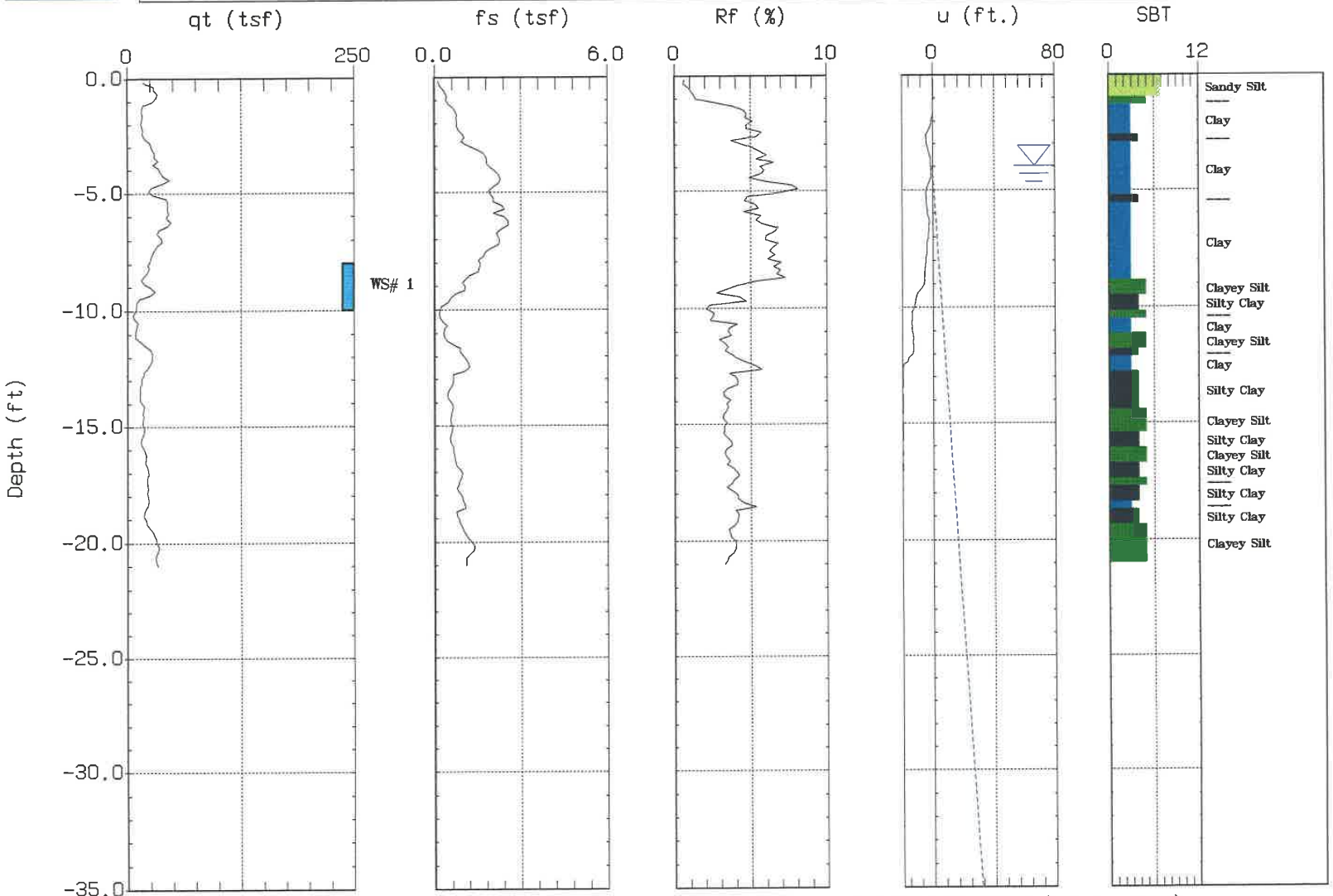
R2-0003483

CONETEC

Louis Berger Group

Sounding:P-50
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:21:07 09:42



Max. Depth: 21.00 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

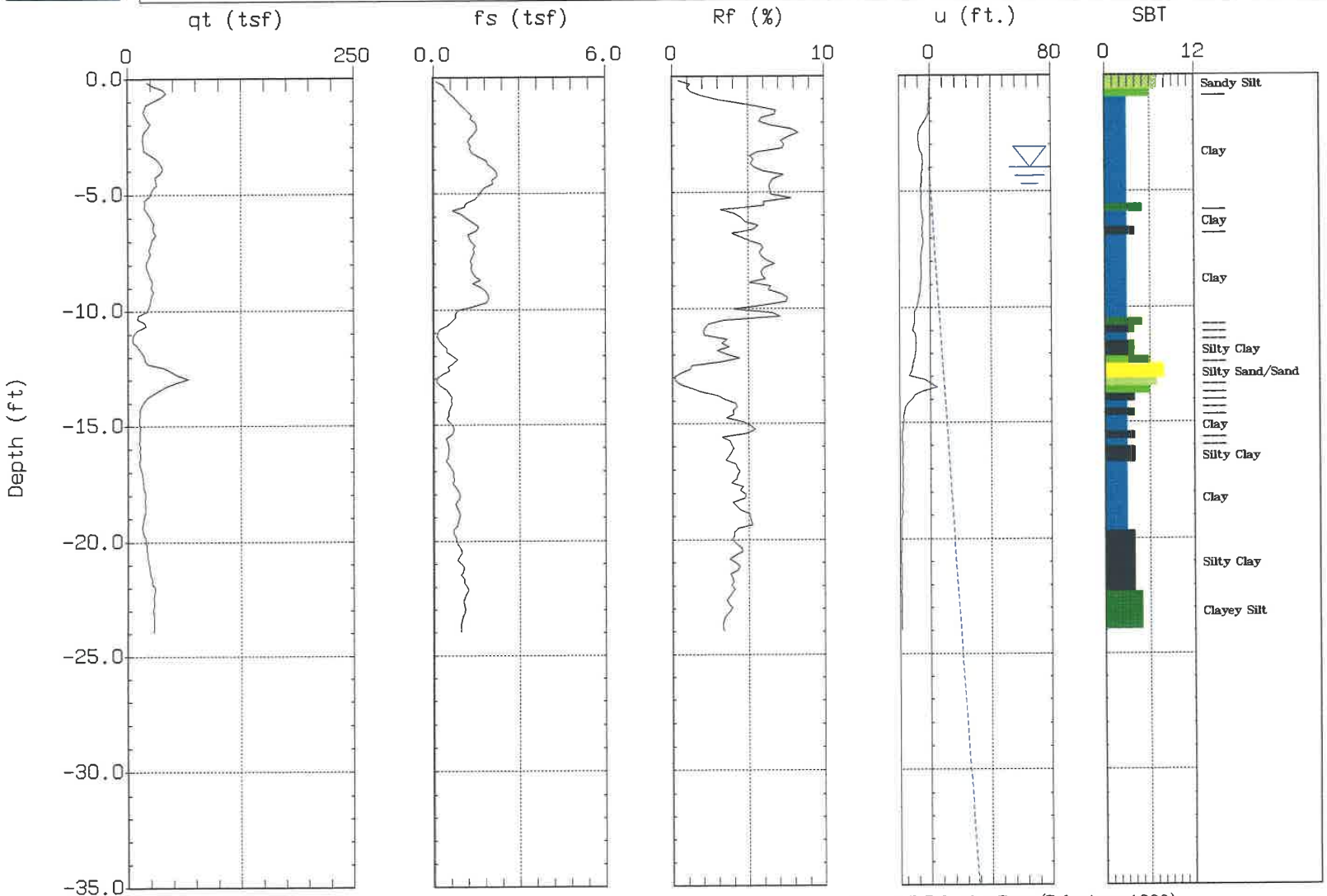
R2-0003484

CONETEC

Louis Berger Group

Sounding:P-51
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:21:07 10:18



Max. Depth: 23.95 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

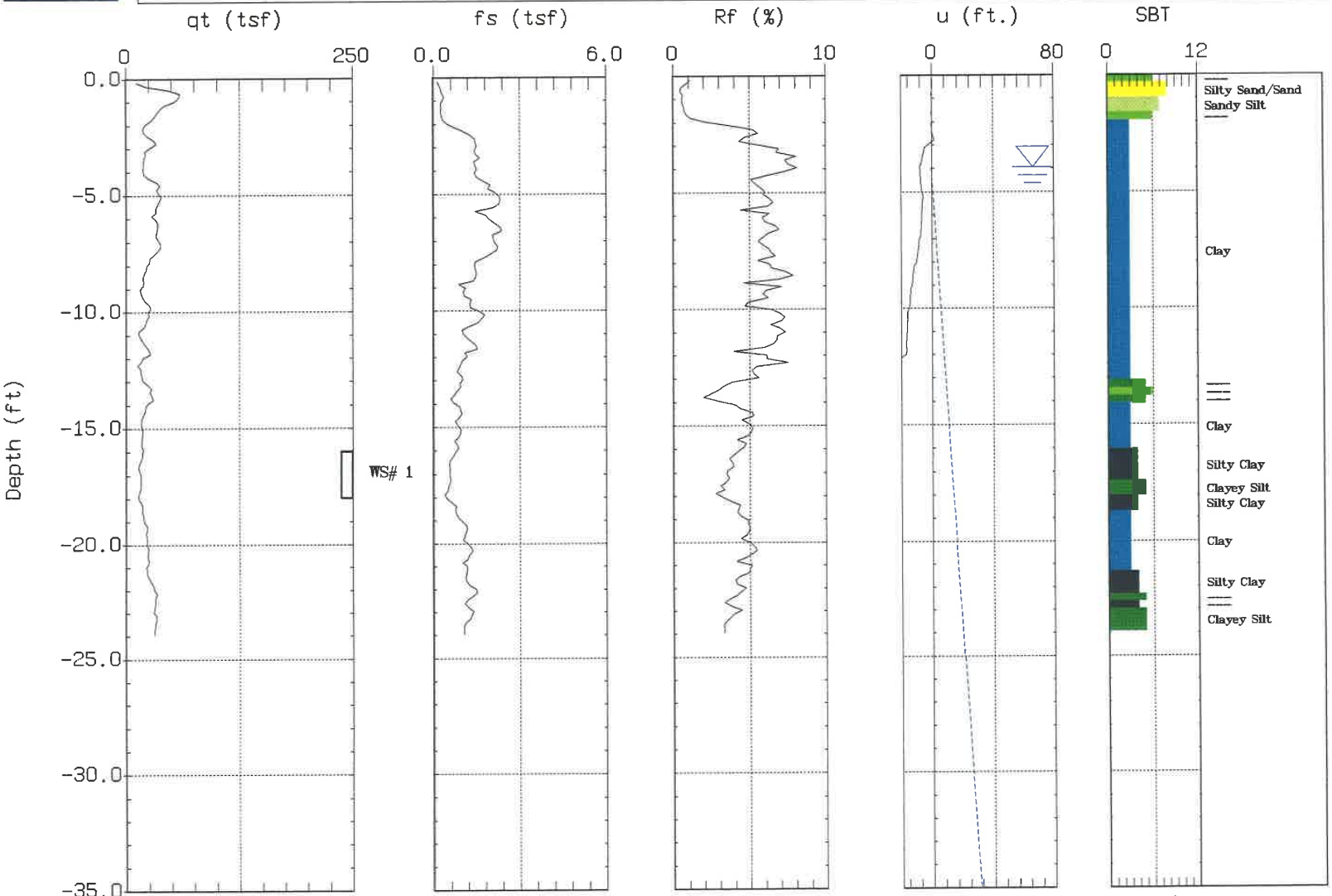
R2-0003485

CONETEC

Louis Berger Group

Sounding:P-52
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:21:07 10:53



Max. Depth: 23.95 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

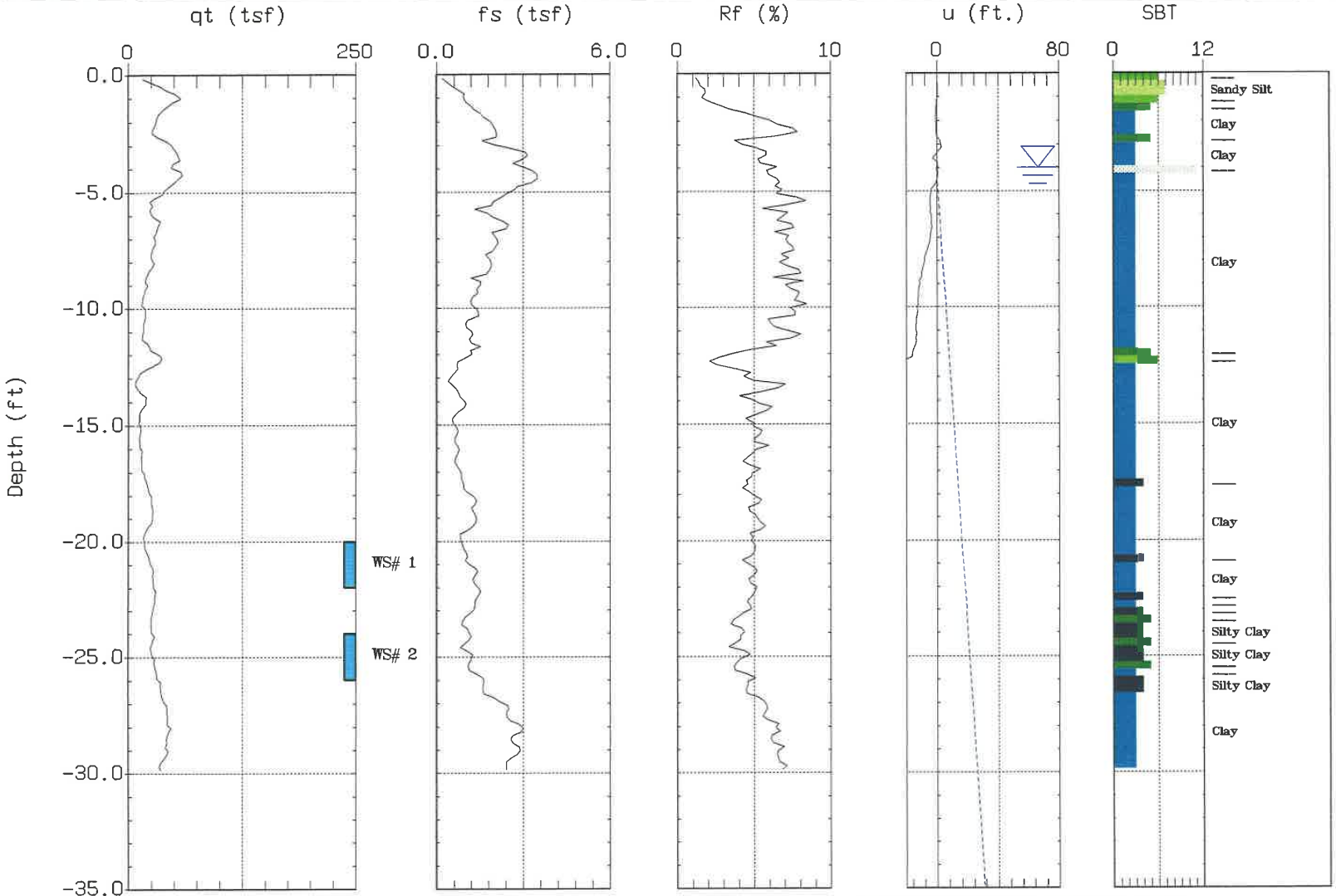
R2-0003486

CONETEC

Louis Berger Group

Sounding:P-53
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:21:07 07:29



Max. Depth: 29.86 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

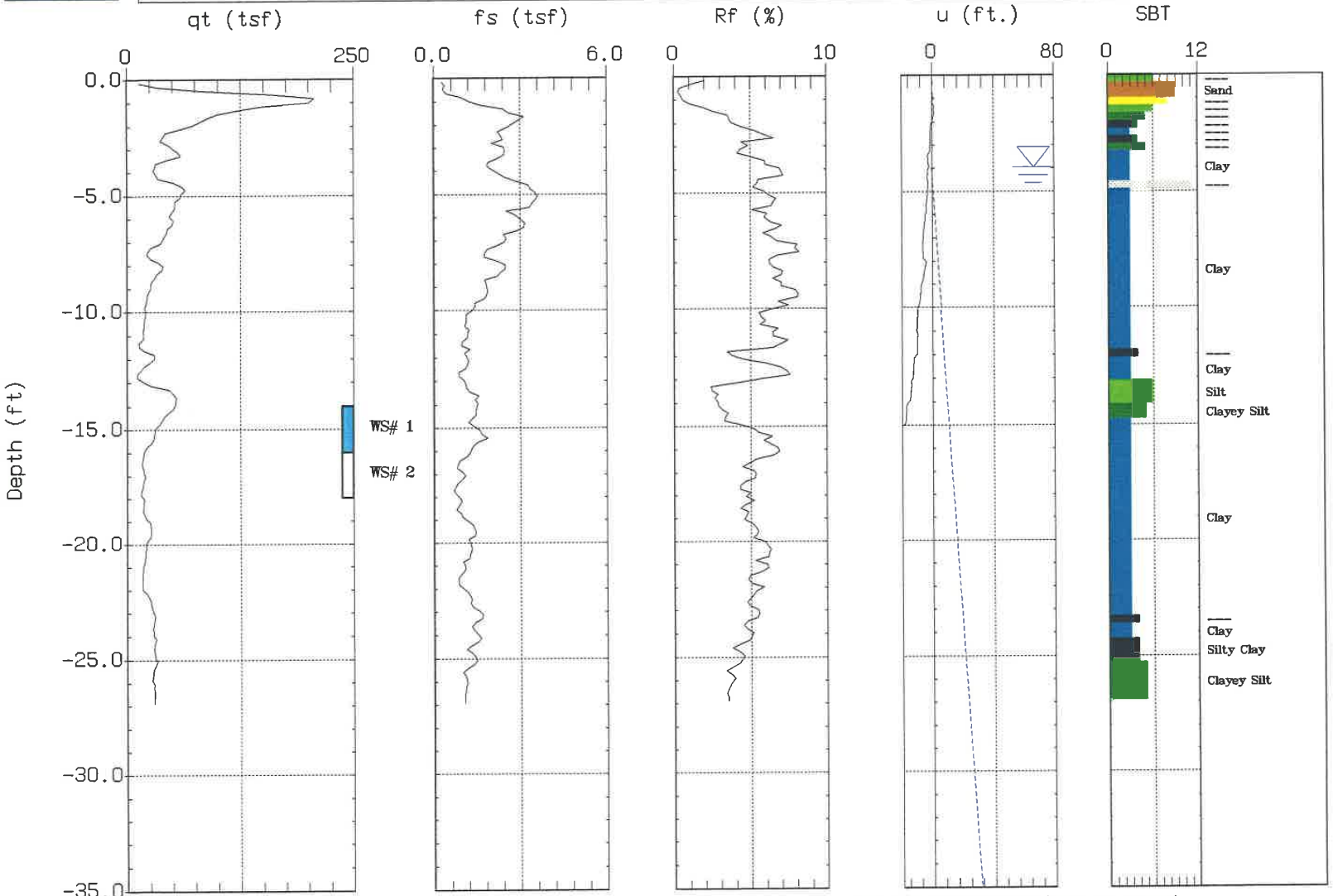
R2-0003487

CONETEC

Louis Berger Group

Sounding:P-54
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:21:07 06:44



Max. Depth: 26.90 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

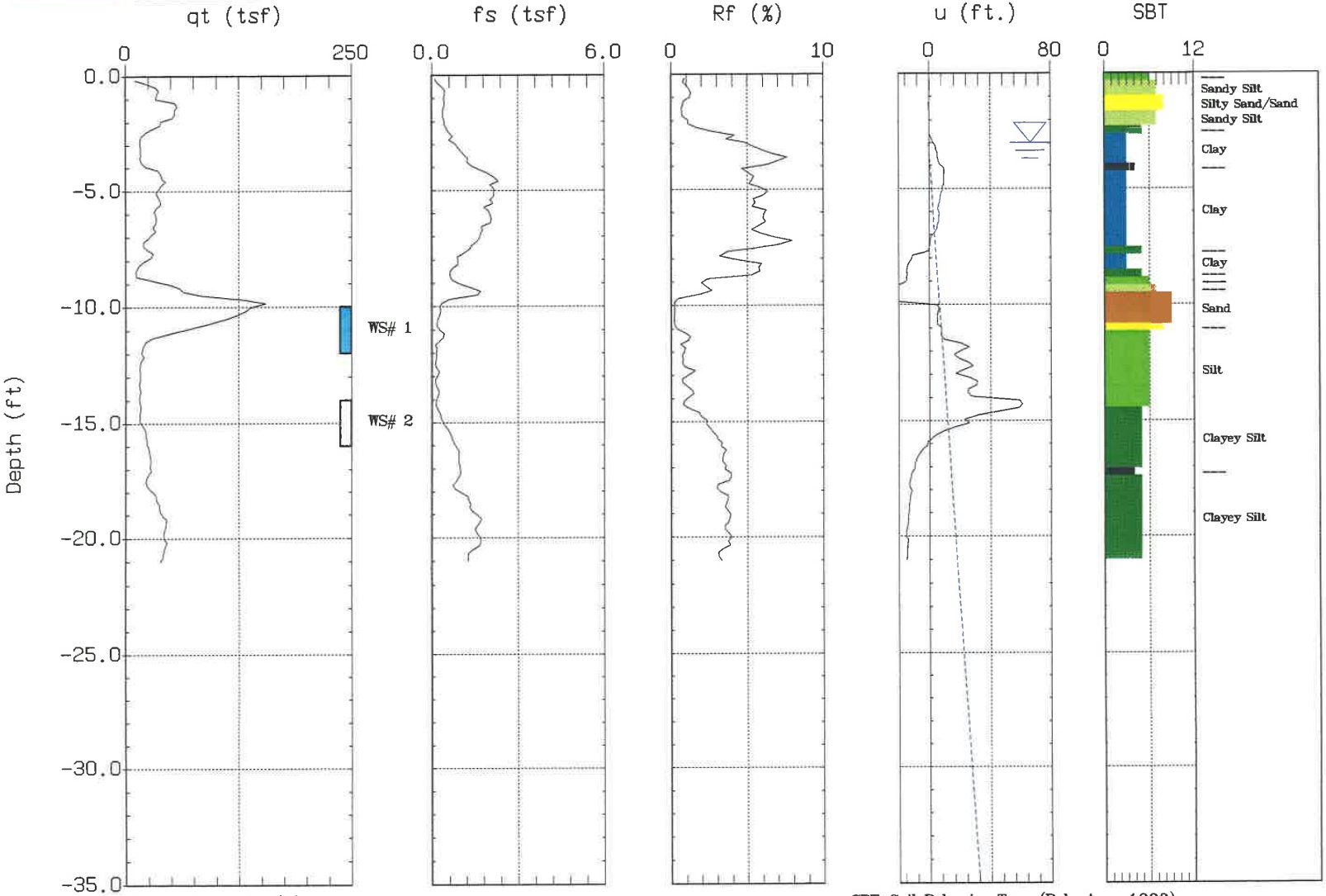
R2-0003488

CONETEC

Louis Berger Group

Sounding:P-55
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:21:07 08:59



Max. Depth: 21.00 (ft)
Depth Inc.: 0.164 (ft)

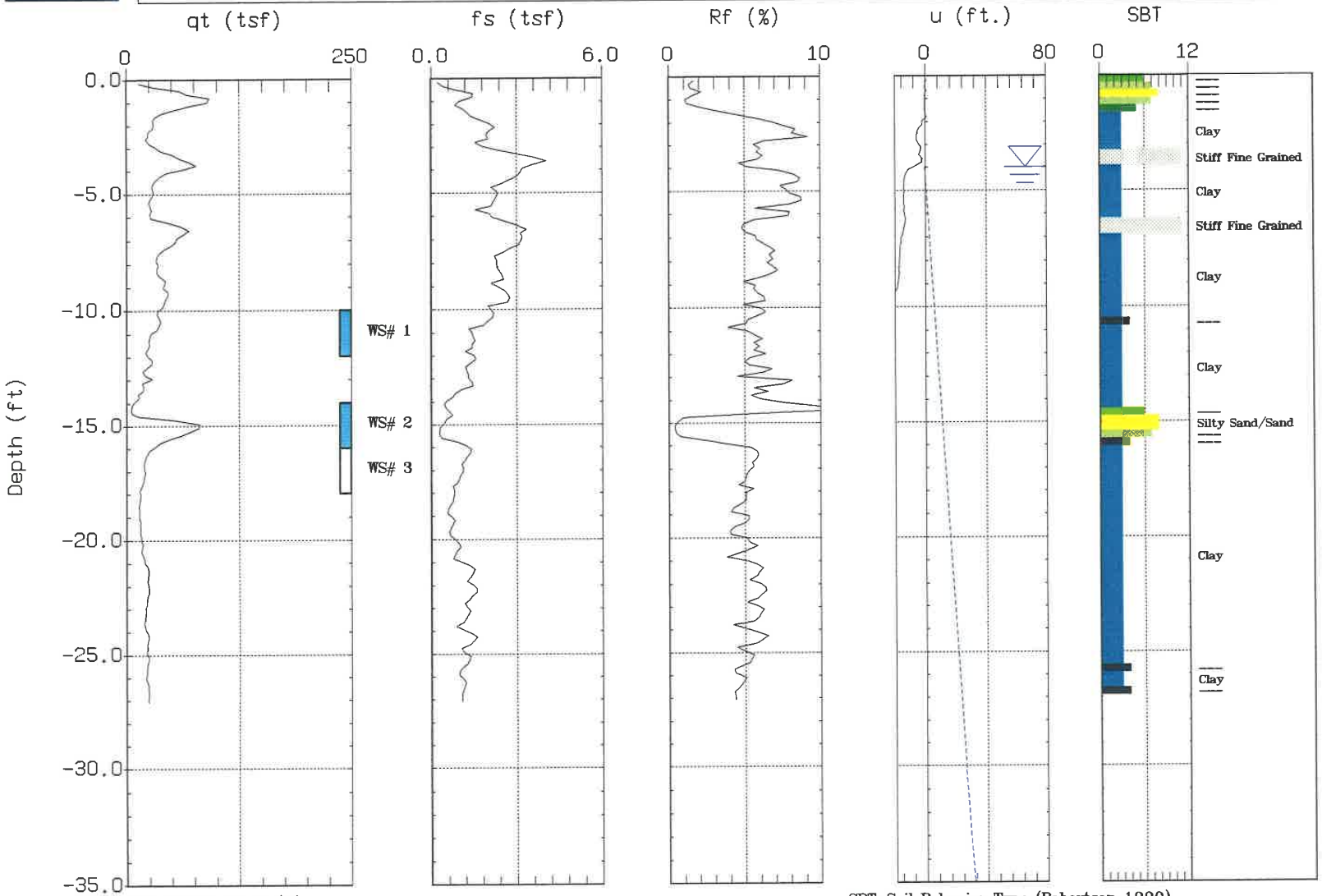
SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

CONETEC

Louis Berger Group

Sounding:P-56
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:21:07 12:11



Max. Depth: 27.07 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

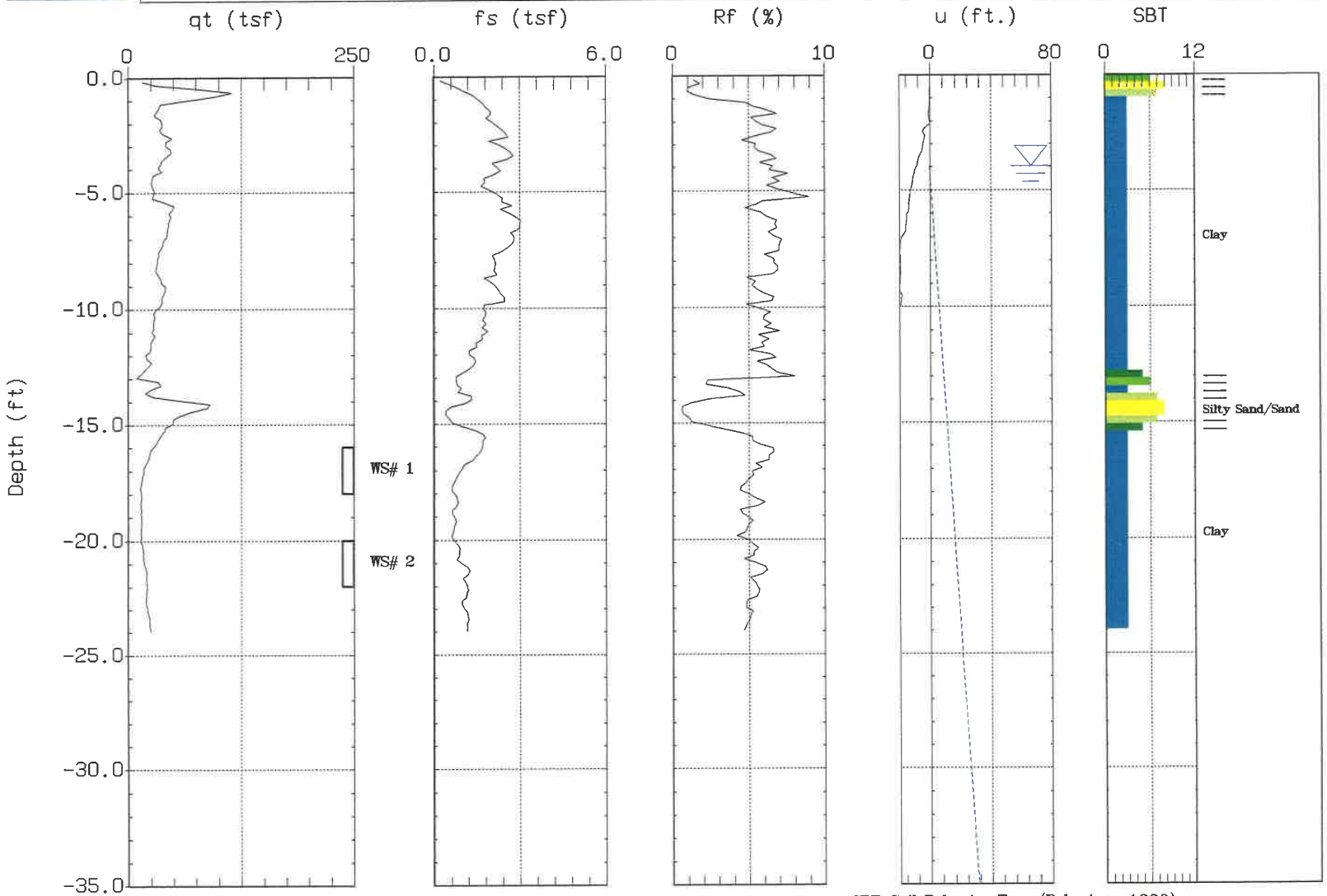
R2-0003490

CONETEC

Louis Berger Group

Sounding:P-57
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:21:07 11:32



Max. Depth: 23.95 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

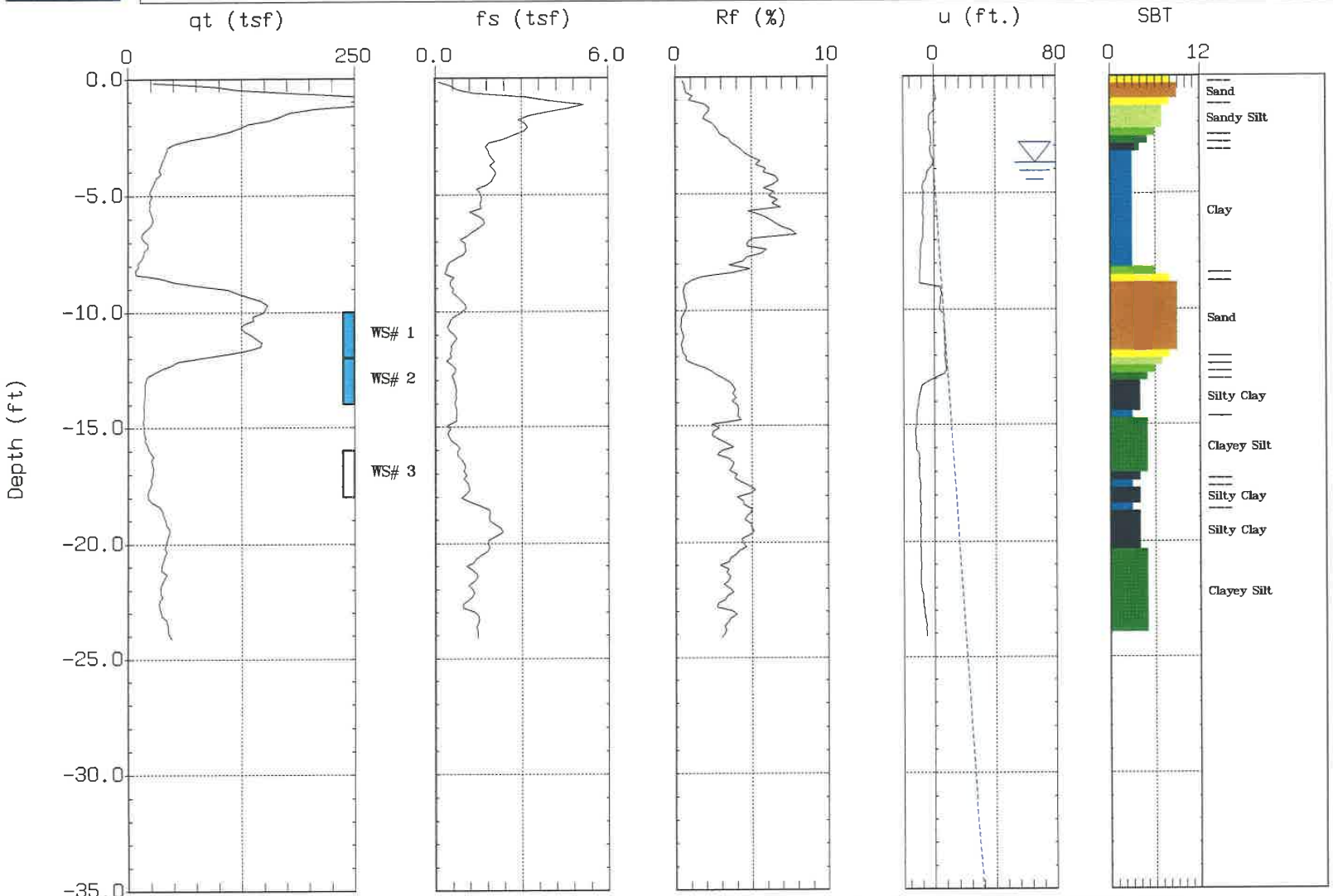
R2-0003491

CONETEC

Louis Berger Group

Sounding:P-58
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:21:07 13:03



Max. Depth: 24.11 (ft)
Depth Inc.: 0.164 (ft)

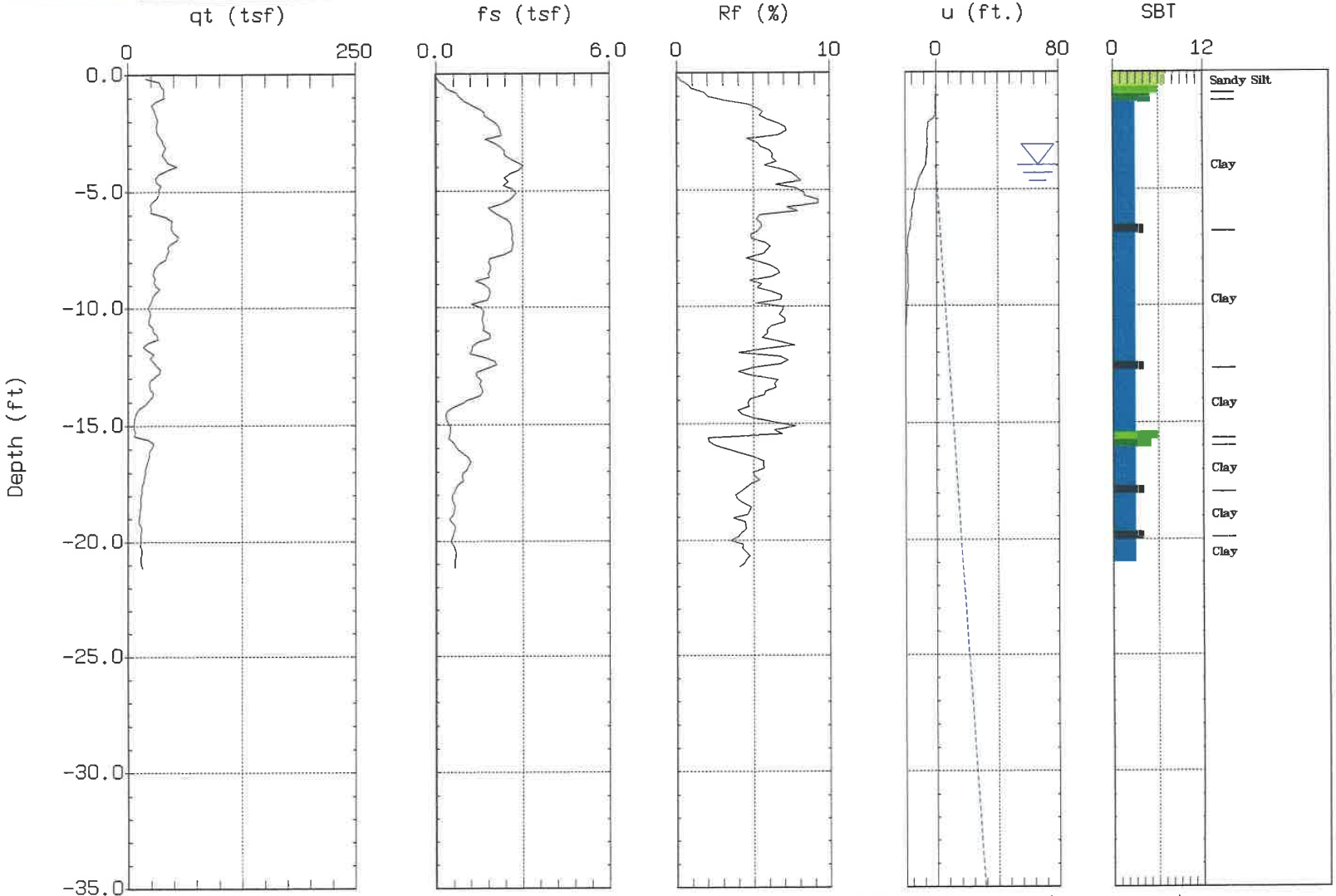
SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

CONETEC

Louis Berger Group

Sounding:P-59
Site:Ellis Property

Piezocone:20 TON AD203
Date:05:21:07 13:59



Max. Depth: 21.16 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Estimated Phreatic Surface

R2-0003493

APPENDIX B
CPT Data Interpretation Summary Sheets

ConeTec Interpretations as of June 30, 2004 (Release 1.22A)

ConeTec's interpretation routine provides a tabular output of geotechnical parameters based on current published CPT correlations and is subject to change to reflect the current state of practice. The interpreted values are not considered valid for all soil types. The interpretations are presented only as a guide for geotechnical use and should be carefully scrutinized for consideration in any geotechnical design. Reference to current literature is strongly recommended. ConeTec does not warranty the correctness or the applicability of any of the geotechnical parameters interpreted by the program and does not assume liability for any use of the results in any design or review. Representative hand calculations should be made for any parameter that is critical for design purposes. The end user of the interpreted output should also be fully aware of the techniques and the limitations of any method used in this program. The purpose of this document is to inform the user as to which methods were used and what the appropriate papers and/or publications are for further reference.

The CPT interpretations are based on values of tip, sleeve friction and pore pressure averaged over a user specified interval (e.g. 0.20m). Note that q_t is the tip resistance corrected for pore pressure effects and q_c is the recorded tip resistance. Since all ConeTec cones have equal end area friction sleeves, pore pressure corrections to sleeve friction, f_s, are not required.

The tip correction is: $q_t = q_c + (1-a) \bullet u_2$

where: q_t is the corrected tip resistance
q_c is the recorded tip resistance
u_2 is the recorded dynamic pore pressure behind the tip (u_2 position)
a is the Net Area Ratio for the cone (typically 0.85 for ConeTec cones)

The total stress calculations are based on soil unit weights that have been assigned to the Soil Behavior Type zones, from a user defined unit weight profile or by using a single value throughout the profile. Effective vertical overburden stresses are calculated based on a hydrostatic distribution of equilibrium pore pressures below the water table or from a user defined equilibrium pore pressure profile (this can be obtained from CPT dissipation tests). For over water projects the effects of the column of water have been taken into account as has the appropriate unit weight of water. How this is done depends on where the instruments were zeroed (i.e. on deck or at mud line).

Details regarding the interpretation methods for all of the interpreted parameters are provided in Table 1. The appropriate references cited in Table 1 are listed in Table 2. Where methods are based on charts or techniques that are too complex to describe in this summary the user should refer to the cited material.

The estimated Soil Behavior Types (normalized and non-normalized) are based on the charts developed by Robertson and Campanella shown in Figures 1 and 2. The Bq classification charts are not reproduced in this document but can be reviewed in Lunne, Robertson and Powell (1997) or Robertson (1990).

Where the results of a calculation/interpretation are declared *'invalid'* the value will be represented by the text strings "-9999" or "-9999.0". In some cases the value 0 will be used. Invalid results will occur because of (and not limited to) one or a combination of:

1. Invalid or undefined CPT data (e.g. drilled out section or data gap).

2. Where the interpretation method is inappropriate, for example, drained parameters in an undrained material (and vice versa).

3. Where interpretation input values are beyond the range of the referenced charts or specified limitations of the interpretation method.

4. Where pre-requisite or intermediate interpretation calculations are invalid.

The parameters selected for output from the program are often specific to a particular project. As such, not all of the interpreted parameters listed in Table 1 may be included in the output files delivered with this report.

The output files are often delivered in one (or more) of the following three formats:

File Type	Typical Extensions	Description
Printable	IFP, NLP	ASCII files formatted for direct printing either by copying to a printer port, through a text editor or through a dedicated printing routine (such as ConeTec's CTPRINT). Typically formatted for 132 columns wide and 70 lines per page. Any printer would need to be set to have a compressed font (16cpi) as its default.
Importable	IFI, NLI	Tab delimited ASCII files (not for use with text editors) meant for importing into spreadsheet and database applications (e.g. Excel, Lotus, Quattro, Access). Some column and cell formatting maybe required depending on the quality of the application's import utility.
Spreadsheet	XLS	IFI, NLI files exported directly to Excel format. Column and cell formatting has been done. Header information is exported to start in Column C allowing the depth columns A and/or B to be duplicated on each printed page without repetition of part of the header information.

Table 1
CPT Interpretation Methods

Interpreted Parameter	Description	Equation	Ref
Depth	Mid Layer Depth *(where interpretations are done at each point then Mid Layer Depth = Recorded Depth)*	*Depth (Layer Top) + Depth (Layer Bottom) / 2.0*	
Elevation	Elevation of Mid Layer based on sounding collar elevation supplied by client	Elevation = Collar Elevation - Depth	
Avgqc	Averaged recorded tip value (q_c)	$Avgqc = \frac{1}{n}\sum_{i=1}^{n} q_c$ *n=1 when interpretations are done at each point*	
Avgqt	Averaged corrected tip (q_t) where: $q_t = q_c + (1-a) \bullet u$	$Avgqt = \frac{1}{n}\sum_{i=1}^{n} q_t$ *n=1 when interpretations are done at each point*	
Avgfs	Averaged sleeve friction (f_s)	$Avgfs = \frac{1}{n}\sum_{i=1}^{n} fs$ *n=1 when interpretations are done at each point*	
AvgRf	Averaged friction ratio (Rf) where friction ratio is defined as: $Rf = 100\% \bullet \frac{fs}{qt}$	$AvgRf = 100\% \bullet \frac{Avgfs}{Avgqt}$ *n=1 when interpretations are done at each point*	
Avgu	Averaged dynamic pore pressure *(u)*	$Avgu = \frac{1}{n}\sum_{i=1}^{n} u_i$ *n=1 when interpretations are done at each point*	
AvgRes	Averaged Resistivity (this data is not always available since it is a specialized test requiring an additional module)	$Avgu = \frac{1}{n}\sum_{i=1}^{n} RESISTIVITY_i$ *n=1 when interpretations are done at each point*	

Interpreted Parameter	Description	Equation	Ref
AvgUVIF	Averaged UVIF ultra-violet induced fluorescence (this data is not always available since it is a specialized test requiring an additional module)	$Avgu = \frac{1}{n}\sum_{i=1}^{n} UVIF_i$ *n=1 when interpretations are done at each point*	
AvgTemp	Averaged Temperature (this data is not always available since it is a specialized test)	$Avgu = \frac{1}{n}\sum_{i=1}^{n} TEMPERATURE_i$ *n=1 when interpretations are done at each point*	
AvgGamma	Averaged Gamma Counts (this data is not always available since it is a specialized test requiring an additional module)	$Avgu = \frac{1}{n}\sum_{i=1}^{n} GAMMA_i$ *n=1 when interpretations are done at each point*	
SBT	Soil Behavior Type as defined by Robertson and Campanella	See Figure 1	2, 5
U.Wt.	Unit Weight of soil determined from one of the following user selectable options: 1) uniform value 2) value assigned to each SBT zone 3) user supplied unit weight profile	See references	5
T. Stress σ_v	Total vertical overburden stress at Mid Layer Depth. *A layer is defined as the averaging interval specified by the user. For data interpreted at each point the Mid Layer Depth is the same as the recorded depth.*	$TStress = \sum_{i=1}^{n} \gamma_i h_i$ *where* γ_i is layer unit weight h_i is layer thickness	
E. Stress σ_v'	Effective vertical overburden stress at Mid Layer Depth	$Estress = Tstress - u_{eq}$	
Ueq	Equilibrium pore pressure determined from one of the following user selectable options: 1) hydrostatic from water table depth 2) user supplied profile	For hydrostatic option: $u_{eq} = \gamma_w \bullet (D - D_{wt})$ where u_{eq} is equilibrium pore pressure γ_w is unit weight of water D is the current depth D_{wt} is the depth to the water table	
Cn	SPT N_{60} overburden correction factor	$Cn=(\sigma_v')^{-0.5}$ where σ_v' *is in tsf* $0.5 < C_n < 2.0$	
N_{60}	SPT N value at 60% energy calculated from qt/N ratios assigned to each SBT zone. This method has abrupt N value changes at zone boundaries.	*See Figure 1*	4, 5
$(N_1)_{60}$	SPT N_{60} value corrected for overburden pressure	$(N_1)_{60} = Cn \bullet N_{60}$	4
$N_{60}Ic$	SPT N_{60} values based on the Ic parameter	$(qt/pa)/ N_{60} = 8.5 (1 - Ic/4.6)$	5
$(N_1)_{60}Ic$	SPT N_{60} value corrected for overburden pressure (using N_{60} Ic). User has 2 options.	1) $(N_1)_{60}Ic = Cn \bullet (N_{60}\ Ic)$ 2) $q_{c1n}/ (N_1)_{60}Ic = 8.5 (1 - Ic/4.6)$	4 5
$(N_1)_{60cs}Ic$	Clean sand equivalent SPT $(N_1)_{60}Ic$. User has 3 options.	1) $(N_1)_{60cs}Ic = \alpha + \beta((N_1)_{60}Ic)$ 2) $(N_1)_{60cs}Ic = K_{SPT} * ((N_1)_{60}Ic)$ 3) $q_{c1ncs})/ (N_1)_{60cs}Ic = 8.5 (1 - Ic/4.6)$ FC ≤ 5%: $\alpha = 0$, $\beta=1.0$ FC ≥ 35% $\alpha = 5.0$, $\beta=1.2$ 5% < FC < 35% $\alpha = \exp[1.76 - (190/FC^2)]$ $\beta = [0.99 + (FC^{1.5}/1000)]$	10 10 5
Su	Undrained shear strength - N_{kt} is user selectable	$Su = \frac{qt - \sigma_v}{N_{kt}}$	1, 5
k	Coefficient of permeability (assigned to each SBT zone)		5

Interpreted Parameter	Description	Equation	Ref
Bq	Pore pressure parameter	$Bq = \frac{\Delta u}{qt - \sigma_v}$ *where:* $\Delta u = u - u_{eq}$ *and* u = *dynamic pore pressure* u_{eq} = *equilibrium pore pressure*	1, 5
Q_t	Normalized q_t for Soil Behavior Type classification as defined by Robertson, 1990	$Qt = \frac{qt - \sigma_v}{\sigma'_v}$	2, 5
F_r	Normalized Friction Ratio for Soil Behavior Type classification as defined by Robertson, 1990	$Fr = 100\% \bullet \frac{fs}{qt - \sigma_v}$	2, 5
SBTn	Normalized Soil Behavior Type as defined by Robertson and Campanella	See Figure 2	2, 5
SBT-BQ	Non-normalized soil behavior type based on the Bq parameter	See Figure 5.7 (reference 5)	2, 5
SBT-BQn	Normalized Soil Behavior base on the Bq parameter	See Figure 5.8 (reference 5) or Figure 3 (reference 2)	2, 5
I_c	Soil index for estimating grain characteristics	$Ic = [(3.47 - \log_{10}Q)^2 + (\log_{10} Fr + 1.22)^2]^{0.5}$ *Where:* $Q = \left(\frac{qt - \sigma_v}{P_{a2}}\right)\left(\frac{P_a}{\sigma'_v}\right)^n$ *And* *Fr is in percent* P_a = *atmospheric pressure* P_{a2} = *atmospheric pressure* *n varies from 0.5 to 1.0 and is selected in an iterative manner based on the resulting* I_c	3, 8
FC	Apparent fines content (%)	$FC=1.75(Ic^{3.25}) - 3.7$ $FC=100$ *for* $Ic > 3.5$ $FC=0$ *for* $Ic < 1.26$ $FC = 5\%$ *if* $1.64 < Ic < 2.6$ *AND* $F_r<0.5$	3
Ic Zone	This parameter is the Soil Behavior Type zone based on the Ic parameter (valid for zones 2 through 7 on SBTn chart)	Ic < 1.31 Zone = 7 1.31 < Ic < 2.05 Zone = 6 2.05 < Ic < 2.60 Zone = 5 2.60 < Ic < 2.95 Zone = 4 2.95 < Ic < 3.60 Zone = 3 Ic > 3.60 Zone = 2	3
PHI ϕ	Friction Angle determined from one of the following user selectable options: a) Campanella and Robertson b) Durgunoglu and Mitchel c) Janbu	See reference	5
Dr	Relative Density determined from one of the following user selectable options: a) Ticino Sand b) Hokksund Sand c) Schmertmann 1976 d) Jamiolkowski - All Sands	See reference	5

