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RESULTS OF THE RADIOLOGICAL SURVEY AT KENNEDY PARK, MONEY AND SIDNEY STREETS, LODI, NEW JERSEY (LJ062)

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ABSTRACT

Maywood Chemical Works (MCW) of Maywood, New Jersey, generated process wastes and residues associated with the production and refining of thorium and thorium compounds from monazite ores from 1916 to 1956. MCW supplied rare earth metals and thorium compounds to the Atomic Energy Commission and various other government agencies from the late 1940s to the mid-1950s. Area residents used the sandlike waste from this thorium extraction process mixed with tea and cocoa leaves as mulch in their yards. Some of these contaminated wastes were also eroded from the site into Lodi Brook. At the request of the U.S. Department of Energy (DOE), a group from Oak Ridge National Laboratory conducts investigative radiological surveys of properties in the vicinity of MCW to determine whether a property is contaminated with radioactive residues, principally ^{232}Th, derived from the MCW site. The survey typically includes direct measurement of gamma radiation levels and soil sampling for radionuclide analyses. The survey of this site, Kennedy Park, Money and Sidney Streets, Lodi, New Jersey (LJ062), was conducted during 1986 and 1987.

Results of the survey demonstrated radionuclide concentrations in excess of the DOE Formerly Utilized Sites Remedial Action Program criteria. The radionuclide distributions are typical of the type of material originating from the MCW site.

RESULTS OF THE RADIOLOGICAL SURVEY AT KENNEDY PARK, MONEY AND SIDNEY STREETS, LODI, NEW JERSEY (LJ062)*

INTRODUCTION

From 1916 to 1956, process wastes and residues associated with the production and refining of thorium and thorium compounds from monazite ores were generated by the Maywood Chemical Works (MCW), Maywood, New Jersey. During the latter part of this period, MCW supplied rare earth metals and thorium compounds to various government agencies. In the 1940s and 1950s, MCW produced thorium and lithium, under contract, for the Atomic Energy Commission (AEC). These activities ceased in 1956, and, approximately three years later, the 30-acre real estate was purchased by the Stepan Company. The property is located at 100 Hunter Avenue in a highly developed area in Maywood and Rochelle Park, Bergen County, New Jersey.

During the early years of operation, MCW stored wastes and residues in low-lying areas west of the processing facilities. In the early 1930s, these areas were separated from the rest of the property by the construction of New Jersey State Highway 17. The Stepan property, the interim storage facility, and several vicinity properties have been designated for remedial action by the U.S. Department of Energy (DOE).

The waste produced by the thorium extraction process was a sandlike material containing residual amounts of thorium and its decay products, with smaller quantities of uranium and its decay products. During the years 1928 and 1944 to 1946, area residents used these process wastes mixed with tea and cocoa leaves as mulch in their lawns and gardens. In addition, some of the contaminated wastes were apparently eroded from the site into Lodi Brook and carried downstream.

Lodi Brook is a small stream flowing south from Maywood with its headwaters near the Stepan waste storage site. Approximately 150 ft after passing under State Route 17, the stream has been diverted underground through concrete or steel culverts until it merges with the Saddle River in Lodi, New Jersey. Only a small section near Interstate 80 remains uncovered. From the 1940s to the 1970s when the stream was being diverted underground, its course was altered several times. Some of these changes resulted in the movement of contaminated soil to the surface of a few properties, where it is still in evidence. In other instances, the contaminated soil was covered over or mixed with clean fill, leaving no immediate evidence on the surface. Therefore, properties in question may be

*The survey was performed by members of the Measurement Applications and Development Group of the Health and Safety Research Division at Oak Ridge National Laboratory under U.S. DOE contract DE-AC05-84OR21400.

drilled in search of former stream bed material, even in the absence of surface contamination.

As a result of the Energy and Water Appropriations Act of Fiscal Year 1984, the property discussed in this report and properties in its vicinity contaminated with residues from the former MCW were included as a decontamination research and development project under the DOE Formerly Utilized Sites Remedial Action Program. As part of this project, DOE is conducting radiological surveys in the vicinity of the site to identify properties contaminated with residues derived from the MCW. The principal radionuclide of concern is thorium-232. The radiological surveys discussed in this report are part of that effort and were conducted, at the request of DOE, by members of the Measurement Applications and Development Group of the Oak Ridge National Laboratory.

A radiological survey of the public property at Kennedy Park, Money and Sidney Streets, Lodi, New Jersey, was conducted during 1986 and 1987. The survey and sampling of the ground surface was carried out on November 14-20, 1986, and the follow-up subsurface investigation was performed on June 5, 1987.

SURVEY METHODS

The radiological survey of the property included: (1) a gamma scan of the entire property outdoors, (2) collection of surface and subsurface soil samples, and (3) gamma profiles of auger holes. No indoor survey measurements were performed.

Using a portable gamma scintillation meter, ranges of measurements were recorded for areas of the property surface. If the gamma exposure rates were elevated, a biased soil sample was taken at the point showing the highest gamma radiation level. Systematic soil samples were taken at various locations on the property, irrespective of gamma radiation levels. These survey methods followed the plan outlined in Reference 1.

To define the extent of possible subsurface soil contamination, the auger holes were drilled to depths of approximately 2.7 m. A plastic pipe was placed in each hole, and a NaI scintillation probe was lowered inside the pipe. The probe was encased in a lead shield with a horizontal row of collimating slits on the side. This collimation allows measurement of gamma radiation intensities resulting from contamination within small fractions of the hole depth. Measurements were usually made at 15- or 30-cm intervals. If the gamma readings in the hole were elevated, a soil sample was scraped from the wall of the auger hole at the point showing the highest gamma radiation level. The auger hole loggings were used to select locations where further soil sampling would be useful. A split-spoon sampler was used to collect subsurface samples at known depths. In some auger holes, a combination of split-spoon sampling and side-wall scraping was used to collect samples. A comprehensive description of the survey methods and instrumentation has been presented in another report.[2]

SURVEY RESULTS

Applicable federal guidelines are summarized in Table 1.[3] The normal background radiation levels for the northern New Jersey area are presented in Table 2.[4] These data are provided for comparison with survey results presented in this section. All direct measurement results presented in this report are gross readings; background radiation levels have not been subtracted. Similarly, background concentrations have not been subtracted from radionuclide concentrations measured in environmental samples.

Surface Gamma Radiation Levels

Gamma radiation levels measured during a gamma scan of the property surface are given in Fig. 1. Gamma exposure rates over the major portion of the property ranged from 8-15 μR/h. The basketball court, in the eastern corner of the park, ranged from 10-14 μR/h. The highest measurements found in this corner of the park were 11-24 μR/h and were taken near the brick building adjacent to this ball court at the intersection of two brick walls. The other side of this court measured 8 and 11 μR/h, as indicated in Fig. 1. The dugouts in the two baseball courts gave slightly higher readings than these, but the survey indicated that such readings were probably due to the block walls and brick floors. The highest gamma levels found in the park altogether were 11-36 μR/h, from a strip of ground bordering Money Street on the western corner of the park. This area is indicated in Fig. 1 by crosshatching.

Systematic and Biased Soil Samples

Systematic and biased soil samples were taken from various locations on the property for radionuclide analyses. Locations of the systematic (S) and biased (B) samples are shown in Fig. 2, with results of laboratory analyses provided in Table 3. Concentrations of radium and thorium in the biased samples ranged from 0.71 to 7.8 pCi/g and 2.4 to 91 pCi/g, respectively. All thorium levels at biased sample location B1 were above DOE criteria (Table 1). Radium levels continued to rise with depth in both biased samples, and thorium levels increased at lower depths in sample B2.