Interpreted Parameter	Description	Equation	Ref
OCR	Over Consolidation Ratio	a) Based on Schmertmann's method involving a plot of $S_u/\sigma_v' / (S_u/\sigma_v')_{NC}$ and OCR where the Su/p' ratio for NC clay is user selectable	9
State Parameter	The state parameter is used to describe whether a soil is contractive (SP is positive) or dilative (SP is negative) at large strains based on the work by Been and Jefferies	See reference	8, 6, 5
Es/qt	Intermediate parameter for calculating Youngs Modulus, E, in sands. It is the Y axis of the reference chart.	Based on Figure 5.59 in the reference	5
Youngs Modulus E	Youngs Modulus based on the work by Baldi. There are three types of sands considered in this technique. The user selects the appropriate type for the site from: a) OC Sands b) Aged NC Sands c) Recent NC Sands Each sand type has a family of curves that depend on mean normal stress. The program calculates mean normal stress and linearly interpolates between the two extremes provided in Baldi's chart.	Mean normal stress is evaluated from: $\sigma_m' = \frac{1}{3} \bullet (\sigma_v' + \sigma_h' + \sigma_h')$ where σ_v'= vertical effective stress σ_h'= horizontal effective stress and $\sigma_h = K_o * \sigma_v'$ with Ko assumed to be 0.5	5
q_{c1}	q_t normalized for overburden stress used for seismic analysis	$q_{c1} = q_t \bullet (Pa/\sigma_v')^{0.5}$ where: Pa = atm. Pressure q_t is in Mpa	3
q_{c1n}	q_{c1} in dimensionless form used for seismic analysis	$q_{c1n} = (q_{c1} / Pa)(Pa/\sigma_v')$ where: Pa = atm. Pressure and n ranges from 0.5 to 0.75 based on Ic.	3
K_{SPT}	Equivalent clean sand factor for $(N_1)60$	$K_{SPT} = 1 + ((0.75/30) * (FC - 5))$	10
K_{CPT}	Equivalent clean sand correction for q_{c1N}	$K_{cpt} = 1.0$ for $I_c \leq 1.64$ $K_{cpt} = f(I_c)$ for $I_c > 1.64$ (see reference)	10
q_{c1ncs}	Clean sand equivalent q_{c1n}	$q_{c1ncs} = q_{c1n} \bullet K_{cpt}$	3
CRR	Cyclic Resistance Ratio (for Magnitude 7.5)	$q_{c1ncs} < 50$: $CRR_{7.5} = 0.833\ [(q_{c1ncs}/1000)] + 0.05$ $50 \leq q_{c1ncs} < 160$: $CRR_{7.5} = 93\ [(q_{c1ncs}/1000)]^3 + 0.08$	10
CSR	Cyclic Stress Ratio	$CSR = (\tau_{av}/\sigma_v') = 0.65\ (a_{max} / g)\ (\sigma_v/ \sigma_v')\ r_d$ $r_d = 1.0 - 0.00765\ z$ $z \leq 9.15m$ $r_d = 1.174 - 0.0267\ z$ $9.15 < z \leq 23m$ $r_d = 0.744 - 0.008\ z$ $23 < z \leq 30m$ $r_d = 0.50$ $z > 30m$	10

Interpreted Parameter	Description	Equation	Ref
MSF	Magnitude Scaling Factor	See Reference	10
FofS	Factor of Safety against Liquefaction	$FS = (CRR_{7.5} / CSR)\ MSF$	10
Liquefaction Status	Statement indicating possible liquefaction	Takes into account FofS and limitations based I_c and q_{c1ncs}.	10

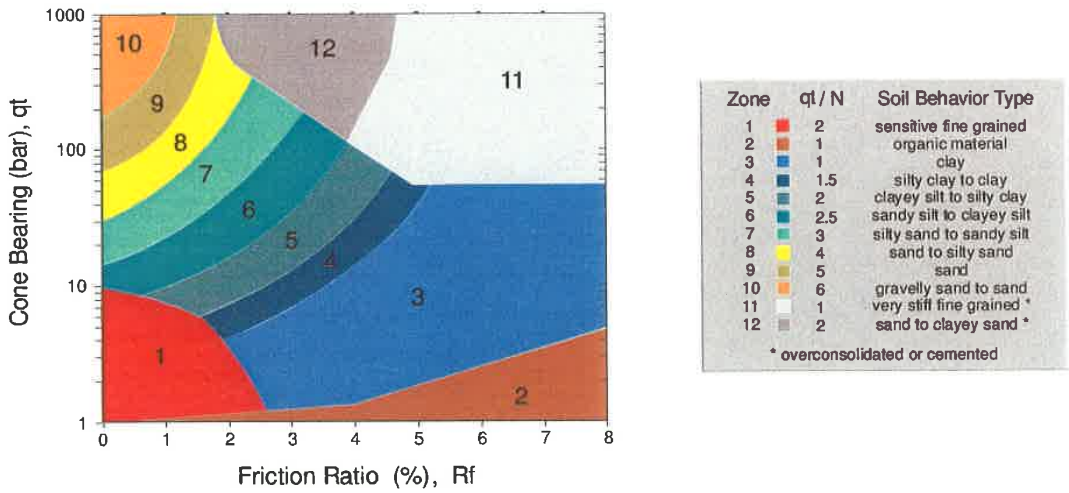


Figure 1 Non-Normalized Behavior Type Classification Chart

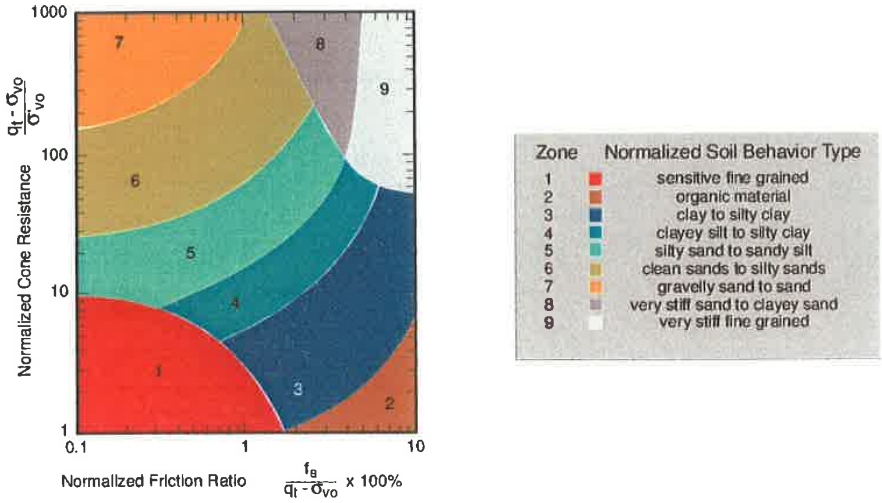


Figure 2 Normalized Behavior Type Classification Chart

Table 2 References

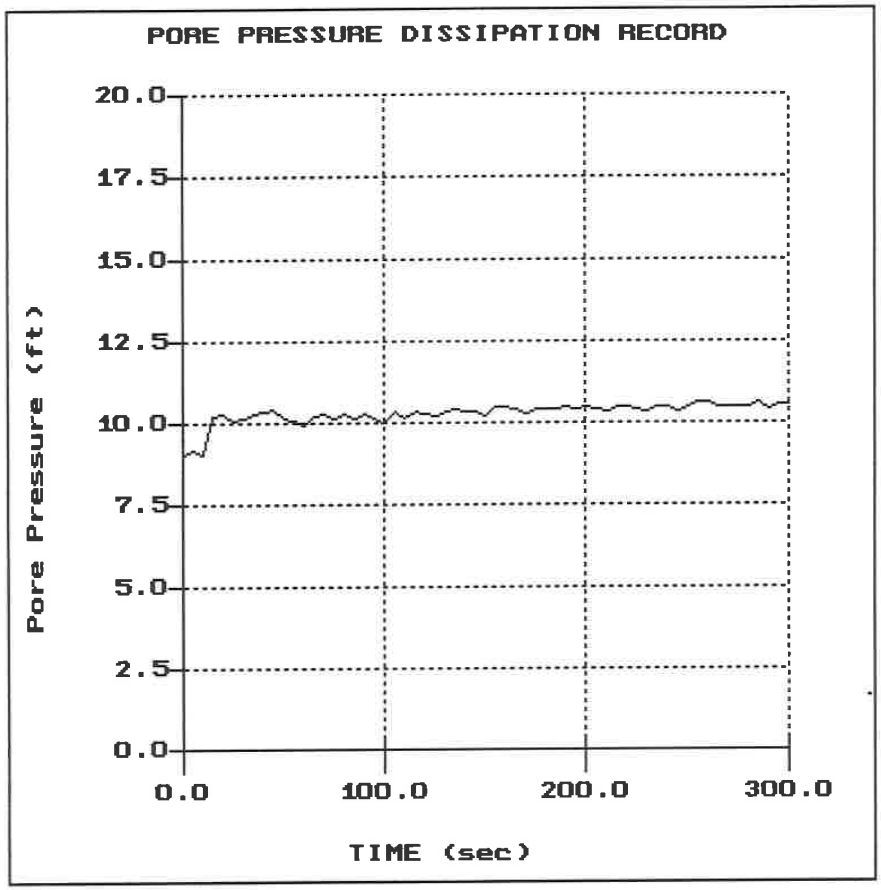
No.	References
1	Robertson, P.K., Campanella, R.G., Gillespie, D. and Greig, J., 1986, "Use of Piezometer Cone Data", Proceedings of InSitu 86, ASCE Specialty Conference, Blacksburg, Virginia.
2	Robertson, P.K., 1990, "Soil Classification Using the Cone Penetration Test", Canadian Geotechnical Journal, Volume 27.
3	Robertson, P.K. and Fear, C.E., 1998, "Evaluating cyclic liquefaction potential using the cone penetration test", Canadian Geotechnical Journal, 35: 442-459.
4	Robertson, P.K. and Wride, C.E., 1998, "Cyclic Liquefaction and its Evaluation Based on SPT and CPT", NCEER Workshop Paper, January 22, 1997
5	Lunne, T., Robertson, P.K. and Powell, J. J. M., 1997, " Cone Penetration Testing in Geotechnical Practice," Blackie Academic and Professional.
6	Plewes, H.D., Davies, M.P. and Jefferies, M.G., 1992, "CPT Based Screening Procedure for Evaluating Liquefaction Susceptibility", 45th Canadian Geotechnical Conference, Toronto, Ontario, October 1992.
7	Jefferies, M.G. and Davies, M.P., 1993. "Use of CPTu to Estimate equivalent N_{60}", Geotechnical Testing Journal, 16(4): 458-467.
8	Been, K. and Jefferies, M.P., 1985, "A state parameter for sands", Geotechnique, 35(2), 99-112.
9	Schmertmann, 1977, "Guidelines for Cone Penetration Test Performance and Design", Federal Highway Administration Report FHWA-TS-78-209, U.S. Department of Transportation
10	Proceedings of theNCEER Workshop on Evaluation of Liquefaction Resistance of Soils, Salt LakeCity, 1996. Chaired by Leslie Youd.

APPENDIX C
Pore Pressure Dissipation Tests

Louis Berger

Hole:P-1
Location:Ellis Property

Cone:20 TON AD203
Date:05:15:07 09:12

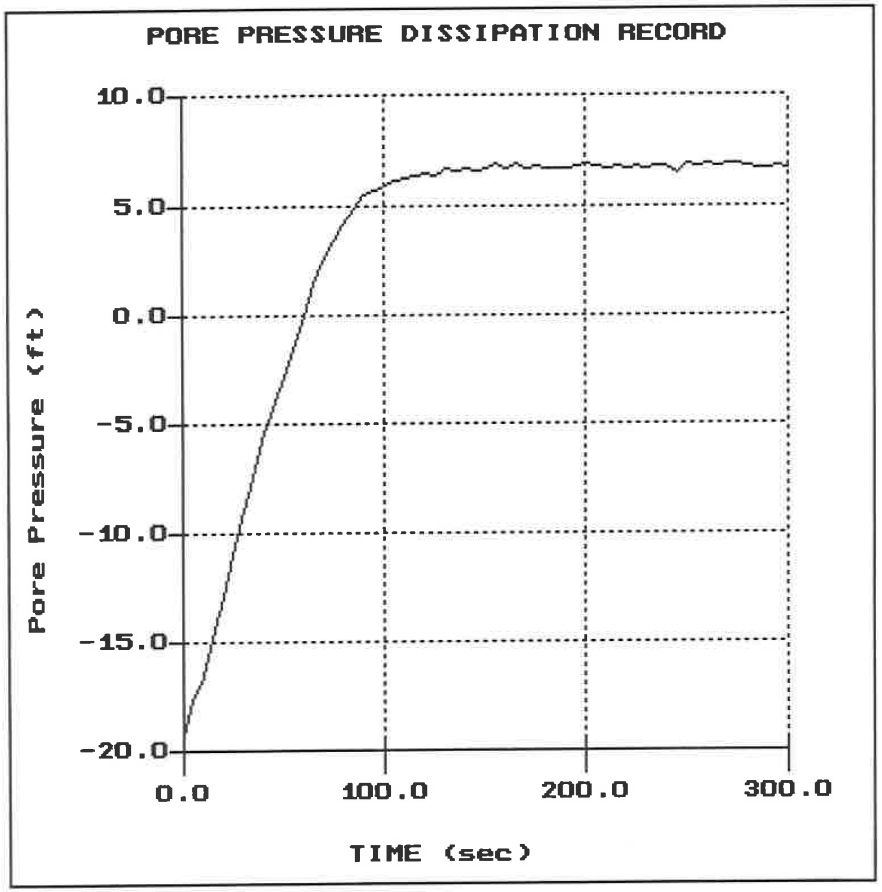


File: 747CP01.PPD
Depth (m): 4.00
(ft): 13.12
Duration : 300.0s
U-min: 9.01 10.0s
U-max: 10.61 285.0s

Louis Berger

Hole:P-3
Location:Ellis Property

Cone:20 TON AD203
Date:05:15:07 07:41

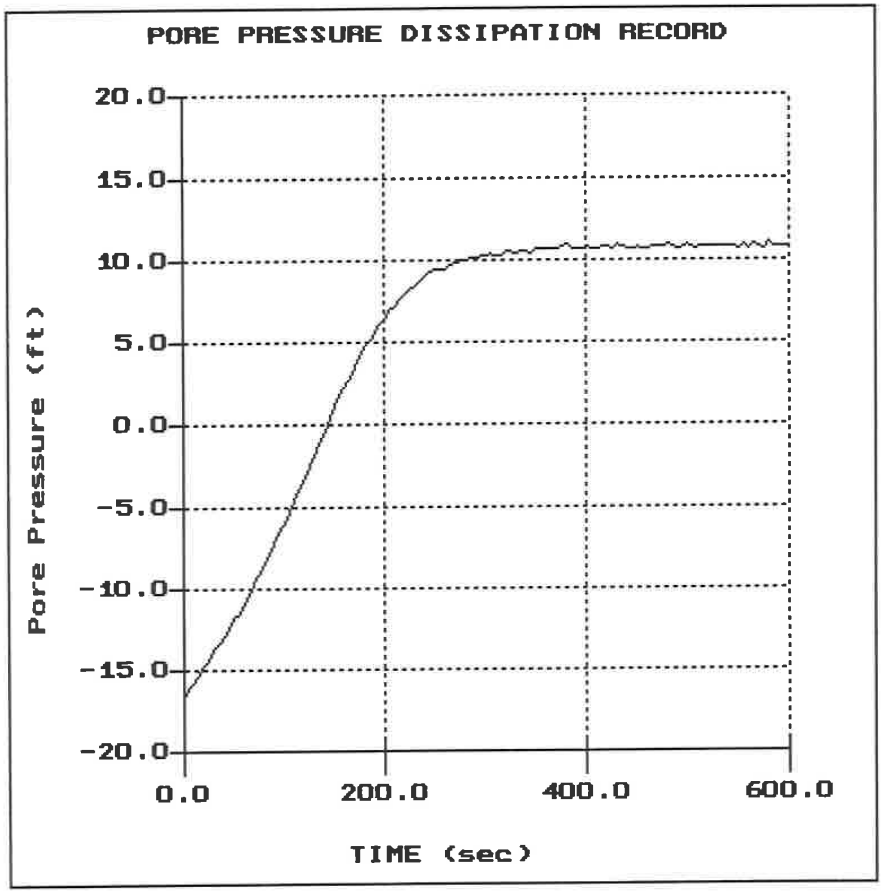


File: 747CP03.PPD
Depth (m): 3.00
(ft): 9.84
Duration : 300.0s
U-min: -19.24 0.0s
U-max: 6.90 275.0s

Louis Berger

Hole:P-5
Location:Ellis Property

Cone:20 TON AD203
Date:05:14:07 14:57

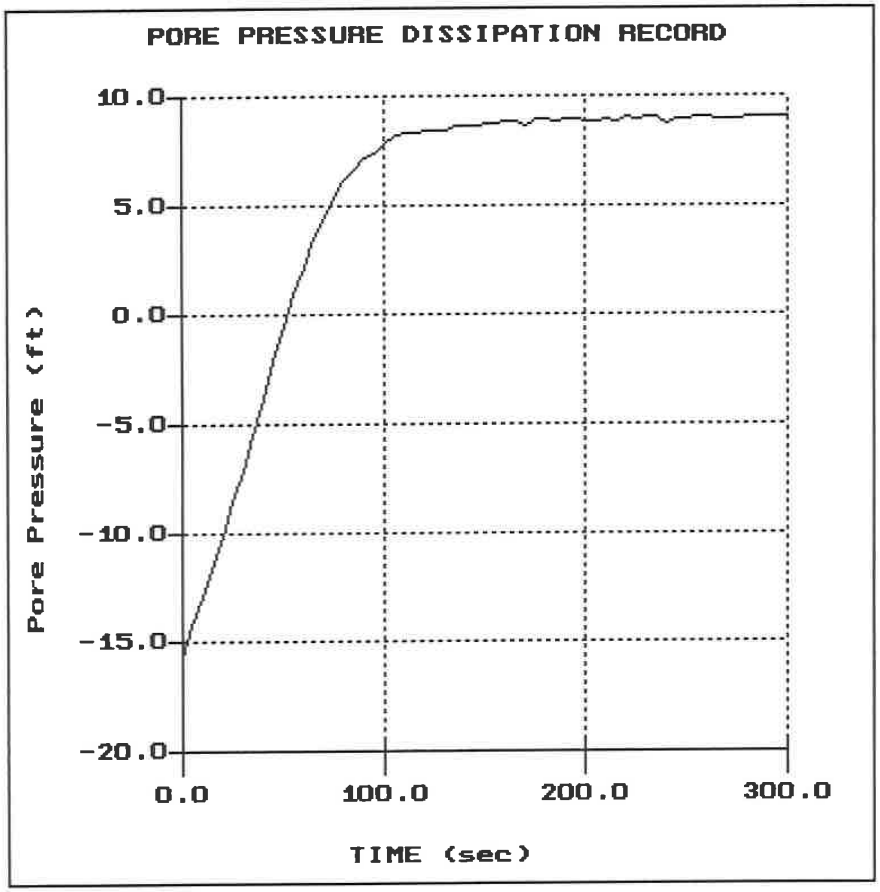


File: 747CP05.PPD
Depth (m): 4.60
(ft): 15.09
Duration : 600.0s
U-min: -16.80 0.0s
U-max: 11.08 580.0s

Louis Berger

Hole:P-7
Location:Ellis Property

Cone:20 TON AD203
Date:05:15:07 09:57

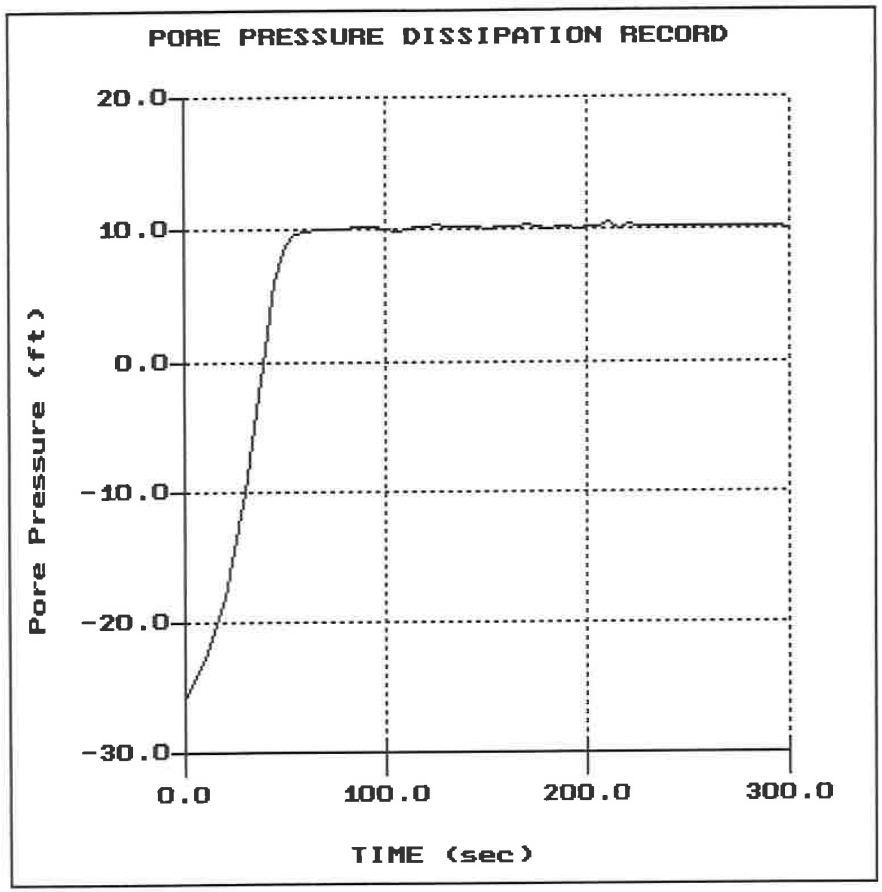


File: 747CP07.PPD
Depth (m): 3.70
(ft): 12.14
Duration : 300.0s
U-min: -15.77 0.0s
U-max: 9.10 295.0s

Louis Berger

Hole:P-15
Location:Ellis Property

Cone:20 TON AD203
Date:05:17:07 10:10

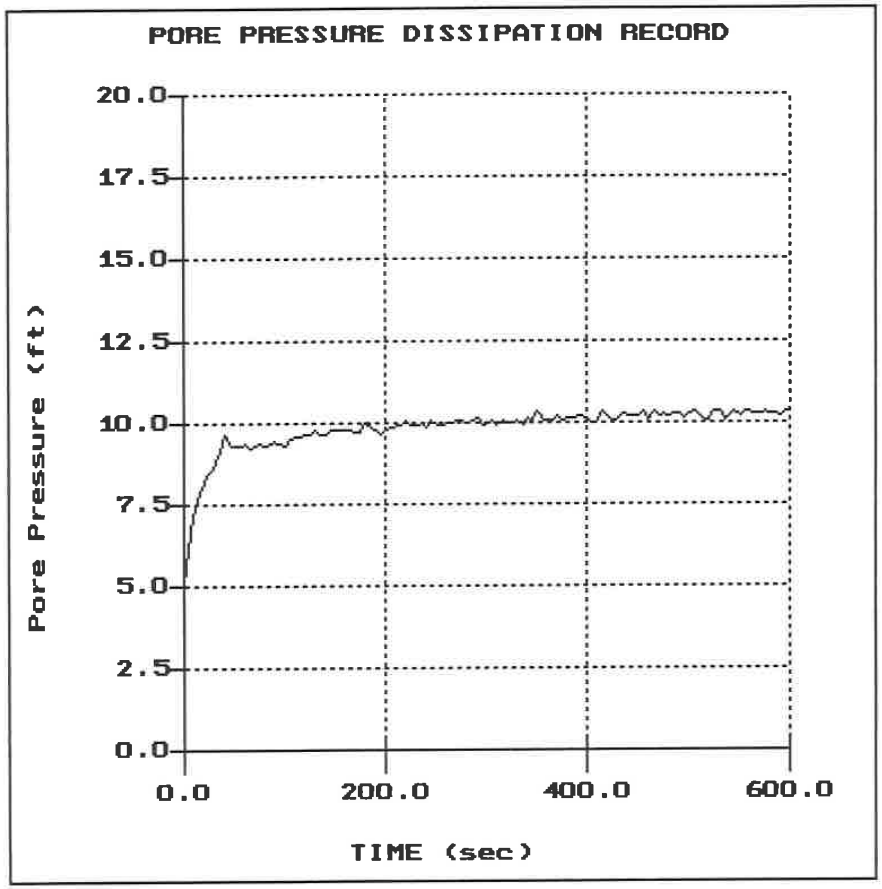


File: 747CP15.PPD
Depth (m): 4.85
(ft): 15.91
Duration : 300.0s
U-min: -26.09 0.0s
U-max: 10.42 210.0s

Louis Berger

Hole:P-20
Location:Ellis Property

Cone:20 TON AD203
Date:05:15:07 12:13

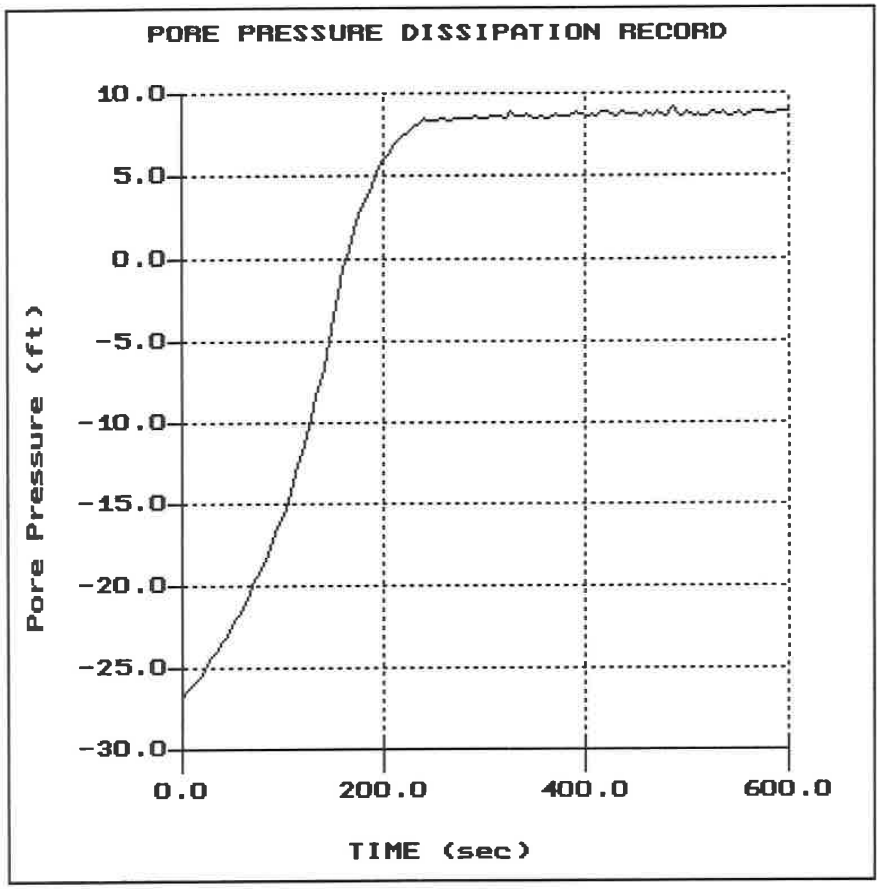


File: 747CP20.PPD
Depth (m): 4.35
(ft): 14.27
Duration : 600.0s
U-min: 5.07 0.0s
U-max: 10.37 560.0s

Louis Berger

Hole:P-25
Location:Ellis Property

Cone:20 TON AD203
Date:05:18:07 07:49

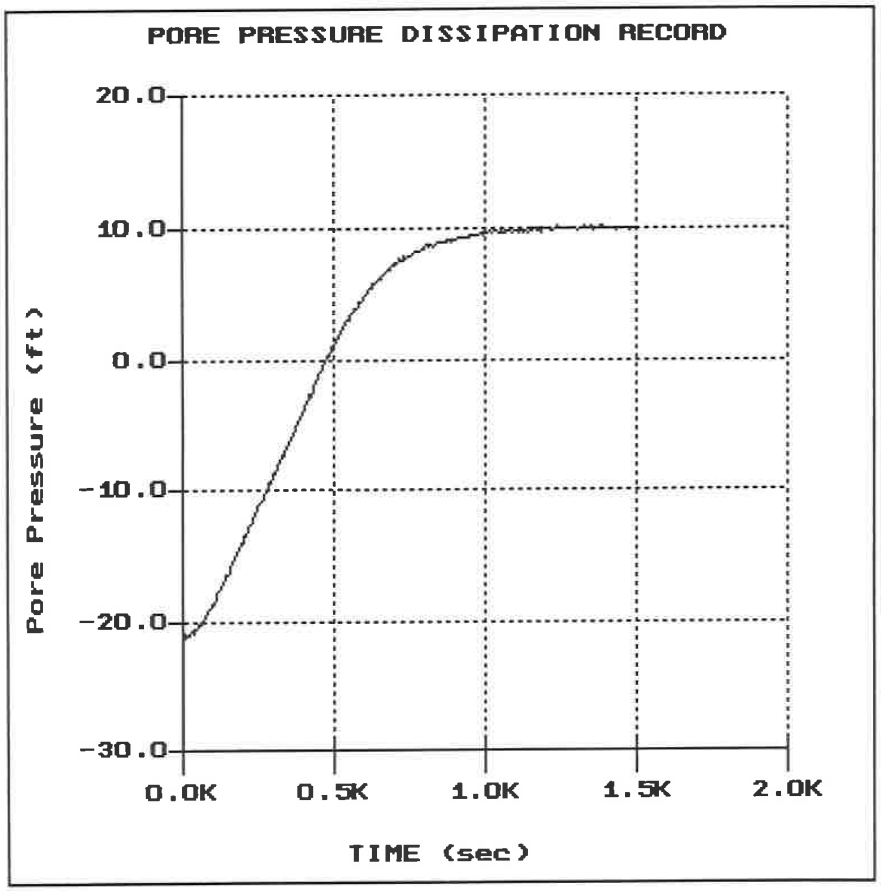


File: 747CP25.PPD
Depth (m): 4.65
(ft): 15.26
Duration : 600.0s
U-min: -26.89 0.0s
U-max: 9.15 485.0s

Louis Berger

Hole:P-31
Location:Ellis Property

Cone:20 TON AD203
Date:05:16:07 13:42

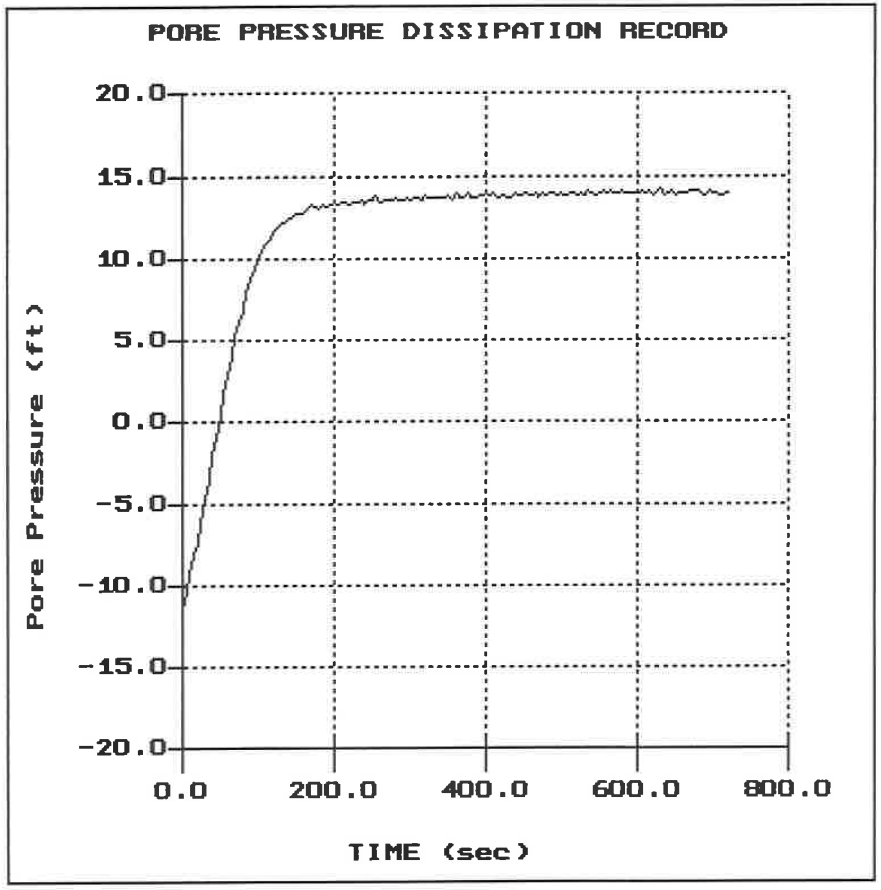


File: 747CP31.PPD
Depth (m): 4.25
(ft): 13.94
Duration : 1500.0s
U-min: -21.35 5.0s
U-max: 10.09 1385.0s

Louis Berger

Hole:P-34
Location:Ellis Property

Cone:20 TON AD203
Date:05:16:07 09:46

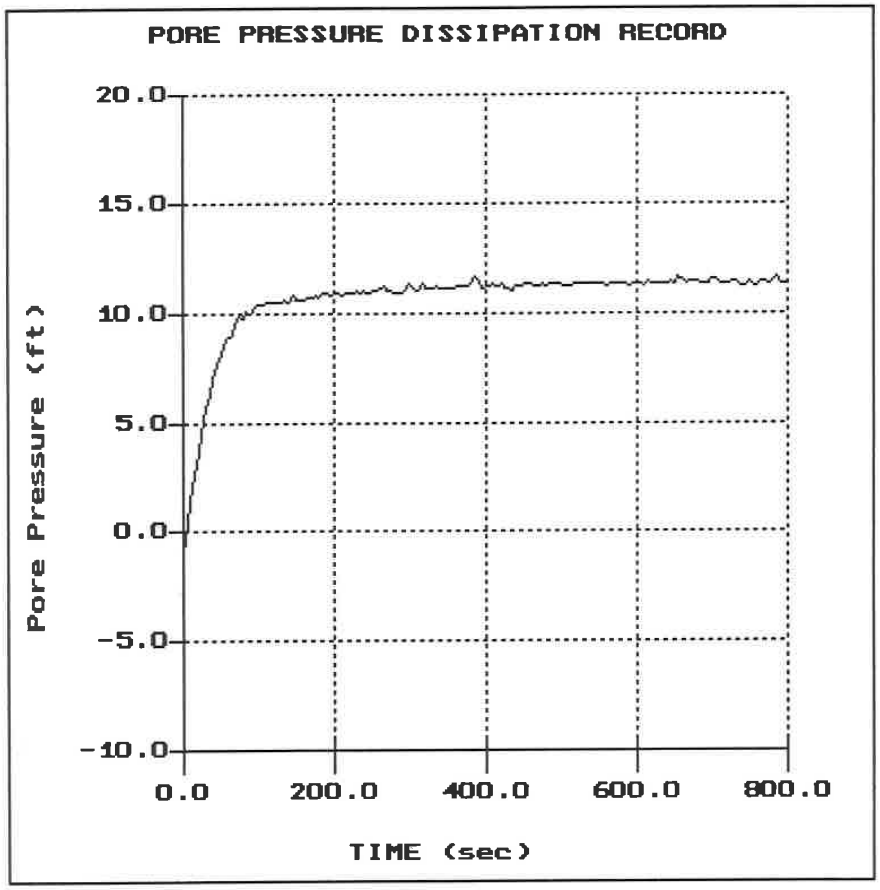


File: 747CP34.PPD
Depth (m): 5.45
(ft): 17.88
Duration : 720.0s
U-min: -11.36 0.0s
U-max: 14.36 630.0s

Louis Berger

Hole:P-37
Location:Ellis Property

Cone:20 TON AD203
Date:05:18:07 11:40

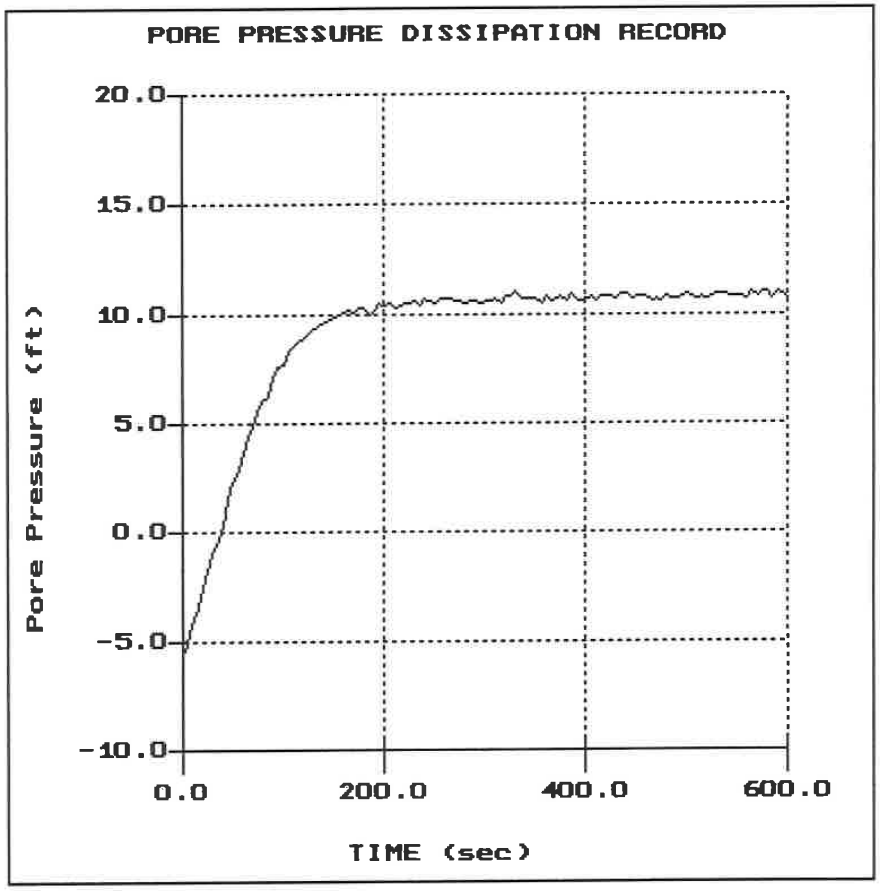


File: 747CP37.PPD
Depth (m): 5.80
(ft): 19.03
Duration : 800.0s
U-min: -0.89 0.0s
U-max: 11.69 655.0s

Louis Berger

Hole:P-43
Location:Ellis Property

Cone:20 TON AD203
Date:05:16:07 11:22

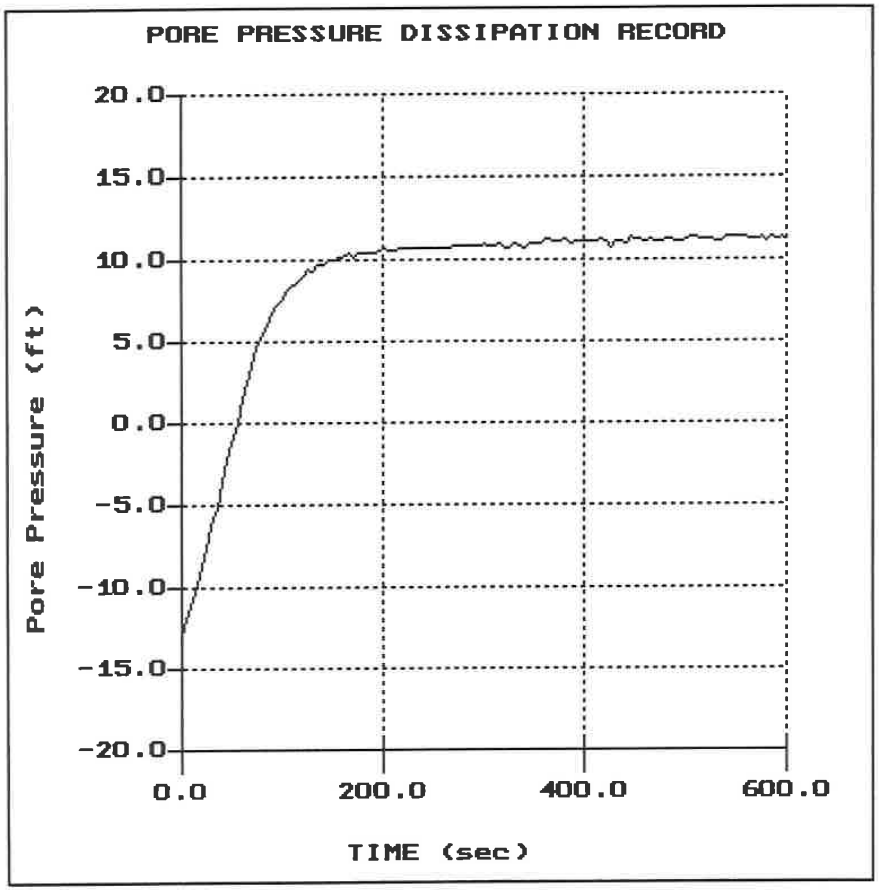


File: 747CP43.PPD
Depth (m): 3.65
(ft): 11.98
Duration : 600.0s
U-min: -5.63 0.0s
U-max: 11.08 575.0s

Louis Berger

Hole:P-45
Location:Ellis Property

Cone:20 TON AD203
Date:05:16:07 08:01

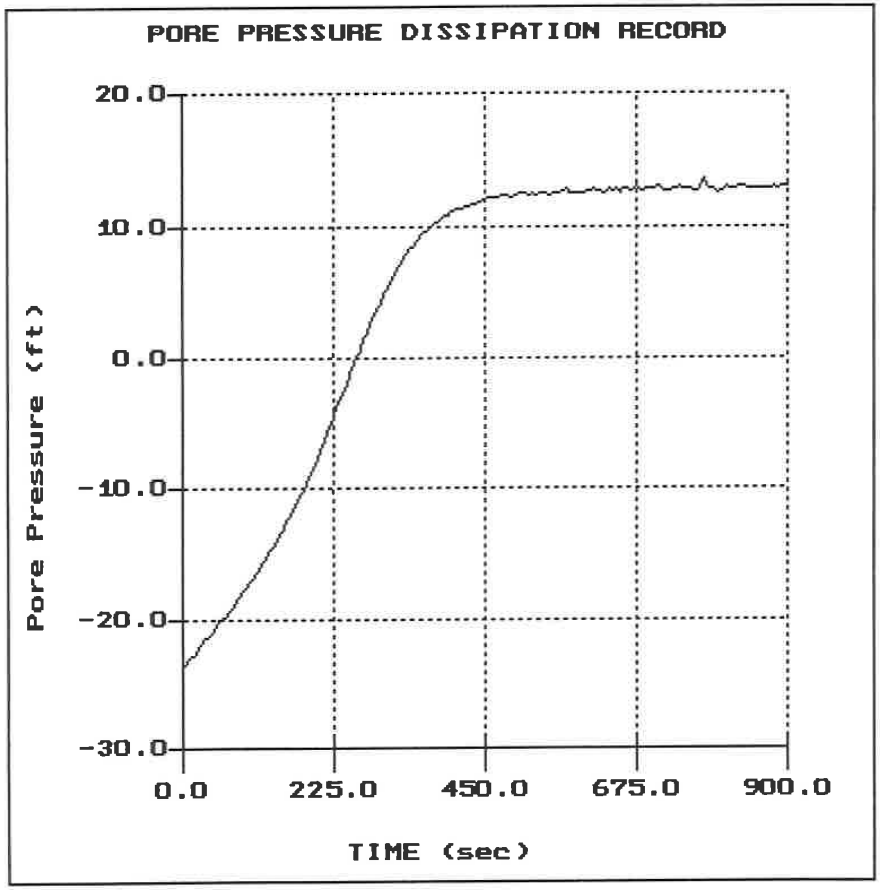


File: 747CP45.PPD
Depth (m): 5.15
(ft): 16.90
Duration : 600.0s
U-min: -13.09 0.0s
U-max: 11.45 555.0s

Louis Berger

Hole:P-46
Location:Ellis Property

Cone:20 TON AD203
Date:05:18:07 10:13



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Louis Berger

Hole:P-55
Location:Ellis Property

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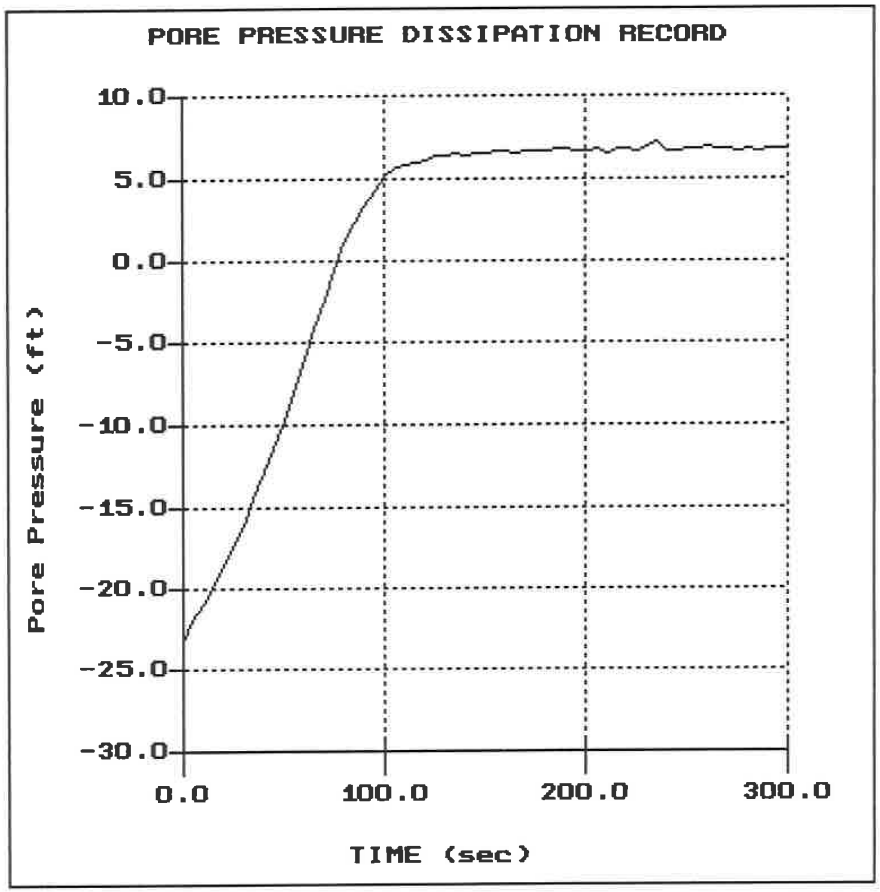
Date:05:21:07 08:59



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Louis Berger

Hole:P-58
Location:Ellis Property

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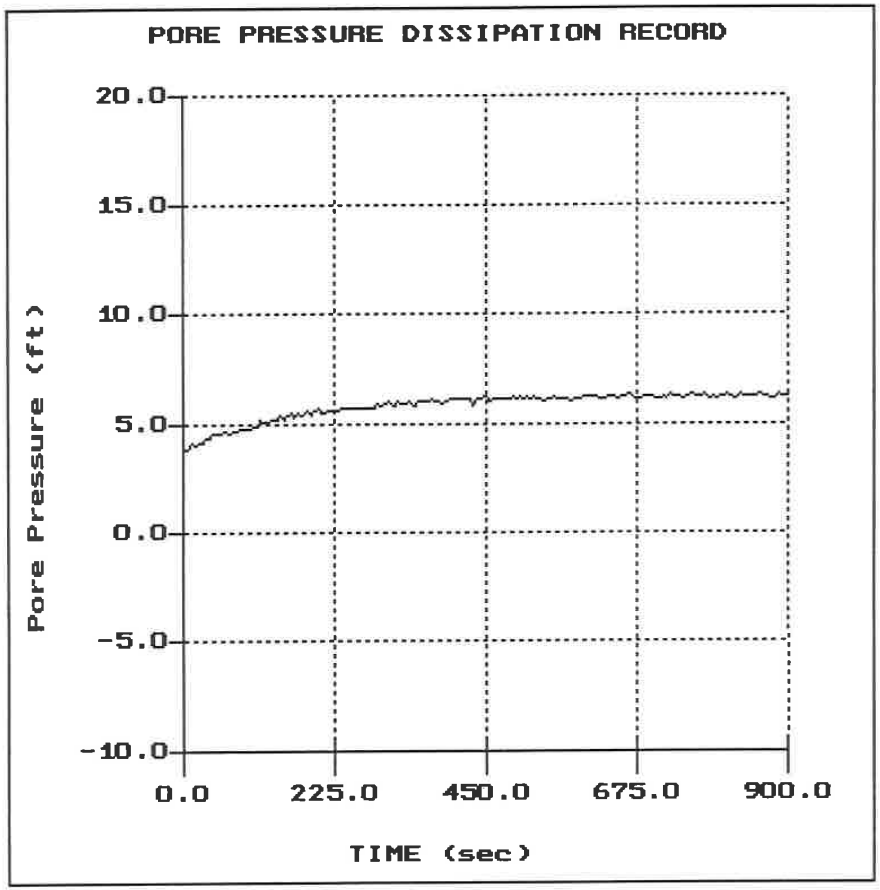

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ATTACHMENT B
MIP Investigation Results Report

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APPENDIX

Appendix A: MIP Logs (Best Fit Scale)

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Introduction

Conetec contracted **COLUMBIA Technologies, LLC (COLUMBIA)** to conduct an investigation of subsurface contamination at the Ellis Superfund Site site, located in Evesham, New Jersey. This investigation involved delineating the depth and horizontal extent of contamination using Membrane Interface Probe (MIP) technologies. The purpose of this investigation was to characterize subsurface soils in the vadose and saturated zones, and delineate the nature and extent of soil and groundwater contamination.

The investigation was conducted May 14, 2007 through May 21, 2007 by COLUMBIA.

Objectives

The objectives of the MIP investigation were to:

1. Characterize subsurface soils in the vadose and saturated zones.
2. Delineate the lateral boundaries of the contaminant in soil and groundwater.
3. Delineate the vertical extent of contamination in soil and groundwater.

Equipment Description

The MIP probe is approximately 12-inches (30 cm) in length and 1.5-inches (3.8 cm) in diameter. The probe is driven into the ground at the nominal rate of one foot per minute using a Conetec direct push rig.