Auger Soil Samples

Varying thicknesses of subsurface soil were sampled from depths of 45 to 275 cm in auger holes (A) which were drilled at 2 separate locations indicated in Fig. 2. Auger hole A1 was drilled and logged, in the manner described above, to determine if the location was in the old creek bed. The gamma log of this auger hole indicated an area of possible contamination. The drilling rig was therefore moved one foot west, and the hole redrilled. Samples were taken from the new hole using the split spoon method. Due to the close proximity of the two holes, the second hole was not logged, and both holes were assigned the same hole location and number. The results of analyses of these samples are given in Table 3. Concentrations of ^{226}Ra and ^{232}Th in soil samples from both auger holes ranged from 0.56 to 2.2 and 0.80 to 17 pCi/g, respectively. Radionuclide concentrations in sample A2D (17 pCi/g) were above DOE criteria (Table 1) for thorium; all other values were near or below criteria.

Gamma logging was performed in each of the 2 auger holes to characterize and further define the extent of possible contamination. The logging technique used here is not radionuclide specific. However, logging data, in conjunction with soil analyses data, may be used to estimate regions of elevated radionuclide concentrations in auger holes when compared with background levels for the area. Following a comparison of these data, it appears that any shielded scintillator readings of 1000 counts per minute (cpm) or greater generally indicate the presence of elevated concentrations of ^{226}Ra and/or ^{232}Th. Data from the gamma profiles of the logged auger holes are graphically represented in Fig. 3 and Fig. 4. Readings at depths from 1.5 to 2.1 m were greater than 1000 cpm in auger hole A2, with a maximum reading of 3053 cpm at 1.8 m. Readings in auger hole A1 were above 1000 cpm from 1.5 m down, with a maximum reading of 6701 cpm at 2.4 m.

SIGNIFICANCE OF FINDINGS

Measurements taken at Kennedy Park indicate that the property contained radioactive contamination primarily from the ^{232}Th decay chain. These radionuclide distributions are typical of the type of material originating from the processing operations at the MCW site. The concentration and extent of ^{232}Th on this property was in excess of the applicable DOE criteria (Table 1). This material was found at sample locations B1, A1, and A2 shown in Fig. 2. Based on the results of this radiological assessment, it is recommended that this site be considered for inclusion in the DOE remedial action program.

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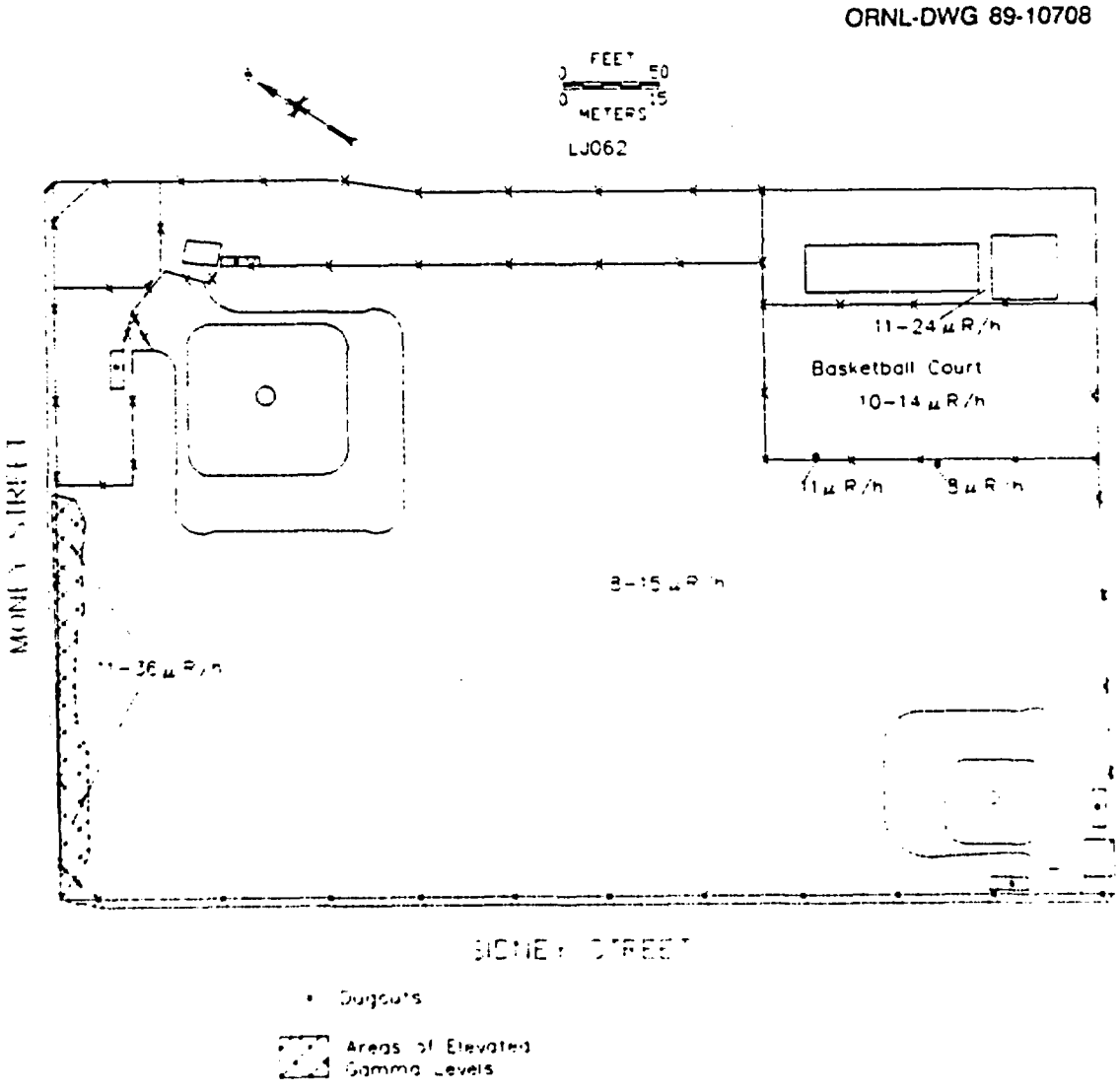

Fig. 1. Gamma radiation levels (μR/h) measured on the surface at Kennedy Park, Money and Sidney Streets, Lodi, New Jersey (LJ062).

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1.4 CONCLUSIONS

Evaluation of data collected, analyses performed, and historical documentation reviewed indicates the presence of radiological contamination on the property located at John F. Kennedy Park. This contamination is both surface and subsurface contamination. Surface contamination is indicated along the property boundary/fenceline adjacent to the Money Street boundary of the park. There is a small, isolated area of marginal surface contamination in front of the dugout on the first-base line of the playing field in the northeast corner as well. The subsurface contamination ranges from a depth of 15.2 cm (6.0 in.) to 2.28 m (7.5 ft). In addition, the contamination appears to extend beneath the baseball field and adjacent dugouts in the northeast corner of the property. There is a high probability the contamination extends beneath the streets (Kennedy Drive, Money Street, and Sidney Street) that border the property. The total affected area is estimated to be approximately 25 percent of the property. These conclusions are supported by documentation that establishes the presence of the former channel of Lodi Brook in this area. This channel is the suspected transport mechanism for the radiological contamination.

2.0 SITE HISTORY

The Maywood Chemical Works was founded in 1895. The company began processing thorium from monazite sand in 1916 (during World War I) for use in manufacturing gas mantles for various lighting devices. Process wastes from manufacturing operations were pumped to two areas surrounded by earthen dikes on property west of the plant. Subsequently, some of the contaminated wastes migrated onto adjacent and vicinity properties.

In 1928 and again between 1944 and 1946, some of the residues from the processing operations were moved from the company's property and used as mulch and fill in nearby low-lying areas. The fill material consisted of tea and coca leaves mixed with other material resulting from operations at the plant. Some fill material apparently contained thorium process wastes (Ref. 3).

Uncertainty exists as to how the properties in Lodi were contaminated. According to an area resident, fill from an unknown source was brought to Lodi and spread over large portions of the previously low-lying and swampy area. For several reasons, however, a more plausible explanation is that the contamination migrated along a drainage ditch originating on the Maywood Chemical Works property. First, it can be seen from photographs and tax maps of the area that the course of a previously existing stream known as Lodi Brook, which originated at the former Maywood Chemical Works, generally coincides with the path of contamination in Lodi. The brook was subsequently replaced by a storm drain system as the area was developed. Second, samples taken from Lodi properties indicate elevated concentrations of a series of elements known as rare earths. Rare earth elements are typically found in monazite sands, which also contain

thorium. This type of sand was feedstock at the Maywood Chemical Works, and elevated levels are known to exist in the by-product of the extraction process. Third, the ratio of thorium to other radionuclides found on these Lodi properties is comparable to the ratio found in contaminated material on other properties in Lodi (Ref. 4). And finally, long-time residents of Lodi recalled chemical odors in and around the brook in Lodi and steam rising off the water. These observations suggest that discharges of contaminants occurred upstream.

The Stepan Chemical Company (now called the Stepan Company) purchased Maywood Chemical Works in 1959. The Stepan Company itself has never been involved in the manufacture or processing of any radioactive materials (Ref. 5).

2.1 PREVIOUS RADIOLOGICAL SURVEYS

Numerous surveys of the Maywood site and its vicinity properties have been conducted. Among the past surveys, three that are pertinent to this vicinity property are detailed in this section.

January 1981--The Nuclear Regulatory Commission directed that a survey be conducted of the Stepan Company property and its vicinity properties in January 1981. Using the Stepan Company plant as the center, a 10.3-km^2 (4-mi^2) aerial survey was conducted by the EG&G Energy Measurements Group, which identified anomalous concentrations of thorium-232 to the north and south of the Stepan Company property. The Lodi vicinity properties were included in this survey (Ref. 6).

June 1984--In June 1984, Oak Ridge National Laboratory (ORNL) conducted a "drive-by" survey of Lodi using its

"scanning van." Although not comprehensive, the survey indicated areas requiring further investigation (Ref. 7).

September 1986--At the request of DOE, ORNL conducted radiological surveys of the vicinity properties in Lodi in September 1986 to determine which properties contained radioactive contamination in excess of DOE guidelines and would, therefore, require remedial action (Ref. 8).

2.2 REMEDIAL ACTION GUIDELINES

Table 2-1 summarizes the DOE guidelines for residual contamination. The thorium-232 and radium-226 limits listed in Table 2-1 will be used to determine the extent of remedial action required at the vicinity properties. DOE developed these guidelines to be consistent with the guidelines established by the U.S. Environmental Protection Agency (EPA) for the Uranium Mill Tailings Remedial Action Program.

TABLE 2-1
SUMMARY OF RESIDUAL CONTAMINATION GUIDELINES

BASIC DOSE LIMITS

The basic limit for the annual radiation dose received by an individual member of the general public is 100 mrem/yr.

SOIL GUIDELINES

Radionuclide	Soil Concentration (pCi/g) Above Background[a,b,c]
Radium-226 Radium-228 Thorium-230 Thorium-232	5 pCi/g when averaged over the first 15 cm of soil below the surface; 15 pCi/g when averaged over any 15-cm-thick soil layer below the surface layer.
Other Radionuclides	Soil guidelines will be calculated on a site-specific basis using the DOE manual developed for this use.

STRUCTURE GUIDELINES

Airborne Radon Decay Products

Generic guidelines for concentrations of airborne radon decay products shall apply to existing occupied or habitable structures on private property that has no radiological restrictions on its use; structures that will be demolished or buried are excluded. The applicable generic guideline (40 CFR 192) is: In any occupied or habitable building, the objective of remedial action shall be, and reasonable effort shall be made to achieve, an annual average (or equivalent) radon decay product concentration (including background) not to exceed 0.02 WL[d]. In any case, the radon decay product concentration (including background) shall not exceed 0.03 WL. Remedial actions are not required in order to comply with this guideline when there is reasonable assurance that residual radioactive materials are not the cause.

External Gamma Radiation

The average level of gamma radiation inside a building or habitable structure on a site that has no radiological restrictions on its use shall not exceed the background level by more than 20 μR/h.

Indoor/Outdoor Structure Surface Contamination

Radionuclide[f]	Allowable Surface Residual Contamination[e] (dpm/100 cm²) Average[g,h]	Maximum[h,i]	Removable[h,i]
Transuranics, Ra-226, Ra-228, Th-230, Th-228 Pa-231, Ac-227, I-125, I-129	100	300	20
Th-Natural, Th-232, Sr-90, Ra-223, Ra-224 U-232, I-126, I-131, I-133	1,000	3,000	200
U-Natural, U-235, U-238, and associated decay products	5,000 α	15,000 α	1,000 α
Beta-gamma emitters (radionuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above	5,000 β - γ	15,000 β - γ	1,000 β - γ

TABLE 2-1
(CONTINUED)

[a]These guidelines take into account ingrowth of radium-226 from thorium-230 and of radium-228 from thorium-232, and assume secular equilibrium. If either thorium-230 and radium-226 or thorium-232 and radium-228 are both present, not in secular equilibrium, the guidelines apply to the higher concentration. If other mixtures of radionuclides occur, the concentrations of individual radionuclides shall be reduced so that 1) the dose for the mixtures will not exceed the basic dose limit, or 2) the sum of ratios of the soil concentration of each radionuclide to the allowable limit for that radionuclide will not exceed 1 ("unity").

[b]These guidelines represent allowable residual concentrations above background averaged across any 15-cm-thick layer to any depth and over any contiguous 100-m^2 surface area.

[c]Localized concentrations in excess of these limits are allowable, provided that the average concentration over a 100-m^2 area does not exceed these limits. In addition, every reasonable effort shall be made to remove any source of radionuclide that exceeds 30 times the appropriate soil limit, regardless of the average concentration in the soil.

[d]A working level (WL) is any combination of short-lived radon decay products in 1 liter of air that will result in the ultimate emission of 1.3 x 105 MeV of potential alpha energy.

[e]As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

[f]Where surface contamination by both alpha- and beta-gamma-emitting radionuclides exists, the limits established for alpha- and beta-gamma-emitting radionuclides should apply independently.

[g]Measurements of average contamination should not be averaged over more than 1 m^2. For objects of less surface area, the average shall be derived for each such object.

[h]The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/h and 1.0 mrad/h, respectively, at 1 cm.

[i]The maximum contamination level applies to an area of not more than 100 cm^2.

[j]The amount of removable radioactive material per 100 cm^2 of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and measuring the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of surface area less than 100 cm^2 is determined, the activity per unit area should be based on the actual area and the entire surface should be wiped. The numbers in this column are maximum amounts.

3.0 HEALTH AND SAFETY PLAN

BNI is responsible for protecting the health of personnel assigned to work at the site. As such, all subcontractors and their personnel were required to comply with the provisions of BNI health and safety requirements and as directed by the on-site BNI Health and Safety Officer.