The MIP portion of the probe was developed and patented by Geoprobe Systems, Inc. The operating principle is based on heating the soil and/or water around a semi-permeable polymer membrane to 121ºC, which allows volatile organic compounds (VOCs) to partition across this membrane. The MIP can be used in saturated or unsaturated soils, as water does not pass through the membrane. Nitrogen is used as a carrier gas, and travels from a surface supply down a transfer tubing which sweeps across the back of the membrane and returns any captured VOCs to the installed detectors at the surface. It takes approximately 37 seconds for the nitrogen gas stream to travel through 100 feet of inert tubing and reach the detectors.

COLUMBIA utilizes three detectors: a Photo Ionization Detector (PID), a Flame Ionization Detector (FID) and an Electron Capture Detector (ECD), mounted on a laboratory grade Shimadzu Model 14A gas chromatograph. The output signal from the detectors is captured by a MIP data logging system installed on a MIP Field Computer or laptop computer.

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Conductivity, speed, detector data and temperature are displayed continuously in real time during each push of the probe. In addition, the data logs can be printed for display and analysis following the data logging run or exported to common spreadsheet software for further analysis using COLUMBIA's ***SmartData Solutions***tm technology.

The PID detector consists of a special UV lamp mounted on a thermostatically controlled, low volume, flow-through cell. The temperature is adjustable from ambient temperature to 250ºC. The 10.2 electron volt (eV) UV lamp emits energy at a wavelength of 120 nanometers, which is sufficient to ionize most aromatics (benzene, toluene, xylene, etc.) and many other molecules (e.g. H_2S, hexane, ethanol) whose ionization potential is below 10.2 eV. The PID also emits a lower response for chlorinated compounds such as TCE and PCE. Methanol and water, which have ionization potentials greater than 10.2 eV, do not respond on the PID. Detection limits for aromatics are in the low picogram range at the detector. Since the PID is non-destructive, it is often run first in series with other detectors for multiple analyses from a single injection. Use of the PID is mandated in several EPA methods (8021, TO-14 etc.) because of its sensitivity and selectivity.

The most commonly used GC detector is the FID, which responds linearly over several orders of magnitude from its minimum detectable quantity of about 100 picograms. The FID response is very stable from day to day, and is not susceptible to contamination from dirty samples or column bleed. This detector responds to any molecule with a carbon-hydrogen bond, but poorly to compounds such as H_2S, CCl_4, or NH_3. The carrier gas effluent from the GC column is mixed with hydrogen and burned. Hydrogen supports a flame and ionizes the analyte molecules. A collector electrode attracts the negative ions to the electrometer amplifier, producing an analog signal, which is directed to the data system input.

The ECD detector consists of a sealed stainless steel cylinder containing radioactive Nickel-63. The Nickel-63 emits beta particles (electrons), which collide with the carrier gas molecules, ionizing them in the process. This forms a stable cloud of free electrons in the ECD cell. When electro-negative compounds (especially chlorinated, fluorinated or brominated molecules) such as carbon tetrachloride or TCE enter the cell, they immediately combine with the free electrons, temporarily reducing the number remaining in the electron cloud. The detector electronics, which maintain a constant current of about 1 nanoampere through the electron cloud, are forced to pulse at a faster rate to compensate for the decreased number of free electrons. The pulse rate is converted to an analog output, which is transmitted to the data system.

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System Performance Testing

Prior to logging each MIP location, performance tests with specific compounds are conducted to evaluate the sensitivity of the particular probe, transfer line and detector suite to be used. An aqueous phase test is performed prior to each location using neat benzene and neat TCE. The resulting values are recorded and compared to predetermined values.

Investigation Methods

MIP profiling was conducted at 59 locations total on, or adjacent to the property of the Ellis Superfund Site, selected by Conetec's representative onsite. Drilling was completed using a Geoprobe® rig, and termination of MIP logging was determined by Conetec's representative onsite. The results from each location are shown in Appendix A. Maps and 3D graphics of the site have been prepared for easier visualization of the subsurface.

MIP Log Interpretation

Each MIP log includes six separate graphs of data. The first graph is conductivity and was not used in this survey. The second graph is the rate of penetration (speed of the probe) and is measured in feet/min. This information can be used to determine how resistant the subsurface is to the direct push and/or percussion. The next three graphs are measures of chemical detector response: PID, FID, and ECD, measured in microvolts (uV). These graphs are a linear scale, and give relative concentrations of contamination. The last graph displays the temperature of the probe as it is advanced in the subsurface. This graph can sometimes be useful to determine where groundwater is encountered.

Correlating MIP Results to Sampling & Laboratory Analyses

It is important to note that some variation between MIP results and quantitative laboratory analyses of selected soil or groundwater samples can be expected. The MIP process uses a membrane extraction process from a heated zone of varying subsurface matrix of soil, water, and/or vapor. Soil and groundwater results involve the collection of a sample, extraction of sub-sample at the surface, and then transporting them to a laboratory for further extraction and

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analysis. These two processes are different by definition. The difference is further accentuated by any difference in depth from where the respective samples are taken for the two different processes and the type of matrix that is sampled.

MIP results are not quantitative results, i.e. concentration values. Contaminant concentration is a ratio of contaminant mass to a particular matrix volume. The mass of a compound that passes through the membrane for evaluation by the MIP detector system will vary as a result of several factors including the volume and type of matrix from which the mass is extracted. Therefore, an accurate calculation of mass is preempted.

When the MIP system lineup and operating protocol are standardized between data points, then the MIP results are an accurate representation of the relative variation of contaminant mass detected with changes in depth. The variation in this case will be wholly dependent on the subsurface conditions, not the internal MIP system performance. This leads to an accurate estimation of the plume boundaries and the geometric volume of soils that it occupies. Follow on soil and groundwater confirmation samples co-located with MIP boring locations taken on hundreds of contaminated sites investigated by Columbia Technologies confirm a high overall correlation between MIP results and quantitative lab results.

SmartData Solutions®

COLUMBIA's SmartData Solutions® is a patented process (U.S. Patent No, 7,058,509) that enables the rapid processing of field data into easy to understand 3D visualizations posted to a password protected website. This process includes quality assurance, formatting and rapid visualization of the data for the project team and enables a complete check of the dataset prior to completion of fieldwork.

Delineation and Volume

The SmartData Solutions® graphics display a 3-dimensional view of the contamination plume. These plumes are calculated by extrapolating data in three dimensions between measured data points. The plume is calculated only within the bounds of the outermost measured points. A plume is considered to be unbounded when it extends to the bounds of those outermost

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measured points. A fully bounded plume will exist entirely within the confines of the outermost measured points.

The SmartData Solutions® graphics also display a plume volume calculation in the heading. This volume is based on the minimum response level listed in the heading. Volume is calculated by using the scale of the map provided. As a result, the plume calculation is only as accurate as the scale and details of the map. It is important to note that the plume volume calculation reflects only the portion of the plume that exists within the outermost measured points. The volume reported of an unbounded plume may be greatly understated. In any case, the volumes reported are intended for general planning purposes only and may vary from actual volumes.

3-Dimensional Orientation

The SmartData Solutions® graphics use a relative azimuth system to describe map orientation because many maps are not oriented with true North at the top of the map. The relative azimuth system uses a 360° compass to describe the position *from which* the graphic is being viewed. For example, a viewer "looking east" on a North oriented map would have a relative azimuth of 270°., i.e. the viewer would be standing on the "western" 270° azimuth point looking through the center to the "east".

The header also describes elevation. Elevation is the number of degrees that the graphic is rotated on the vertical Z axis. A plan view has an elevation of 90°; a transect view has an elevation of 0°.

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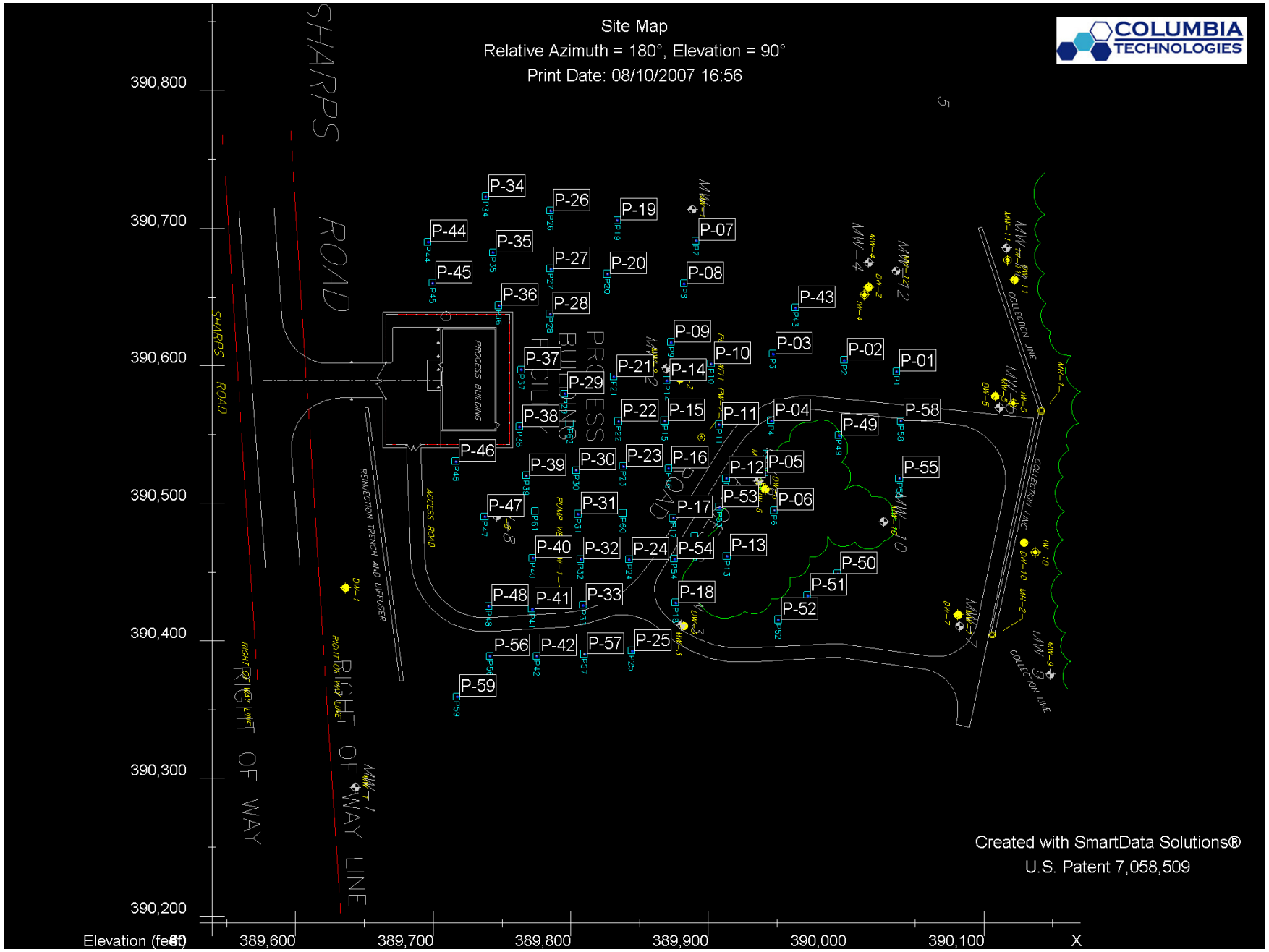

Figure 1 Sitemap and MIP Locations
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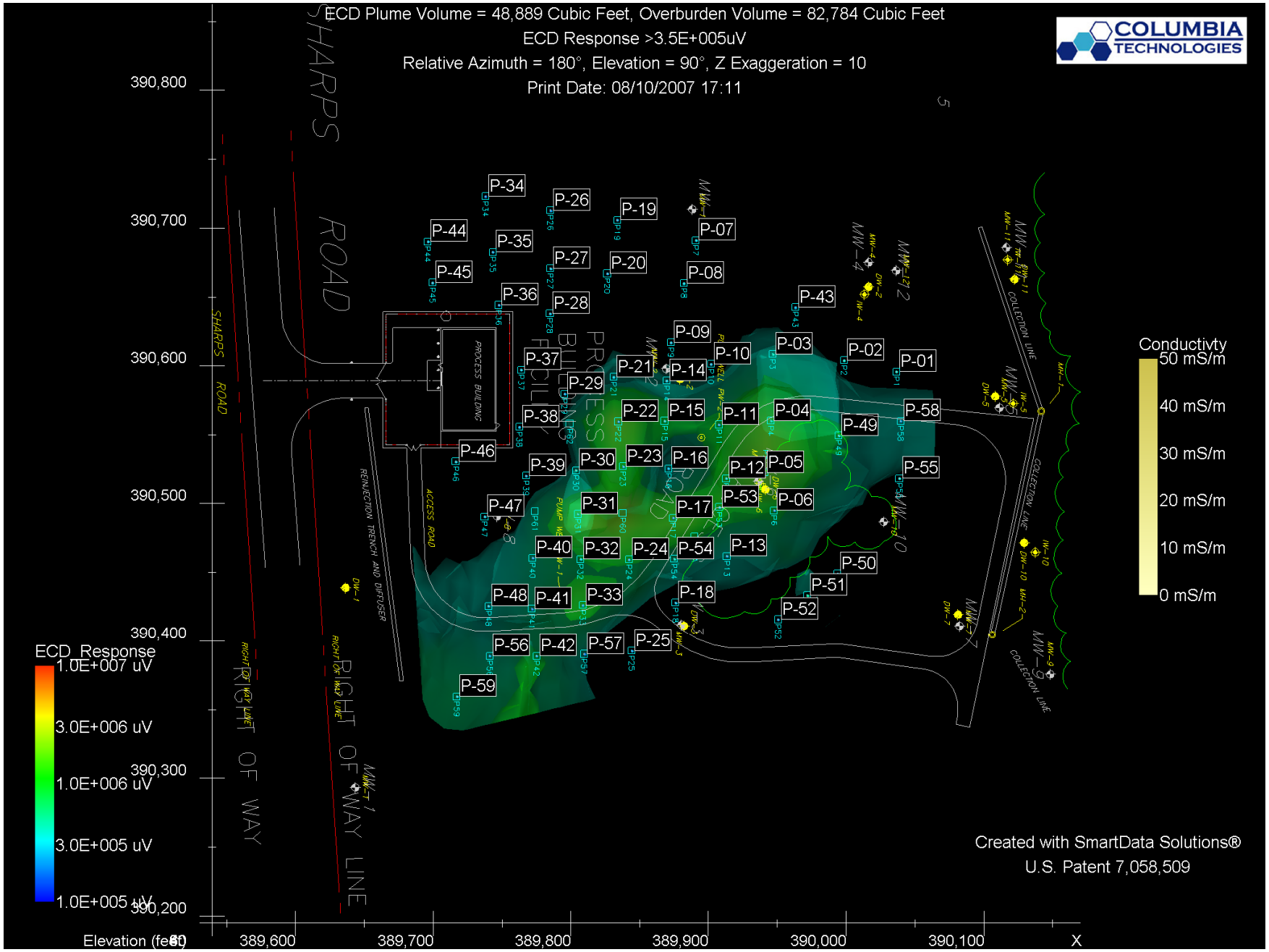

Figure 2 Plan View Relative Azimuth 180°
May 14, 2007 – May 21, 2007

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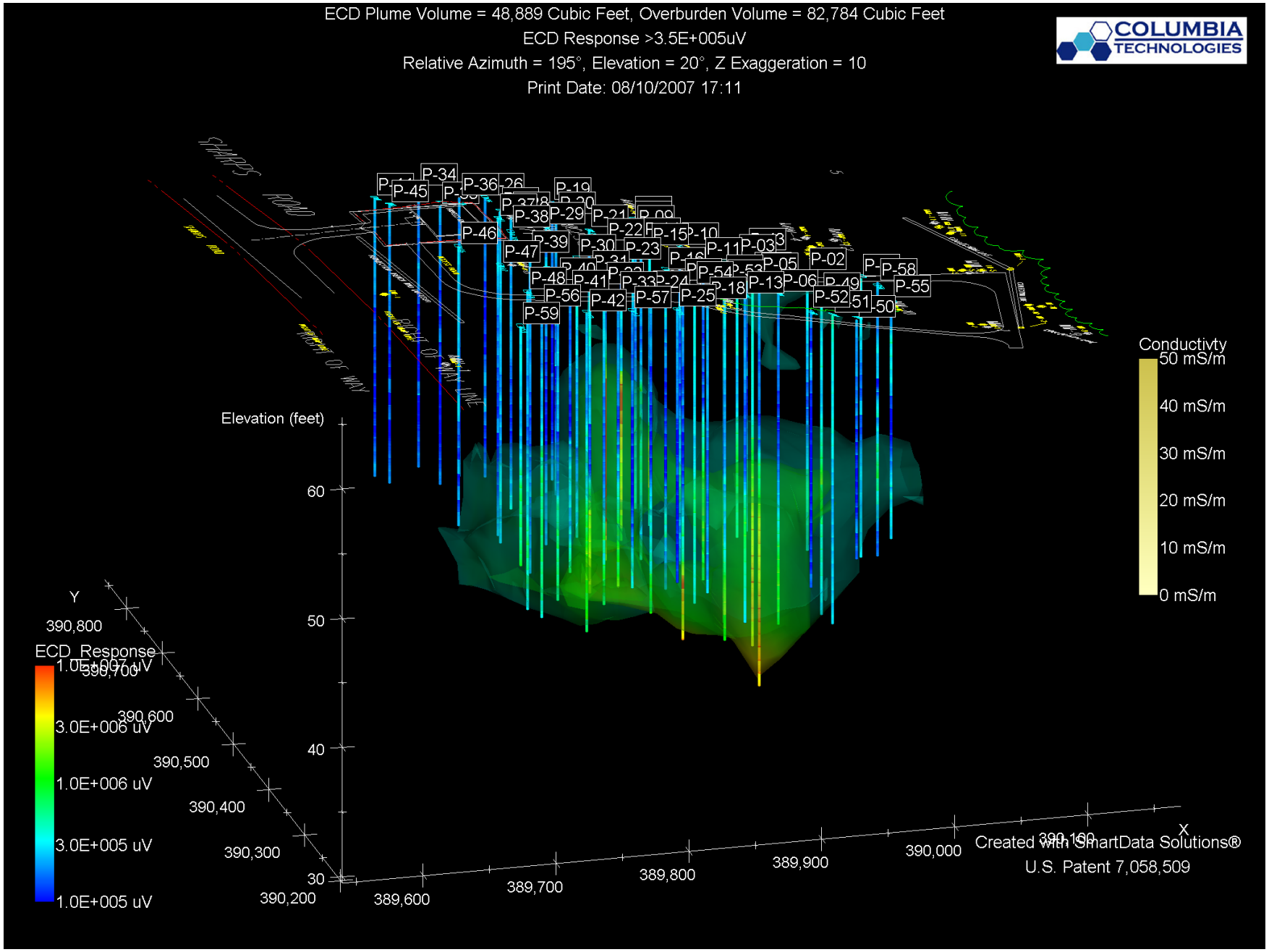

Figure 3 Oblique View Relative Azimuth 195°
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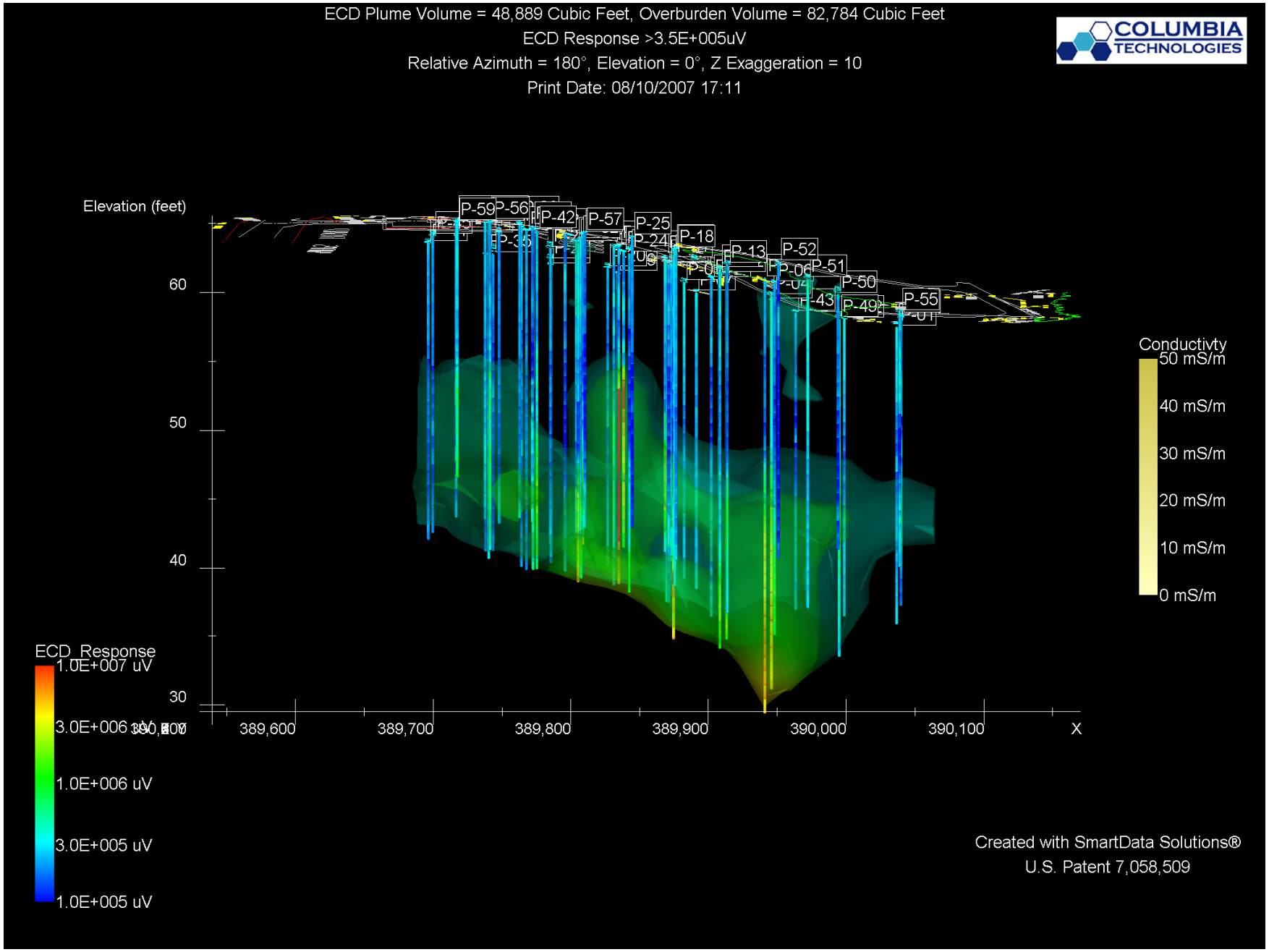

Figure 4 Transect View Relative Azimuth 180°
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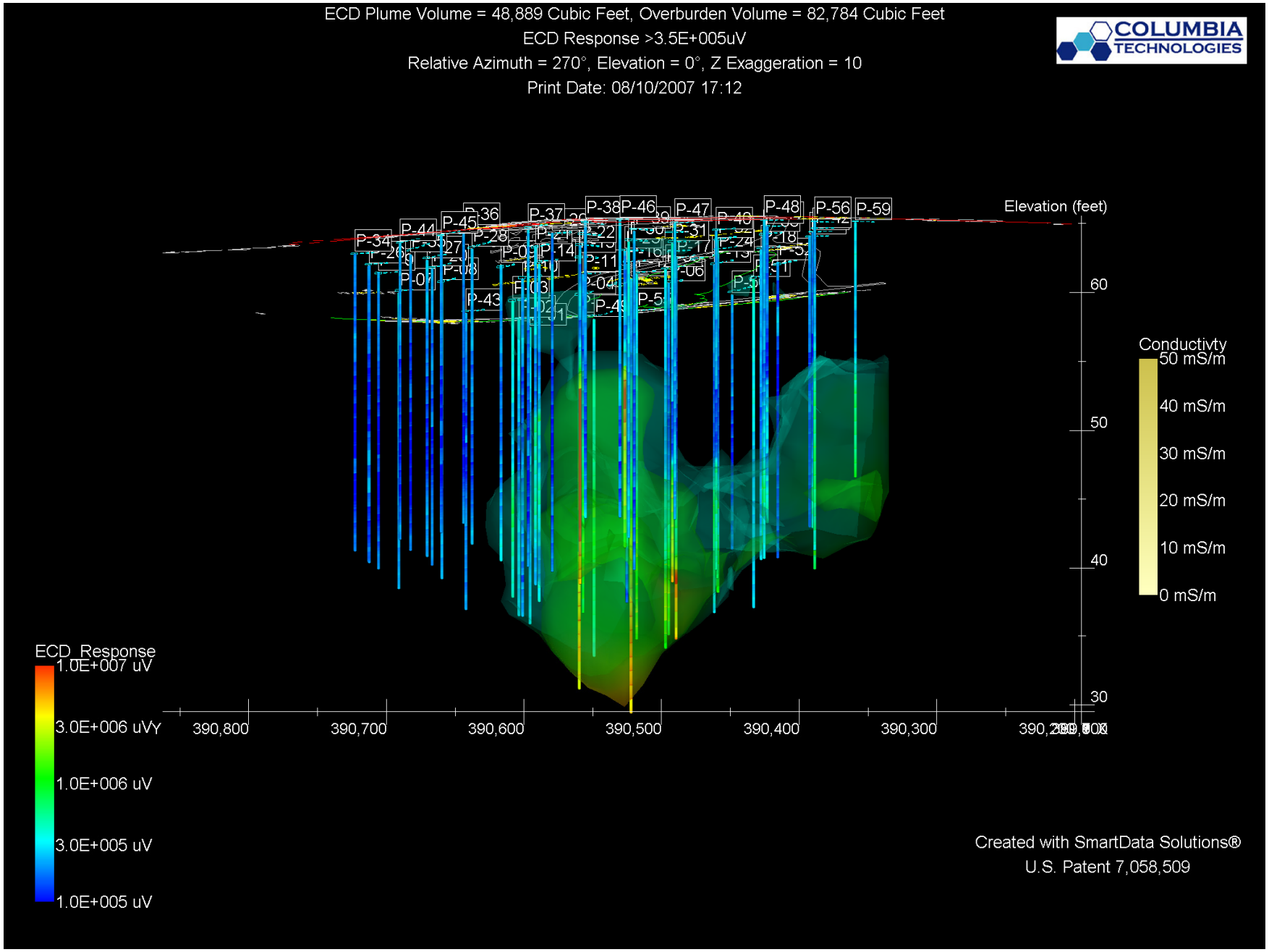

Figure 5 Transect View Relative Azimuth 270°
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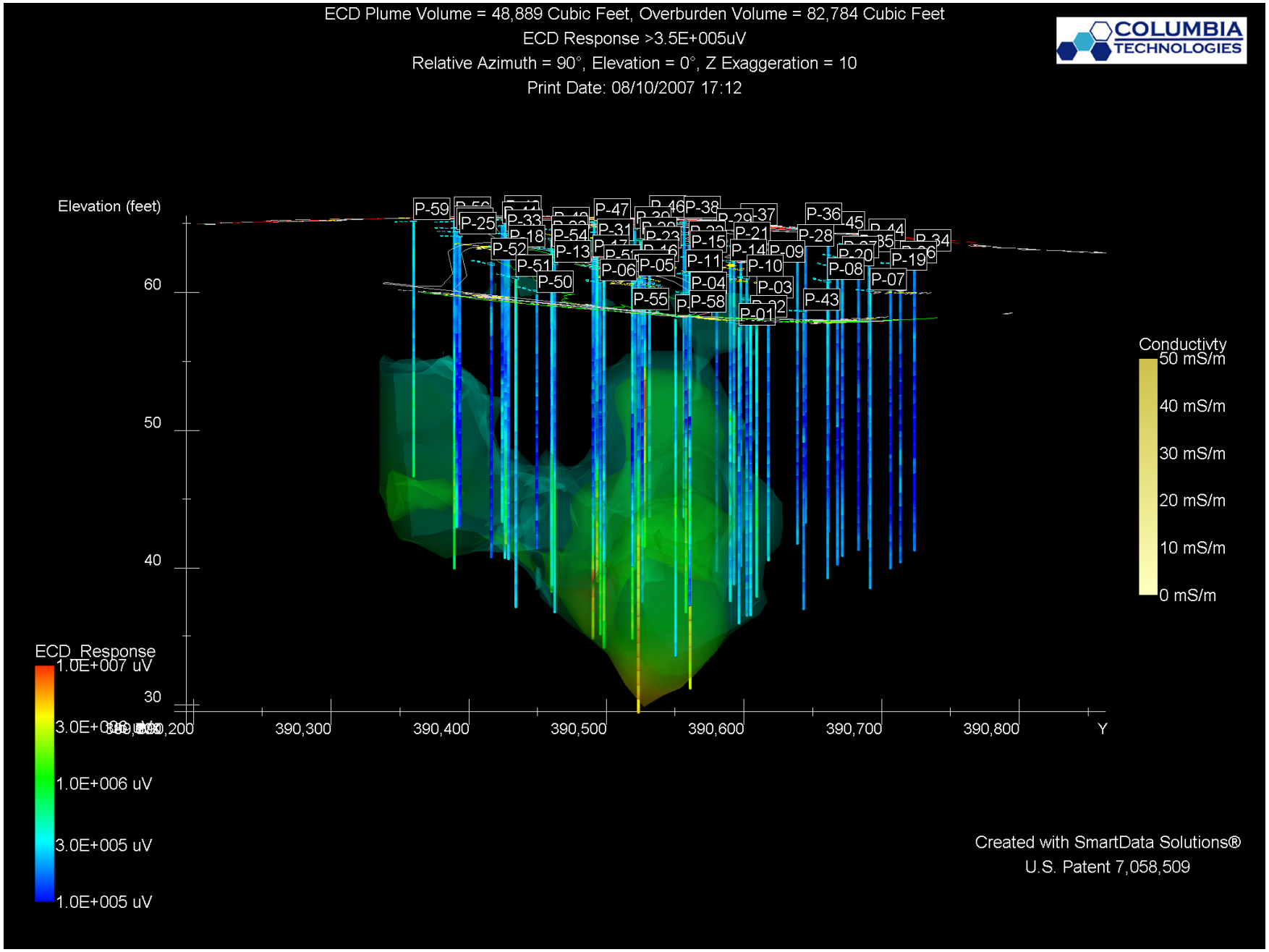

Figure 6 Transect View Relative Azimuth 90°
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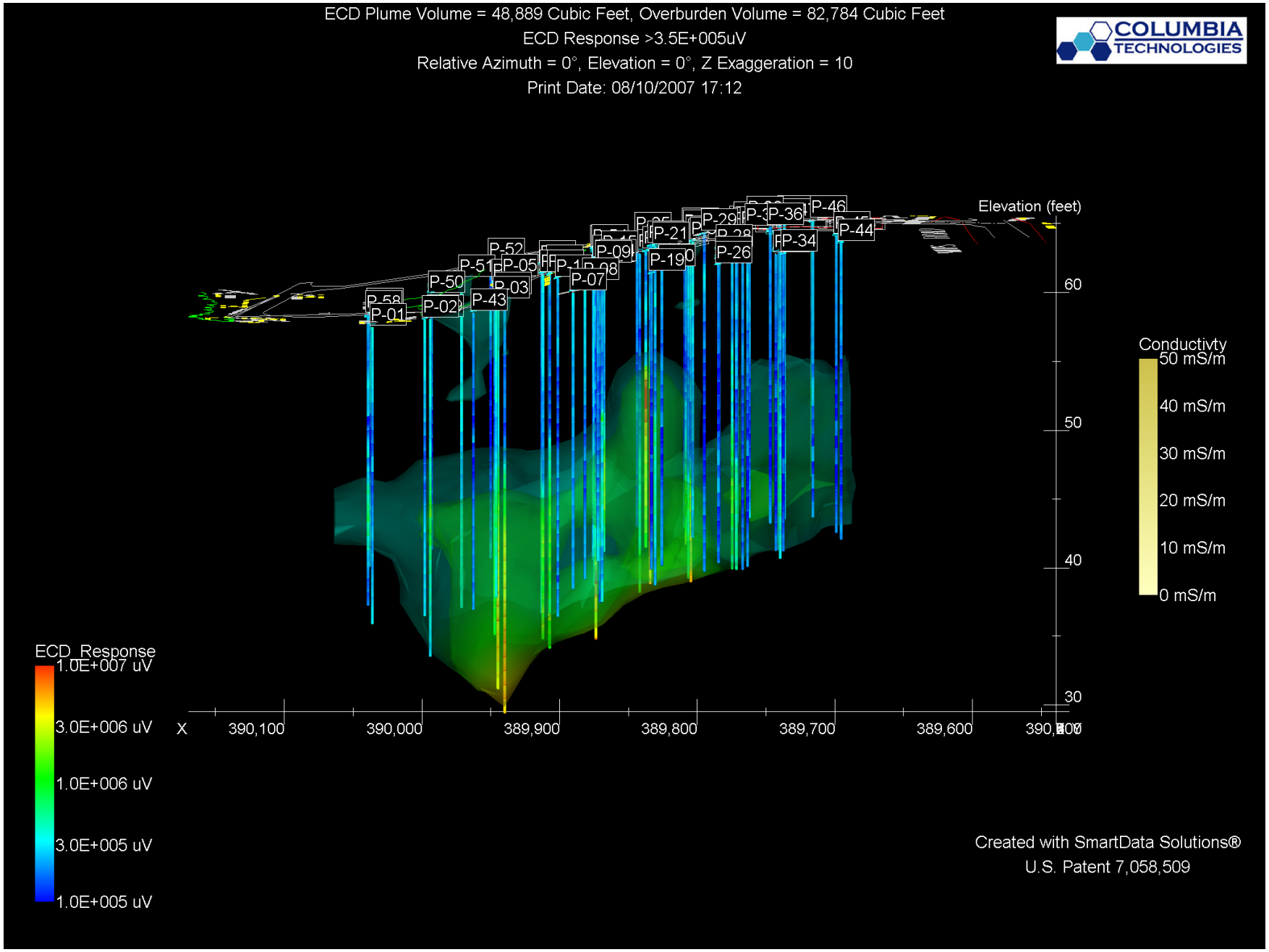

Figure 7 Transect View Relative Azimuth 0°
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APPENDIX A

MIP Logs (Best Fit Scale)

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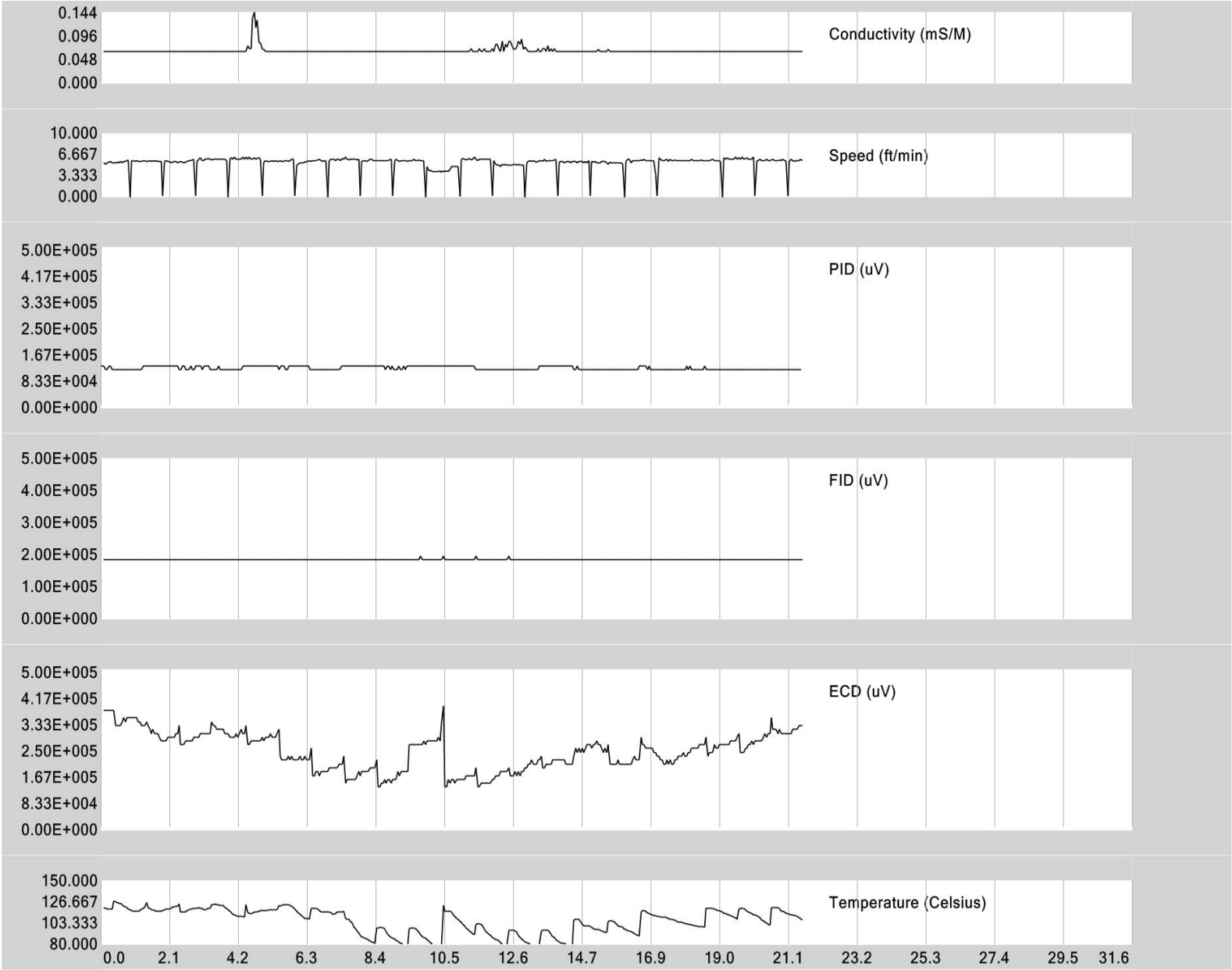
P-01



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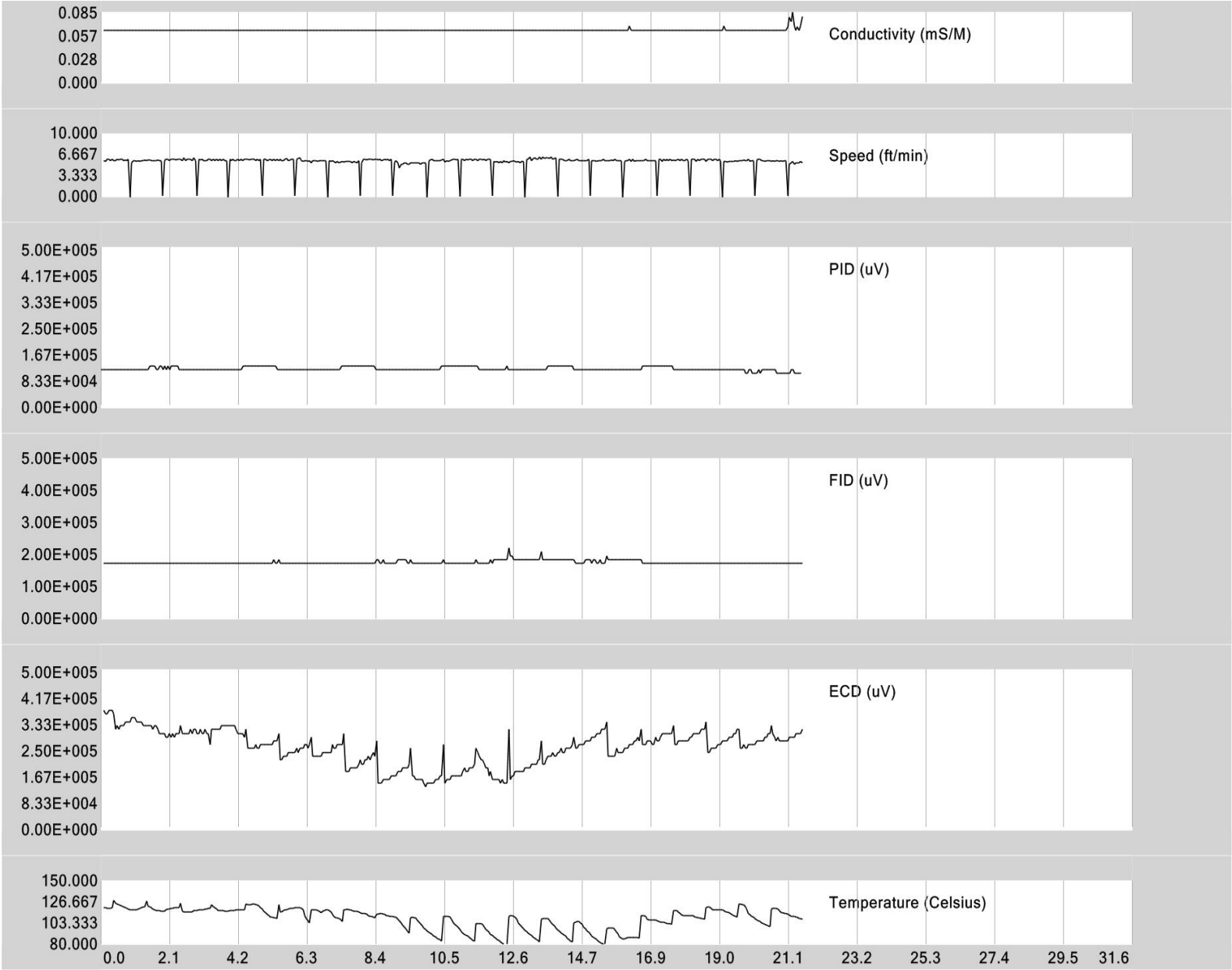

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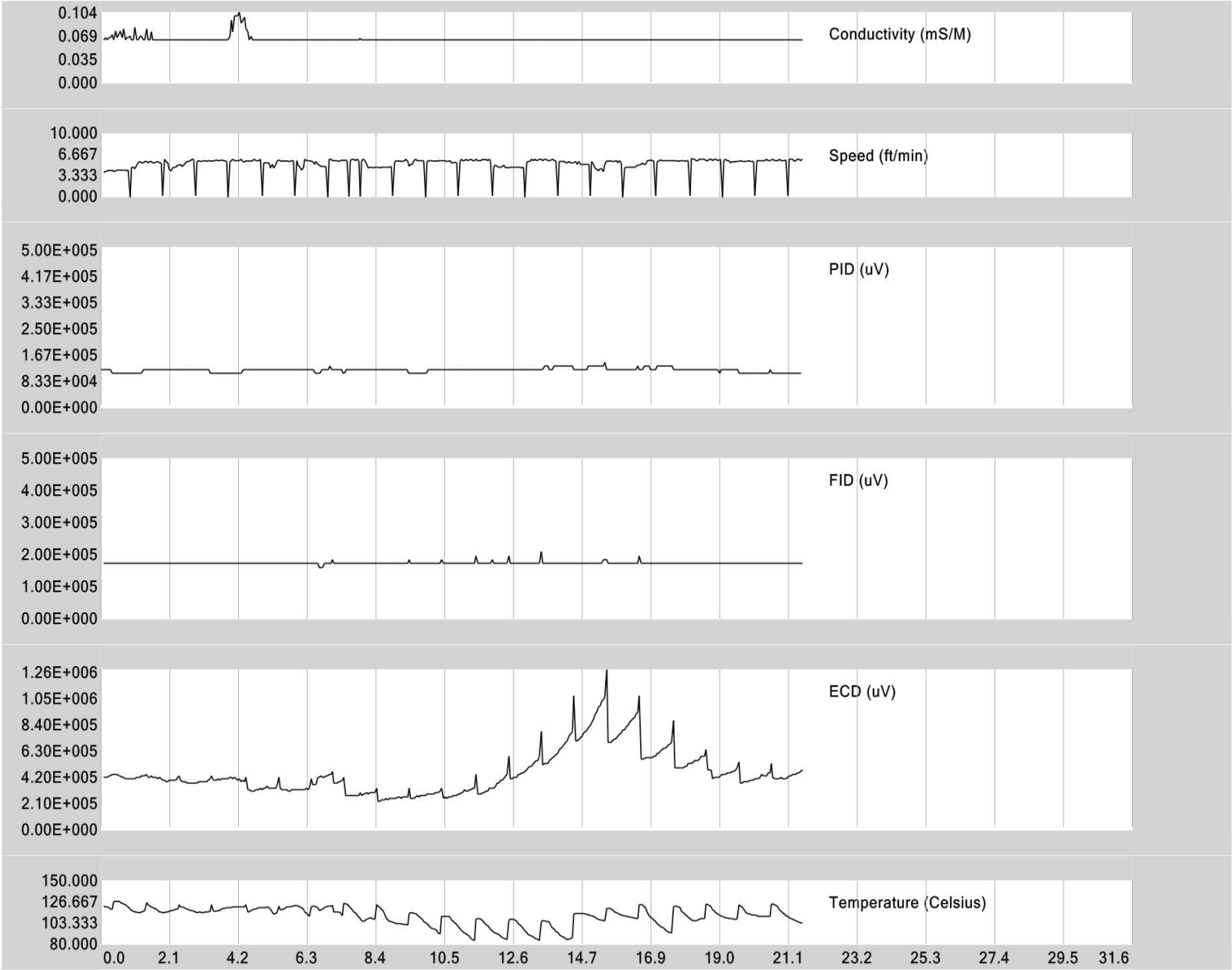

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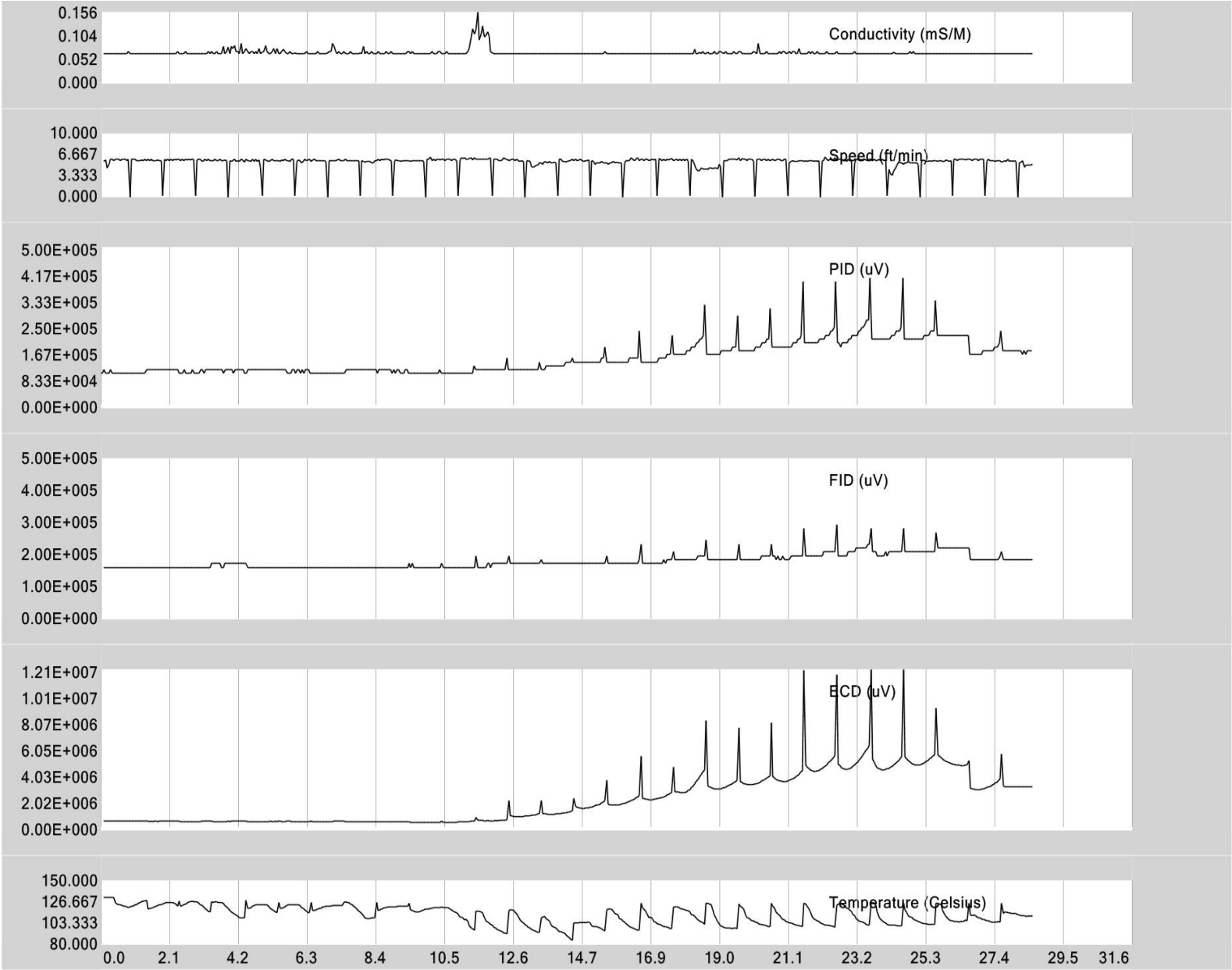