3.1 SUBCONTRACTOR TRAINING

Before the start of work, all subcontractor personnel attended an orientation session presented by the BNI Health and Safety Officer to explain the nature of the material to be encountered in the work and the personnel monitoring and safety measures that are required.

3.2 SAFETY REQUIREMENTS

Subcontractor personnel complied with the following BNI requirements:

- Bioassay--Subcontractor personnel submitted bioassay samples before or at the beginning of on-site activity, upon completion of the activity, and periodically during site activities as requested by BNI.
- Protective Clothing/Equipment--Subcontractor personnel were required to wear the protective clothing/equipment specified in the subcontract or as directed by the BNI Health and Safety Officer.
- Dosimetry--Subcontractor personnel were required to wear and return daily the dosimeters and monitors issued by BNI.
- Controlled Area Access/Egress--Subcontractor personnel and equipment entering areas where access and egress were controlled for radiation and/or chemical safety purposes were surveyed by the BNI Health and Safety Officer (or personnel representing BNI) for contamination before leaving those areas.

- Medical Surveillance--Upon written direction from BNI, subcontractor personnel who work in areas where hazardous chemicals might exist were given a baseline and periodic health assessment defined in BNI's Medical Surveillance Program.

Radiation and/or chemical safety surveillance of all activities related to the scope of work was under the direct supervision of personnel representing BNI.

Health and safety-related requirements for all activities involving exposure to radiation, radioactive material, chemicals, and/or chemically contaminated materials and other associated industrial safety hazards are generated in compliance with applicable regulatory requirements and industry-wide standards. Copies of these requirements are located at the BNI project office for use by project personnel.

4.0 CHARACTERIZATION PROCEDURES

A master grid was established by the surveyor. BNI's radiological support subcontractor, Thermo Analytical/Eberline (TMA/E), established a grid on individual properties. The size of the grid blocks was adjusted to characterize each property adequately. The grid origin allows the grid to be reestablished during remedial action and is correlated with the New Jersey state grid system. All data correspond to coordinates on the characterization grid. The grid with the east and north coordinates is shown on all figures included in Sections 4.0 and 5.0 of this report.

4.1 FIELD RADIOLOGICAL CHARACTERIZATION

This section provides a description of the instrumentation and methodologies used to obtain exterior surface and subsurface measurements during radiological characterization of this property.

4.1.1 Measurements Taken and Methods Used

An initial walkover survey was performed using an unshielded gamma scintillation detector [5.0- by 5.0-cm (2- by 2-in.) thallium-activated sodium iodide probe] to identify areas of elevated radionuclide activity. Near-surface gamma measurements taken using a cone-shielded gamma scintillation detector were also used to determine areas of surface contamination. The shielded detector ensured that the majority of the radiation detected by the instrument originated from the ground directly beneath the unit. Shielding against lateral gamma flux, or shine, from nearby areas of contamination minimized potential sources of error in the measurements. The measurements were taken 30.4 cm (12 in.) above the ground at the intersections of

3.0-m (10-ft) grid lines. The shielded detector was calibrated at the Technical Measurements Center (TMC) in Grand Junction, Colorado, to provide a correlation of counts per minute (cpm) to picocuries per gram (pCi/g). This calibration demonstrated that approximately 11,000 cpm corresponds to the DOE guideline of 5 pCi/g plus local average background of 1 pCi/g for thorium-232 in surface soils (Ref. 9).

A subsurface investigation was conducted to determine the depth to which the previously identified surface contamination extended and to locate subsurface contamination where there was no surface manifestation. The subsurface characterization consisted of drilling 68 boreholes (Figure 4-1), using either a 7.6-cm- (3-in.-) or 15.2-cm- (6-in.-) diameter auger bit, and gamma logging them. The boreholes were drilled to depths determined in the field by the radiological and geological support representatives.

The downhole gamma logging technique was used because the procedure can be accomplished in less time than collecting soil samples, and the need for analyzing these samples in a laboratory is eliminated. A 5.0- by 5.0-cm (2- by 2-in.) sodium iodide gamma scintillation detector was used to perform the downhole logging. The instrument was calibrated at TMC where it was determined that a count rate of approximately 40,000 cpm corresponds to the 15-pCi/g subsurface contamination guideline for thorium-232. This relationship has also been corroborated by results from previous characterizations where thorium-232 was found (Ref. 9).

Gamma radiation measurements were taken at 15.2-cm (6-in.) vertical intervals to determine the depth and concentration

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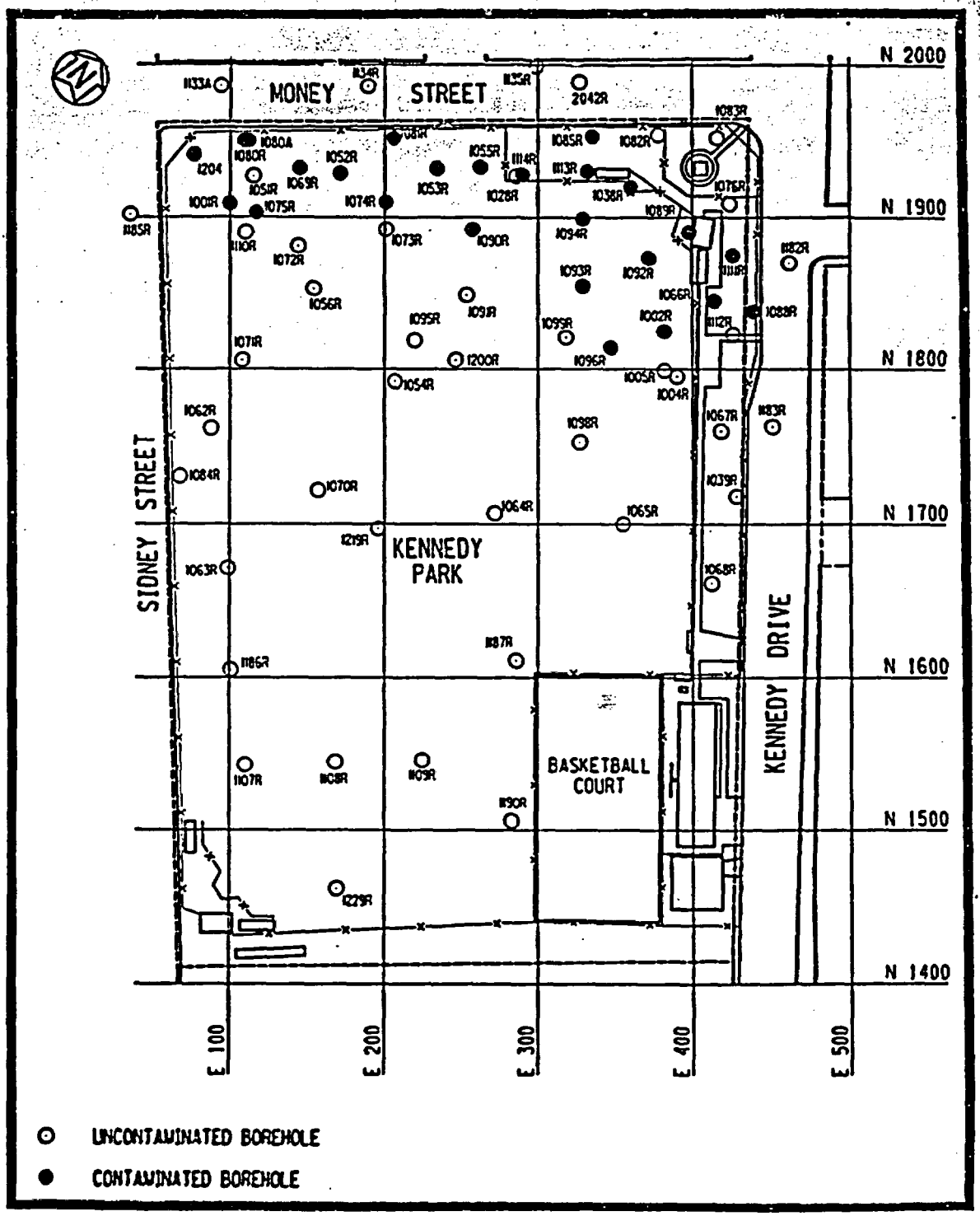

FIGURE 4-1 BOREHOLE LOCATIONS AT KENNEDY PARK

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of the contamination. The gamma-logging data were reviewed to identify trends, whether or not concentrations exceeded the guidelines.