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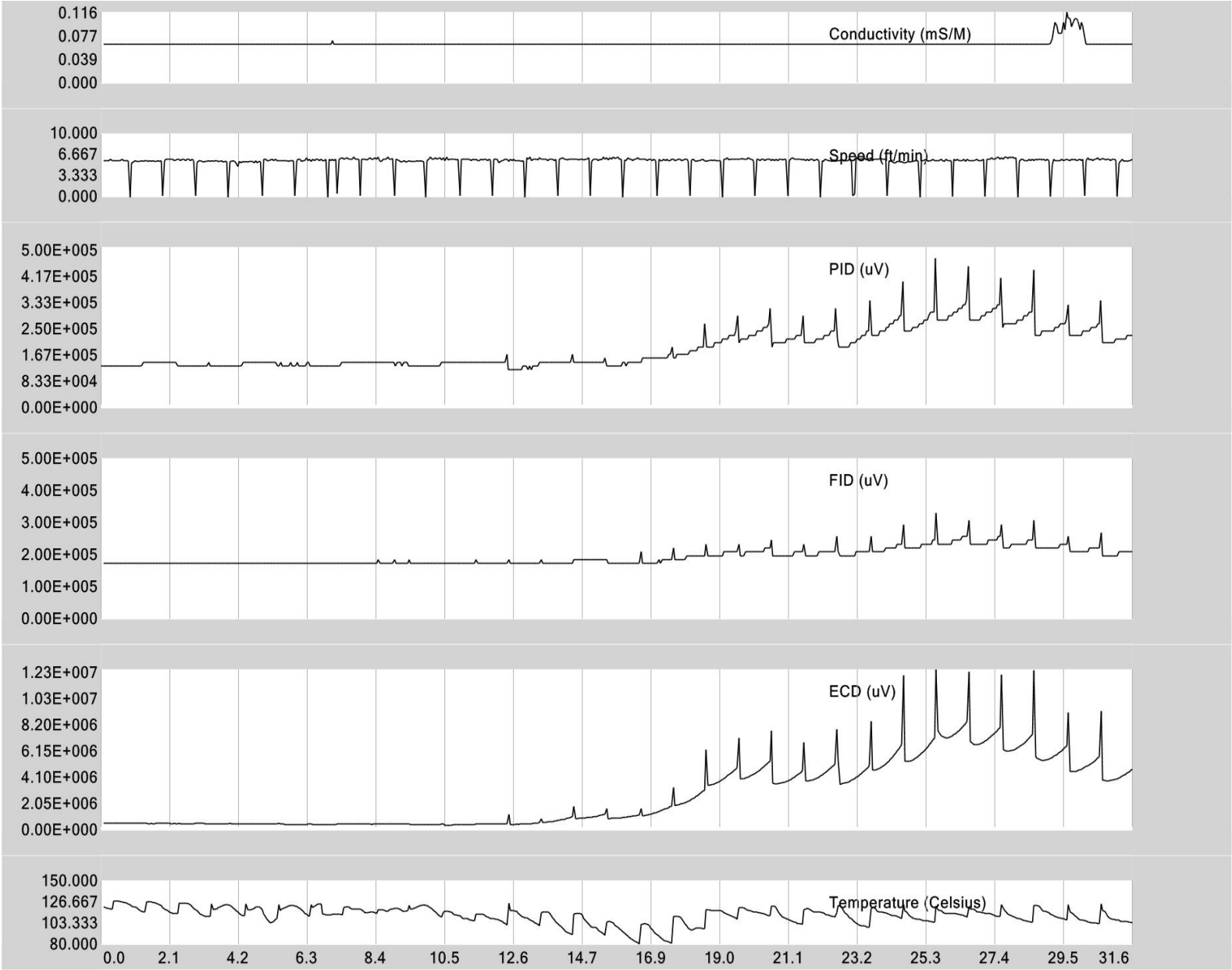

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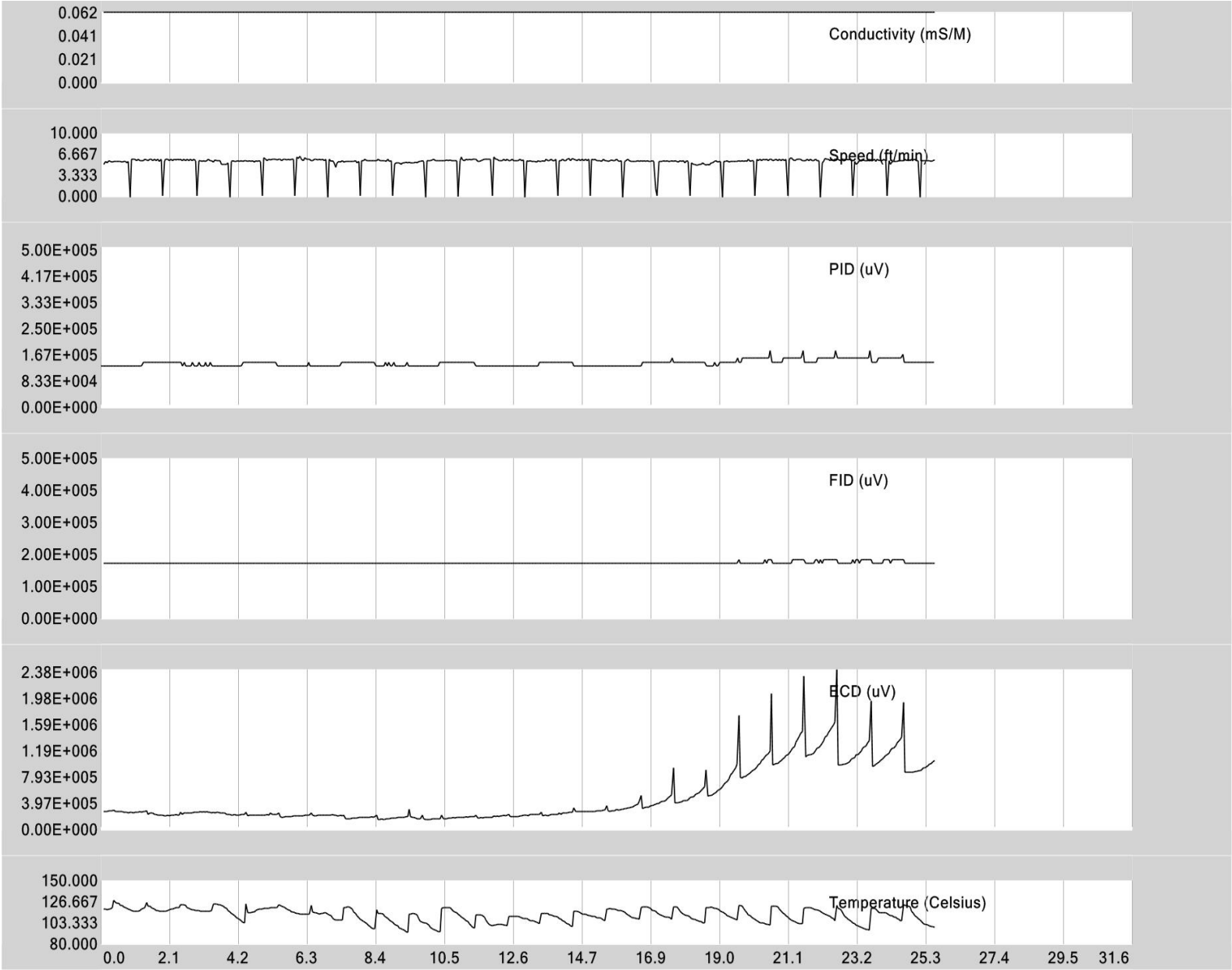

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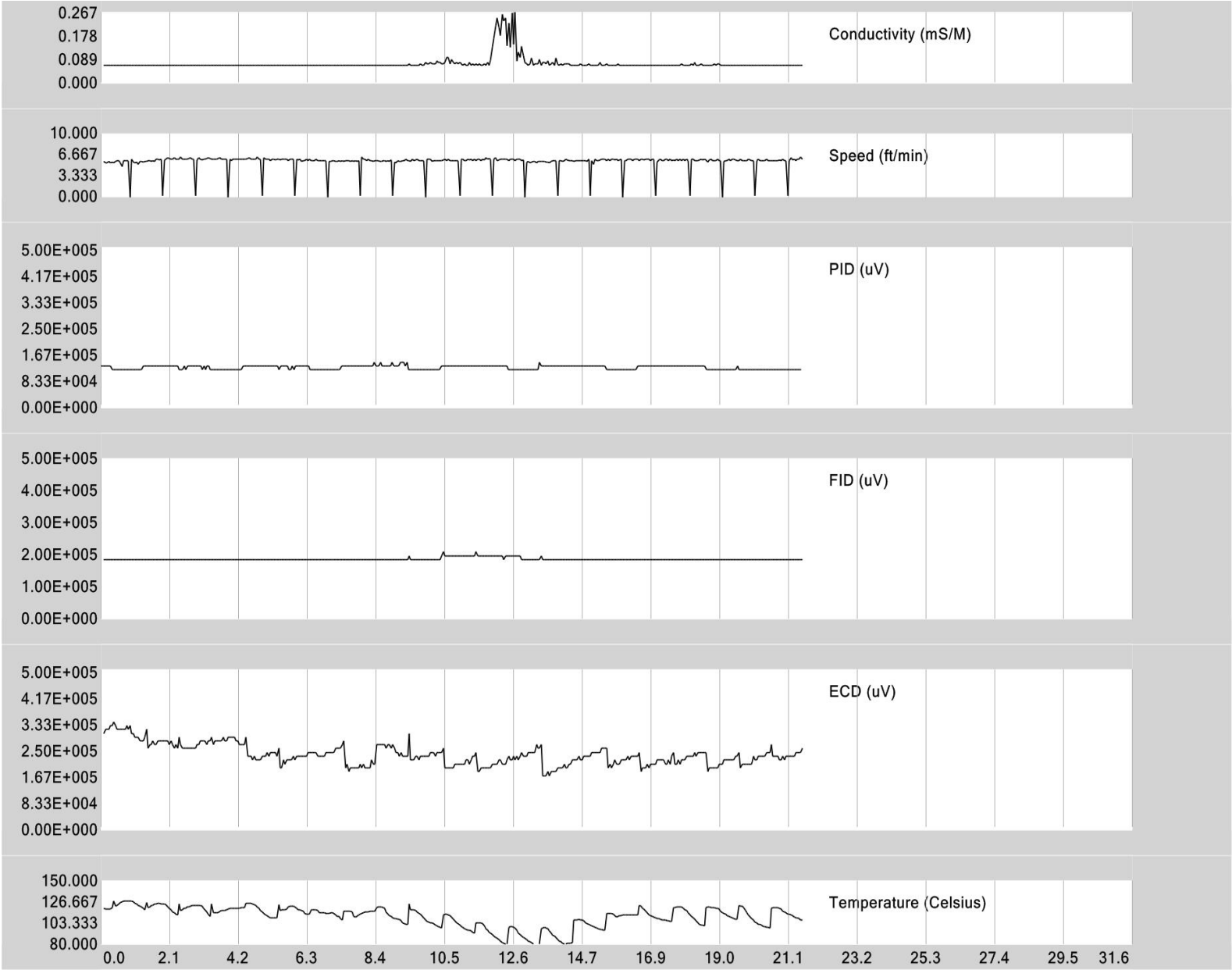

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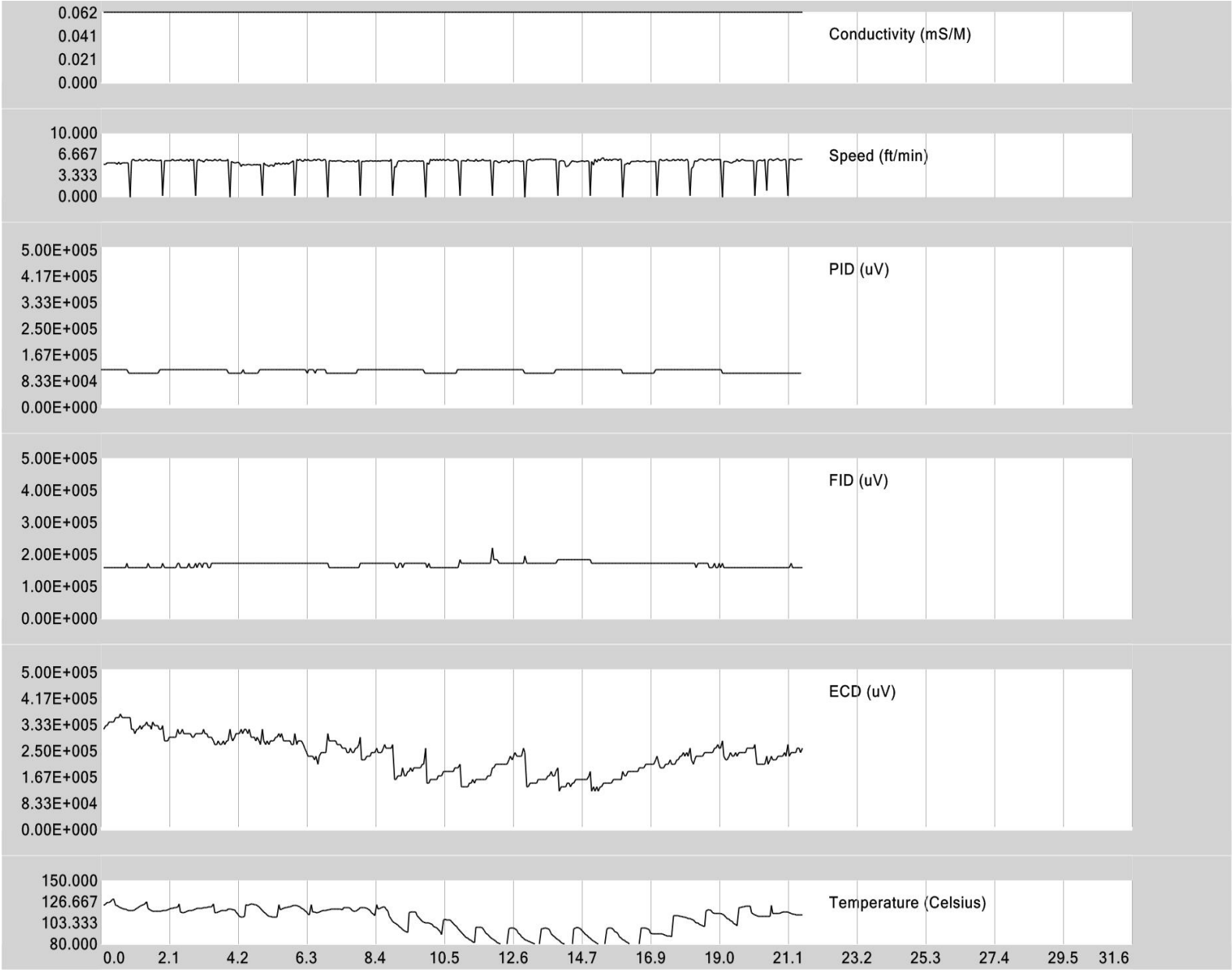

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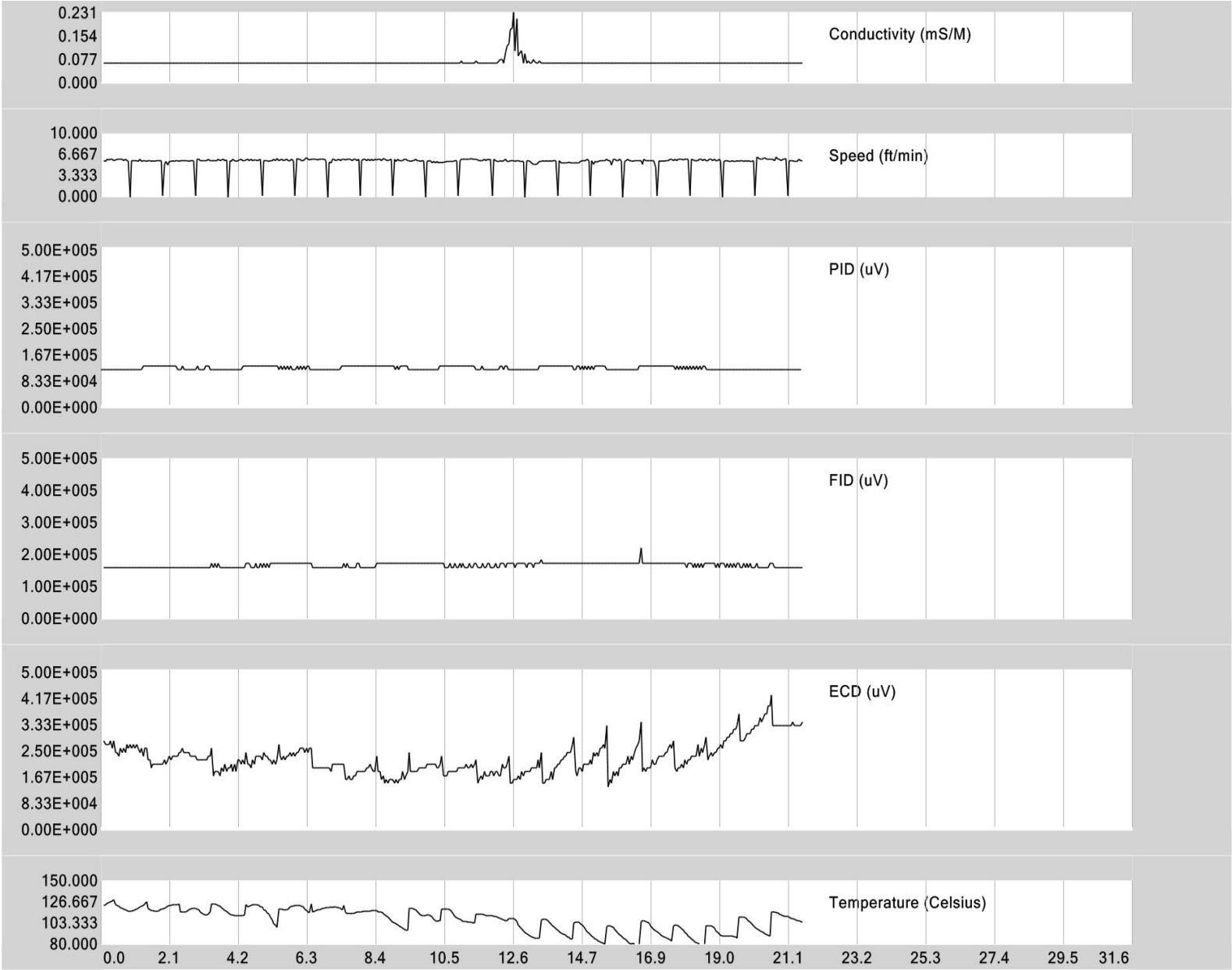

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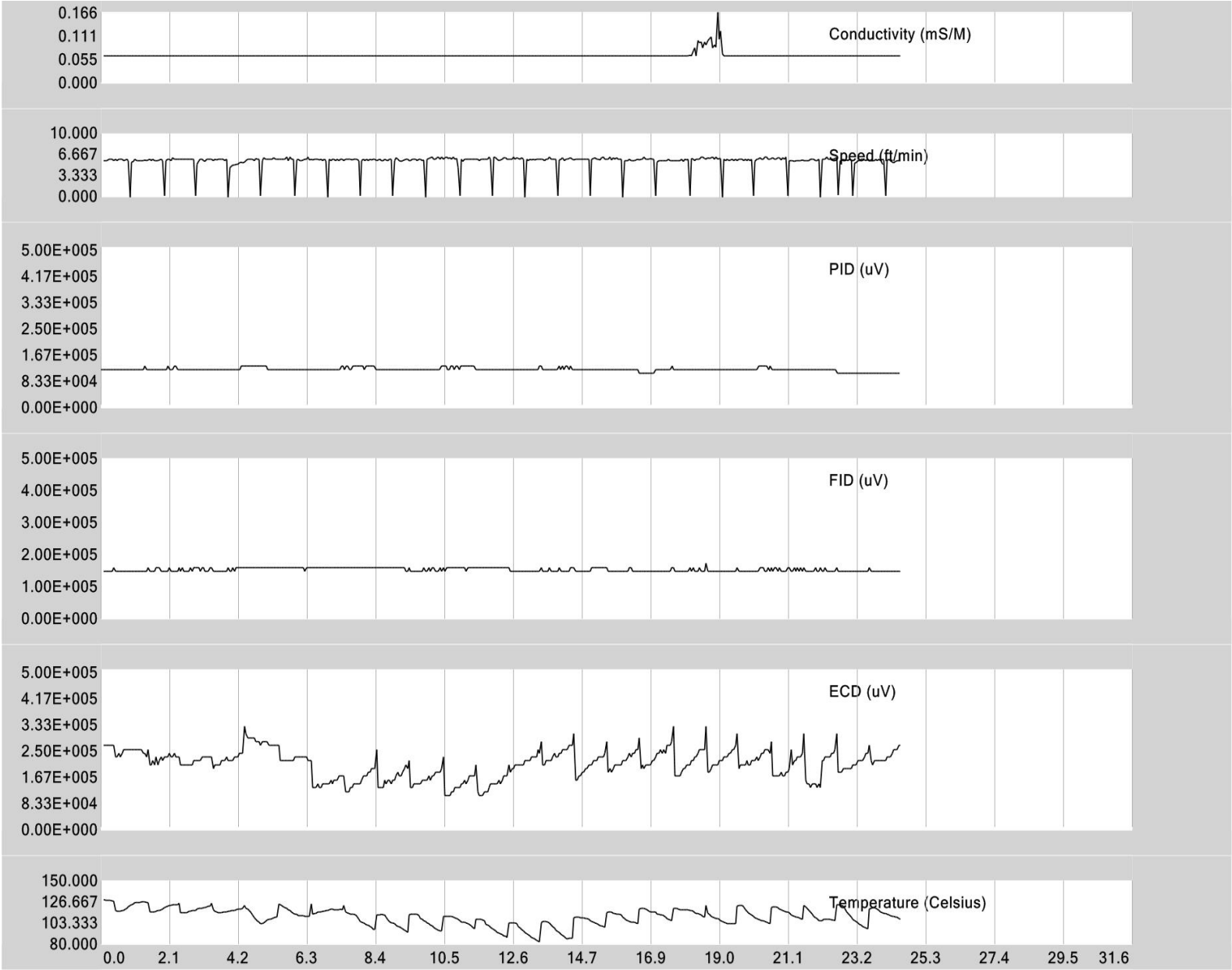

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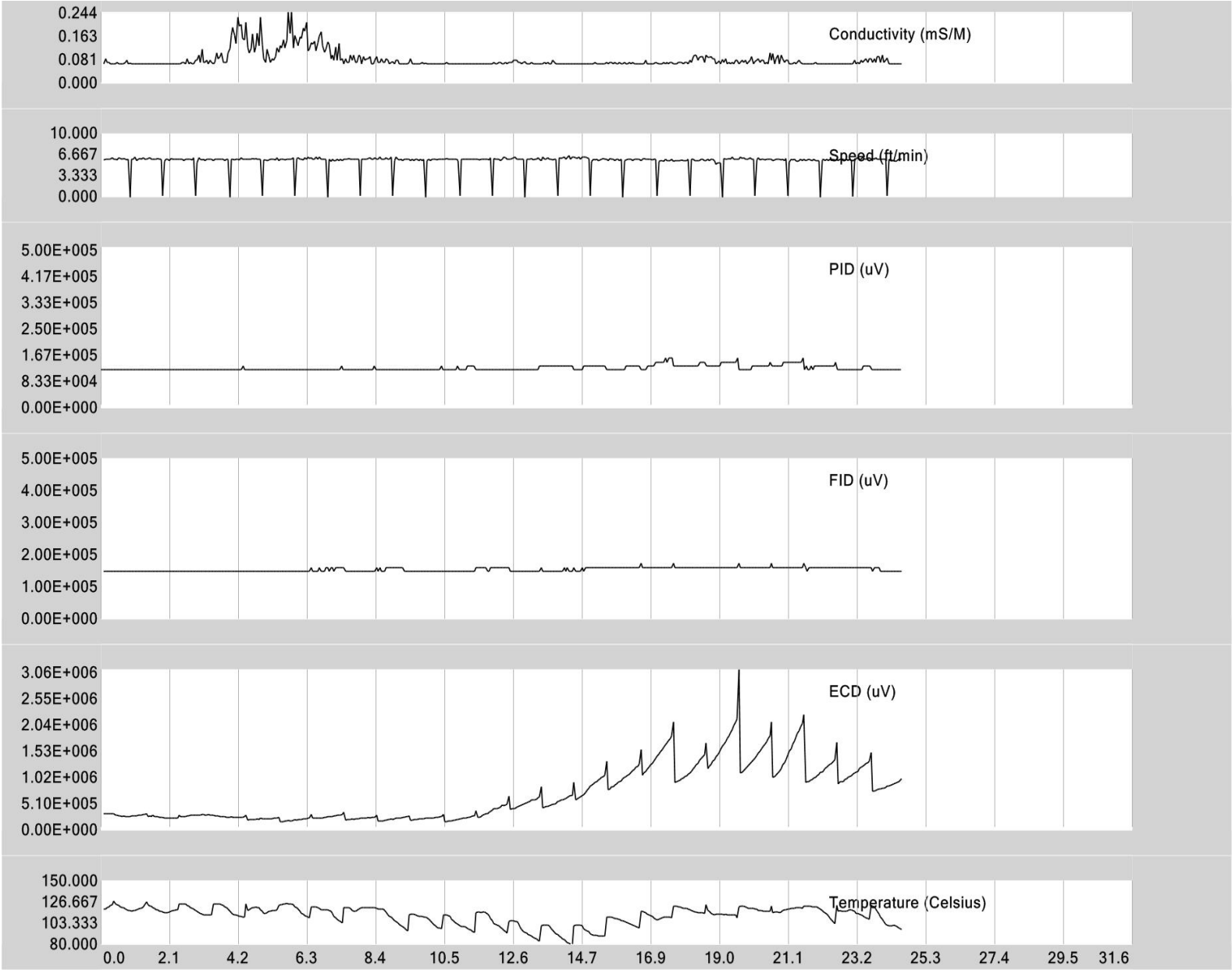

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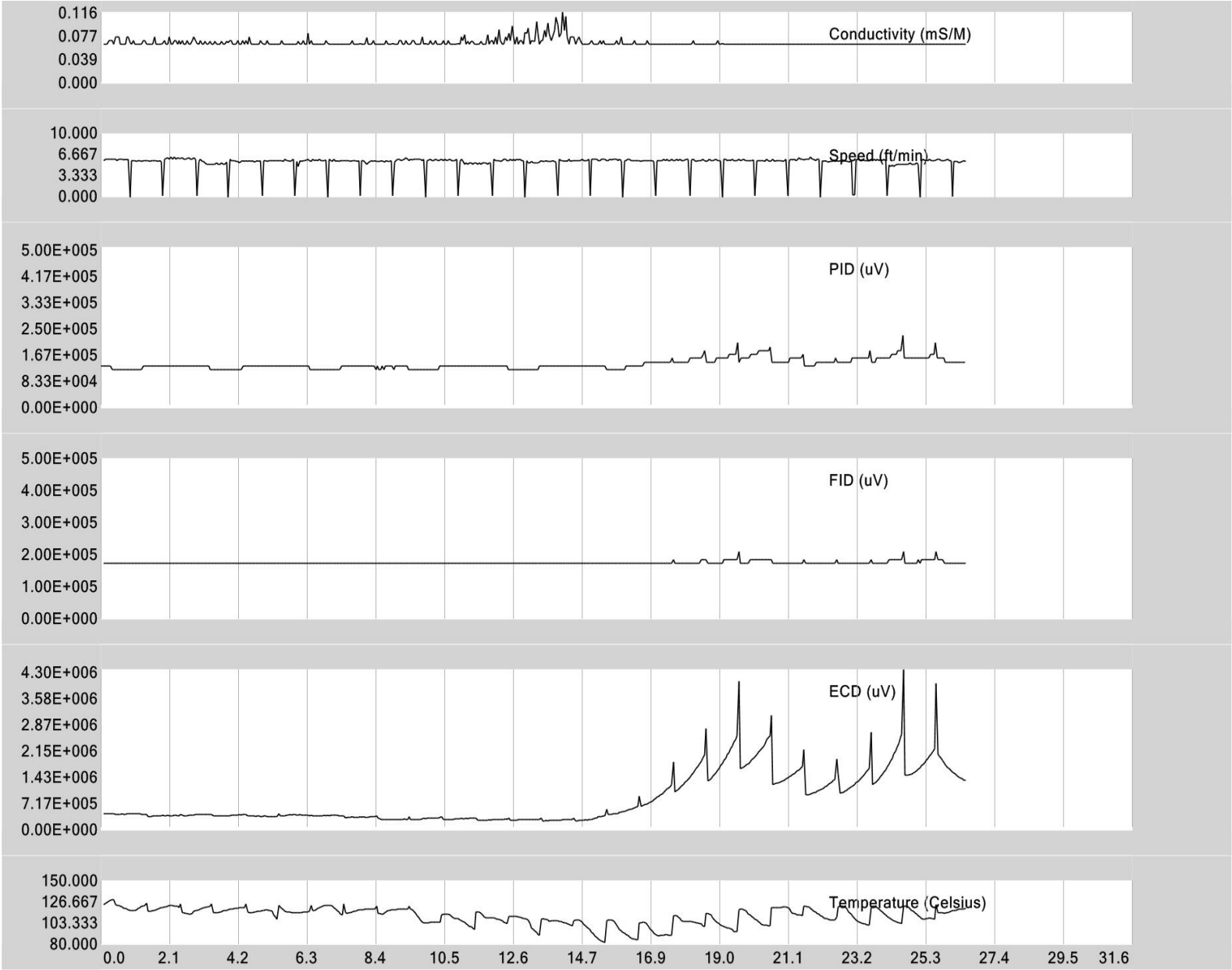

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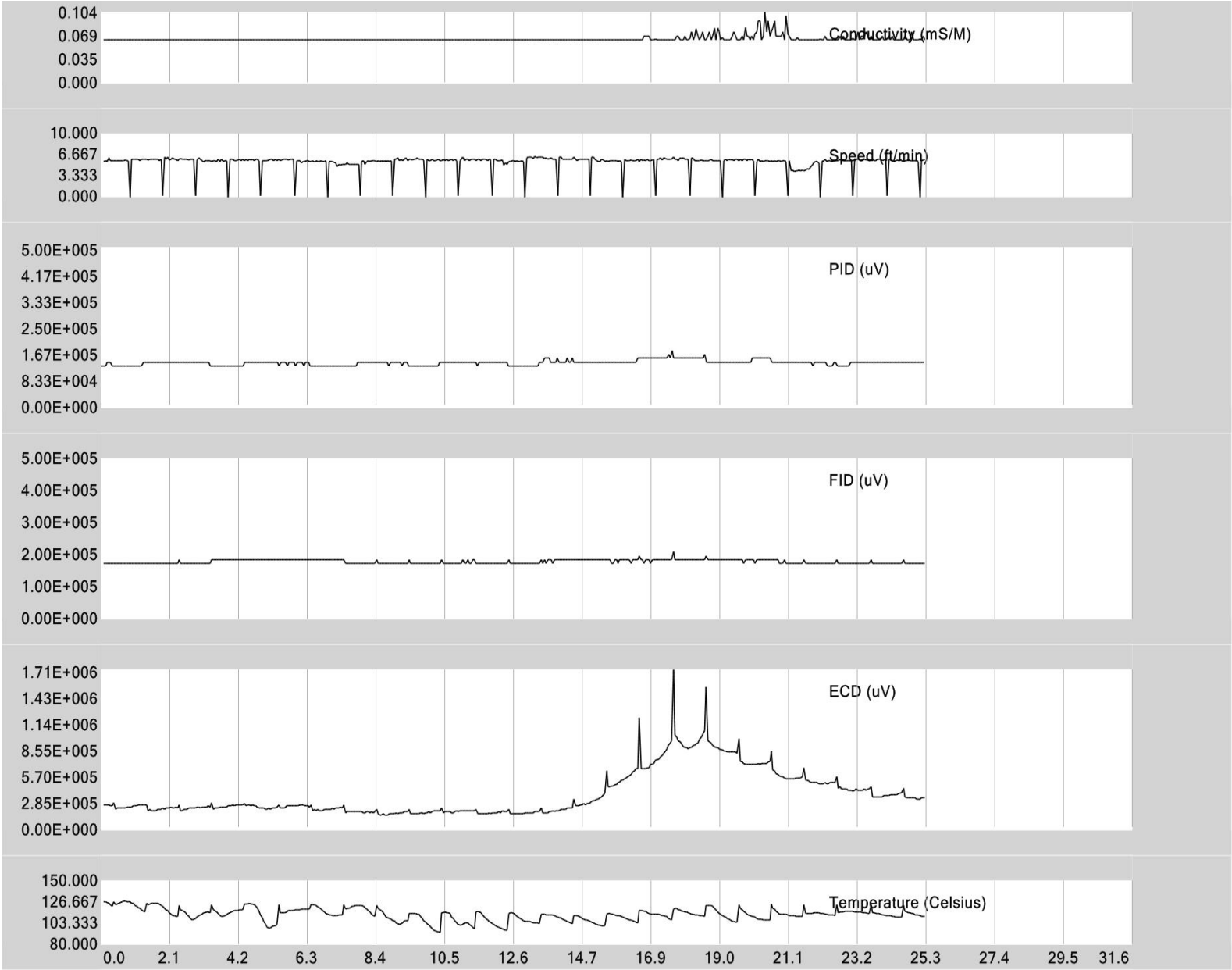

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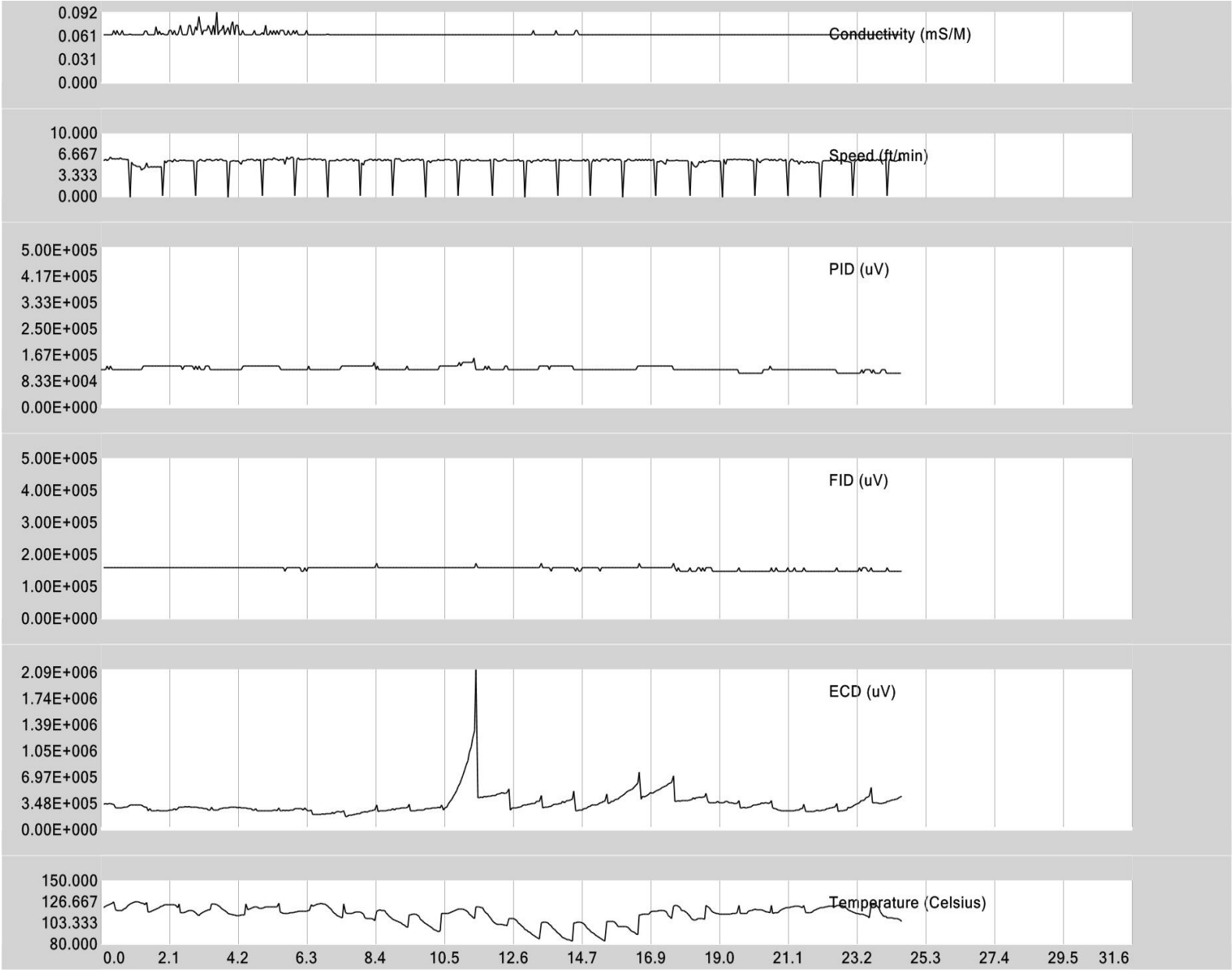

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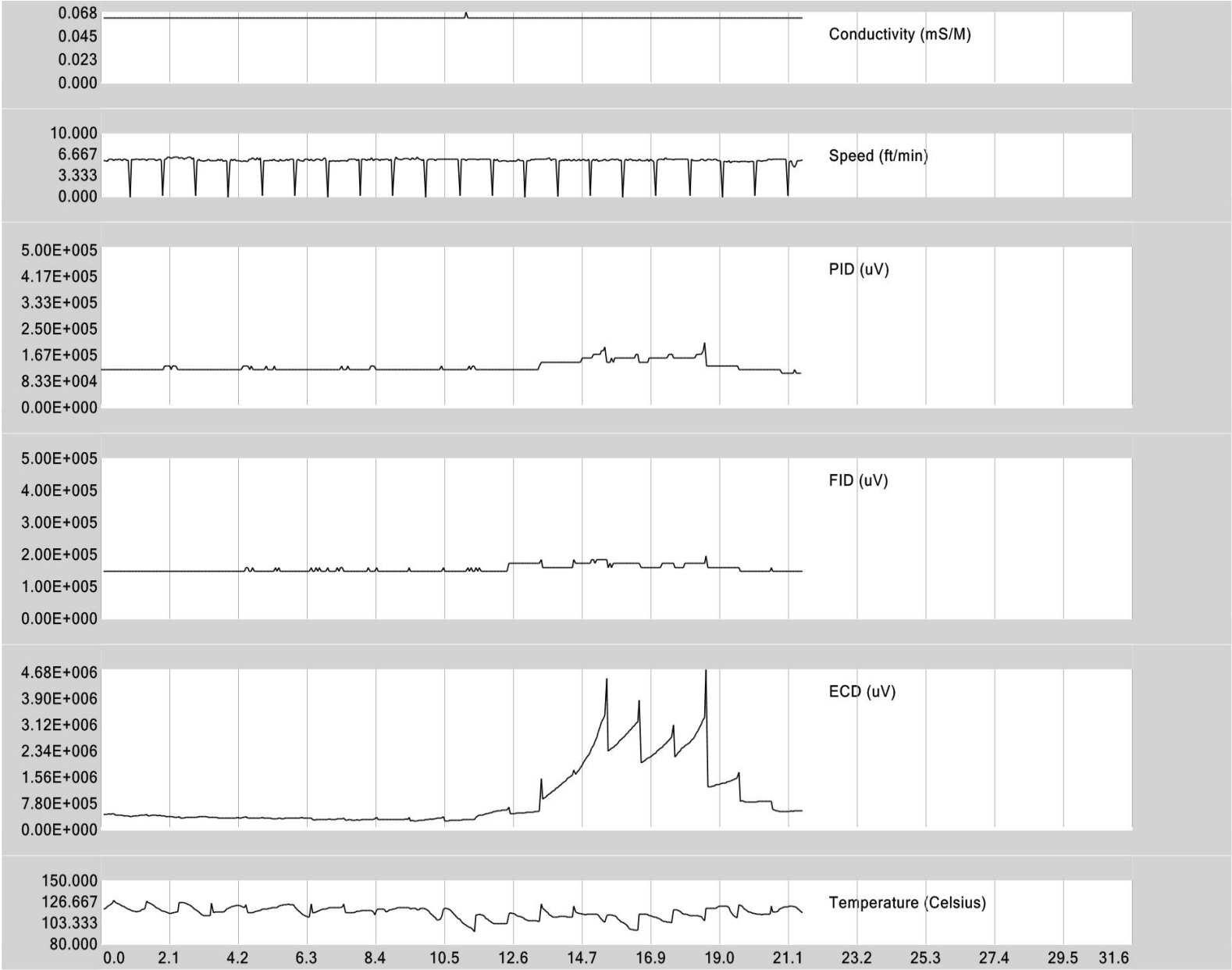

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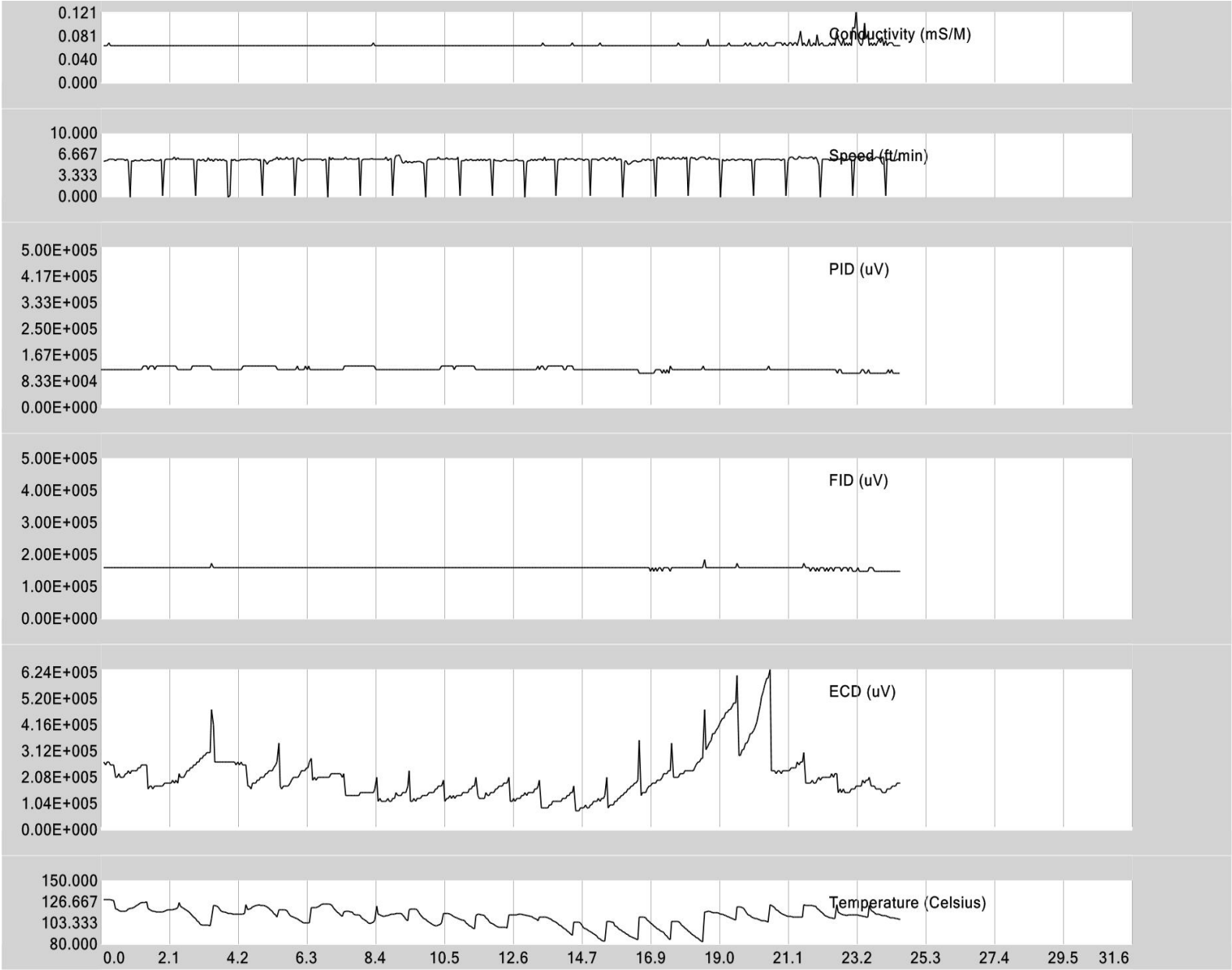

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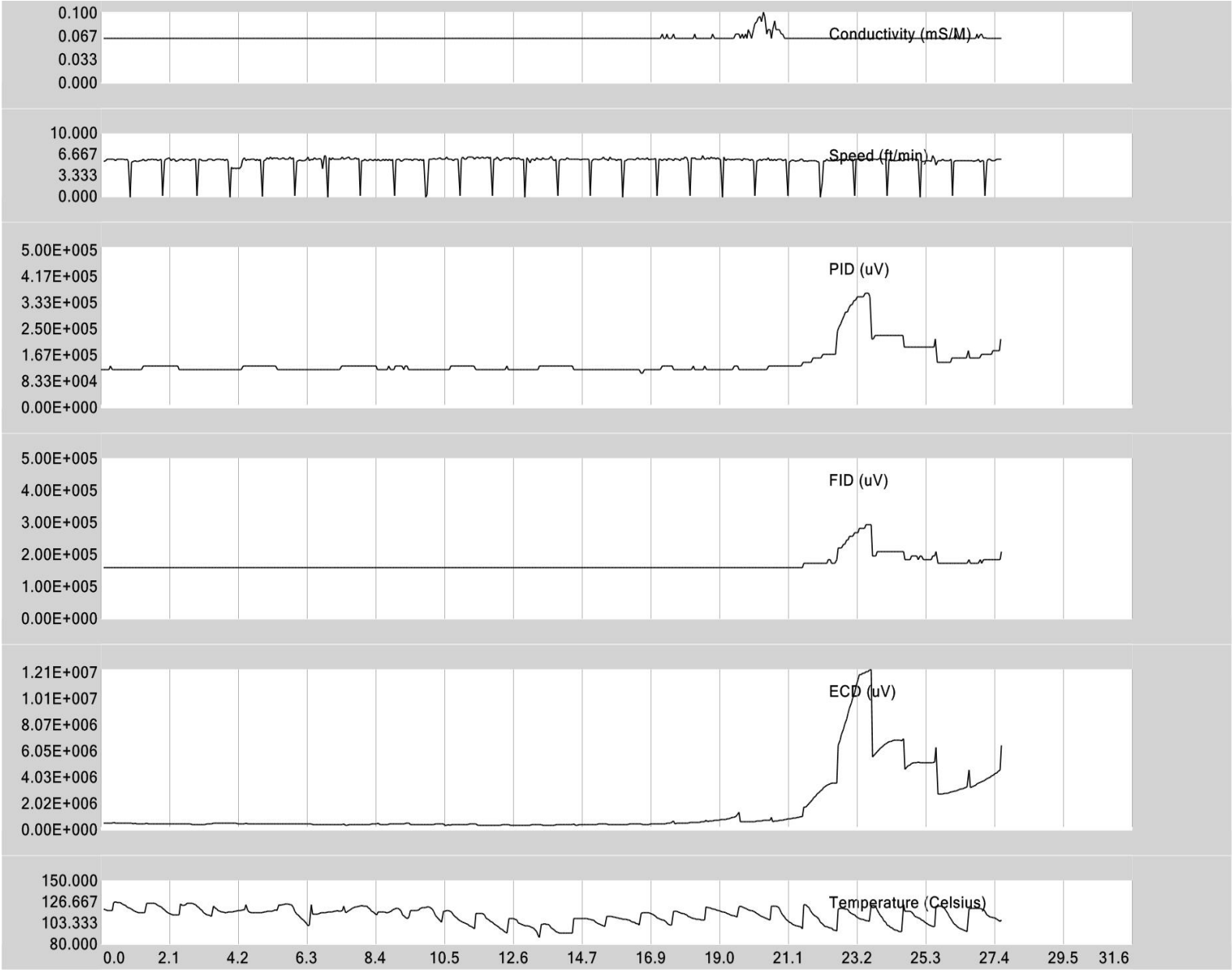

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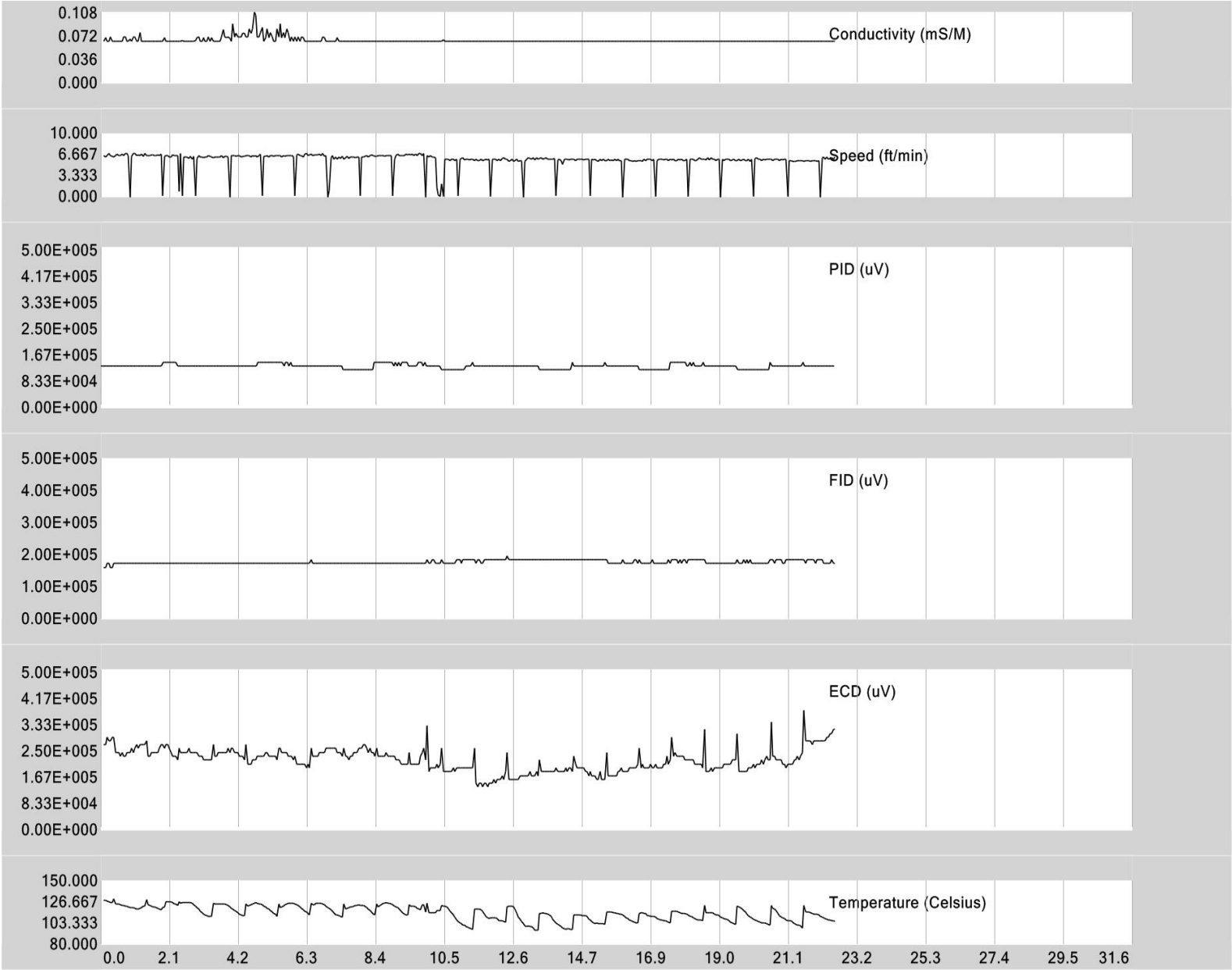