4.1.2 Sample Collection and Analysis

To identify surface areas where the level of contamination exceeded the DOE guideline of 5 pCi/g for thorium-232, areas with measurements of more than 11,000 cpm were plotted. Using these data as well as data from previous surveys (Refs. 5, 6, 7, and 8), the locations of biased surface soil samples were selected to better define the limits of contamination. Surface soil samples were taken at 19 locations (Figure 4-2) and analyzed for thorium-232, uranium-238, and radium-226. Each sample was dried, pulverized, and counted for 10 min using an intrinsic germanium detector housed in a lead counting cave lined with cadmium and copper. The pulse height distribution was sorted using a computer-based, multichannel analyzer. Radionuclide concentrations were determined by comparing the gamma spectrum of each sample with the spectrum of a certified counting standard for the radionuclide of interest.

Subsurface soil samples were collected from 67 locations (Figure 4-2) using a 7.6-cm (3.0-in.) outside diameter (O.D.) split-spoon sampler mounted on a tripod or attached to a truck-mounted auger stem. The subsurface soil samples were analyzed for radium-226, uranium-238, and thorium-232 in the same manner as the surface soil samples.

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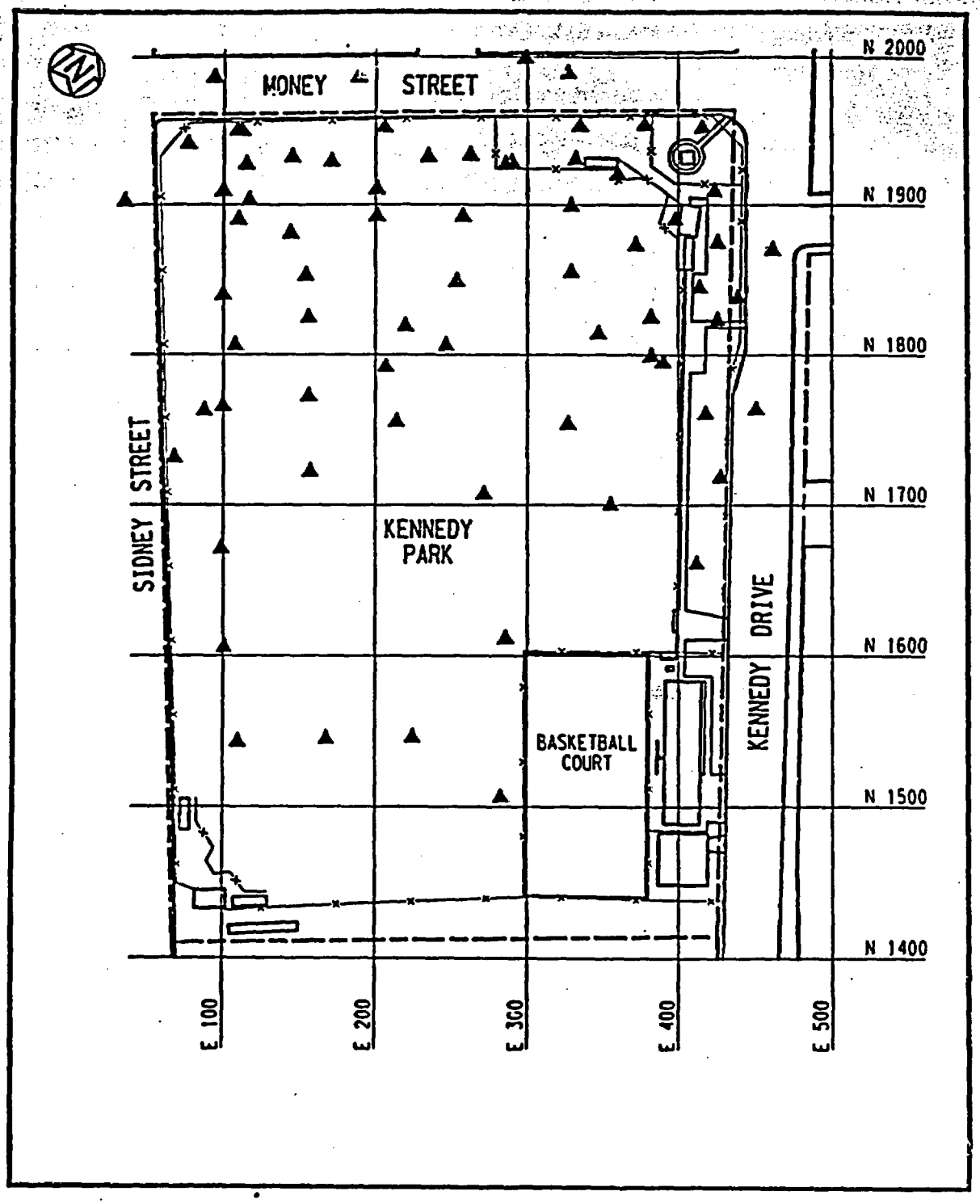

FIGURE 4-2 SURFACE AND SUBSURFACE SOIL SAMPLING LOCATIONS AT KENNEDY PARK

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4.2 BUILDING RADIOLOGICAL CHARACTERIZATION

Restricted access and scheduling conflicts prohibited indoor measurements from being obtained; therefore, this element of the radiological characterization activities was not conducted.

Exterior gamma exposure rate measurements were made at six locations along the northwest property grid system. To obtain these measurements, either a 5.0- by 5.0-cm (2- by 2-in.) thallium-activated sodium iodide gamma scintillation detector designed to detect gamma radiation only or a pressurized ionization chamber (PIC) was used. Measurement locations are shown in Figure 4-3. The PIC instrument has a response to gamma radiation that is proportional to exposure in roentgens. A conversion factor for gamma scintillation to the PIC was established through a correlation of these two measurements at four locations in the vicinity of the property. The unshielded gamma scintillation detector readings were then used to estimate gamma exposure rates for each location. These measurements were taken 1 m (3 ft) above the ground. The locations were determined to be representative of the entire property.