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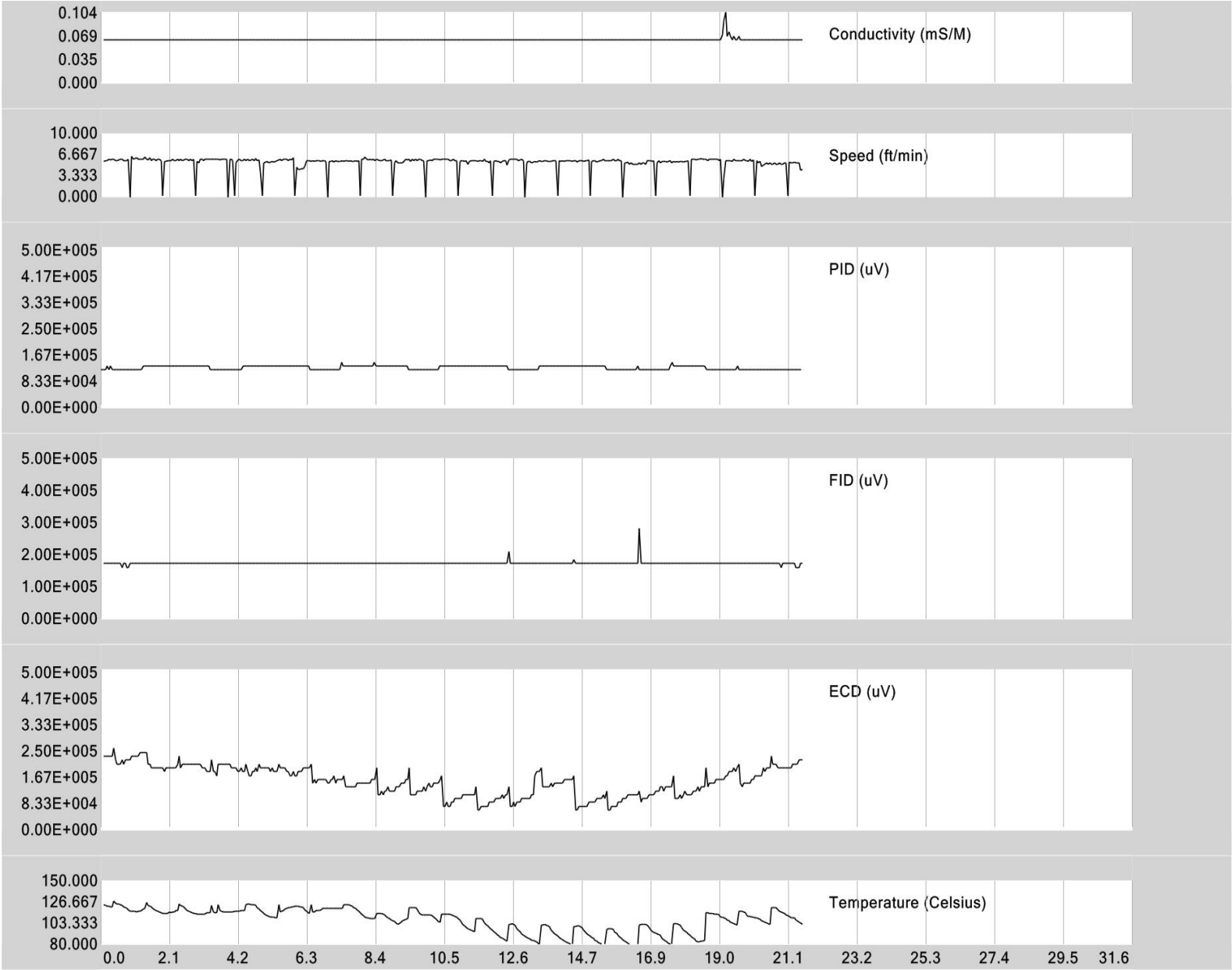

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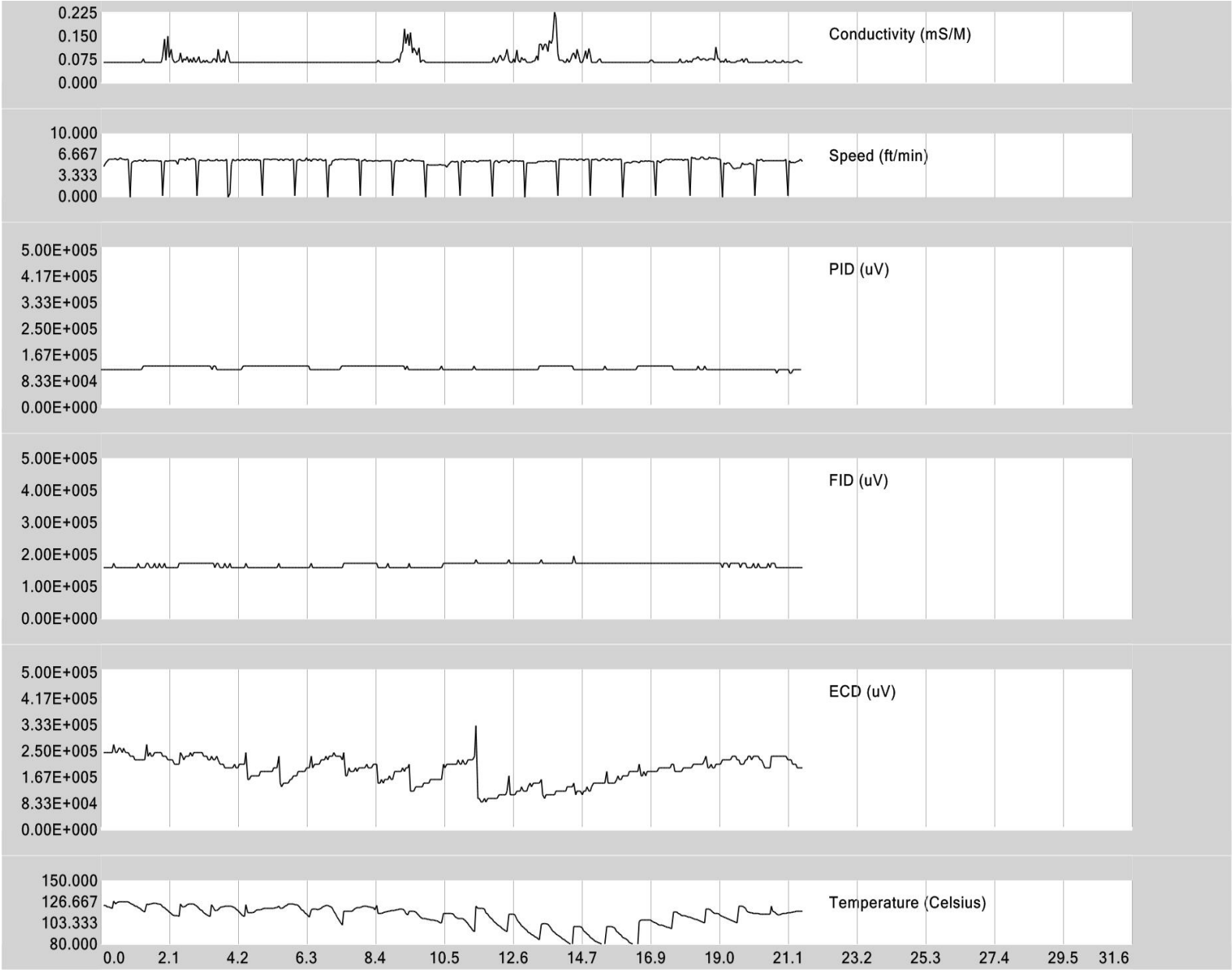
P-20



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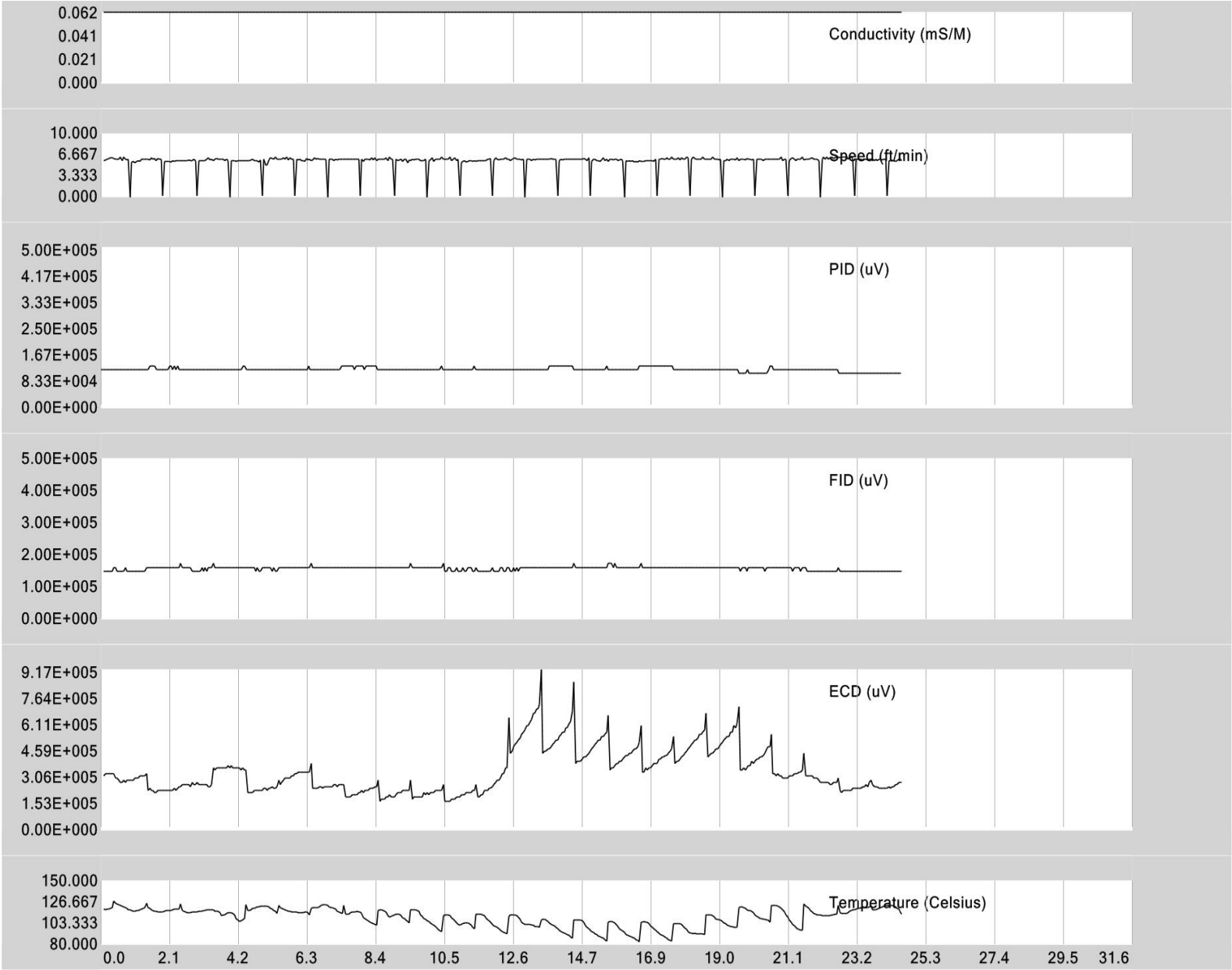

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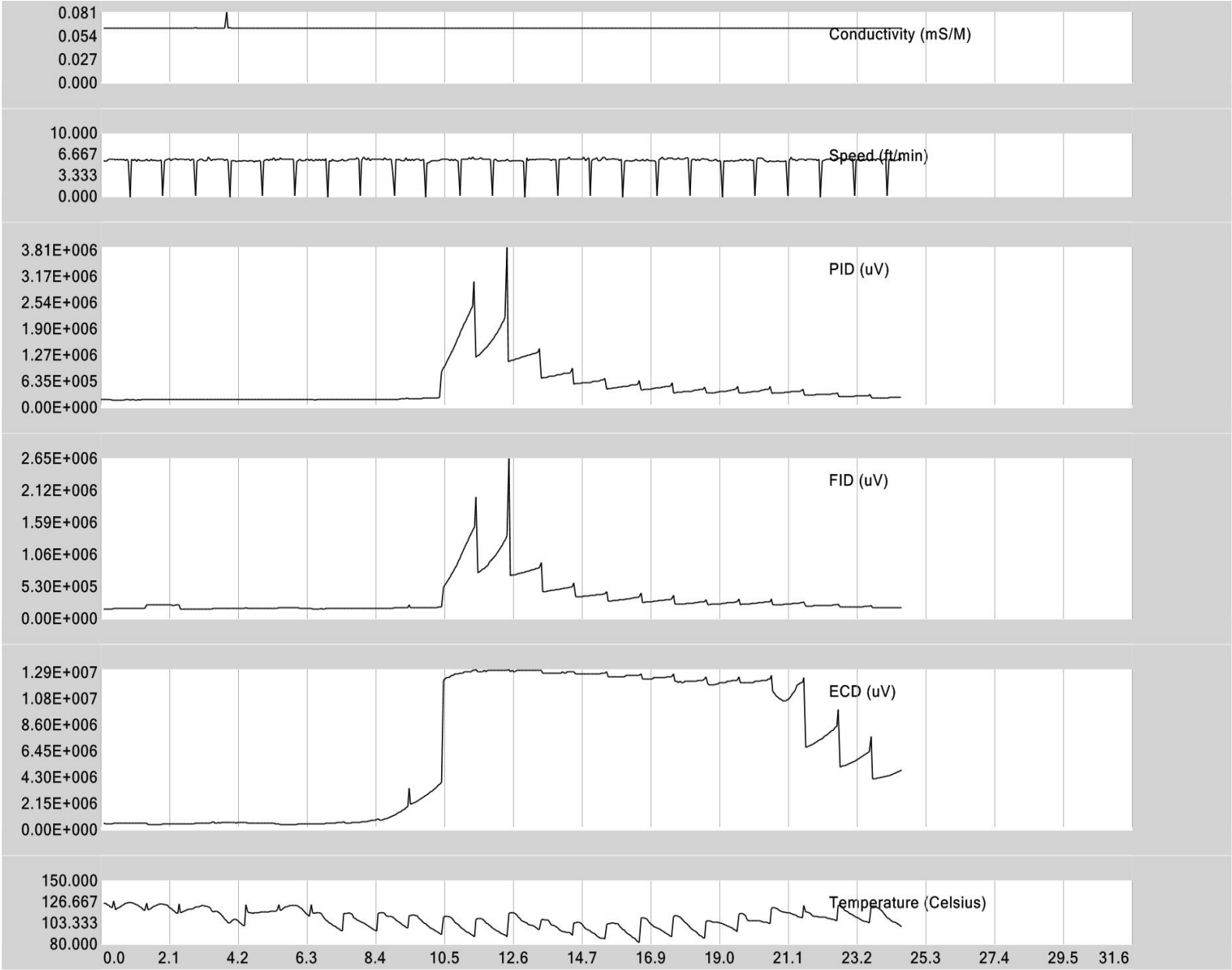

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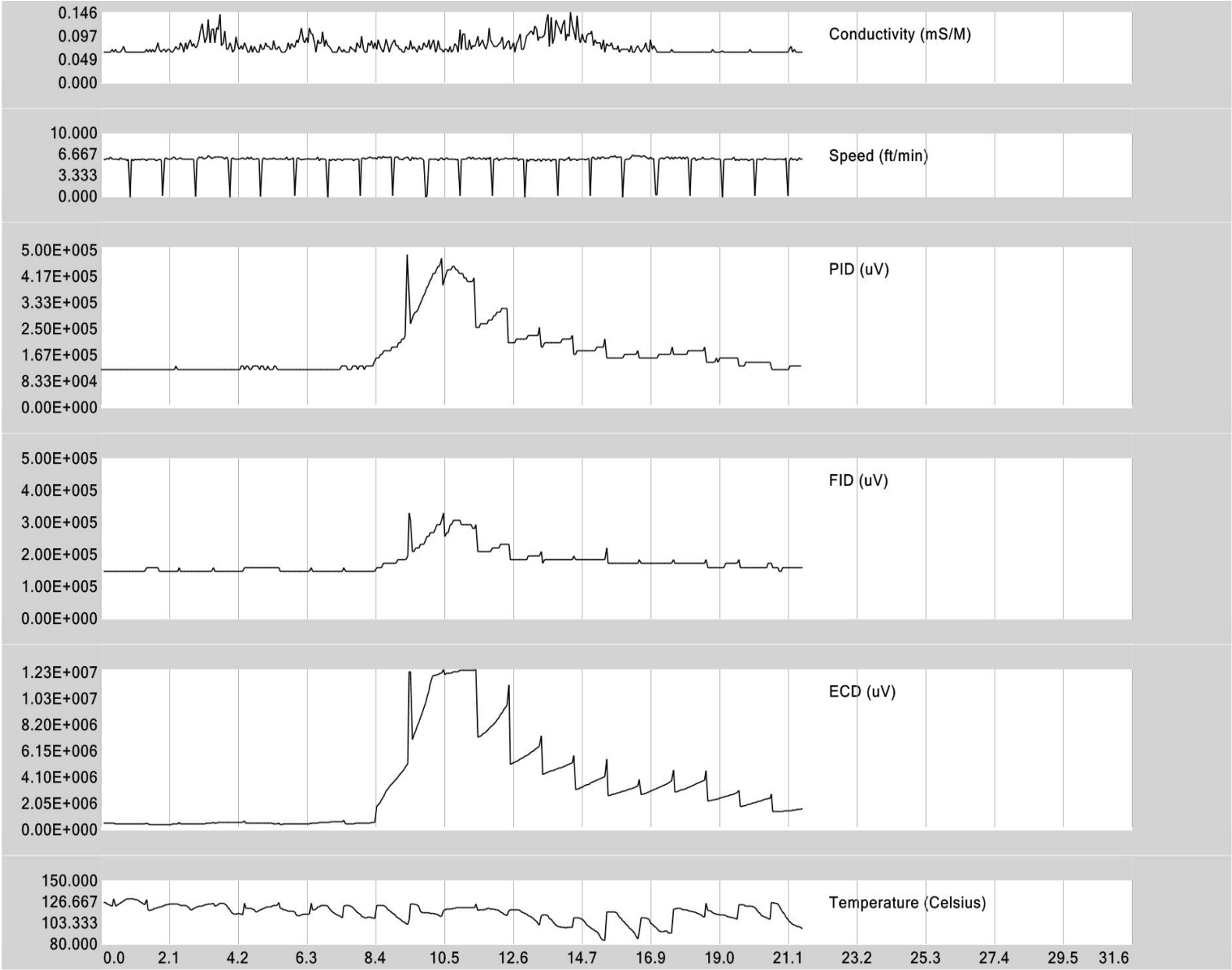

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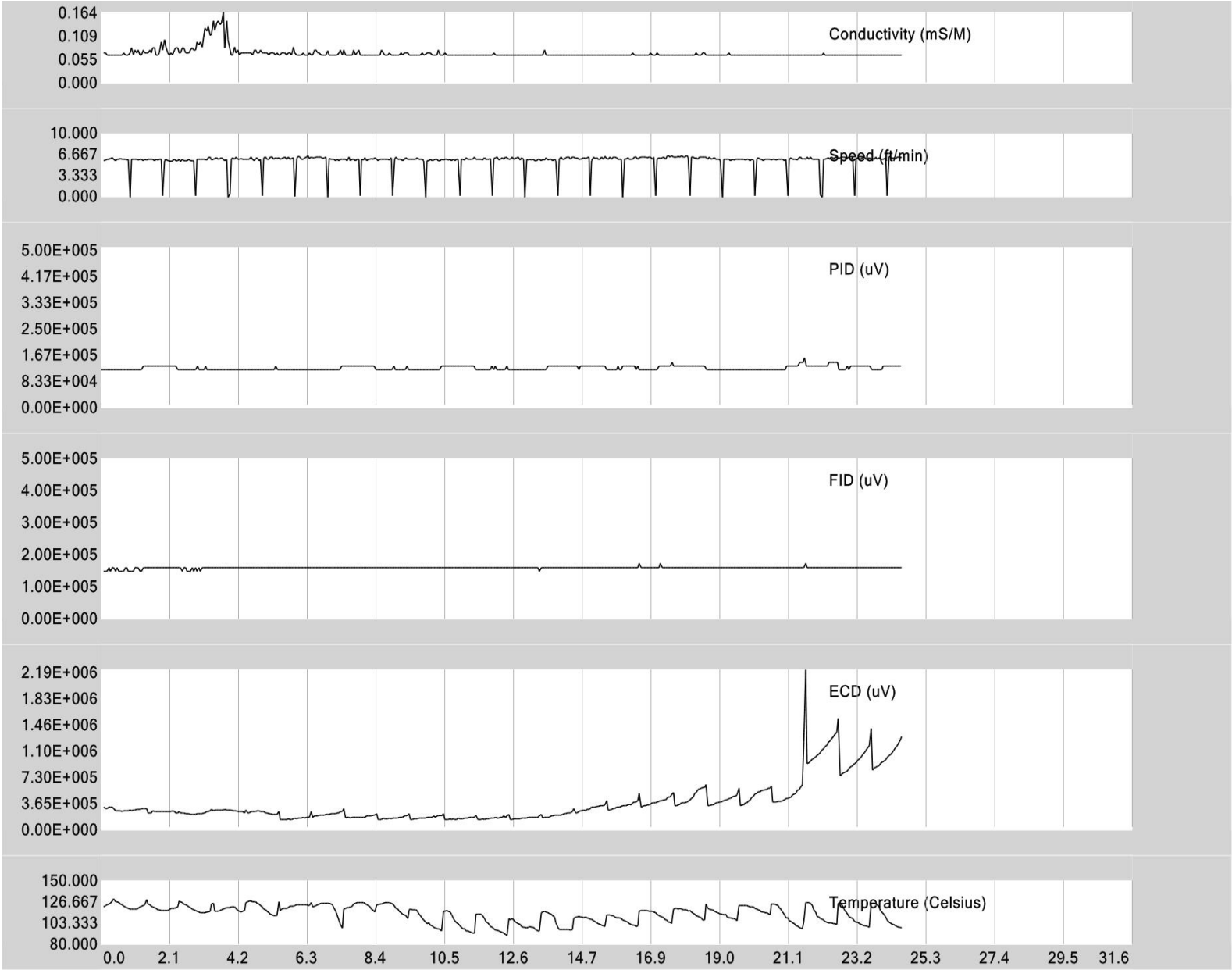

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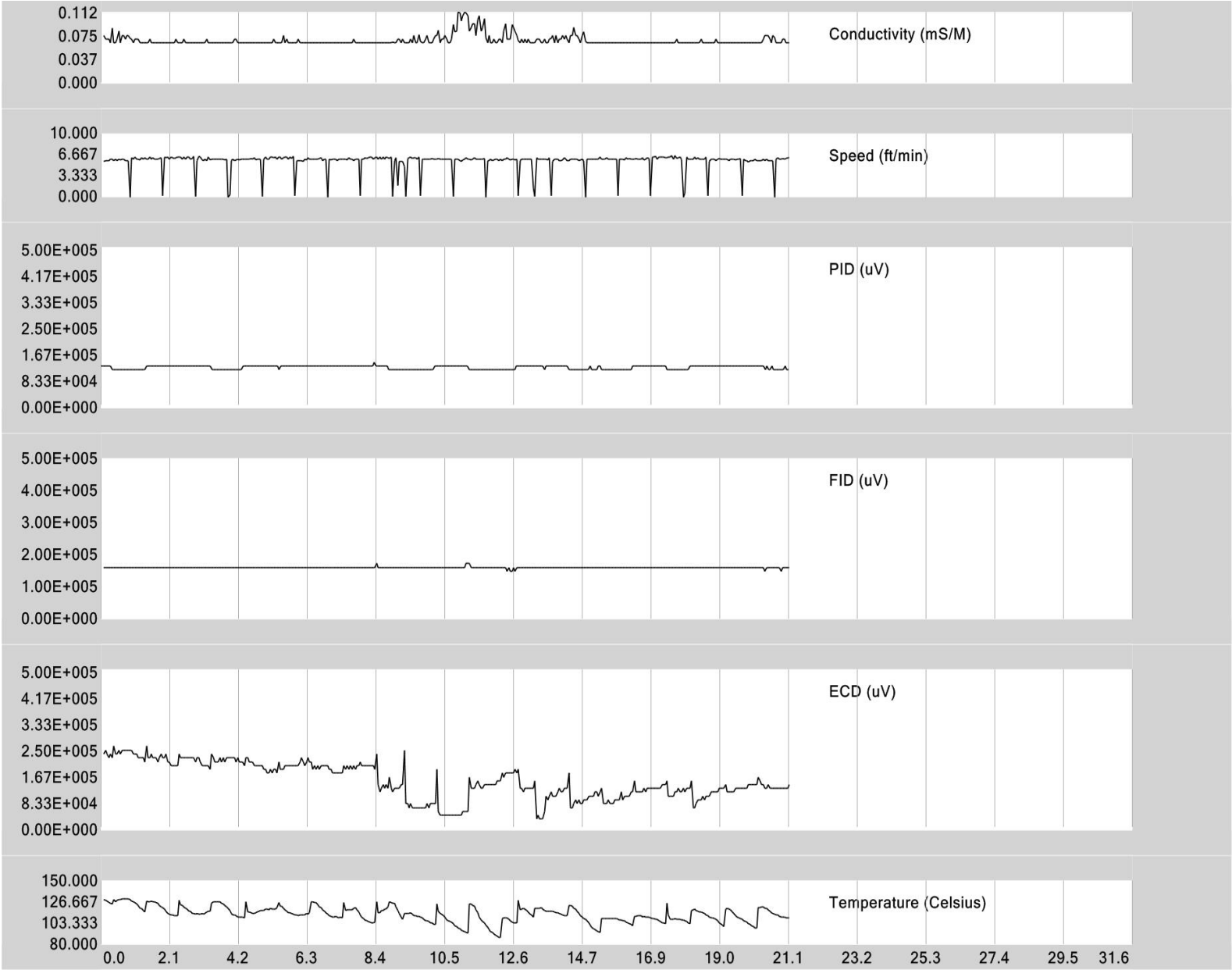

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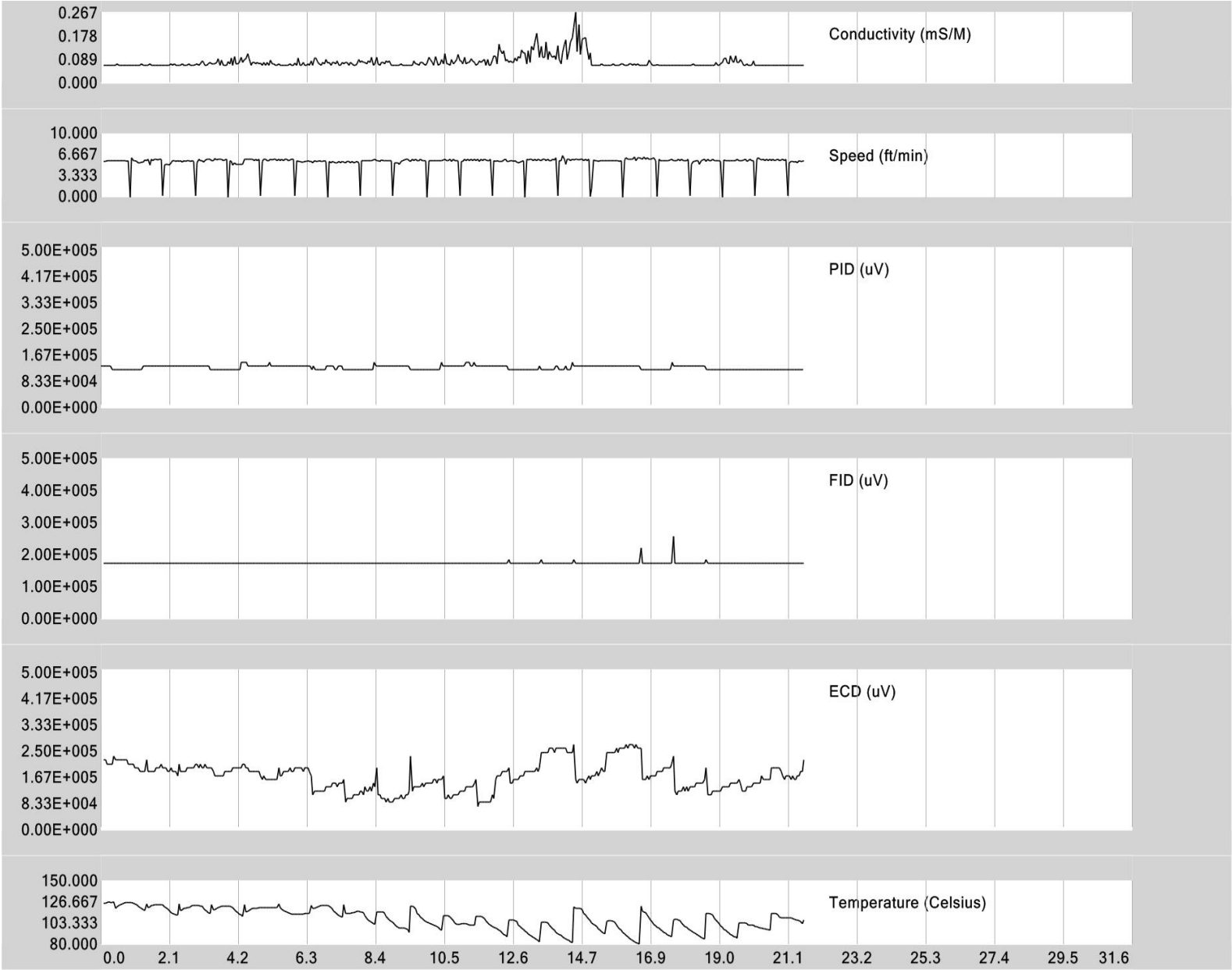

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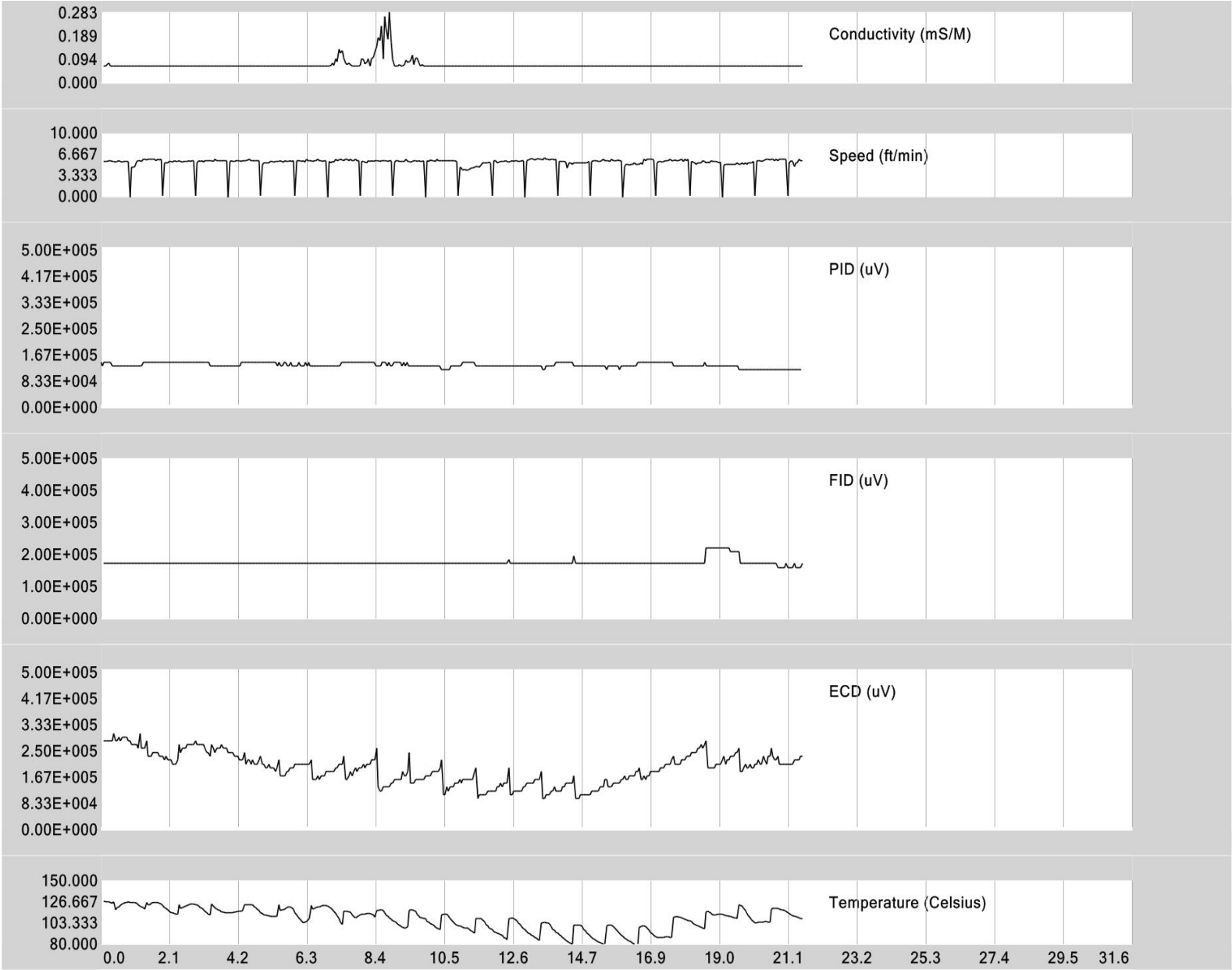

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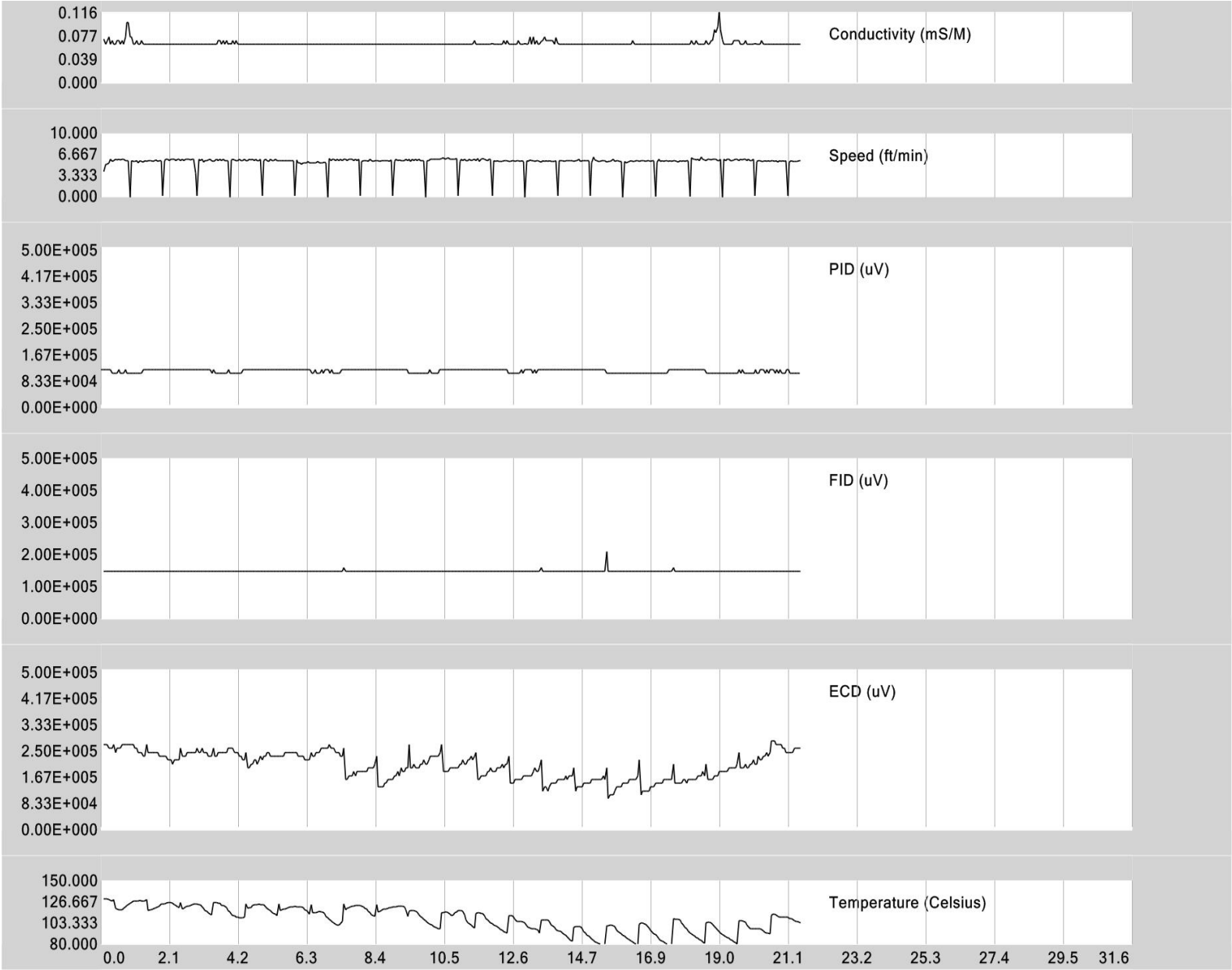

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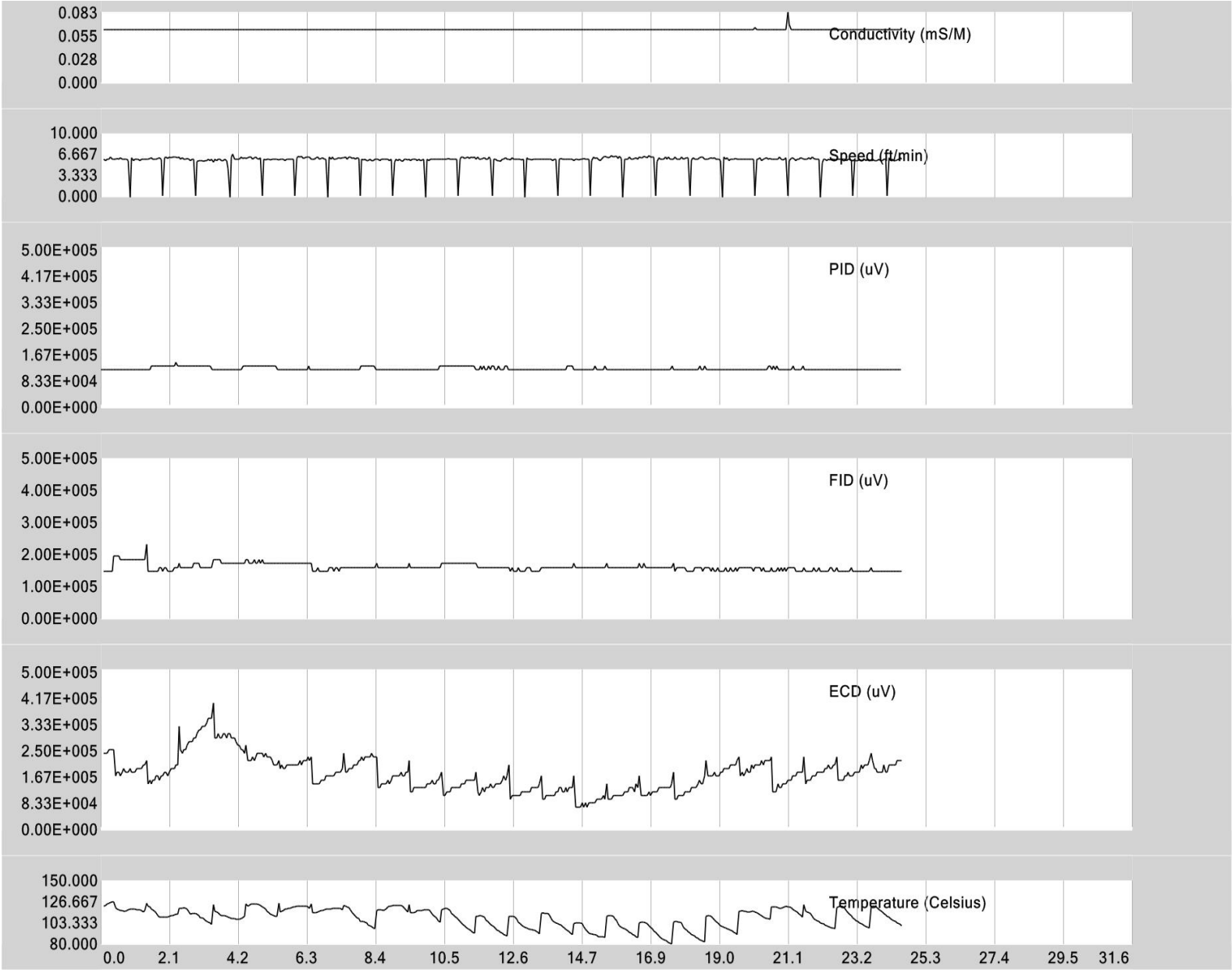

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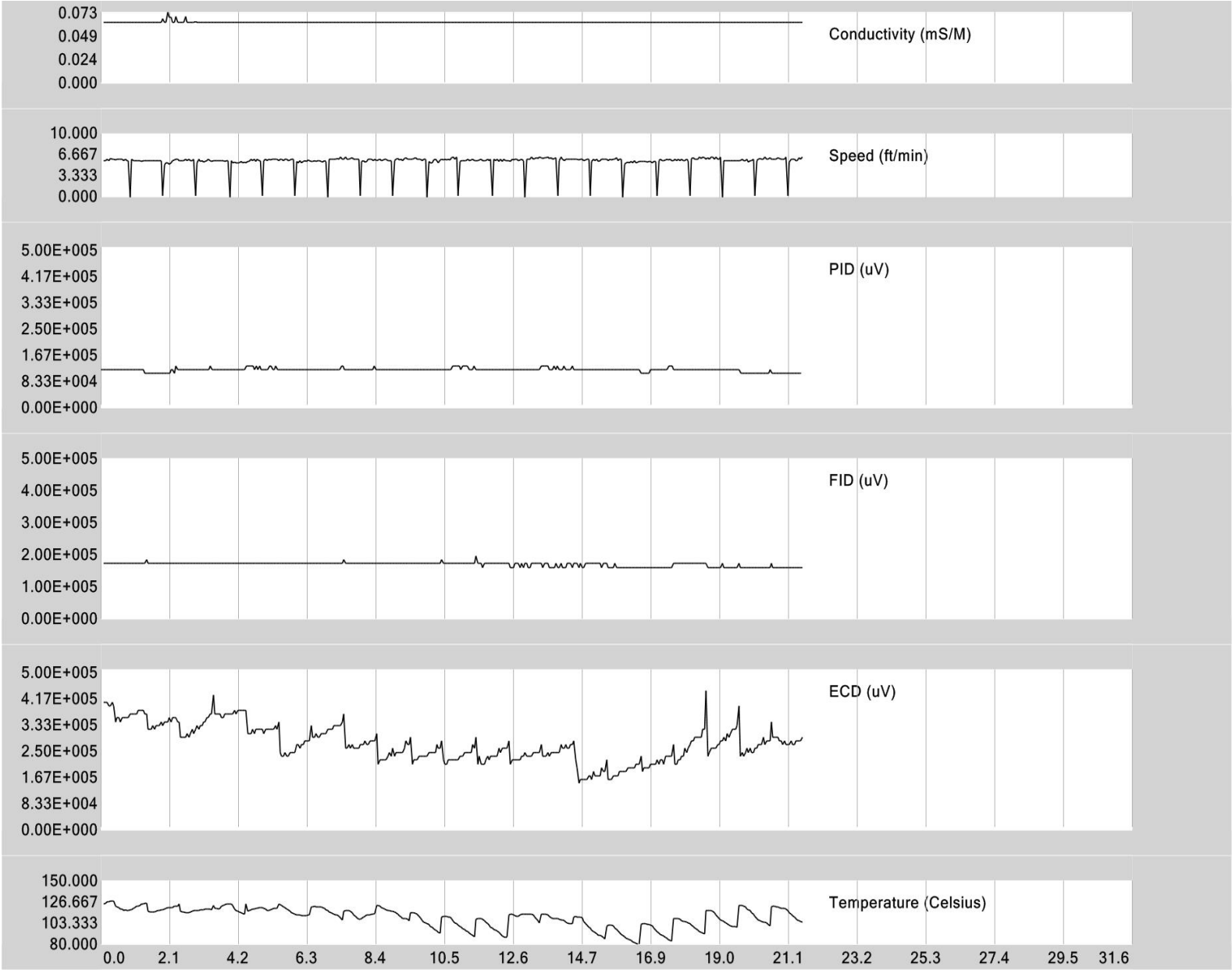

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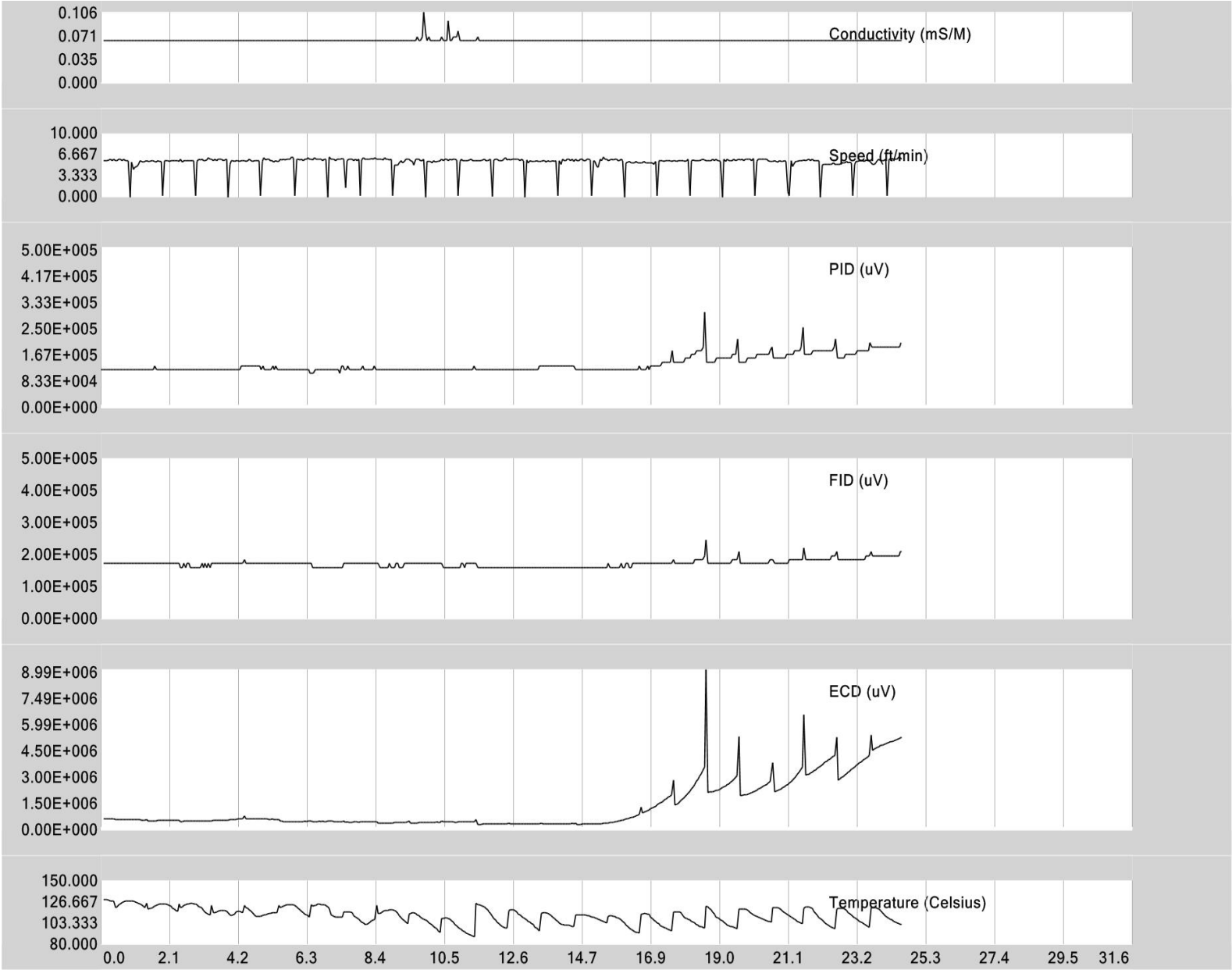

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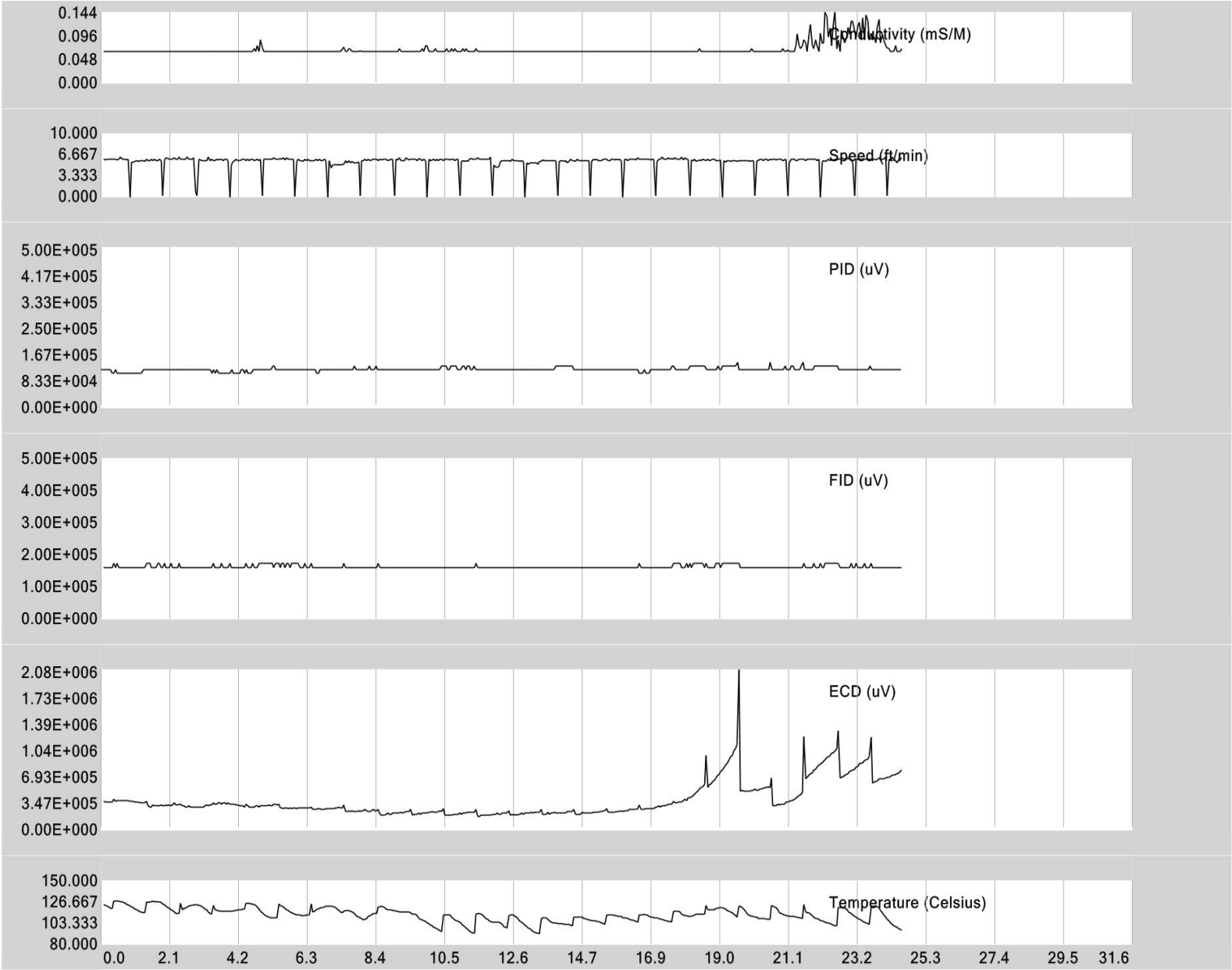