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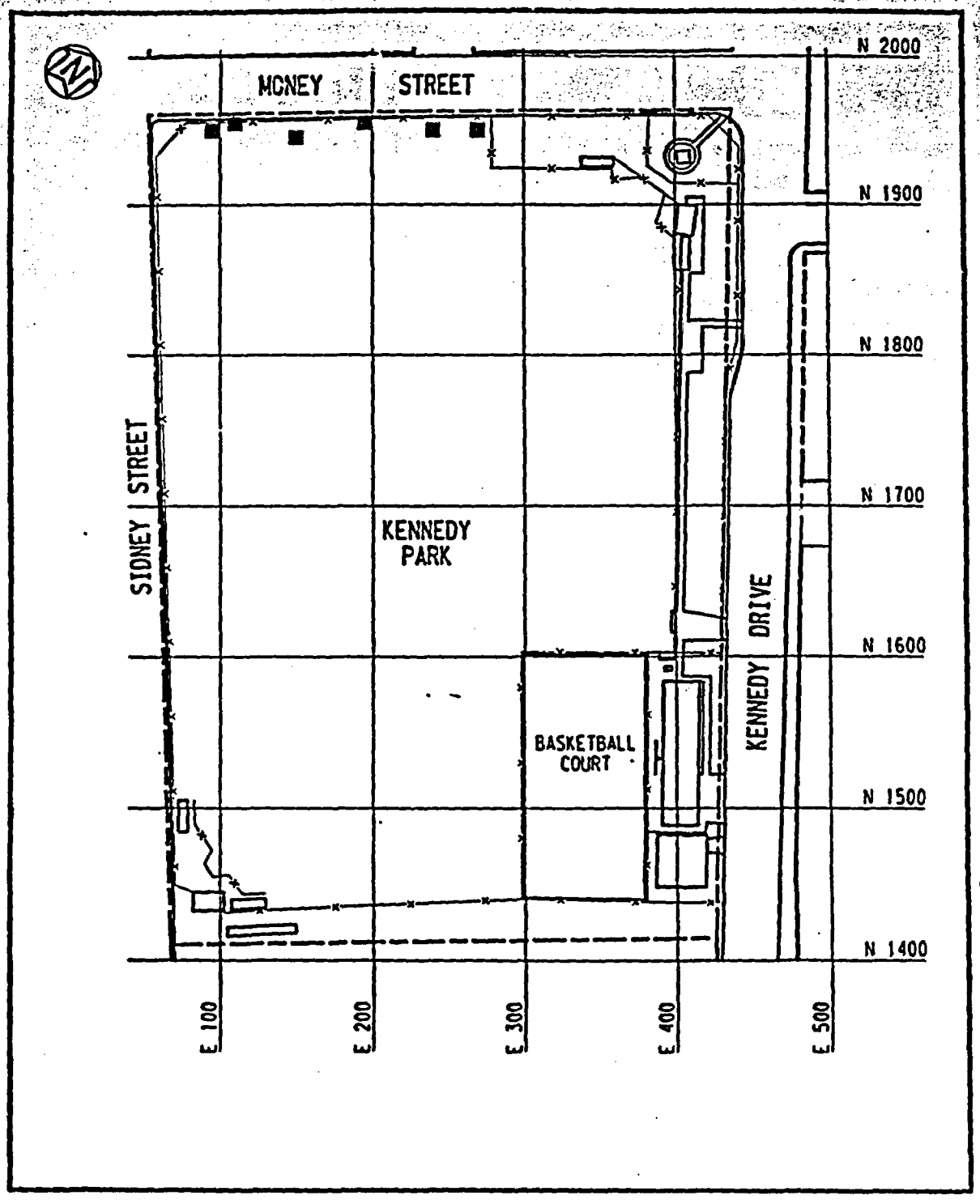

FIGURE 4-3 GAMMA EXPOSURE RATE MEASUREMENT LOCATIONS AT KENNEDY PARK

5.0 CHARACTERIZATION RESULTS

Radiological characterization results are presented in this section. The data included represent exterior surface and subsurface radiation measurements and interior radiation measurements.

5.1 FIELD RADIOLOGICAL CHARACTERIZATION

Near-surface gamma radiation measurements on the property ranged from 7,000 cpm to approximately 23,000 cpm. The average background level for this area is 5,000 cpm. A measurement of 11,000 cpm is approximately equal to the DOE guideline for thorium-232 of 5 pCi/g above background for surface soil contamination. Using this correlation, the near-surface gamma measurements were used to determine the extent of surface contamination and the basis for selecting the locations of soil samples. Areas of surface contamination are shown in Figure 5-1.

Surface soil samples [depths from 0.0 to 15.2 cm (6.0 in.)] were taken at 14 locations on the property and six locations in the streets that border the property (Figure 4-2). These samples were analyzed for thorium-232, uranium-238, and radium-226. The concentrations in these samples ranged from less than 2.0 to less than 7.7 pCi/g for uranium-238, from less than 0.8 to 11.6 pCi/g for thorium-232, and from less than 0.5 to less than 2.3 pCi/g for radium-226. Analytical results for surface soils are provided in Table 5-1; these data showed that concentrations of thorium-232 exceeded DOE guidelines (5 pCi/g plus background of 1 pCi/g for surface soils) with a maximum concentration of 11.6 pCi/g. Use of the "less than" (<) notation in reporting results indicates that the radionuclide was not present in concentrations that are quantitative with the instruments and techniques used.

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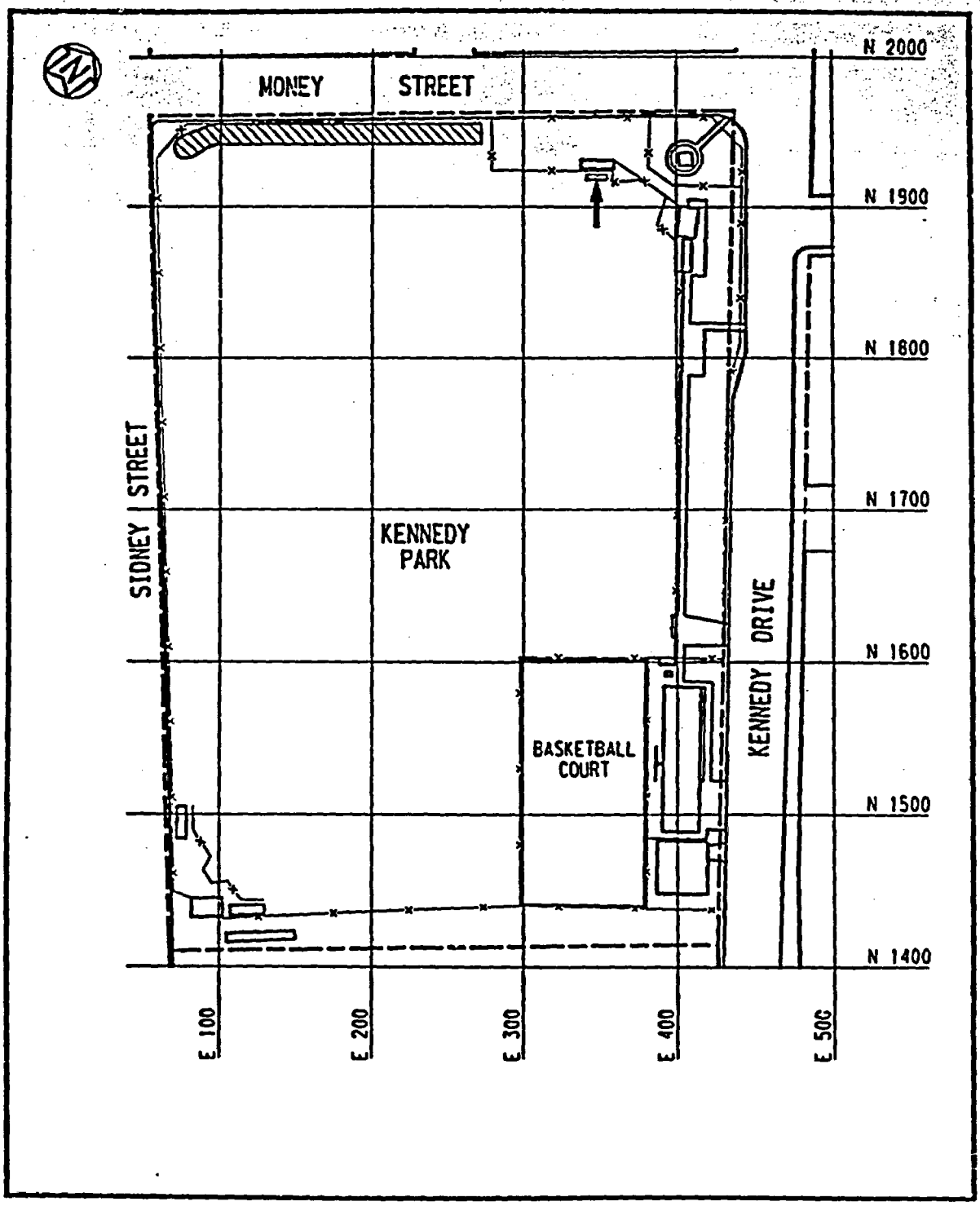

FIGURE 5-1 AREAS OF SURFACE CONTAMINATION AT KENNEDY PARK

K3EN063.DOI

The "less than" value represents the lower bound of the quantitative capacity of the instrument and technique used. The "less than" value is based on various factors, including the volume, size, and weight of the sample; the type of detector used; the counting time; and the background count rate. The actual concentration of the radionuclide is less than the value indicated. In addition, since radioactive decay is a random process, a correlation between the rate of disintegration and a given radionuclide concentration cannot be precisely established. For this reason, the exact concentration of the radionuclide cannot be determined. As such, each value that can be quantitatively determined has an associated uncertainty term (±), which represents the amount by which the actual concentration can be expected to differ from the value given in the table. The uncertainty term has an associated confidence level of 95 percent.

Thorium-232, the primary contaminant at the site, is the radionuclide most likely to exceed a specific DOE guideline in soil. Parameters for soil sample analysis were selected to ensure that the thorium-232 would be detected and measured at concentrations well below the lower guideline value of 5 pCi/g in excess of background level. Radionuclides of the uranium series, specifically uranium-238 and radium-226, are also potential contaminants but at lower concentrations than thorium-232. Therefore, these radionuclides (considered secondary contaminants) would not be present in concentrations in excess of guidelines unless thorium-232 was also present in concentrations in excess of its guideline level. Parameters selected for the thorium-232 analyses also provide detection sensitivities for uranium-238 and radium-226 that demonstrate that concentrations of these radionuclides are below guidelines. However, because of the relatively low gamma photon abundance of uranium-238, many of the uranium-238 concentrations were below the detection

sensitivity of the analytical procedure; these concentrations are reported in the data tables as "less than" values. To obtain more sensitive readings for the uranium-238 radionuclide with these analytical methods, much longer instrument counting times would be required than were necessary for analysis of thorium-232, the primary contaminant.

Analytical results for subsurface soil samples are given in Table 5-1, and gamma logging data are given in Table 5-2. The results in Table 5-2 showed a range from 5,000 cpm to 373,000 cpm. A measurement of 40,000 cpm is approximately equal to the DOE guideline for subsurface contamination of 15 pCi/g. Analyses of subsurface soil samples indicated uranium-238 concentrations ranging from less than 0.7 to less than 24.0 pCi/g, thorium-232 concentrations ranging from less than 0.4 to 93.1 pCi/g, and radium-226 concentrations ranging from less than 0.3 to 5.3 pCi/g.

On the basis of near-surface gamma radiation measurements, surface and subsurface soil sample analyses, and downhole gamma logging, contamination on this property is believed to consist primarily of subsurface contamination at depths ranging from 15.2 cm (6.0 in.) to 2.28 m (7.5 ft). The areas of subsurface contamination are shown in Figure 5-2. The subsurface contamination appears to extend beneath the baseball field and adjacent dugouts in the northeast corner of the property. There is a high probability the contamination extends beneath the streets (Kennedy Drive, Money Street, and Sidney Street) that border the property.

It is apparent from review of historical documentation (e.g., aerial photographs of the area, interviews with local residents, and previous radiological surveys) that the

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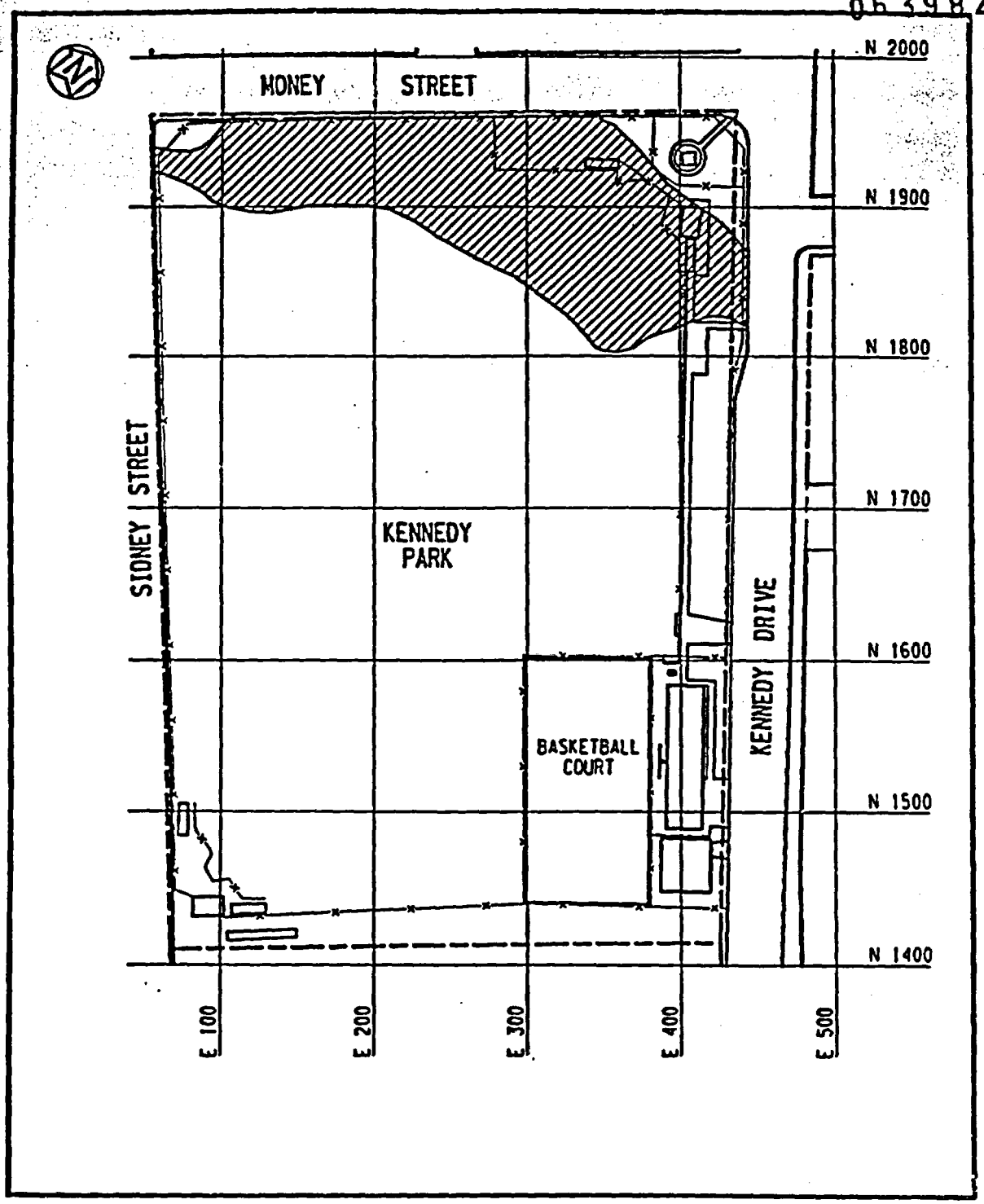

FIGURE 5-2 AREAS OF SUBSURFACE CONTAMINATION AT KENNEDY PARK

K3BMC65.DCN

subsurface contamination on this property lies along the former channel of Lodi Brook and its associated floodplain.