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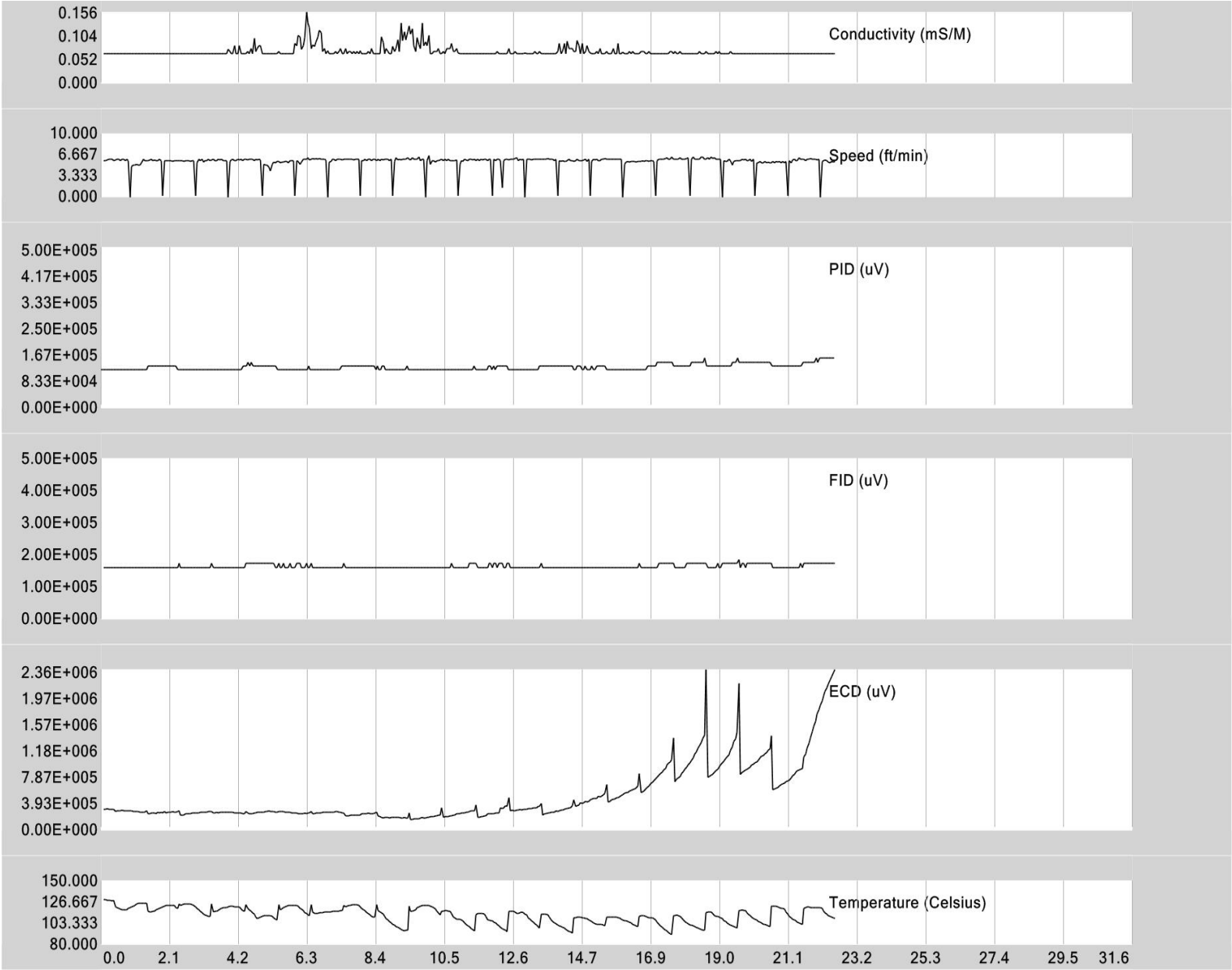

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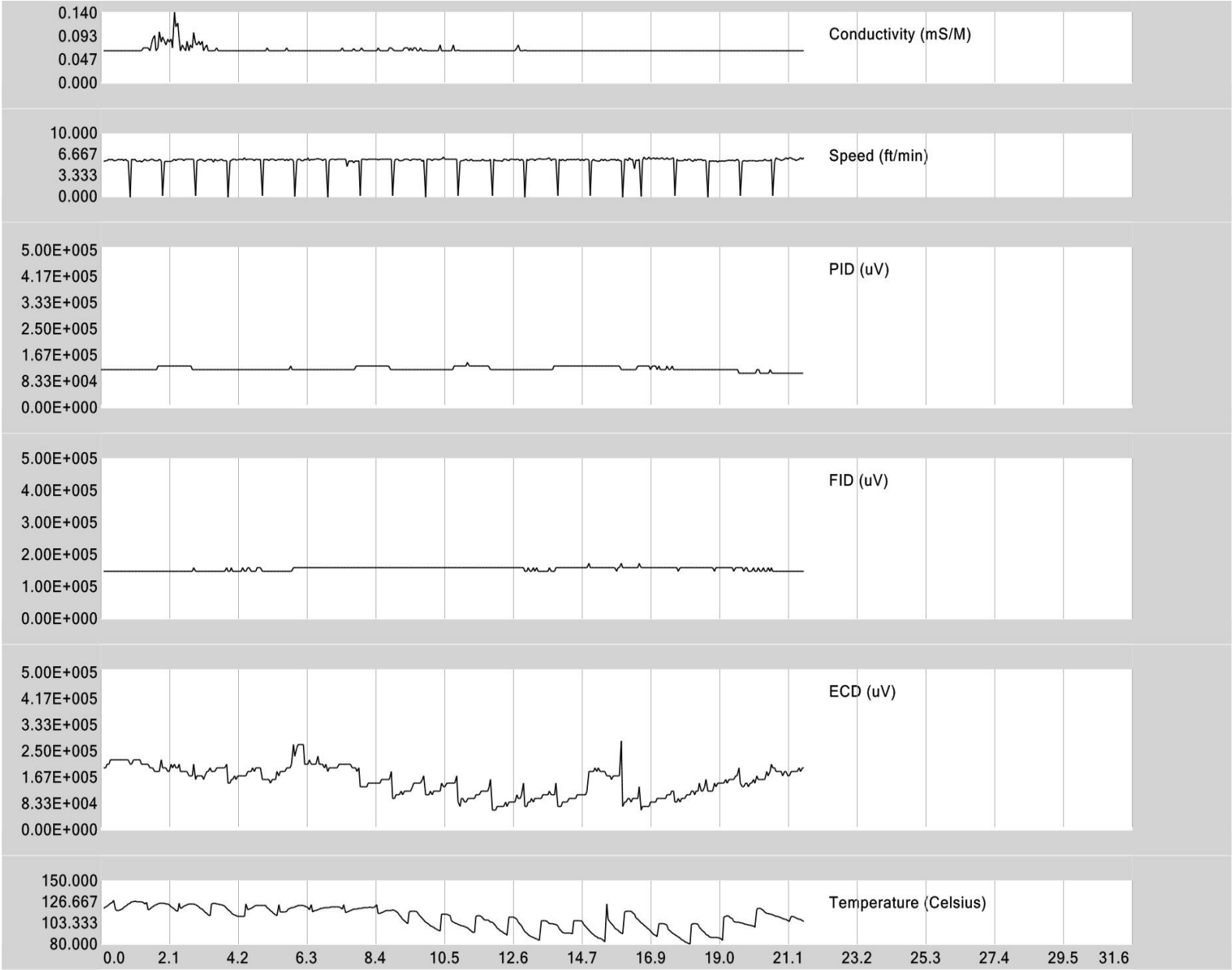

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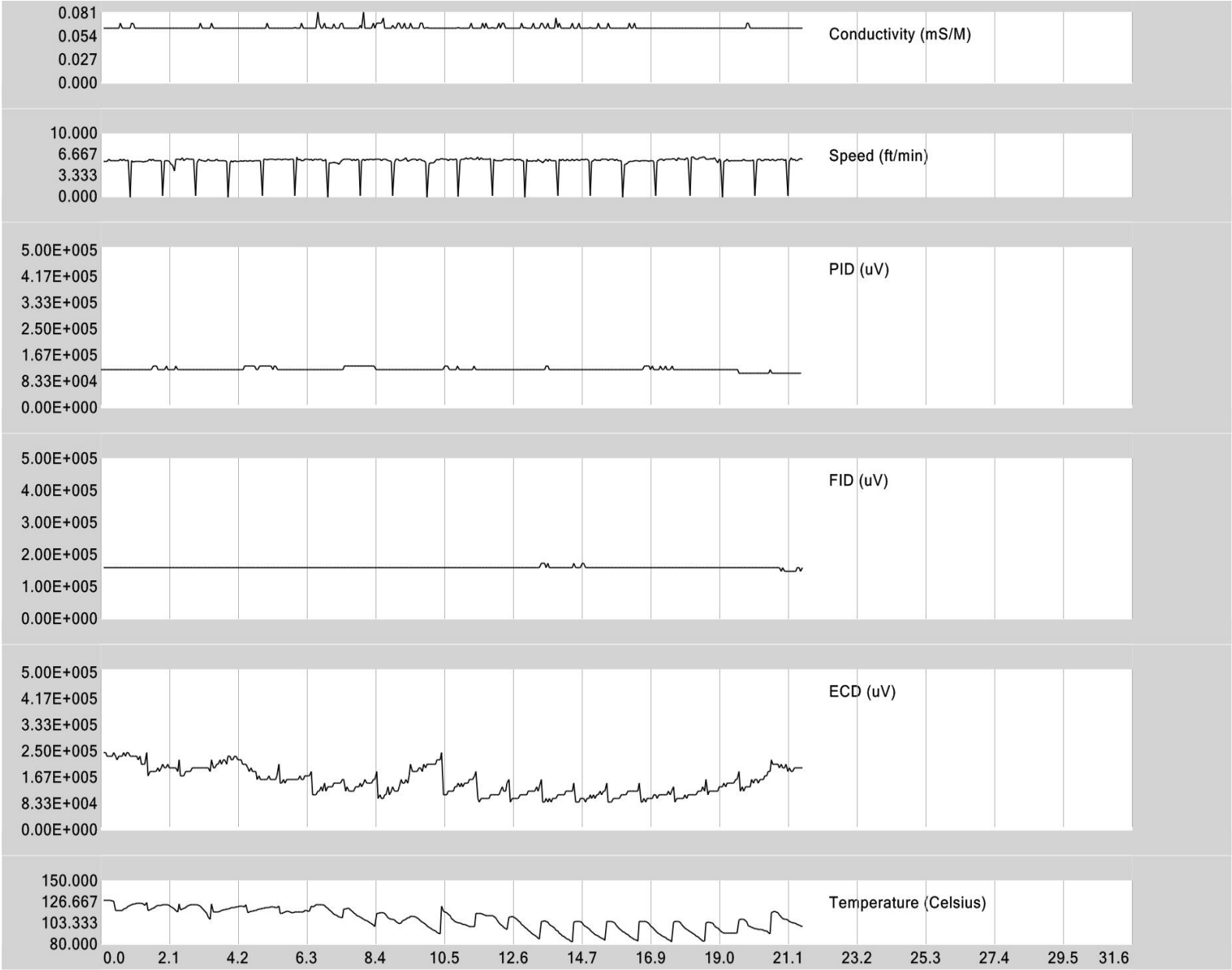

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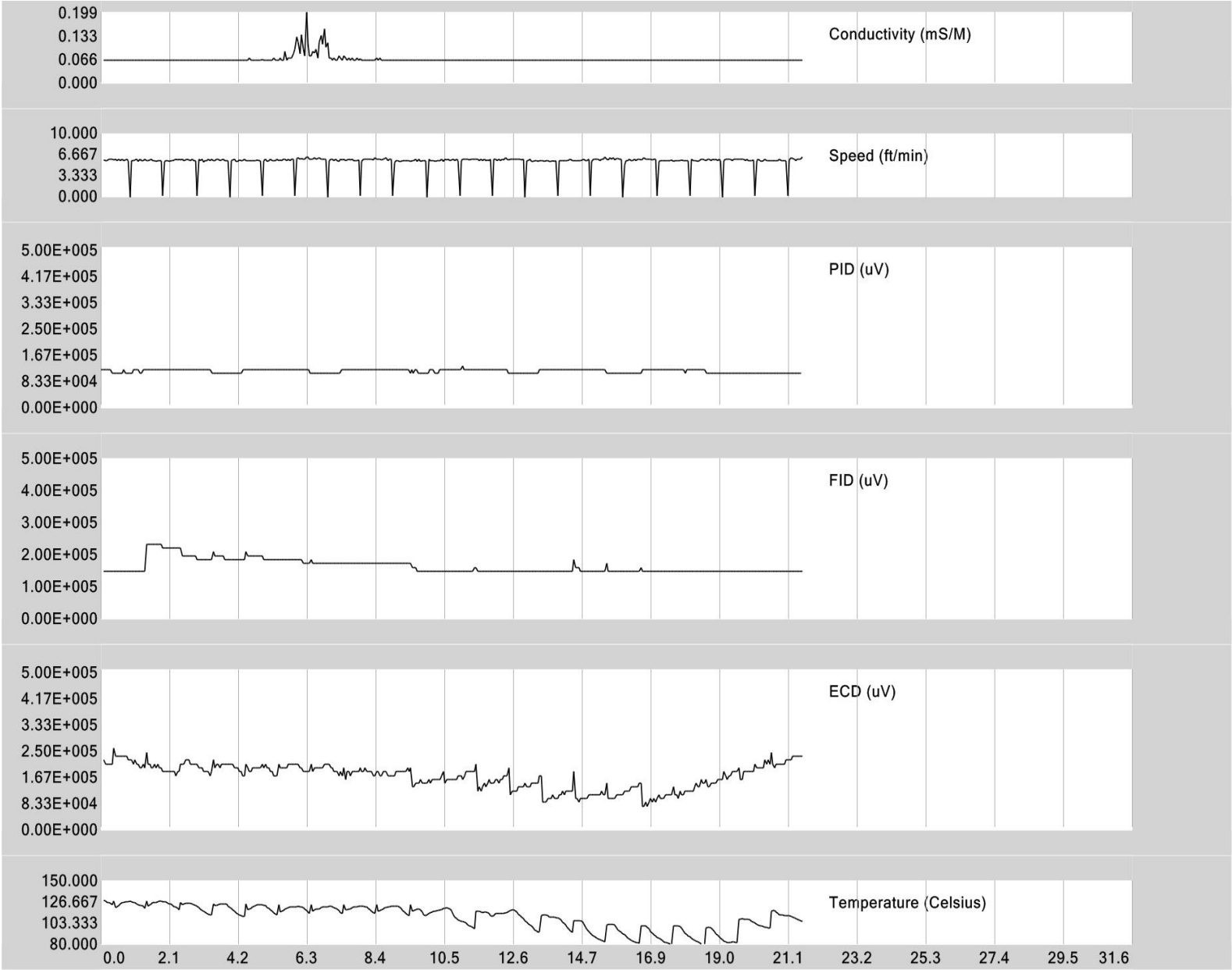

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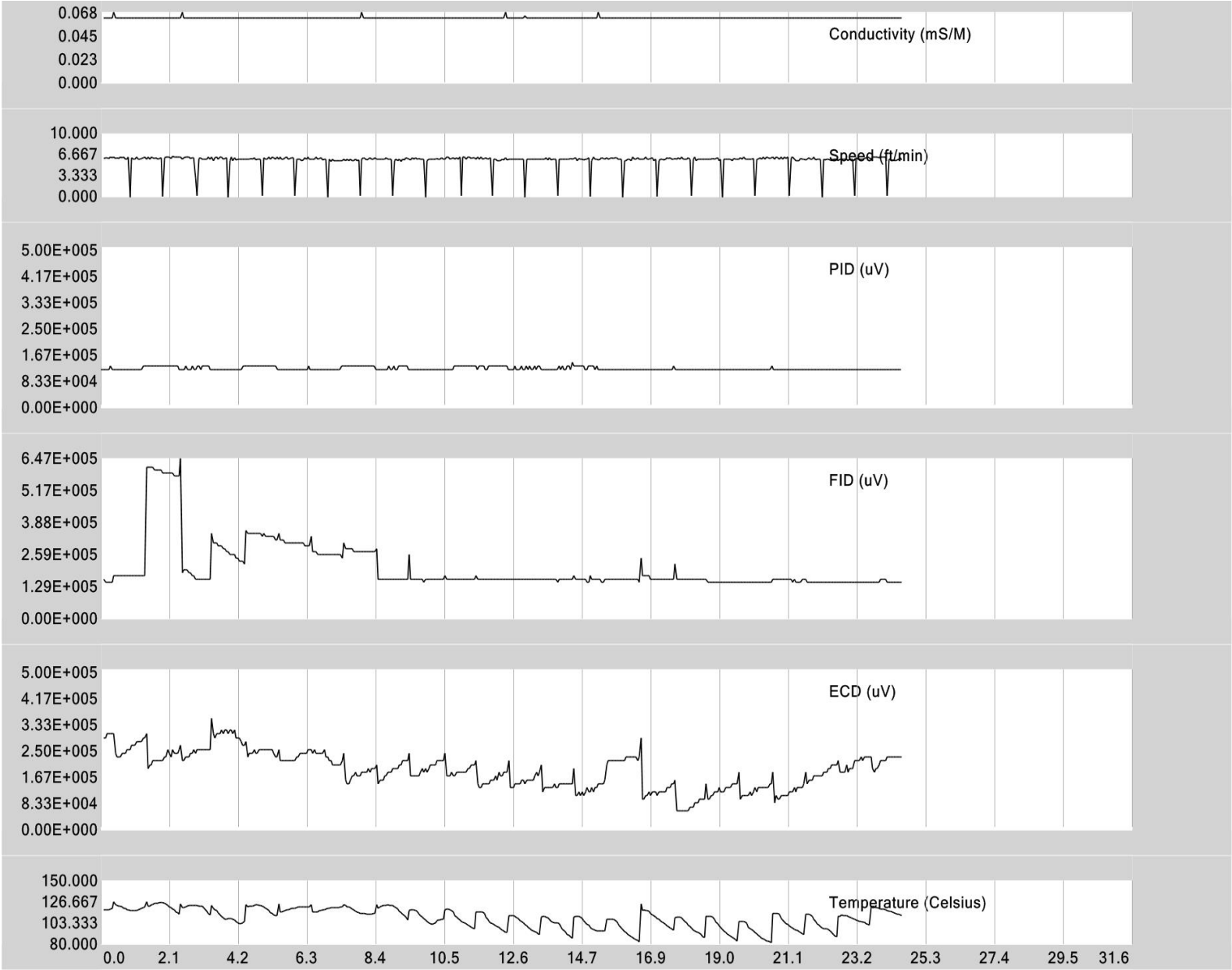

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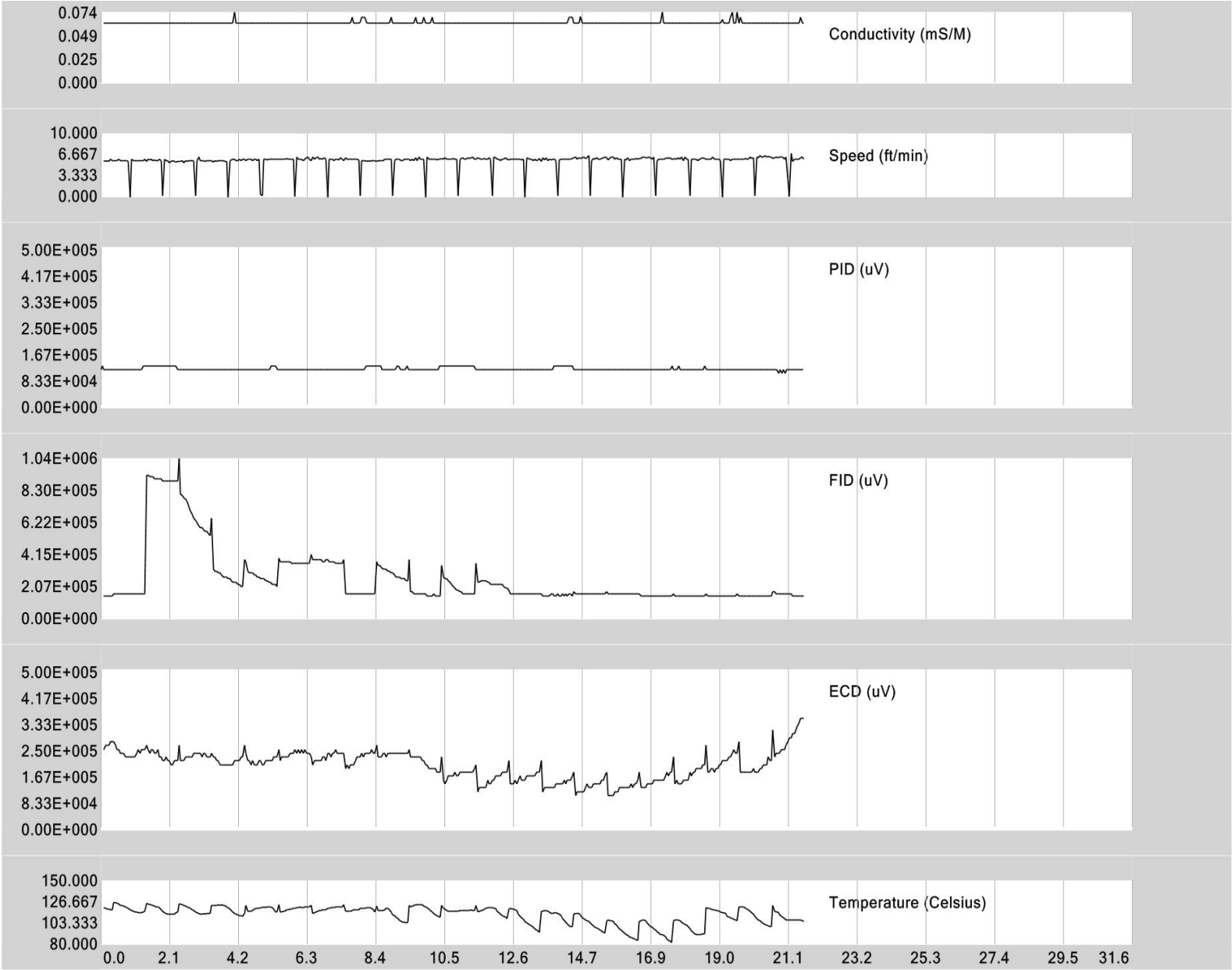

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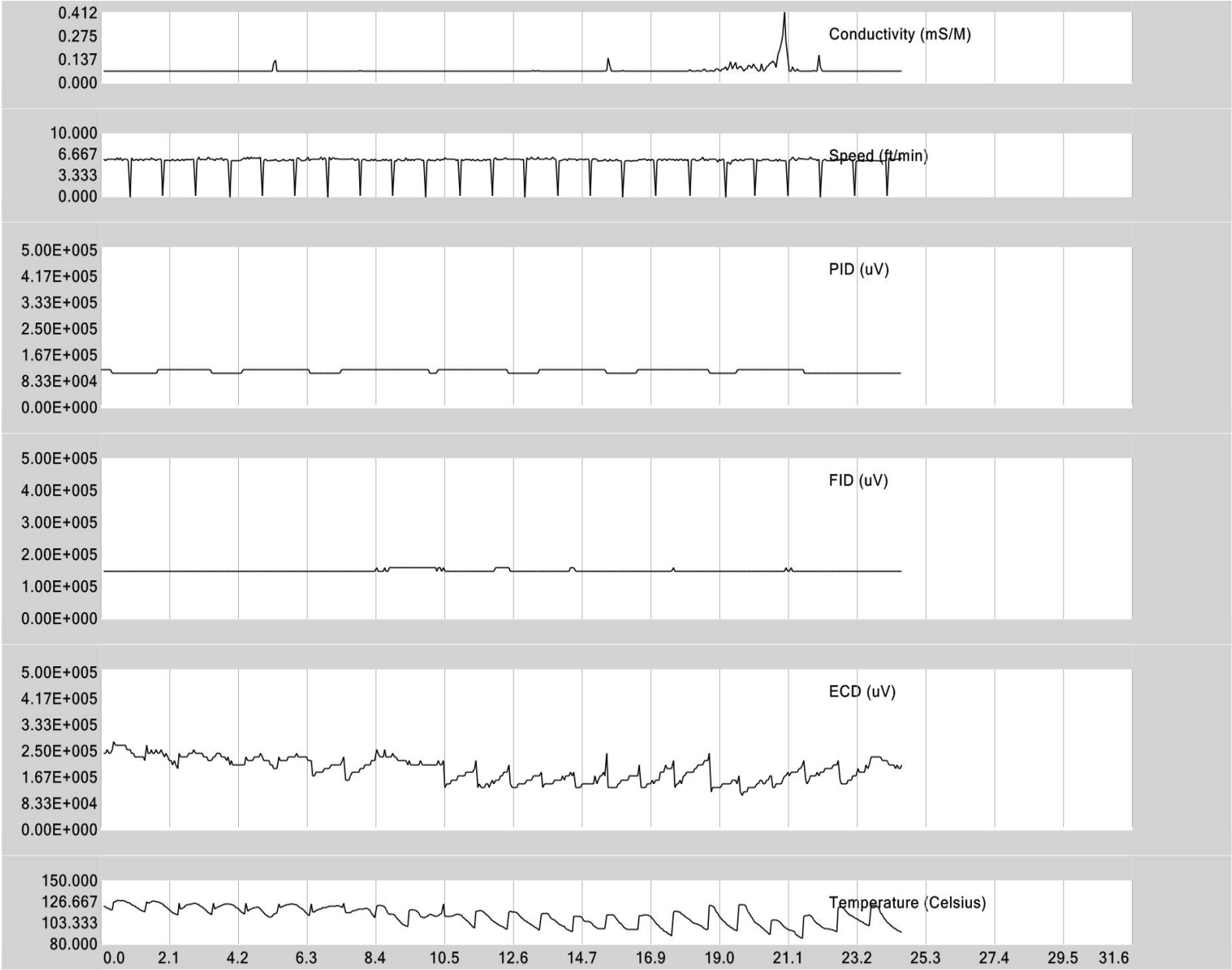

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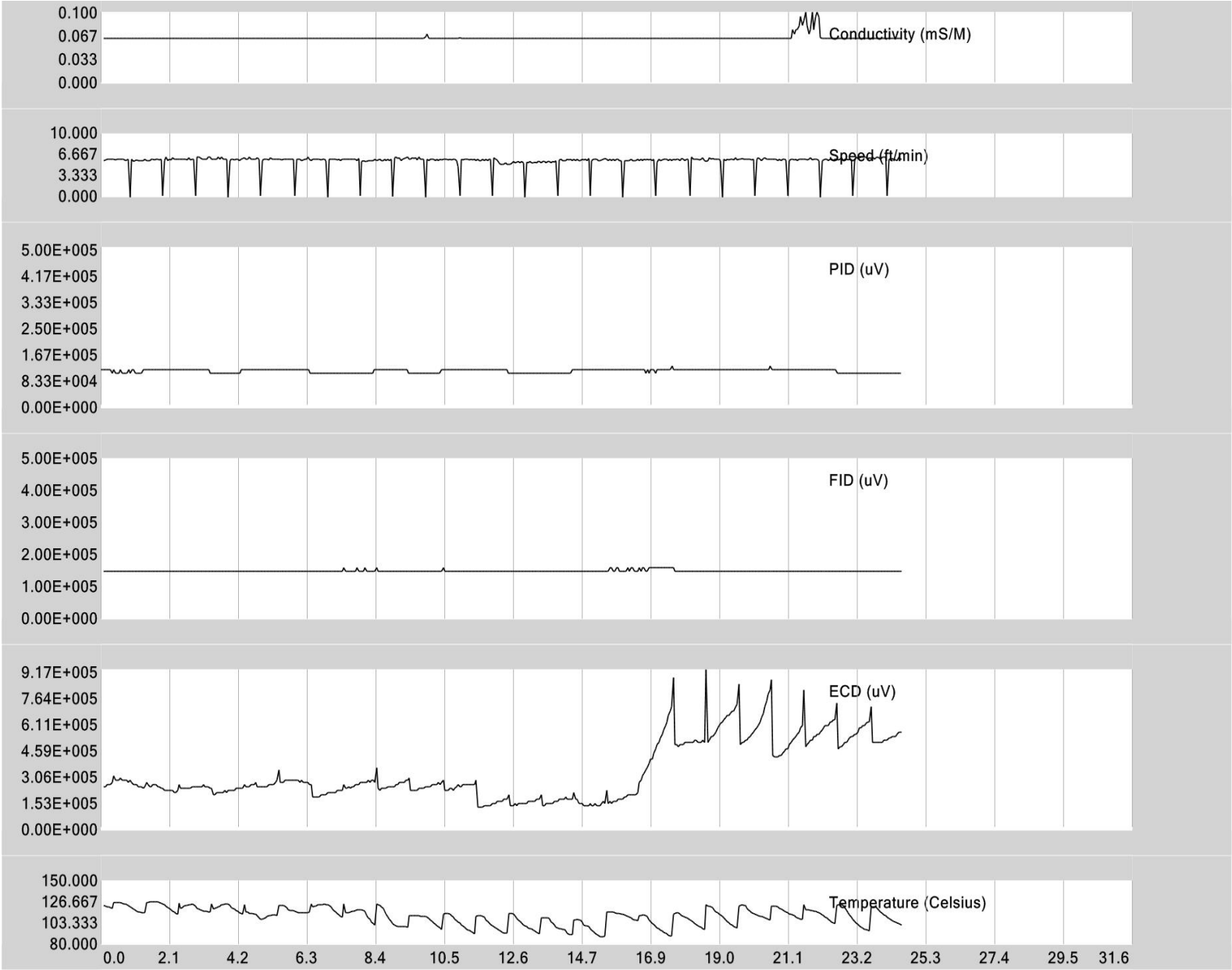

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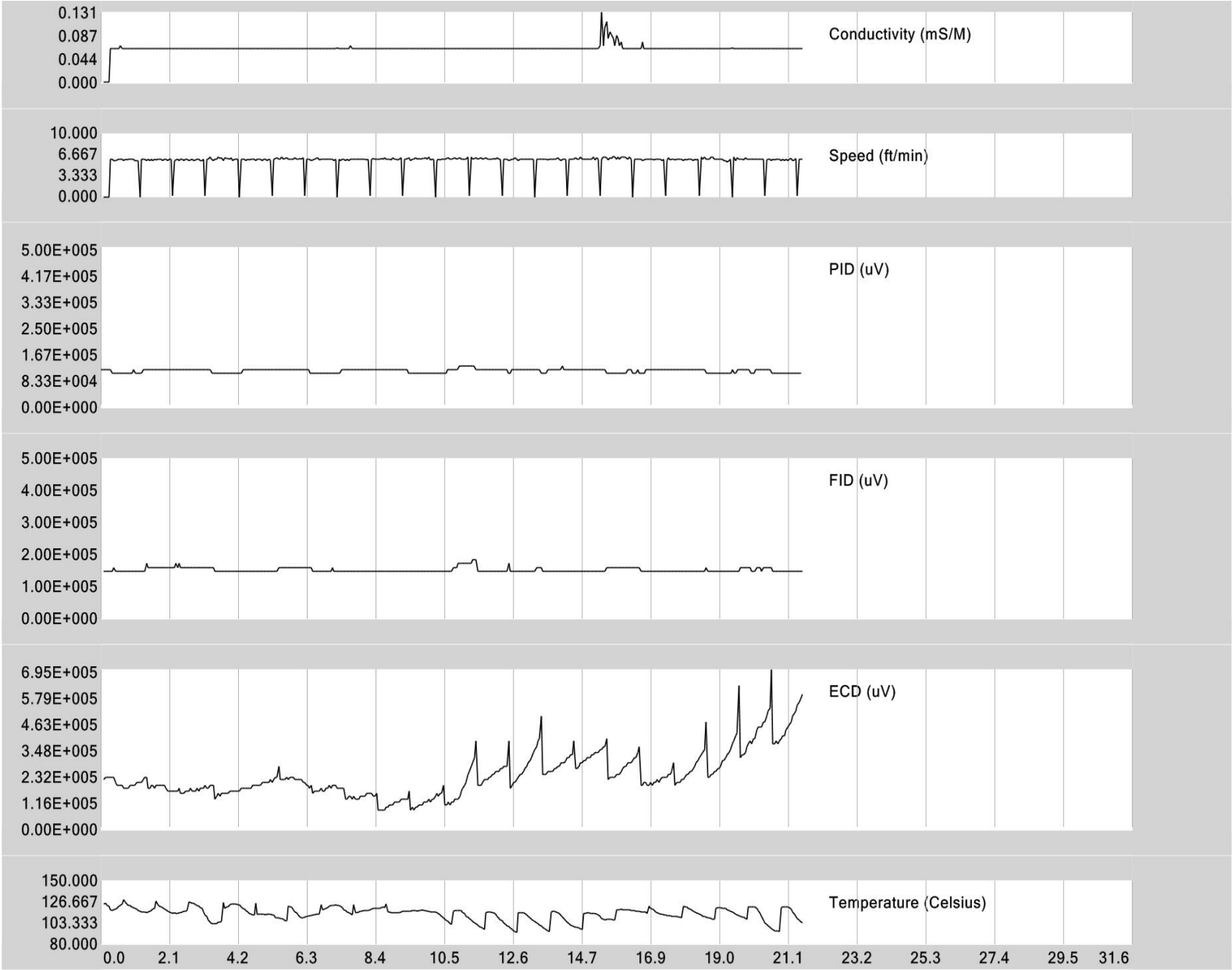

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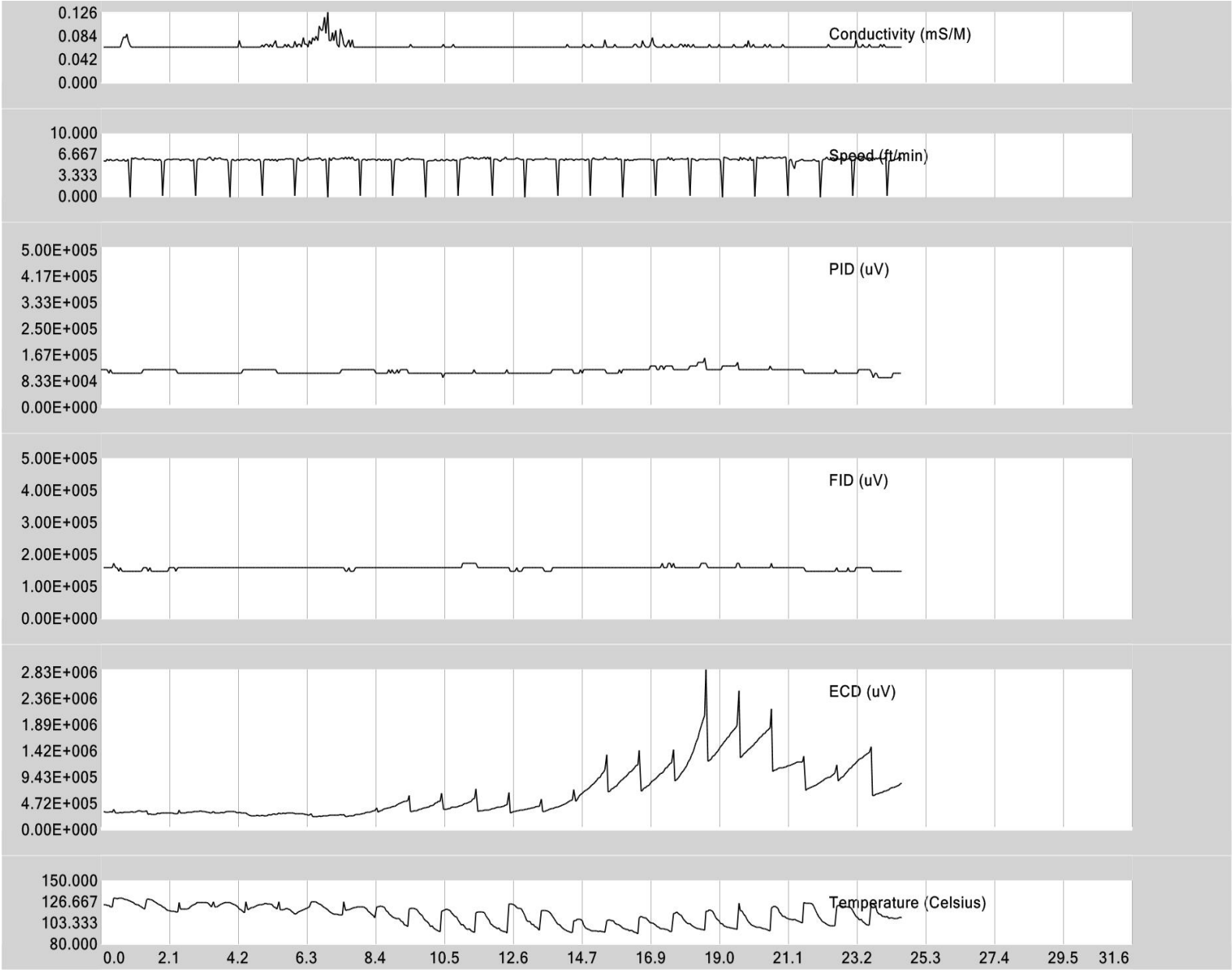

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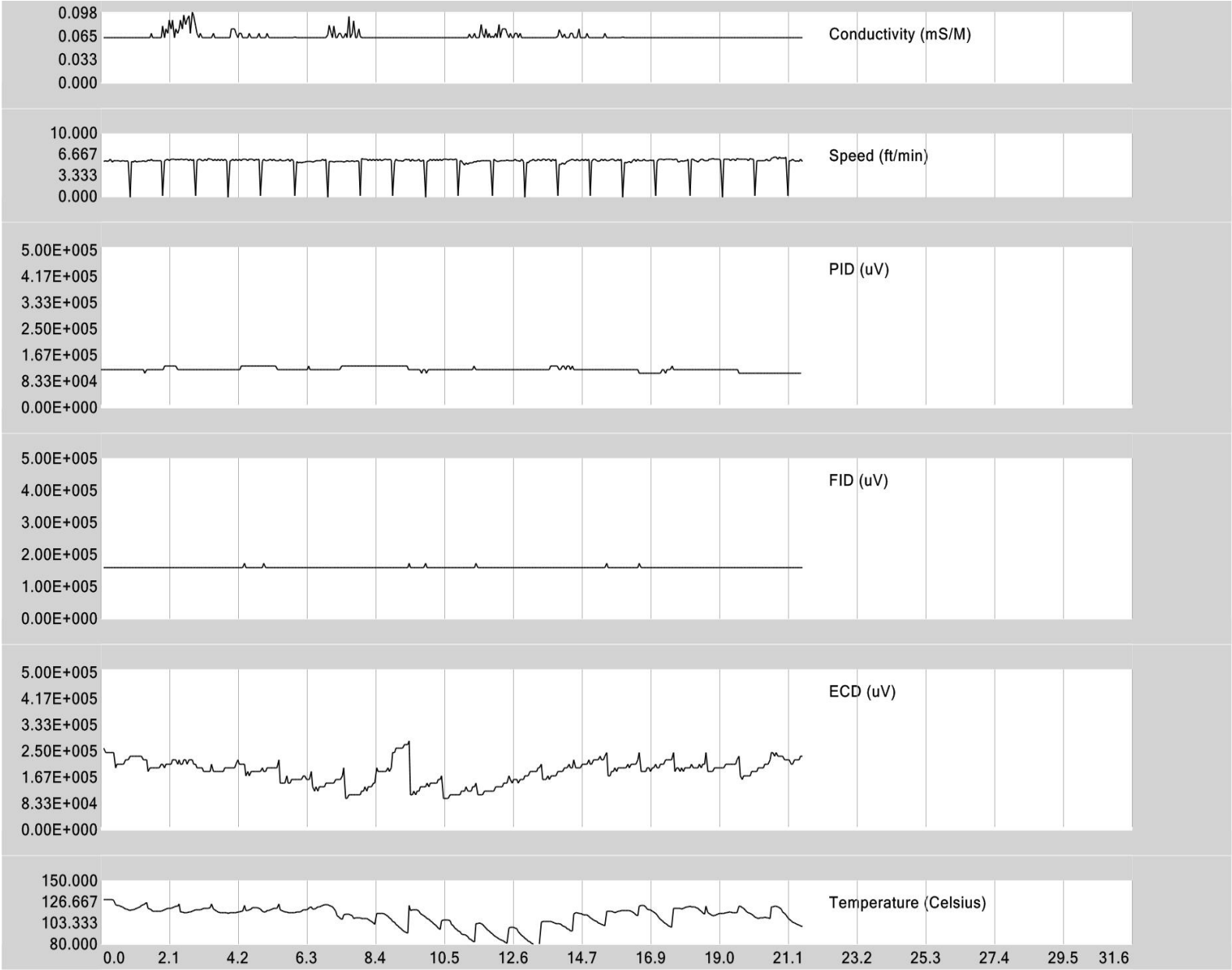

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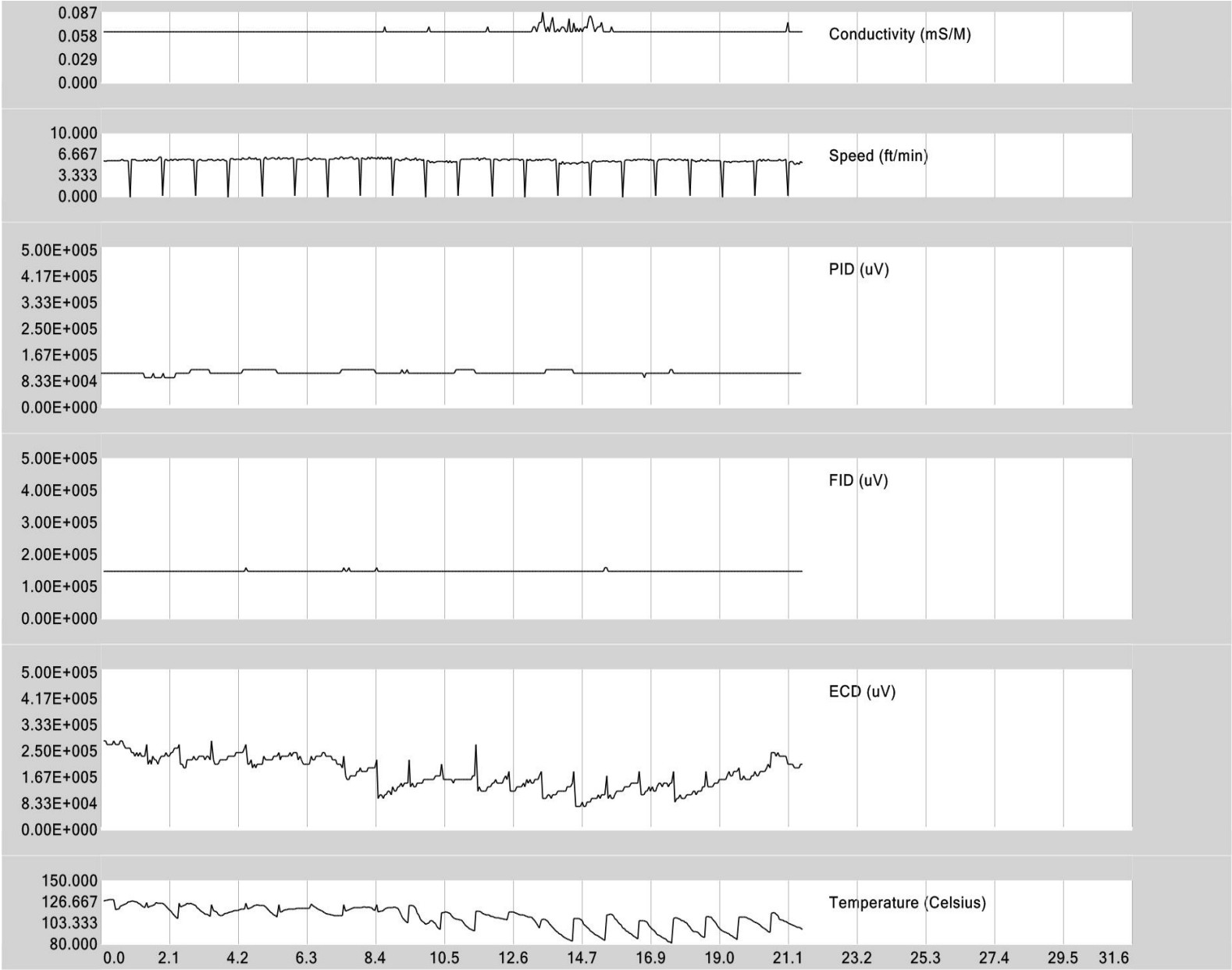

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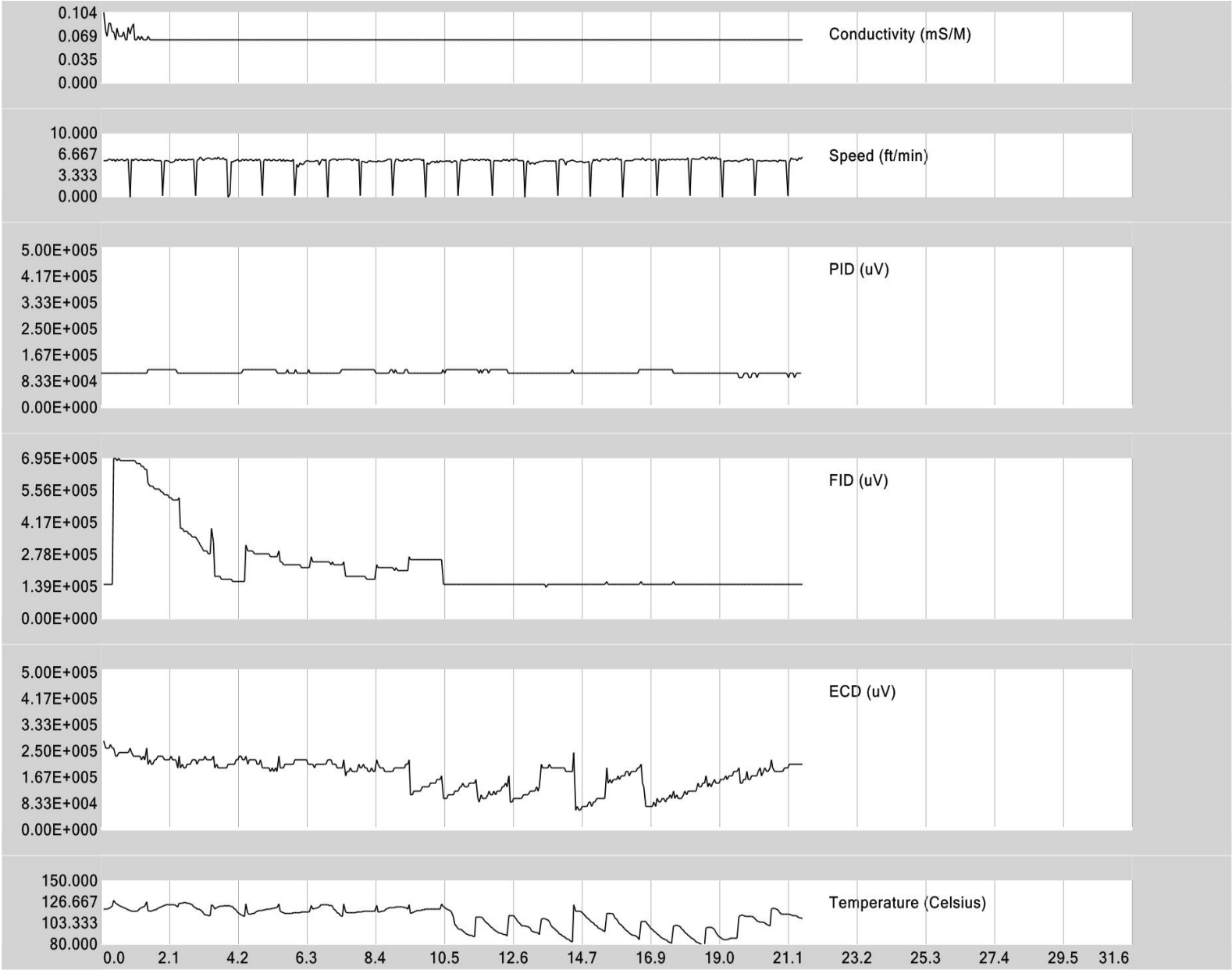

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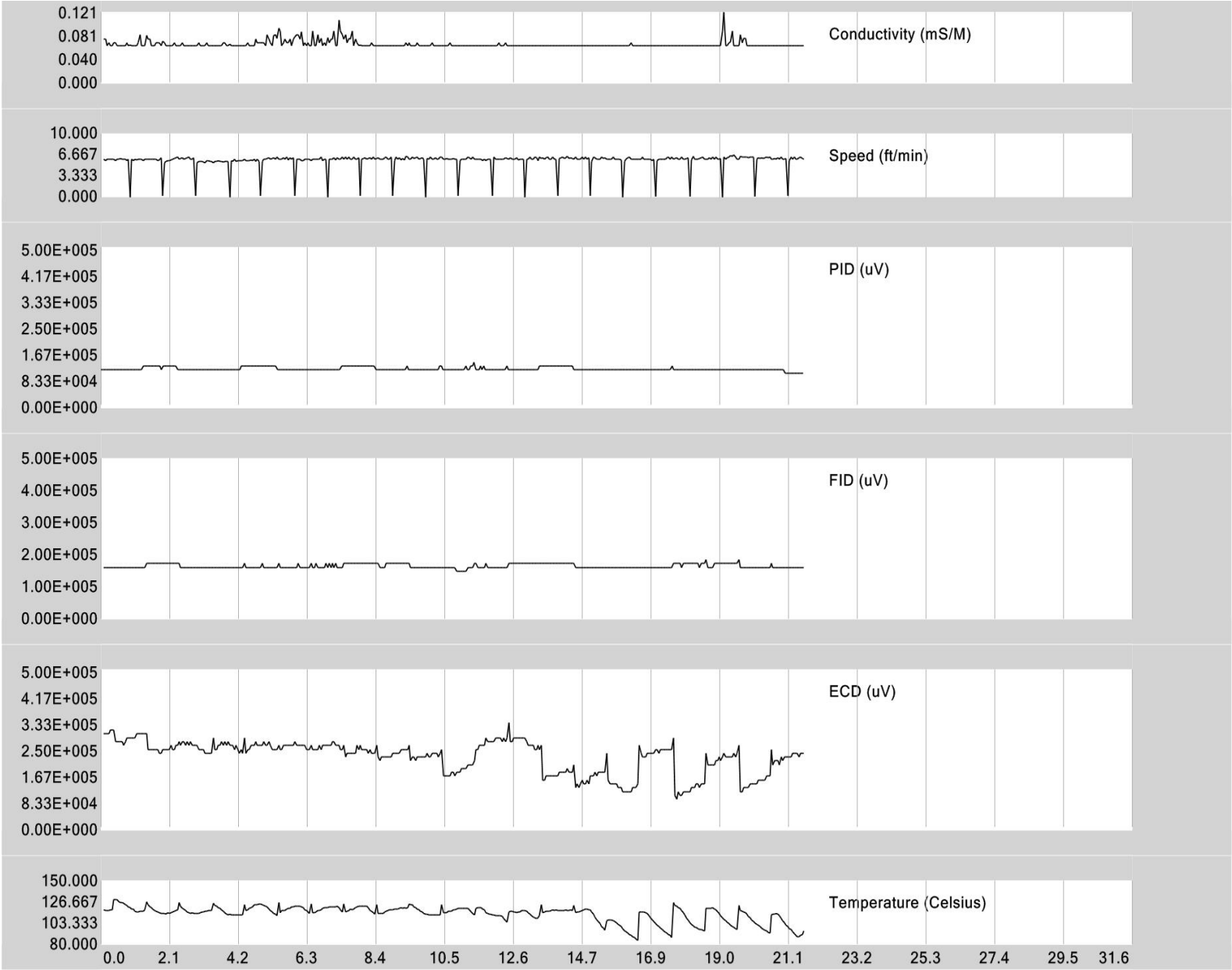

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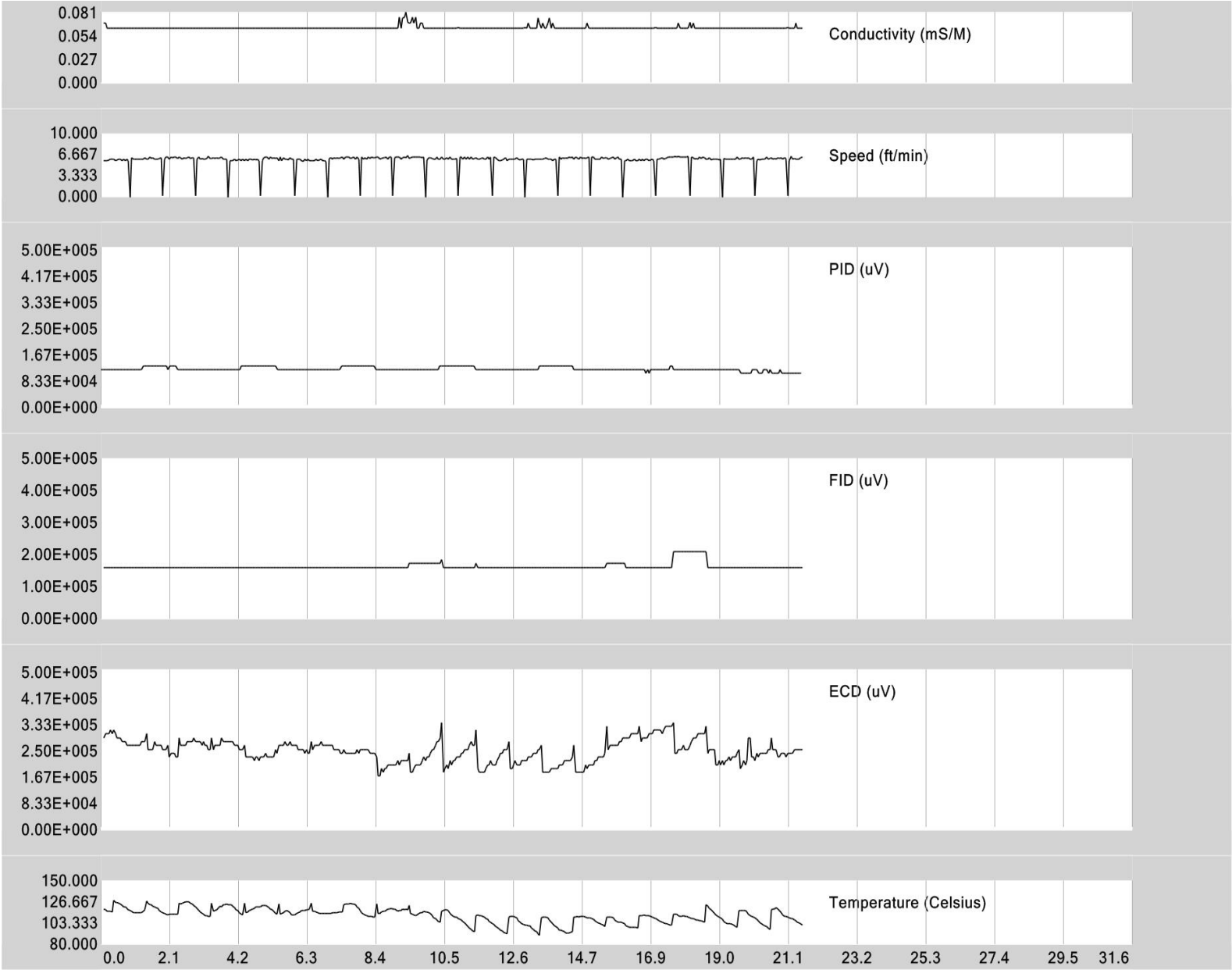

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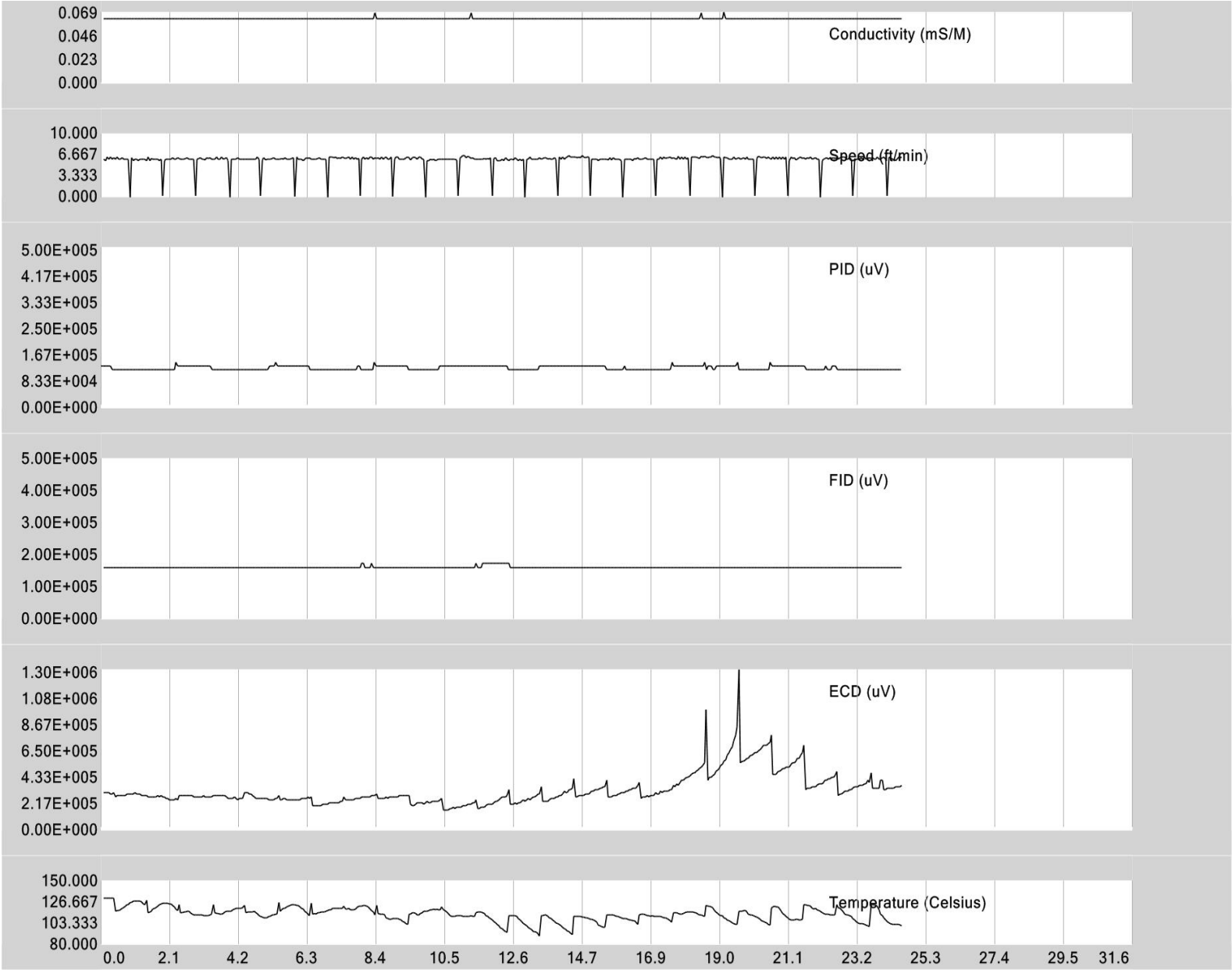

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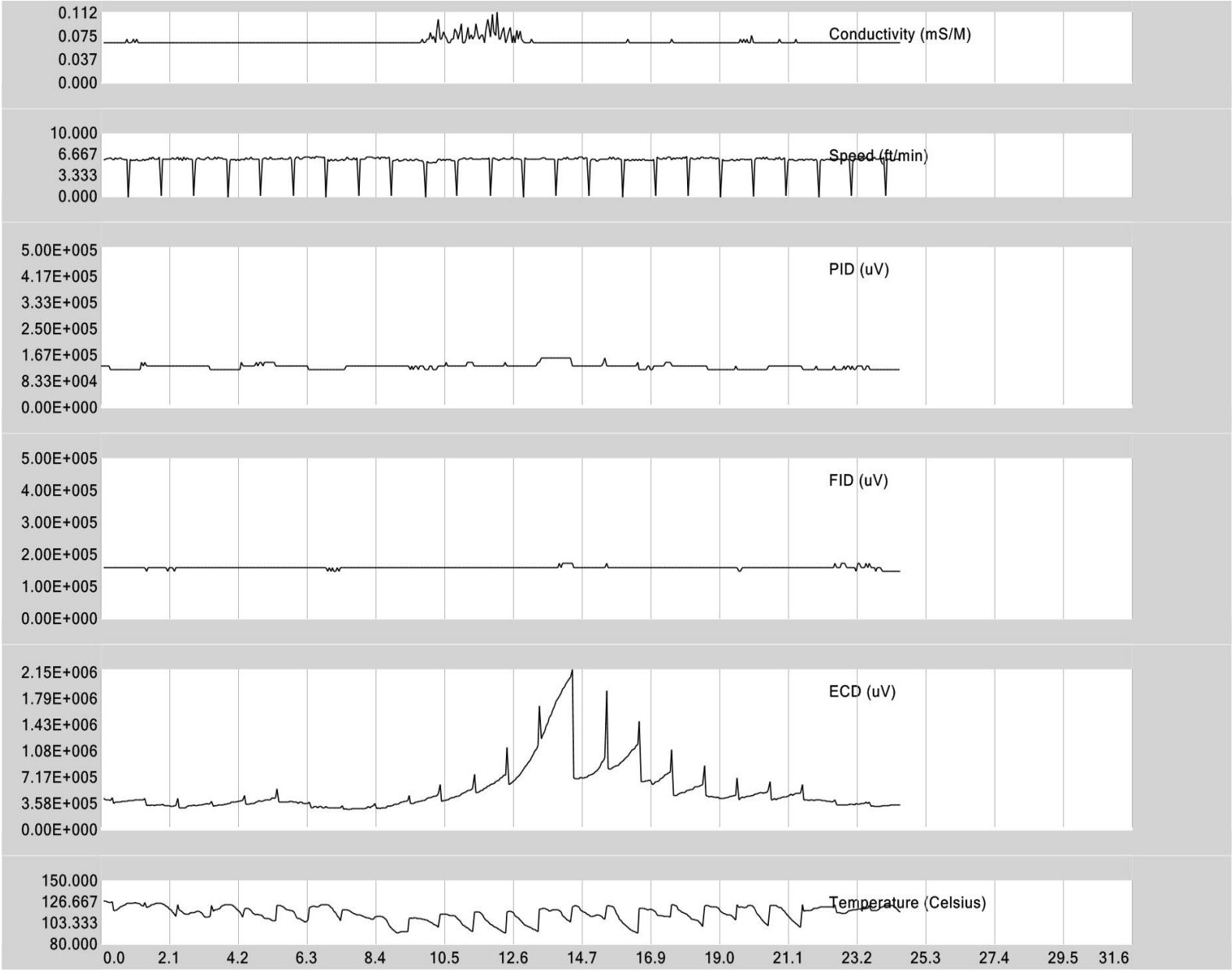

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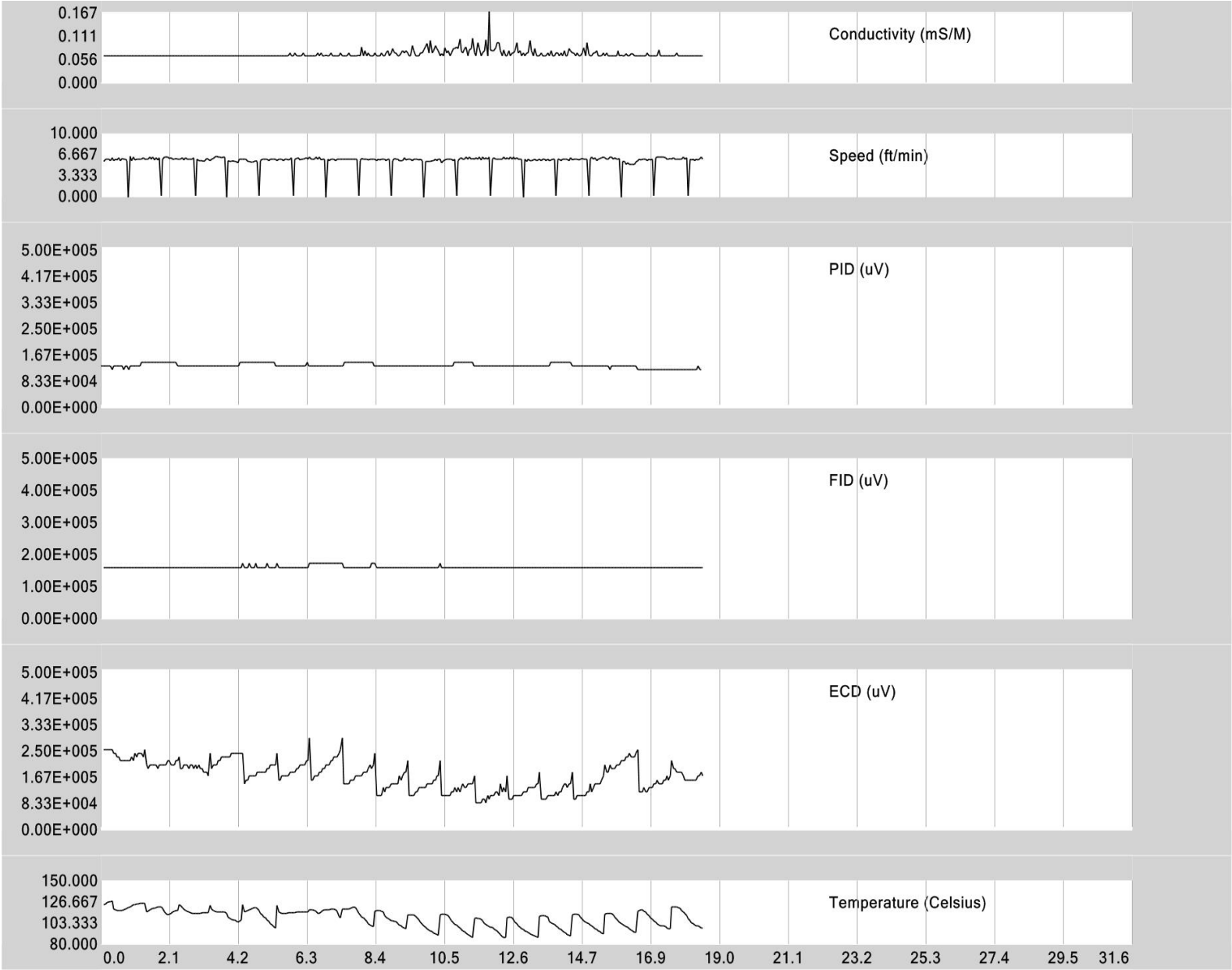

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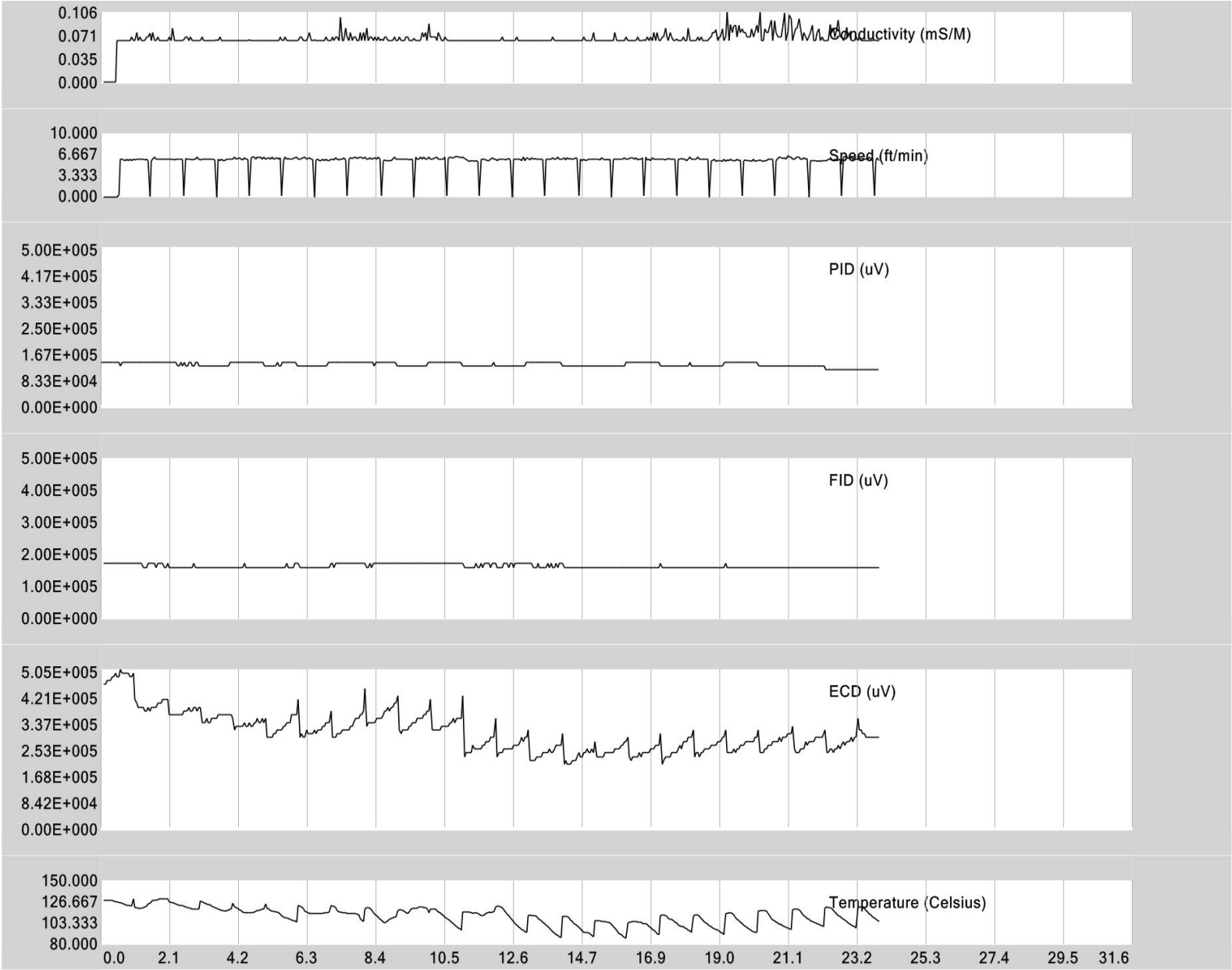

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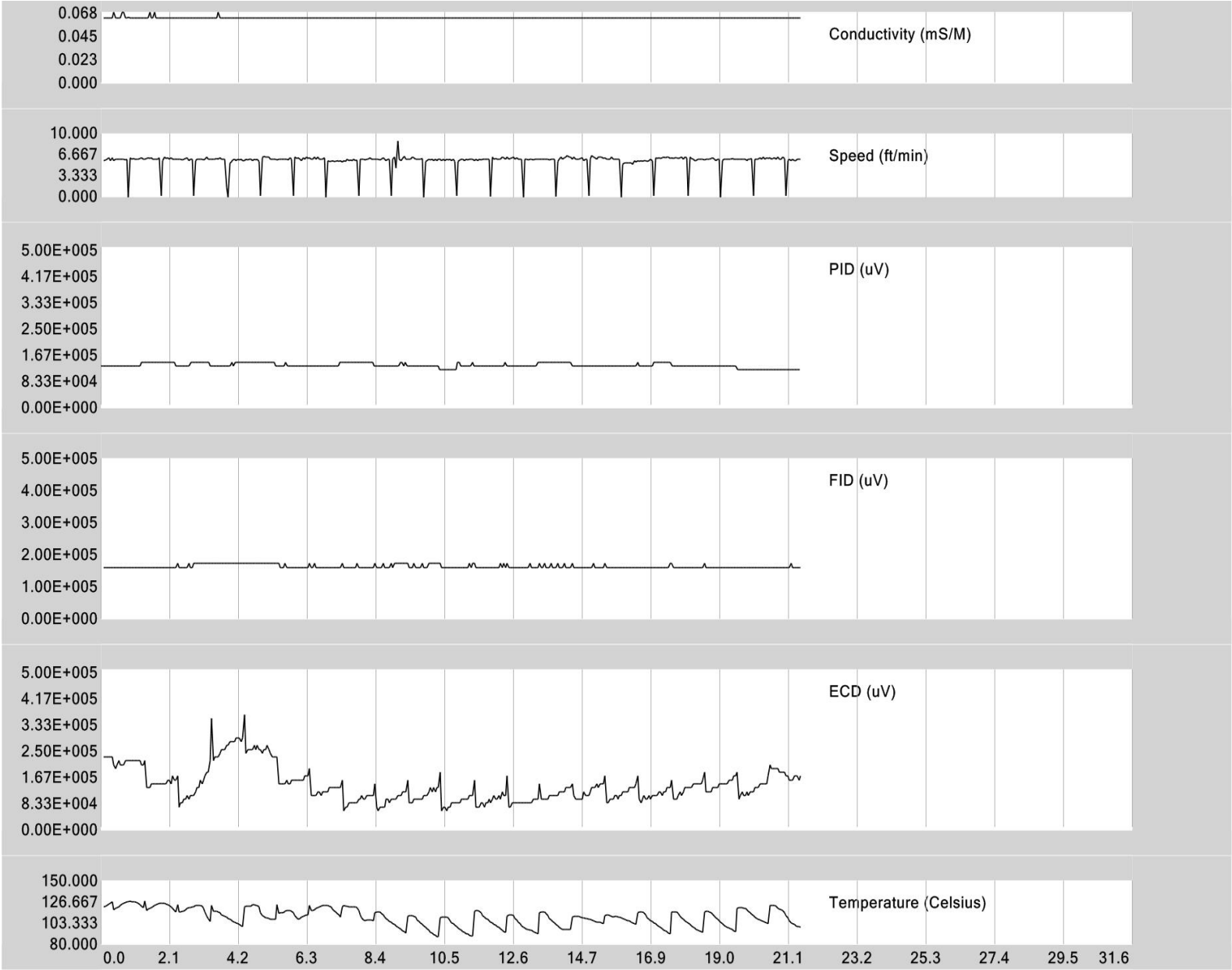

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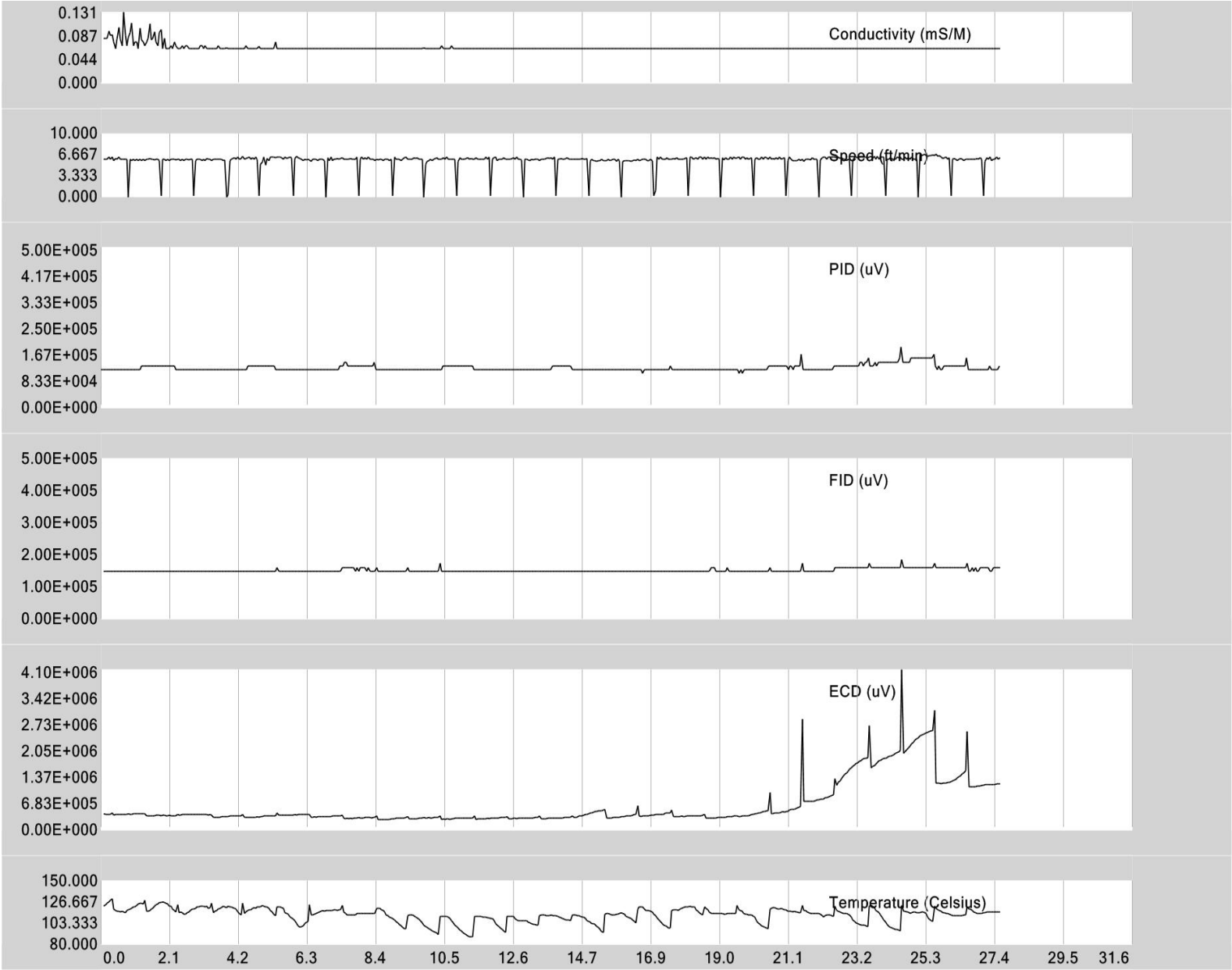

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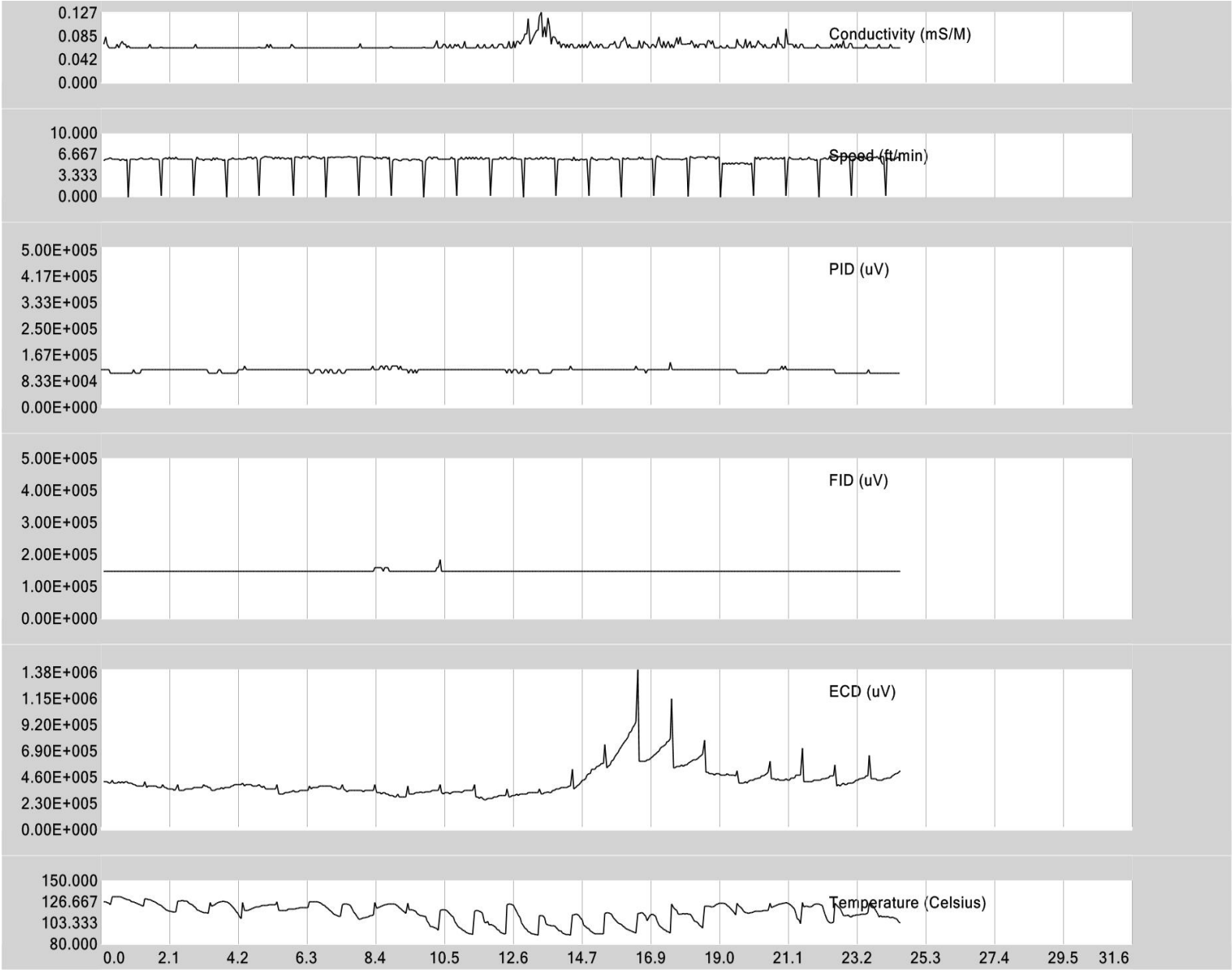

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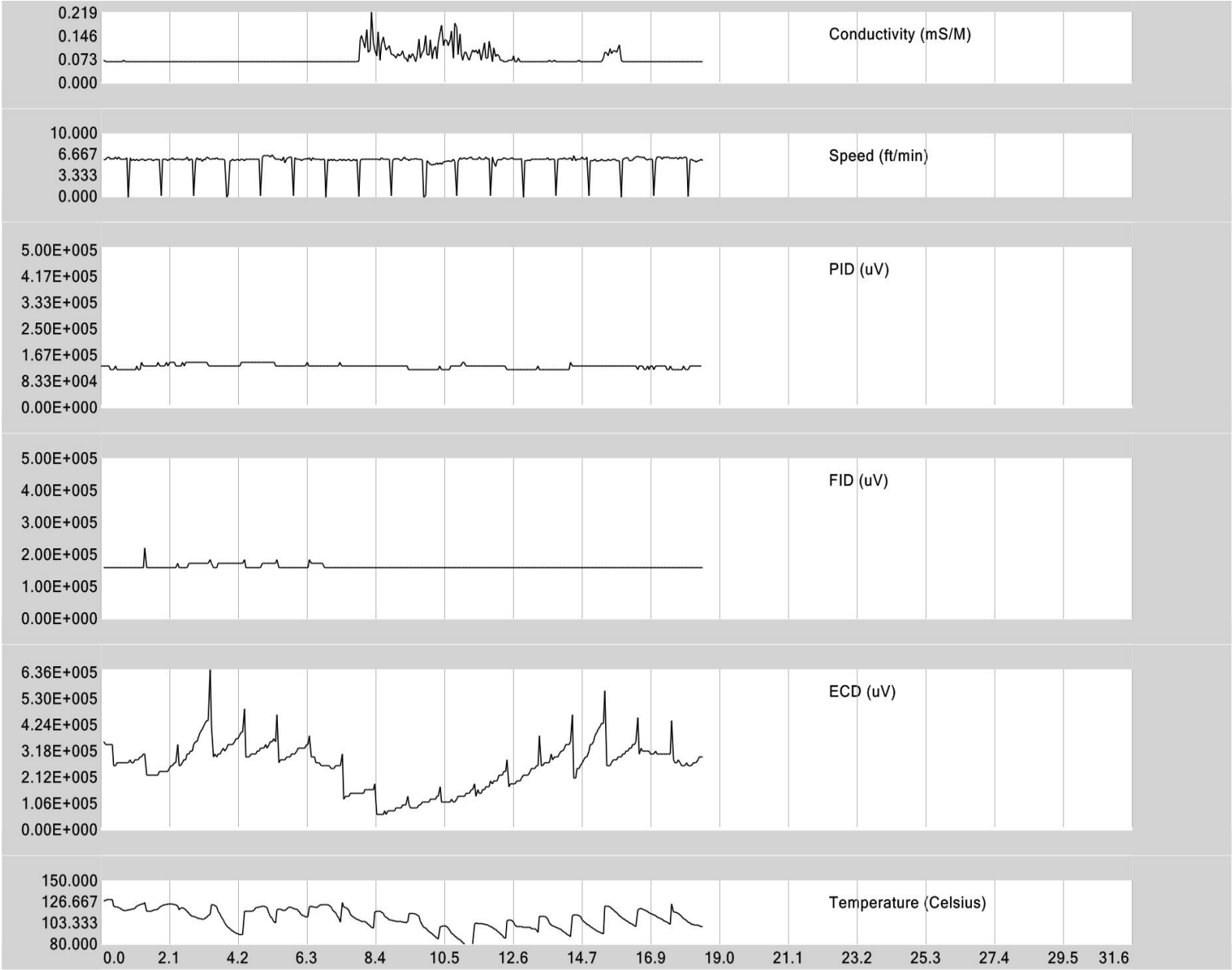

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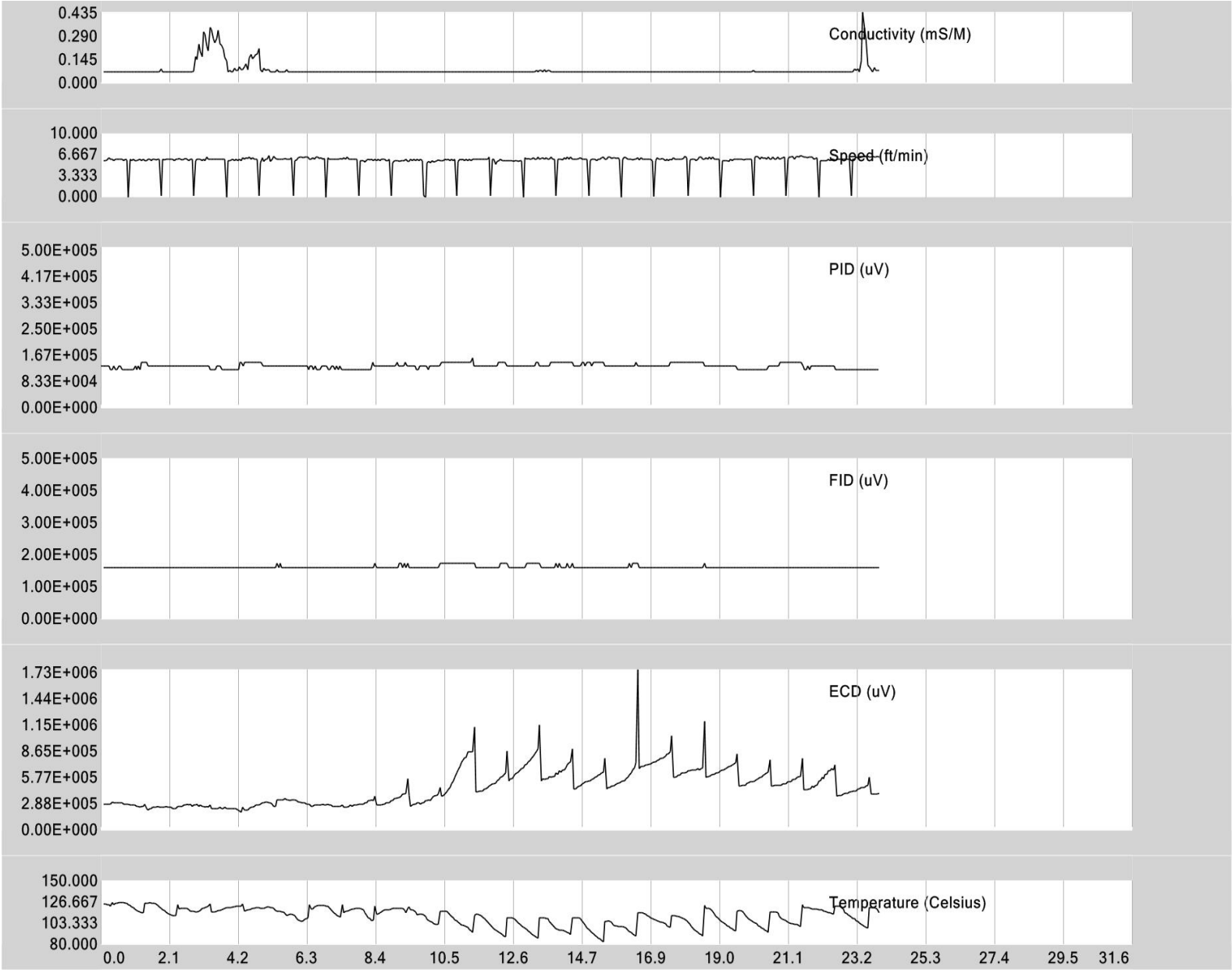

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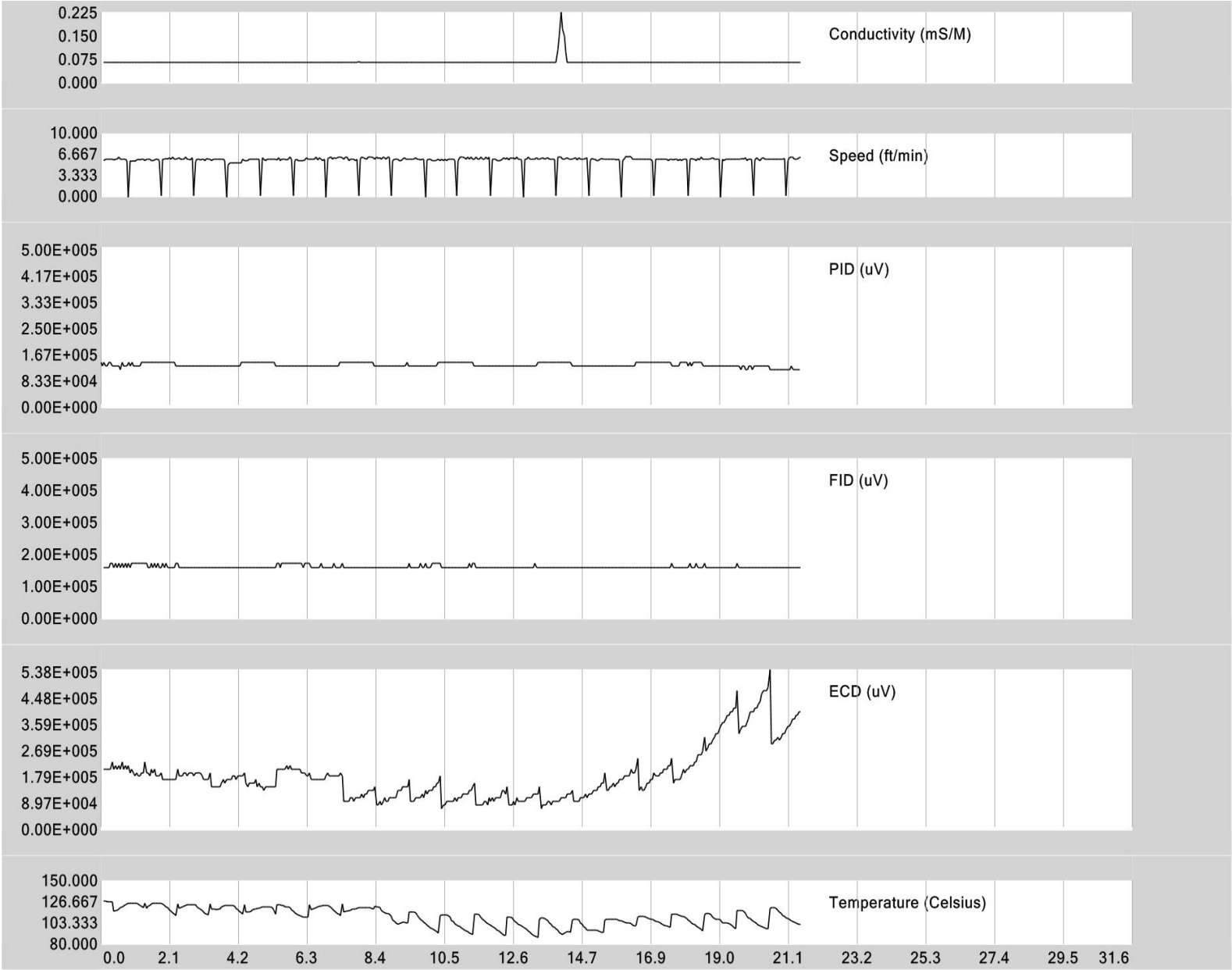

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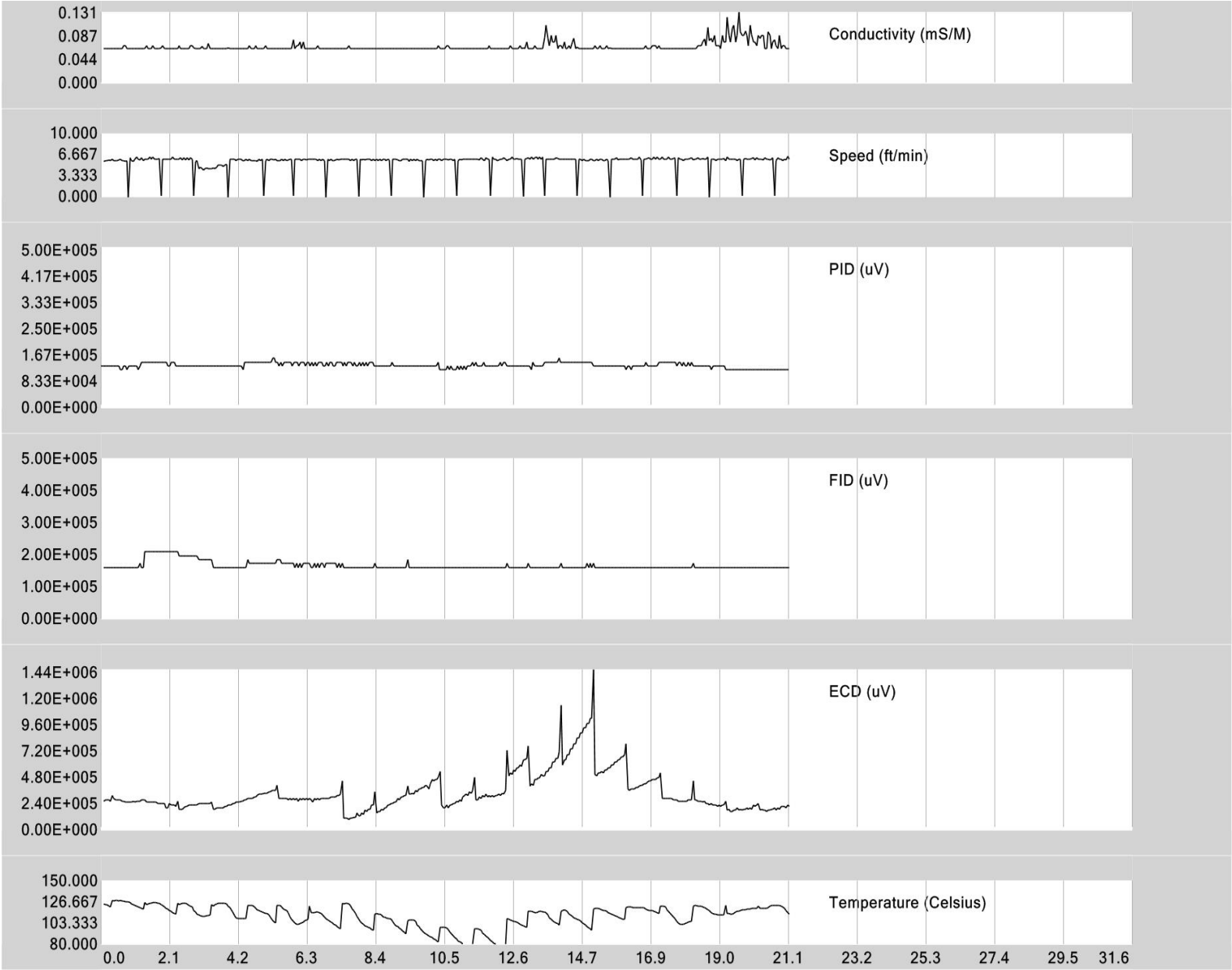

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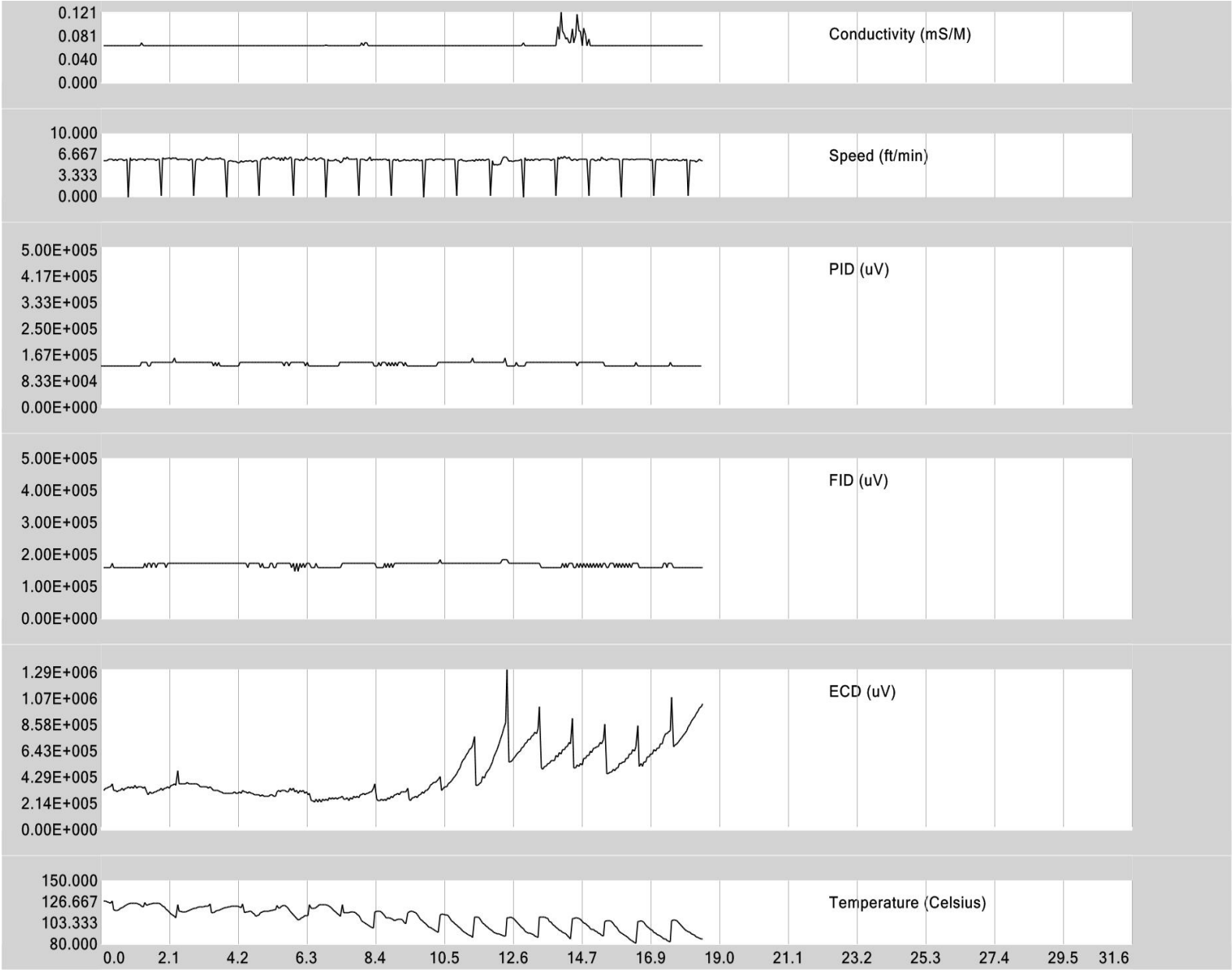

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ATTACHMENT C
Soil Boring Logs

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-3 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG320H0
PROJECT: Ellis Property		**DATE STARTED:** 6/7/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:** 6/7/2007
DRILLING METHOD: Direct Push		**DRILLER:** S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):** N/A
Total Depth (ft): 20.00	**Total Depth (ft):** N/A	**EASTING (ft):** N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):** N/A
Depth to Water (ft): 8	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A	

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SM				<1	Dark yellowish green (10YR4/4) fine SAND, some Silt; moist.	**Silty Sand**
	2		CL				<1	Dark yellowish green (10YR4/4) Silty CLAY; moist.	**Silty Clay**
	4		SM				<1	Dark yellowish green (10YR4/4) fine SAND, some Silt; moist.	**Silty Sand**
	6		CL				<1	Dark yellowish green (10YR4/4) CLAY; moist.	**Clay** **Water Level at 8 ft. bgs.**
	8		CL				<1	Dark yellowish green (10YR4/4) Silty CLAY; wet.	**Silty Clay**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-3
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10		SP				<1	Dark greenish gray (5G4/1) coarse to fine SAND; wet.	**Sand**
	12		SP				<1	Brownish gray (5YR4/1) coarse to fine SAND; wet.	**Collected P03SB and P03SBG from 12.0 to 14.0 ft bgs**
	14		CL				<1	Dark greenish gray (5G4/1) to brownish black (5YR2/1) Silty CLAY; moist.	**Silty Clay, Collected P03SC from 14.0 to 16.0 ft bgs**
	16		CL				<1	Dark greenish gray (5G4/1) to brownish black (5YR2/1) Silty CLAY; moist.	**Collected P03SD from 16.0 to 20.0 ft bgs**
	18								
	20								**End of Boring at 20 ft.**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-4 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG320H0
PROJECT: Ellis Property		**DATE STARTED:** 6/7/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:** 6/7/2007
DRILLING METHOD: Direct Push		**DRILLER:** S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):** N/A
Total Depth (ft): 24.00	**Total Depth (ft):** N/A	**EASTING (ft):** N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):** N/A
Depth to Water (ft): 8	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A	

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		CL				<1	Dark yellowish green (10GY4/4) Silty CLAY; moist.	**Silty Clay**
	2								
			SM				<1	Dark yellowish green (10GY4/4) fine SAND, some Silt; moist.	**Silty Sand**
	4		CL				<1	Dark yellowish green (10GY4/4) Silty CLAY; moist.	**Silty Clay**
			CL				<1	Dark yellowish green (10GY4/4) CLAY; moist.	**Clay** **Water Level at 8 ft. bgs.**
	6								
	8		SP				<1	Brownish gray (5YR4/1) coarse to fine SAND; wet.	**Sand**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-4
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10		CL				<1	Dark greenish gray (5G4/1) Silty CLAY; moist.	**Silty Clay, Collected P04SA from 10.0 to 12.0 ft bgs**
	12		CL				<1	Dark greenish gray (5G4/1) Silty CLAY; moist.	**Collected P04SB from 12.0 to 14.0 ft bgs**
	14								
			SM				<1	Dark greenish gray (5G4/1) fine SAND, some Silt; moist.	**Silty Sand**
	16		SM				<1	Dark greenish gray (5G4/1) to brownish black (5YR2/1) coarse to fine SAND, some Silt; moist.	
			CL				<1	Dark greenish gray (5G4/1) to brownish black (5YR2/1) Silty CLAY; moist.	**Silty Clay, Collected P04SC from 18.0 to 20.0 ft bgs**
	18								
	20		CL				<1	Dark greenish gray (5G4/1) to brownish black (5YR2/1) Silty CLAY; moist.	**Collected P04SD from 20.0 from 24.0 ft bgs**
	22								
									End of Boring at 24 ft.
	24								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-5 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG320H0
PROJECT: Ellis Property		**DATE STARTED:** 6/7/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:** 6/7/2007
DRILLING METHOD: Direct Push		**DRILLER:** S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):** N/A
Total Depth (ft): 28.00	**Total Depth (ft):** N/A	**EASTING (ft):** N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):** N/A
Depth to Water (ft): 12	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A	

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		CL				<1	Dark yellowish green (10GY4/4) Silty CLAY; moist.	**Silty Clay**
	2								
	4		SM				<1	Dark yellowish green (10GY4/4) fine SAND, some Silt; moist.	**Silty Sand**
	6		CL				<1	Dark yellowish green (10GY4/4) CLAY; moist.	**Clay**
	8		CL				<1	Dark yellowish green (10GY4/4) Silty CLAY; moist.	**Silty Clay** **Water Level at 12 ft. bgs.**
	10								
	12		SM				<1	Dark yellowish green (10GY4/4) fine SAND, some Silt; wet.	**Silty Sand**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-5
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	14		SM				<1	Dark greenish gray (5G4/1) fine SAND, some Silt; wet.	
	16		SP-SM				<1	Dark greenish gray (5G4/1) coarse to fine SAND, little Silt; wet.	**Sand**
	18		CL				<1	Dark greenish gray (5G4/1) Silty CLAY; moist.	**Silty Clay, Collected P05SB from 16.0 to 18.0 ft bgs**
	20		CL				<1	Dark greenish gray (5G4/1) to brownish black (5YR2/1) Silty CLAY; moist.	**Collected P05SC from 22.0 to 24.0 ft bgs**
	22								
	24		CL				<1	Dark greenish gray (5G4/1) to brownish black (5YR2/1) Silty CLAY; moist.	**Collected P05SD from 24.0 to 28.0 ft bgs**
	26								
	28								**End of Boring at 28 ft.**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-6 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:**	JG320H0
PROJECT: Ellis Property		**DATE STARTED:**	6/7/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:**	6/7/2007
DRILLING METHOD: Direct Push		**DRILLER:**	S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:**	J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):**	N/A
Total Depth (ft): 24.00	**Total Depth (ft):** N/A	**EASTING (ft):**	N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):**	N/A
Depth to Water (ft): 12	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):**	N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		CL				<1	Dark yellowish green (10YR4/4) Silty CLAY; moist.	**Silty Clay**
	2								
	4		SM				<1	Dark yellowish green (10YR4/4) fine SAND, some Silt; moist.	**Silty Sand**
	6		CL				<1	Dark yellowish green (10YR4/4) Silty CLAY; moist.	**Silty Clay**
	8		CL				<1	Dark yellowish green (10YR4/4) Silty CLAY; moist.	
	10		SM				<1	Dark greenish gray (5G4/1) fine SAND, some Silt; moist.	**Silty Sand, Collected P6SB from**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-6
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	12		SM				<1	Dark greenish gray (5G4/1) fine SAND, some Silt; wet.	**10.0 to 12.0 ft bgs** **Water Level at 12 ft. bgs.**
	14		CL				<1	Dark greenish gray (5G4/1) to brownish black (5G2/1) Silty CLAY; moist.	**Silty Clay**
	16		CL				<1	Dark greenish gray (5G4/1) to brownish black (5G2/1) Silty CLAY; moist.	**Collected P6SC from 18.0 to 20.0 ft bgs**
	18								
	20		CL				<1	Dark greenish gray (5G4/1) to brownish black (5G2/1) Silty CLAY; moist.	**Collected P6SD from 20.0 to 24.0 ft bgs**
	22								
	24								**End of Boring at 24 ft.**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-9 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:**	JG320H0
PROJECT: Ellis Property		**DATE STARTED:**	6/6/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:**	6/6/2007
DRILLING METHOD: Direct Push		**DRILLER:**	S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:**	J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):**	N/A
Total Depth (ft): 20.00	**Total Depth (ft):** N/A	**EASTING (ft):**	N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):**	N/A
Depth to Water (ft): 12	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):**	N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	**Silty Clay**
	2								
	4		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	
	6								
	8		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	
	10								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-9
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
									Water Level at 12 ft. bgs.
	12		SP				<1	Greenish gray (5G6/1) coarse to fine SAND; wet.	**Sand**
	14								
	16		SP				<1	Brownish gray (5YR4/1) coarse to fine SAND; wet.	**Collected P09SB, P09SBMS, P09SBMSD, and P09SBG from 18.0 to 20.0 ft bgs**
	18								**End of Boring at 20 ft.**
	20								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-11 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:**	JG320H0
PROJECT: Ellis Property		**DATE STARTED:**	6/7/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:**	6/7/2007
DRILLING METHOD: Direct Push		**DRILLER:**	S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:**	J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):**	N/A
Total Depth (ft): 24.00	**Total Depth (ft):** N/A	**EASTING (ft):**	N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):**	N/A
Depth to Water (ft): 12	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):**	N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SM				<1	Dark yellowish green (10GY4/4) fine SAND, some Silt; moist.	**Silty Sand**
	2								
	4		SM				<1	Dark yellowish green (10GY4/4) fine SAND, some Silt; moist.	
	6								
	8		SM				<1	Dark yellowish green (10GY4/4) fine SAND, some Silt; moist.	
	10								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-11
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
									Water Level at 12 ft. bgs.
	12		SP				<1	Brownish gray (5YR4/1) coarse to fine SAND; wet.	**Sand**
			CL				<1	Dark greenish gray (5G4/1) Silty CLAY; moist.	**Silty Clay, Collected P11SB from 12.0 to 14.0 ft bgs**
	14								
	16		CL				<1	Dark greenish gray (5G4/1) to brownish black (5YR2/1) Silty CLAY; moist.	**Collected P11SC from 18.0 to 20.0 ft bgs**
	18								
	20		CL				<1	Dark greenish gray (5G4/1) to brownish black (5YR2/1) Silty CLAY; moist.	**Collected P11SD from 20.0 to 24.0 ft bgs**
	22								
	24								**End of Boring at 24 ft.**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 3	**BORING NO.:** P-12 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:**	JG320H0
PROJECT: Ellis Property		**DATE STARTED:**	6/7/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:**	6/7/2007
DRILLING METHOD: Direct Push		**DRILLER:**	S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:**	J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):**	N/A
Total Depth (ft): 28.00	**Total Depth (ft):** N/A	**EASTING (ft):**	N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):**	N/A
Depth to Water (ft): 12	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):**	N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SM				<1	Dark yellowish green (10GY4/4) fine SAND, some Silt; moist.	**Silty Sand**
	2								
	4		SM				<1	Dark yellowish green (10GY4/4) fine SAND, some Silt; moist.	
	6		SM				<1	Dark yellowish green (10GY4/4) fine SAND, some Silt; moist.	

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-12
	Page 2 of 3	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	8		CL				<1	Dark yellowish green (10GY4/4) Silty CLAY; moist.	**Silty Clay**
	10								**Water Level at 12 ft. bgs.**
	12		SM				<1	Dark yellowish green (10GY4/4) fine SAND, some Silt; wet.	**Silty Sand, Collected P12SB from 12.0 to 14.0 ft bgs**
	14		SM				<1	Greenish gray (5G6/1) to dark greenish gray (5G4/1) fine SAND, some Silt; wet.	
	16		SM				<1	Greenish gray (5G6/1) to dark greenish gray (5G4/1) fine SAND, some Silt; wet.	
	18		OL				<1	Brownish gray (5YR4/1) Organic SILT, (non plastic); moist.	**Organic Silt, Collected P12SC from**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-12
	Page 3 of 3	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
									18.0 to 20.0 ft bgs
			SM				<1	Dark greenish gray (5G4/1) to greenish black (5G2/1) fine SAND, some Silt; moist.	**Silty Sand**
	20		CL				<1	Dark greenish gray (5G4/1) to greenish black (5G2/1) Silty CLAY; moist.	**Silty Clay**
	22								
	24		SM				<1	Dark greenish gray (5G4/1) to greenish black (5G2/1) fine SAND, some Silt; moist.	**Silty Sand, Collected P12SD from 24.0 to 26.0 ft bgs**
	26								**End of Boring at 28 ft.**
	28								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-13A **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG320H0	
PROJECT: Ellis Property		**DATE STARTED:** 6/7/2007	
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:** 6/7/2007	
DRILLING METHOD: Direct Push		**DRILLER:** S. Weigand	
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J. Lacanlale	
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):** N/A	
Total Depth (ft): 24.00	**Total Depth (ft):** N/A	**EASTING (ft):** N/A	
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):** N/A	
Depth to Water (ft): 12	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):** N/A	
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SM				<1	Moderate yellowish brown (10YR5/4) coarse to fine SAND, some Silt, little coarse to fine Gravel; moist.	**Silty Sand**
			SM				<1	Dark yellowish green (10YR4/4) fine SAND, some Silt; moist.	
	2								
	4		SM				<1	Dark yellowish green (10YR4/4) fine SAND, some Silt; moist.	
	6								
	8		CL				<1	Dark yellowish green (10YR4/4) Silty CLAY; moist.	**Silty Clay**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-13
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10		SM				<1	Dark yellowish green (10YR4/4) fine SAND, some Silt; moist.	**Silty Sand**
	12		SM				<1	Greenish gray (5G6/1) to dark greenish gray (5G4/1) fine SAND, some Silt; wet.	**Water Level at 12 ft. bgs.**
	14								
	16		CL				<1	Greenish gray (5G6/1) to dark greenish gray (5G4/1) Silty CLAY; moist.	**Silty Clay, Collected P13SC, P13SCMS, and P13SCMSD from 16.0 to 18.0 ft bgs**
	18								
	20		CL					Greenish gray (5G6/1) to dark greenish gray (5G4/1) Silty CLAY; moist.	**Collected P13SD and DUP04 from 20.0 to 24.0 ft bgs**
	22								
	24								**End of Boring at 24 ft.**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-14 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG320H0	
PROJECT: Ellis Property		**DATE STARTED:** 6/6/2007	
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:** 6/6/2007	
DRILLING METHOD: Direct Push		**DRILLER:** S. Weigand	
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J. Lacanlale	
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):** N/A	
Total Depth (ft): 16.00	**Total Depth (ft):** N/A	**EASTING (ft):** N/A	
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):** N/A	
Depth to Water (ft): 12	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):** N/A	
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0 2		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; moist.	**Silty Sand**
	4 6		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	**Clayey Silt**
	8		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; moist.	**Silty Sand, Collected P14SA from 10.0 to 12.0 ft bgs**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-14
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10								
	12		SM				<1	Dark greenish gray (5G4/1) coarse to fine SAND, some Silt; wet.	**Water Level at 12 ft. bgs.**
			SM				<1	Dark greenish gray (5GY4/1) medium to fine SAND, some Silt; wet.	**Collected P14SB and DUP03 from 14.0 to 16.0 ft bgs**
	14								
	16								**End of Boring at 16 ft.**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-15 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:**	JG320H0
PROJECT: Ellis Property		**DATE STARTED:**	6/6/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:**	6/6/2007
DRILLING METHOD: Direct Push		**DRILLER:**	S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:**	J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):**	N/A
Total Depth (ft): 20.00	**Total Depth (ft):** N/A	**EASTING (ft):**	N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):**	N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):**	N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0 2		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; moist.	**Silty Sand**
	4 6		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	**Silty Clay**
	8		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-15
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10								
	12		CL				<1	Dark greenish gray (5G4/1) to dark greenish gray (5GY4/1) CLAY; moist.	**Clay, Collected P15SB from 14.0 to 16.0 ft bgs**
	14								
	16		SM				<1	Dark greenish gray (5G4/1) fine SAND, some Silt; moist.	**Silty Sand, Collected P15SC and P15SCG from 18.0 to 20.0 ft bgs**
	18								**End of Boring at 20 ft.**
	20								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-16 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG320H0	
PROJECT: Ellis Property		**DATE STARTED:** 6/6/2007	
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:** 6/6/2007	
DRILLING METHOD: Direct Push		**DRILLER:** S. Weigand	
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J. Lacanlale	
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):** N/A	
Total Depth (ft): 24.00	**Total Depth (ft):** N/A	**EASTING (ft):** N/A	
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):** N/A	
Depth to Water (ft): 12	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):** N/A	
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SM				<1	Moderate yellowish brown (10YR5/4) medium to fine SAND, some Silt; moist.	**Silty Sand**
	2								
	4		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; moist.	
	6								
	8		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	**Silty Clay**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-16
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10								**Water Level at 12 ft. bgs.**
	12		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; wet.	**Silty Sand, Collected P16SA from 14.0 to 16.0 ft bgs**
	14								
	16		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt, trace fine Gravel; wet.	**Collected P16SB from 16.0 to 18.0 ft bgs**
	18		SM				<1	Dark greenish gray (5GY4/1) to dark greenish gray (5G4/1) fine SAND, some Silt; moist.	**Collected P16SC from 18.0 to 20.0 ft bgs**
	20		CL				<1	Dark greenish gray (5GY4/1) to dark greenish gray (5G4/1) Silty CLAY; moist.	**Silty Clay, Collected P16SD from 20.0 to 24.0 ft bgs**
	22								
	24								**End of Boring at 24 ft.**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-17 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG320H0	
PROJECT: Ellis Property		**DATE STARTED:** 6/6/2007	
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:** 6/6/2007	
DRILLING METHOD: Direct Push		**DRILLER:** S. Weigand	
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J. Lacanlale	
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):** N/A	
Total Depth (ft): 24.00	**Total Depth (ft):** N/A	**EASTING (ft):** N/A	
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):** N/A	
Depth to Water (ft): 12	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):** N/A	
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		GP				<1	Medium gray (N5) coarse to medium GRAVEL; moist.	**Gravel**
			SM				<1	Dark yellowish orange (10YR6/6) coarse to fine SAND, some Silt, trace fine Gravel; moist.	**Silty Sand**
			CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	**Silty Clay**
	2								
	4		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	
	6								
	8		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-17
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10								**Water Level at 12 ft. bgs.**
	12		SM				<1	Dark greenish gray (5GY4/1) to dark greenish gray (5G4/1) fine SAND, some Silt; wet.	**Silty Sand, Collected P17SB from 12.0 to 14.0 ft bgs'**
	14								
	16		CL				<1	Dark greenish gray (5GY4/1) to dark greenish gray (5G4/1) Silty CLAY; wet.	**Silty Clay, Collected P17SC from 16.0 to 18.0 ft bgs**
	18								
	20		CL				6	Dark greenish gray (5GY4/1) to dark greenish gray (5G4/1) Silty CLAY; moist.	**Collected P17SD from 22.0 to 24.0 ft bgs**
	22								**End of Boring at 24 ft.**
	24								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-21 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:**	JG320H0
PROJECT: Ellis Property		**DATE STARTED:**	6/4/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:**	6/4/2007
DRILLING METHOD: Direct Push		**DRILLER:**	S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:**	J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):**	N/A
Total Depth (ft): 24.00	**Total Depth (ft):** N/A	**EASTING (ft):**	N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):**	N/A
Depth to Water (ft): 12	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):**	N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SM				<1	Olive gray (5Y4/1) fine SAND, some Silt; moist.	**Silty Sand**
	2		SM				<1	Dark yellowish orange (10YR6/6) fine SAND, some Silt, little fine Gravel; moist.	
	4		SM				<1	Dark yellowish orange (10YR6/6) fine SAND, some Silt, little fine Gravel; moist.	
	6		CL				<1	Greenish gray (5GY6/1) Silty CLAY; moist.	**Silty Clay**
	8		CL				<1	Greenish gray (5GY6/1) Silty CLAY; wet.	

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-21
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10								**Water Level at 12 ft. bgs.**
	12		SM				<1	Greenish gray (5GY6/1) fine SAND, some Silt; wet.	**Silty Sand, Collected P21SA from 12.0 to 14.0 ft bgs**
	14		SP				<1	Light brownish gray (5YR6/1) medium to fine SAND; wet.	**Sand**
	16		SP				<1	Light brownish gray (5YR6/1) medium to fine SAND; wet.	**Collected P21SB from 16.0 to 18.0 ft bgs**
	18		CL				<1	Dark greenish gray (5G4/1) to greenish black (5G2/1) Silty CLAY; wet.	**Silty Clay**
	20		CL				<1	Dark greenish gray (5G4/1) to greenish black (5G2/1) Silty CLAY; wet.	**Collected P21SC from 20.0 to 24.0 ft bgs**
	22								
	24								**End of Boring at 24 ft.**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-22 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:**	JG320H0
PROJECT: Ellis Property		**DATE STARTED:**	6/5/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:**	6/5/2007
DRILLING METHOD: Direct Push		**DRILLER:**	S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:**	J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):**	N/A
Total Depth (ft): 24.00	**Total Depth (ft):** N/A	**EASTING (ft):**	N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):**	N/A
Depth to Water (ft): 13	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):**	N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SM				<1	Olive gray (5Y4/1) fine SAND, some Silt; moist.	**Silty Sand**
	2		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	**Silty Clay**
	4		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; moist.	**Silty Sand**
	6								
	8		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; moist.	**Collected P22SA from 10.0 to 12.0 ft bgs**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-22
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10								
	12		SM				<1	Dark greenish gray (5G4/1) to greenish black (5G2/1) fine SAND, some Silt; wet.	**Collected P22SB from 14.0 to 16.0 ft bgs** ▽ **Water Level at 13 ft. bgs.**
	14								
	16		SM				<1	Dark greenish gray (5G4/1) to greenish black (5G2/1) fine SAND, some Silt; wet.	**Collected P22SC from 16.0 to 20.0 ft bgs**
	18								
	20		SM				<1	Dark greenish gray (5G4/1) to greenish black (5G2/1) fine SAND, some Silt; wet.	**Collected P22SD and DUP01 from 20.0 to 24.0 ft bgs**
	22								
	24								**End of Boring at 24 ft.**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-23 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG320H0
PROJECT: Ellis Property		**DATE STARTED:** 6/5/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:** 6/5/2007
DRILLING METHOD: Direct Push		**DRILLER:** S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):** N/A
Total Depth (ft): 20.00	**Total Depth (ft):** N/A	**EASTING (ft):** N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):** N/A
Depth to Water (ft): 13	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A	

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SP-SM				<1	Olive gray (5Y4/1) coarse to fine SAND, little Silt, trace fine Gravel; moist.	**Sand**
	2		SP				<1	Dark yellowish orange (10YR6/6) medium to fine SAND, trace fine Gravel; moist.	
	4		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; moist.	**Silty Sand**
	6								
	8		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; moist.	

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-23
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; moist.	**Collected P23SA, P23SAMS, and P23SAMSD from 10.0 to 12.0 ft bgs**
	12		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt, trace fine Gravel; wet.	**Collected P23SB from 14.0 to 16.0 ft bgs** ▽ **Water Level at 13 ft. bgs.**
	14								
	16		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; wet.	**Silty Clay, Collected P23SC from 18.0 to 20.0 ft bgs**
	18								
	20								**End of Boring at 20 ft.**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-24 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:**	JG320H0
PROJECT: Ellis Property		**DATE STARTED:**	6/5/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:**	6/5/2007
DRILLING METHOD: Direct Push		**DRILLER:**	S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:**	J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):**	N/A
Total Depth (ft): 24.00	**Total Depth (ft):** N/A	**EASTING (ft):**	N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):**	N/A
Depth to Water (ft): 10	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):**	N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SM				<1	Greenish gray (5Y6/1) fine SAND, some Silt; moist.	**Silty Sand**
	2								
	4		SM				<1	Greenish gray (5Y6/1) fine SAND, some Silt; moist.	
	6								
	8		SM				<1	Greenish gray (5Y6/1) fine SAND, some Silt; moist.	

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-24
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10		SM				<1	Dark greenish gray (5G4/1) fine SAND, some Silt; wet.	**Water Level at 10 ft. bgs.**
	12		SM				<1	Dark greenish gray (5G4/1) fine SAND, some Silt; wet.	**Collected P24SB from 14.0 to 16.0 ft bgs**
	14								
	16		SM				<1	Dark greenish gray (5G4/1) fine SAND, some Silt; wet.	**Collected P24SC from 18.0 to 20.0 ft bgs**
	18								
	20		SM				<1	Dark greenish gray (5G4/1) fine SAND, some Silt; wet.	**Collected P24SD from 20.0 to 22.0 ft bgs**
	22								**End of Boring at 24 ft.**
	24								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-25 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:**	JG320H0
PROJECT: Ellis Property		**DATE STARTED:**	6/5/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:**	6/5/2007
DRILLING METHOD: Direct Push		**DRILLER:**	S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:**	J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):**	N/A
Total Depth (ft): 20.00	**Total Depth (ft):** N/A	**EASTING (ft):**	N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):**	N/A
Depth to Water (ft): 12	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):**	N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SM				<1	Greenish gray (5GY6/1) fine SAND, some Silt; moist.	**Silty Sand**
	2								
	4		CL				<1	Greenish gray (5GY6/1) Silty CLAY; moist.	**Silty Clay**
	6								
	8		CL				<1	Greenish gray (5GY6/1) Silty CLAY; moist.	

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-25
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10								**Water Level at 12 ft. bgs.**
	12		SM				<1	Dark greenish gray (5G4/1) fine SAND, some Silt; wet.	**Silty Sand**
	14								
	16		CL				<1	Dark greenish gray (5G4/1) Silty CLAY; wet.	**Silty Clay, Collected P25SC from 16.0 to 18.0 ft bgs**
	18								**End of Boring at 20 ft.**
	20								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-31 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:**	JG320H0
PROJECT: Ellis Property		**DATE STARTED:**	6/4/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:**	6/4/2007
DRILLING METHOD: Direct Push		**DRILLER:**	S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:**	J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):**	N/A
Total Depth (ft): 24.00	**Total Depth (ft):** N/A	**EASTING (ft):**	N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):**	N/A
Depth to Water (ft): 12	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):**	N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SM				<1	Greenish gray (5G6/1) fine SAND, some Silt; moist.	**Silty Sand**
	2								
	4		CL				<1	Greenish gray (5G6/1) Silty CLAY; moist.	**Silty Clay**
	6								
	8		CL				<1	Greenish gray (5G6/1) Silty CLAY; moist.	

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-31
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10								**Water Level at 12 ft. bgs.**
	12		SM				<1	Greenish gray (5G6/1) fine SAND, some Silt; wet.	**Silty Sand, Collected P31SB from 12.0 to 14.0 ft bgs**
	14		CL				NA	Dark greenish gray (5G4/1) Silty CLAY; wet.	**Silty Clay**
	16		CL				NA	Dark greenish gray (5G4/1) Silty CLAY; wet.	**Collected P31SC from 18.0 to 20.0 ft bgs**
	18								
	20		CL				NA	Dark greenish gray (5G4/1) Silty CLAY; wet.	**Collected P31SD from 20.0 to 24.0 ft bgs**
	22								**End of Boring at 24 ft.**
	24								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-32 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:**	JG320H0
PROJECT: Ellis Property		**DATE STARTED:**	6/4/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:**	6/4/2007
DRILLING METHOD: Direct Push		**DRILLER:**	S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:**	J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):**	N/A
Total Depth (ft): 24.00	**Total Depth (ft):** N/A	**EASTING (ft):**	N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):**	N/A
Depth to Water (ft): 12	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):**	N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	**Silty Clay**
	2								
	4		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	
	6								
	8		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-32
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10		SM				<1	Dark greenish gray (5G4/1) fine SAND, some Silt; moist.	**Silty Sand**
	12		SM				<1	Dark greenish gray (5G4/1) to greenish black (5G2/1) fine SAND, some Silt; wet.	**Water Level at 12 ft. bgs.**
	14								
	16		CL				<1	Dark greenish gray (5G4/1) to greenish black (5G2/1) Silty CLAY; wet.	**Silty Clay, Collected P32SC from 18.0 to 20.0 ft bgs**
	18								
	20		CL				<1	Dark greenish gray (5G4/1) to greenish black (5G2/1) Silty CLAY; wet.	**Collected P32SD from 20.0 to 24.0 ft bgs**
	22								
	24								**End of Boring at 24 ft.**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-33 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:**	JG320H0
PROJECT: Ellis Property		**DATE STARTED:**	6/4/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:**	6/4/2007
DRILLING METHOD: Direct Push		**DRILLER:**	S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:**	J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):**	N/A
Total Depth (ft): 24.00	**Total Depth (ft):** N/A	**EASTING (ft):**	N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):**	N/A
Depth to Water (ft): 12	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):**	N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		CL				<1	Dark greenish black (5G4/1) Silty CLAY; moist.	**Silty Clay**
	2								
	4		CL				<1	Dark greenish black (5G4/1) Silty CLAY; moist.	
	6								
	8		SM				<1	Dark greenish black (5G4/1) fine SAND, some silt; wet.	**Silty Sand**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-33
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10								**Water Level at 12 ft. bgs.**
	12		CL				<1	Greenish gray (5GY6/1) Silty CLAY; wet.	**Silty Clay**
	14		SM				<1	Dark greenish black (5G4/1) to greenish black (5G2/1) fine SAND, some silt; wet.	**Silty Sand, Collected P33SB from 14.0 to 16.0 ft bgs**
	16		CL				<1	Dark greenish black (5G4/1) to greenish black (5G2/1) Silty CLAY; wet.	**Silty Clay, Collected P33SC from 18.0 to 20.0 ft bgs**
	18								
	20		CL				<1	Dark greenish black (5G4/1) to greenish black (5G2/1) Silty CLAY; wet.	**Collected P33SD from 22.0 to 24.0 ft bgs**
	22								
	24								**End of Boring at 24 ft.**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-40 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG320H0
PROJECT: Ellis Property		**DATE STARTED:** 6/6/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:** 6/6/2007
DRILLING METHOD: Direct Push		**DRILLER:** S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):** N/A
Total Depth (ft): 24.00	**Total Depth (ft):** N/A	**EASTING (ft):** N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):** N/A
Depth to Water (ft): 8	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A	

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SM				<1	Moderate yellowish brown (10YR5/4) medium to fine SAND, some Silt, trace fine Gravel; dry.	**Silty Sand**
	2								
	4		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; moist.	
	6		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	**Silty Clay** **Water Level at 8 ft. bgs.**
	8		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; wet.	**Silty Sand**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-40
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10								
			CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; wet.	**Silty Clay**
	12		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; moist.	**Silty Sand**
	14								
	16		CL				<1	Dark greenish gray (5GY4/1) to dark greenish gray (5G4/1) Silty CLAY; moist.	**Silty Clay, Collected P40SC, P40SCMS, and P40SCMSD from 16.0 to 18.0 ft bgs**
	18								
	20		CL				<1	Dark greenish gray (5GY4/1) to dark greenish gray (5G4/1) Silty CLAY; moist.	**Collected P40SD from 20.0 to 24.0 ft bgs**
	22								
	24								**End of Boring at 24 ft.**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-41 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG320H0
PROJECT: Ellis Property		**DATE STARTED:** 6/5/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:** 6/5/2007
DRILLING METHOD: Direct Push		**DRILLER:** S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):** N/A
Total Depth (ft): 24.00	**Total Depth (ft):** N/A	**EASTING (ft):** N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):** N/A
Depth to Water (ft): 8	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A	

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0 2		SP-SM				<1	Dark yellowish orange (10YR6/6) coarse to fine SAND, little Silt, trace medium to fine Gravel; moist.	**Sand**
	4 6		CL CL				<1 <1	Dark yellowish green (10GY4/4) Silty CLAY; moist. Dark yellowish green (10GY4/4) Silty CLAY; moist.	**Silty Clay** **Water Level at 8 ft. bgs.**
	8		SM				<1	Dark yellowish green (10GY4/4) fine SAND, some Silt; wet.	**Silty Sand**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-41
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10								
	12		SM				<1	Dark yellowish green (10GY4/4) fine SAND, some Silt; wet.	**Collected P41SB from 12.0 to 14.0 ft bgs**
	14		SM				<1	Dark greenish gray (5GY4/1) to greenish black (5G2/1) fine SAND, some Silt; wet.	
	16		SM				<1	Dark greenish gray (5GY4/1) to greenish black (5G2/1) fine SAND, some Silt; moist.	**Collected P41SC from 18.0 to 20.0 ft bgs**
	18								
	20		CL				<1	Dark greenish gray (5GY4/1) to greenish black (5G2/1) Silty CLAY; moist.	**Silty Clay, Collected P41SD from 20.0 to 22.0 ft bgs**
	22								**End of Boring at 24 ft.**
	24								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-42 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG320H0	
PROJECT: Ellis Property		**DATE STARTED:** 6/5/2007	
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:** 6/5/2007	
DRILLING METHOD: Direct Push		**DRILLER:** S. Weigand	
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J. Lacanlale	
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):** N/A	
Total Depth (ft): 24.00	**Total Depth (ft):** N/A	**EASTING (ft):** N/A	
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):** N/A	
Depth to Water (ft): 18	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):** N/A	
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SP-SM				<1	Moderate yellowish brown (10YR5/4) coarse to fine SAND, little Silt, little fine Gravel; moist.	**Sand**
			SP				<1	Dark yellowish orange (10YR6/6) coarse to fine SAND, trace fine Gravel; moist.	
	2		CL				<1	Dark yellowish green (10GY 4/4) Silty CLAY; moist.	**Silty Clay**
	4		SM				<1	Dark yellowish green (10GY 4/4) fine SAND, some Silt; moist.	**Silty Sand**
	6								
	8		SM				<1	Dark yellowish green (10GY 4/4) fine SAND, some Silt; wet.	

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-42
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10 12 14		SM				<1	Dark greenish gray (5G4/1) to greenish black (5G2/1) fine SAND, some Silt; wet.	**Collected P42SB from 12.0 to 14.0 ft bgs**
	16 18 20 22 24		CL CL				<1 <1	Dark greenish gray (5G4/1) to greenish black (5G2/1) Silty CLAY; moist. Dark greenish gray (5G4/1) to greenish black (5G2/1) Silty CLAY; moist.	**Silty Clay, Collected P42SC and P42SCG from 18.0 to 20.0 ft bgs** **Water Level at 18 ft. bgs.** **Collected P42SD from 20.0 to 22.5 ft bgs** **End of Boring at 24 ft.**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-49 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG320H0
PROJECT: Ellis Property		**DATE STARTED:** 6/7/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:** 6/7/2007
DRILLING METHOD: Direct Push		**DRILLER:** S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):** N/A
Total Depth (ft): 20.00	**Total Depth (ft):** N/A	**EASTING (ft):** N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):** N/A
Depth to Water (ft): 8	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A	

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0 2		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; moist.	**Silty Sand**
	4 6		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	**Silty Clay**
	8		SM SM				<1 <1	Dark greenish gray (5GY4/1) fine SAND, some Silt; moist. Dark greenish gray (5G4/1) fine SAND, some Silt; wet.	**Silty Sand** **Water Level at 8 ft. bgs.** **Collected P49SB and DUP05 from 8.0 to 10.0 ft bgs**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-49
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10								
	12		CL				<1	Dark greenish gray (5G4/1) to brownish black (5YR2/1) Silty CLAY; moist.	**Silty Clay, Collected P49SC from 12.0 to 14.0 ft bgs**
	14								
	16		CL				<1	Dark greenish gray (5G4/1) to brownish black (5YR2/1) Silty CLAY; moist.	**Collected P49SD from 16.0 to 18.0 ft bgs**
	18								**End of Boring at 20 ft.**
	20								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 1	**BORING NO.:** P-50 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG320H0
PROJECT: Ellis Property		**DATE STARTED:** 6/7/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:** 6/7/2007
DRILLING METHOD: Direct Push		**DRILLER:** S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):** N/A
Total Depth (ft): 12.00	**Total Depth (ft):** N/A	**EASTING (ft):** N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A	

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SM				<1	Moderate yellowish brown (10YR5/4) fine SAND, some Silt; moist.	**Silty Sand**
	2		CL				<1	Dark yellowish green (10GY4/1) CLAY; moist.	**Clay**
	4		CL				<1	Dark yellowish green (10GY4/1) Silty CLAY; moist.	**Silty Clay**
	6								
	8		CL				<1	Dark yellowish green (10GY4/1) Silty CLAY; moist.	**Collected P50SB, P50SBMS, and P50SBMSD from 8.0 to 10.0 ft bgs**
	10								**End of Boring at 12 ft.**
	12								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-52 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:**	JG320H0
PROJECT: Ellis Property		**DATE STARTED:**	6/6/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:**	6/6/2007
DRILLING METHOD: Direct Push		**DRILLER:**	S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:**	J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):**	N/A
Total Depth (ft): 20.00	**Total Depth (ft):** N/A	**EASTING (ft):**	N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):**	N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):**	N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		CL				<1	Dark yellowish green (10GY4/4) Silty CLAY; moist.	**Silty Clay**
	2								
	4		CL				<1	Dark yellowish green (10GY4/4) Silty CLAY; moist.	
	6								
	8		CL				<1	Dark yellowish green (10GY4/4) Silty CLAY; moist.	

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-52
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10								
	12		SM				<1	Dark greenish gray (5G4/1) to dark greenish gray (5GY4/1) fine SAND, some Silt; moist.	**Silty Sand**
	14								
	16		SM				<1	Dark greenish gray (5G4/1) to dark greenish gray (5GY4/1) fine SAND, some Silt; moist.	**Collected P52SB from 16.0 to 18.0 ft bgs**
	18								**End of Boring at 20 ft.**
	20								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-53 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:**	JG320H0
PROJECT: Ellis Property		**DATE STARTED:**	6/6/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:**	6/6/2007
DRILLING METHOD: Direct Push		**DRILLER:**	S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:**	J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):**	N/A
Total Depth (ft): 28.00	**Total Depth (ft):** N/A	**EASTING (ft):**	N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):**	N/A
Depth to Water (ft): 16	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):**	N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		CL				<1	Dark yellowish green (10GY4/4) Silty CLAY; moist.	**Silty Clay**
	2								
	4		CL				<1	Dark yellowish green (10GY4/4) Silty CLAY; moist.	
	6								
	8		CL				<1	Dark yellowish green (10GY4/4) Silty CLAY; moist.	
	10		SM				<1	Dark greenish gray (5G4/1) to dark yellowish orange (10YR6/6) fine SAND, some Silt; moist.	**Silty Sand**
	12		SM				<1	Dark greenish gray (5G4/1) to dark yellowish orange	

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-53
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
								(10YR6/6) fine SAND, some Silt; moist.	
	14								**Water Level at 16 ft. bgs.**
	16		CL				<1	Dark greenish gray (5G4/1) to dark yellowish orange (10YR6/6) Silty CLAY; wet.	**Silty Clay**
	18								
	20		CL				<1	Dark greenish gray (5G4/1) to dark yellowish orange (10YR6/6) Silty CLAY; moist.	**Collected P53SC from 20.0 to 22.0 ft bgs**
	22								
	24		CL				<1	Dark greenish gray (5G4/1) to dark yellowish orange (10YR6/6) Silty CLAY; wet.	**Collected P53SD from 24.0 to 28.0 ft bgs.**
	26								
	28								**End of Boring at 28 ft.**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-54 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG320H0	
PROJECT: Ellis Property		**DATE STARTED:** 6/6/2007	
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:** 6/6/2007	
DRILLING METHOD: Direct Push		**DRILLER:** S. Weigand	
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J. Lacanlale	
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):** N/A	
Total Depth (ft): 20.00	**Total Depth (ft):** N/A	**EASTING (ft):** N/A	
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):** N/A	
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):** N/A	
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		GP				<1	Medium gray (N5) coarse to medium GRAVEL; moist.	**Gravel**
	2		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; moist.	**Silty Sand**
	4		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; moist.	
	6								
	8		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	**Silty Clay**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-54
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10								
	12		SM				10	Dark greenish gray (5GY4/1) to dark greenish gray (5G4/1) fine SAND, some Silt; moist.	**Silty Sand, Collected P54SC from 14.0 to 16.0 ft bgs**
	14								
	16		CL				<1	Dark greenish gray (5GY4/1) to dark greenish gray (5G4/1) Silty CLAY; moist.	**Silty Clay, Collected P54SD from 16.0 to 20.0 ft bgs**
	18								**End of Boring at 20 ft.**
	20								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-55 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG320H0
PROJECT: Ellis Property		**DATE STARTED:** 6/7/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:** 6/7/2007
DRILLING METHOD: Direct Push		**DRILLER:** S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):** N/A
Total Depth (ft): 16.00	**Total Depth (ft):** N/A	**EASTING (ft):** N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):** N/A
Depth to Water (ft): 8	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A	

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0 2		SM				<1	Olive gray (5Y4/1) fine SAND, some Silt; moist.	**Silty Sand**
	4 6		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	**Silty Clay** **Water Level at 8 ft. bgs.**
	8		SM				<1	Dark greenish gray (5G4/1) fine SAND, some Silt; wet.	**Silty Sand, Collected P55SB from 10.0 to 12.0 ft bgs**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-55
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10								
	12		CL				<1	Dark greenish gray (5G4/1) to greenish black (5G2/1) Silty CLAY; moist.	**Silty Clay, Collected P55SC from 14.0 to 16.0 ft bgs**
	14								**End of Boring at 16 ft.**
	16								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-56 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:**	JG320H0
PROJECT: Ellis Property		**DATE STARTED:**	6/6/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:**	6/6/2007
DRILLING METHOD: Direct Push		**DRILLER:**	S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:**	J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):**	N/A
Total Depth (ft): 20.00	**Total Depth (ft):** N/A	**EASTING (ft):**	N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):**	N/A
Depth to Water (ft): 16	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):**	N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	**Silty Clay**
	2								
	4		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	
	6								
	8		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	**Collected P56SB from 10.0 to 12.0 ft bgs**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-56
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10								
	12		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; moist.	**Silty Sand**
			SM				<1	Dark greenish gray (5GY4/1) to dark greenish gray (5G4/1) fine SAND, some Silt; moist.	**Collected P56SC from 14.0 to 16.0 ft bgs**
	14								**Water Level at 16 ft. bgs.**
	16		SM				<1	Dark greenish gray (5GY4/1) to dark greenish gray (5G4/1) fine SAND, some Silt; wet.	▽ **Collected P56SD from 16.0 to 20.0 ft bgs**
	18								
	20								**End of Boring at 20 ft.**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-57 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:**	JG320H0
PROJECT: Ellis Property		**DATE STARTED:**	6/4/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:**	6/4/2007
DRILLING METHOD: Direct Push		**DRILLER:**	S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:**	J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):**	N/A
Total Depth (ft): 22.00	**Total Depth (ft):** N/A	**EASTING (ft):**	N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):**	N/A
Depth to Water (ft): 12	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):**	N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		CL				<1	Dark greenish gray (5G4/1) Silty CLAY; dry.	**Silty Clay**
	2								
	4		CL				<1	Dark greenish gray (5G4/1) Silty CLAY; moist.	
	6								
	8		CL				<1	Dark greenish gray (5G4/1) Silty CLAY; moist.	

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-57
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10		SM				<1	Dark greenish gray (5G4/1) fine SAND, some Silt; moist.	**Silty Sand**
	12		SM					Dark greenish gray (5G4/1) fine SAND, some Silt; wet.	**Water Level at 12 ft. bgs.**
	14								
	16		SM				5	Dark greenish gray (5G4/1) to greenish black (5G2/1) fine SAND, some Silt; wet.	**Collected P57SC from 16.0 to 18.0 ft bgs**
	18								
	20		CL				0	Dark greenish gray (5G4/1) to greenish black (5G2/1) Silty CLAY; wet.	**Silty Clay, Collected P57SD from 20.0 to 22.0 ft bgs** **End of Boring at 22 ft. bgs.**
	22								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-58 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG320H0
PROJECT: Ellis Property		**DATE STARTED:** 6/7/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:** 6/7/2007
DRILLING METHOD: Direct Push		**DRILLER:** S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):** N/A
Total Depth (ft): 20.00	**Total Depth (ft):** N/A	**EASTING (ft):** N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):** N/A
Depth to Water (ft): 10	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A	

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; moist.	**Silty Sand**
	2								
	4		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	**Silty Clay**
	6								
	8		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	**Water Level at 10 ft. bgs.**
	10								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-58
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
			SP				<1	Dark greenish gray (5GY4/1) coarse to fine SAND; wet.	**Sand, Collected P58SB from 10.0 to 12.0 ft bgs**
			SP				<1	Brownish gray (5YR4/1) coarse to fine SAND; wet.	
	12		CL				<1	Dark greenish gray (5G4/1) to greenish black (5G2/1) Silty CLAY; moist.	**Silty Clay, Collected P58SC from 14.0 to 16.0 ft bgs**
	14								
	16		SM				<1	Dark greenish gray (5G4/1) to greenish black (5G2/1) fine SAND, some Silt; moist.	**Silty Sand, Collected P58SD from 16.0 to 20.0 ft bgs**
	18								**End of Boring at 20 ft. bgs.**
	20								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-60 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:**	JG320H0
PROJECT: Ellis Property		**DATE STARTED:**	6/5/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:**	6/5/2007
DRILLING METHOD: Direct Push		**DRILLER:**	S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:**	J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):**	N/A
Total Depth (ft): 24.00	**Total Depth (ft):** N/A	**EASTING (ft):**	N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):**	N/A
Depth to Water (ft): 12	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):**	N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SP-SM				<1	Moderate yellowish brown (10YR5/4) coarse to fine SAND, little Silt, little medium to fine Gravel; moist.	**Sand**
	2		SP-SM				<1	Dark yellowish orange (10YR6/6) medium to fine SAND, little Silt, trace fine Gravel; moist.	
	4		CL				<1	Greenish gray (5GY6/1) Silty CLAY; moist.	**Silty Clay**
	6								
	8		CL				<1	Greenish gray (5GY6/1) Silty CLAY; moist.	
	10								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-60
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
									Water Level at 12 ft. bgs.
	12		SM				<1	Greenish gray (5GY6/1) to dark greenish gray (5G4/1) fine SAND, some Silt; moist.	**Silty Sand, Collected P60SB from 12.0 to 14.0 ft bgs**
	14								
	16		CL				<1	Greenish gray (5GY6/1) to dark greenish gray (5G4/1) Silty CLAY; moist.	**Silty Clay, Collected P60SC from 16.0 to 20.0 ft bgs**
	18								
	20		CL				<1	Greenish gray (5GY6/1) to dark greenish gray (5G4/1) Silty CLAY; moist.	**Collected P60SD from 20.0 to 24.0 ft bgs**
	22								
	24								**End of Boring at 24 ft.**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-61 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG320H0
PROJECT: Ellis Property		**DATE STARTED:** 6/6/2007
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:** 6/6/2007
DRILLING METHOD: Direct Push		**DRILLER:** S. Weigand
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J. Lacanlale
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):** N/A
Total Depth (ft): 24.00	**Total Depth (ft):** N/A	**EASTING (ft):** N/A
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):** N/A
Depth to Water (ft): 8	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A	

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SM				<1	Moderate yellowish brown (10YR5/4) medium to fine SAND, some Silt, trace fine Gravel; moist.	**Silty Sand**
	2								
	4		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; moist.	
	6		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	**Silty Clay** **Water Level at 8 ft. bgs.**
	8		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; wet.	**Silty Sand**
	10								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-61
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	12		SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; wet.	**Silty Sand**
			SM				<1	Dark greenish gray (5GY4/1) to Dark greenish gray (5G4/1) fine SAND, some Silt; wet.	
	14								
	16		SM				<1	Dark greenish gray (5GY4/1) to Dark greenish gray (5G4/1) fine SAND, some Silt; wet.	**Collected P61SC and P61SCG from 16.0 to 18.0 ft bgs**
			CL				<1	Dark greenish gray (5GY4/1) to Dark greenish gray (5G4/1) Silty CLAY; wet.	**Silty Clay**
	18								
	20		CL				<1	Dark greenish gray (5GY4/1) to Dark greenish gray (5G4/1) Silty CLAY; moist.	**Collected P61SD from 20.0 to 24.0 ft bgs**
	22								
									End of Boring at 24 ft.
	24								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** P-62 **WELL NO.:** N/A

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG320H0	
PROJECT: Ellis Property		**DATE STARTED:** 6/4/2007	
DRILLING CONTRACTOR: Conetec		**DATE FINISHED:** 6/4/2007	
DRILLING METHOD: Direct Push		**DRILLER:** S. Weigand	
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J. Lacanlale	
Diameter (in): 2	**Completion:** N/A	**NORTHING (ft):** N/A	
Total Depth (ft): 24.00	**Total Depth (ft):** N/A	**EASTING (ft):** N/A	
Sampler: Macrocore	**Screen Length (ft)/Slot (in):** N/A	**GROUND ELEVATION (ft):** N/A	
Depth to Water (ft): 12	**Depth to Water (ft):** N/A	**TOC ELEVATION (ft):** N/A	
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SP				<1	Dark yellowish orange (10YR6/6) medium to fine SAND; moist.	**Sand**
	2								
	4		SP				<1	Dark yellowish orange (10YR6/6) medium to fine SAND; moist.	
			SM				<1	Dark greenish gray (5GY4/1) fine SAND, some Silt; moist.	**Silty Sand**
	6								
	8		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; moist.	**Silty Clay**
	10								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG320H0	**BORING NO.:** P-62
	Page 2 of 2	**WELL NO.:** N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	12		CL				<1	Dark greenish gray (5GY4/1) Silty CLAY; wet.	**Water Level at 12 ft. bgs.**
	14		SM				<1	Light brownish gray (5YR6/1) fine SAND, some Silt; wet.	**Silty Sand, Collected P62SB from 14.0 to 16.0 ft bgs**
	16		SM				<1	Light brownish gray (5YR6/1) fine SAND, some Silt; wet.	
	18		CL				<1	Dark greenish gray (5G4/1) to greenish black (5G2/1) Silty CLAY; wet.	**Silty Clay**
	20		CL				<1	Dark greenish gray (5G4/1) to greenish black (5G2/1) Silty CLAY; wet.	**Collected SB62SC from 20.0 to 22.0 ft bgs**
	22								**End of Boring at 24 ft.**
	24								

ATTACHMENT D
Summary of Lab Analytical Data
(To be provided in Final PDI Report)