The contamination on this property is similar to contamination found on municipal and commercial properties in close proximity to this property. It has been established that the Lodi Brook channel through these neighboring properties once occupied locations connecting to those where stream sediments were found at John F. Kennedy Park. Thus, the elevated gamma readings shown on gamma logs from boreholes drilled on this property serve as further indication of the suspected mechanism of transport for radiological contamination (i.e., stream deposition from Lodi Brook).

The vertical and horizontal limits of contamination as determined by this characterization effort are being evaluated to determine the volume of contaminated material that will require remedial action. To develop this estimate, BNI will consider the location of the contamination, construction techniques, and safety procedures.

5.2 BUILDING RADIOLOGICAL CHARACTERIZATION

No indoor measurements were obtained because of restricted access to the buildings and scheduling conflicts. Exterior gamma radiation exposure rate measurements ranged from 5 to 22 μR/h, including background. These results can be found in Table 5-3. Because the contamination is restricted to the north-northeast edge of the park, it is unlikely that prolonged exposures will occur. Assuming an individual spends 10 hours per week for 50 weeks per year (500 hours or 2 hours per day for 5 days per week) at the park in the contaminated area, the average exposure rate of 15 μR/h would result in a yearly dose of 3 mrem above background (after subtracting average

background of 9 μR/h) (Ref. 10). The DOE guideline is 100 mrem/yr above background.

Based on the above information, the exposure rates and doses at this property are within DOE guidelines. Further, it should be emphasized that natural background exposure rates vary widely across the United States and are often significantly higher than average background for this area.

TABLE 5-1

SURFACE AND SUBSURFACE RADIONUCLIDE CONCENTPATIONS IN SOIL

FOR KENNEDY PARK

Coordinates[a] East	Coordinates[a] North	Depth (ft)	Concentration (pCi/g ± 2 sigma) Uranium-238	Radium-226	Thorium-232
36	1902	0.0 - 0.5	< 5.7	< 1.1	< 1.6
36	1902	0.0 - 1.0	< 6.9	< 1.3	< 1.9
36	1902	4.0 - 6.0	< 3.3	< 0.5	< 0.9
36	1902	8.0 - 9.0	< 5.4	< 0.9	< 1.4
36	1902	9.0 - 10.0	< 3.5	< 0.6	< 1.1
68	1731	0.0 - 0.5	< 2.8	< 0.6	< 1.0
68	1731	0.0 - 1.0	< 3.2	< 0.7	< 1.2
68	1731	3.0 - 4.0	< 1.4	< 0.3	< 0.5
68	1731	4.0 - 4.8	< 2.6	< 0.5	< 0.8
68	1731	4.8 - 5.8	< 1.5	< 0.4	< 0.6
68	1731	5.8 - 6.8	< 2.4	< 0.6	< 0.6
68	1731	6.8 - 7.8	< 1.5	< 0.3	< 0.5
68	1731	7.8 - 8.8	< 1.5	< 0.4	< 0.6
68	1731	8.8 - 9.8	< 2.1	< 0.5	< 0.8
68	1731	9.8 - 10.8	< 1.5	< 0.4	< 0.5
68	1731	10.8 - 11.8	< 2.2	< 0.6	< 0.8
68	1731	11.8 - 12.8	< 1.7	< 0.5	< 0.5
68	1731	12.8 - 13.8	< 2.3	< 0.7	< 0.8
68	1731	13.8 - 14.8	< 1.4	< 0.3	< 0.6
68	1731	14.8 - 15.8	< 2.3	< 0.6	< 0.8
68	1731	15.8 - 16.8	< 2.0	< 0.5	< 0.5
68	1731	16.8 - 18.8	< 1.8	< 0.4	< 0.7
77	1941	0.0 - 0.5	< 6.9	< 1.3	6.7 ± 1.4
77	1941	0.0 - 1.0	< 5.2	< 1.1	< 1.8
77	1941	1.0 - 2.0	< 3.8	< 0.7	< 1.5

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TABLE 5-1

(continued)

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Coordinates[a] East	Coordinates[a] North	Depth (ft)	Concentration (pCi/g ± 2 sigma) Uranium-238	Radium-226	Thorium-232
77	1941	2.0 - 3.0	< 7.6	< 1.2	< 3.0
77	1941	3.0 - 4.0	< 9.5	< 1.5	21.3 ± 0.1
77	1941	4.0 - 5.0	< 7.3	< 1.2	15.5 ± 1.5
77	1941	6.0 - 7.0	< 6.0	< 0.9	< 2.6
77	1941	7.0 - 9.0	< 4.1	< 1.0	< 1.4
88	1762	0.0 - 2.0	< 3.3	< 0.6	< 1.2
88	1762	6.0 - 8.0	< 3.1	< 0.8	< 1.0
88	1762	8.0 - 9.0	< 2.1	< 0.5	< 0.9
88	1762	9.0 - 10.0	< 2.7	< 0.7	< 1.1
88	1762	10.0 - 11.0	< 2.0	< 0.4	< 0.8
88	1762	11.0 - 12.0	< 1.8	< 0.5	< 0.9
88	1762	12.0 - 13.0	< 3.2	< 0.8	< 1.1
88	1762	13.0 - 14.0	< 1.8	< 0.4	< 0.9
94	1986	0.0 - 0.5	< 3.7	< 1.0	< 1.9
94	1986	0.0 - 2.0	< 1.4	< 0.6	< 0.9
94	1986	4.0 - 5.0	< 2.0	< 0.7	< 0.9
94	1986	7.0 - 8.0	< 3.1	< 0.8	< 1.3
94	1986	8.0 - 10.0	< 3.1	< 0.8	< 1.1
99	1671	0.0 - 1.0	< 6.2	< 1.4	< 1.9
99	1671	5.0 - 6.0	< 3.0	< 0.5	< 1.0
99	1671	6.0 - 7.0	< 1.6	< 0.5	< 0.5
99	1671	7.0 - 8.0	< 1.8	< 0.5	< 0.5
99	1671	8.0 - 9.0	< 2.3	< 0.6	< 0.7
99	1671	9.0 - 10.0	< 2.0	< 0.5	< 0.8
99	1671	10.0 - 11.0	<15.4	< 5.3	< 2.2
99	1671	11.0 - 12.0	< 3.9	< 1.0	< 1.3

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TABLE 5-1

(continued)

Coordinates[a] East	Coordinates[a] North	Depth (ft)	Concentration (pCi/g ± 2 sigma) Uranium-238	Radium-226	Thorium-232
100	1765	0.0 - 2.0	< 4.4	< 1.0	< 1.9
100	1765	5.0 - 6.0	< 2.9	< 0.8	< 1.2
100	1765	9.0 - 10.0	< 2.8	< 0.7	< 1.2
100	1840	0.0 - 2.0	< 3.7	< 1.2	< 1.8
100	1840	4.0 - 5.0	< 5.3	< 1.4	< 2.1
100	1840	9.0 - 10.0	< 3.7	< 0.9	< 1.5
100	1909	0.0 - 0.5	< 4.2	< 0.6	< 1.2
100	1909	0.5 - 1.0	< 5.1	< 0.5	< 1.0
100	1909	1.0 - 2.0	< 4.0	< 0.7	< 1.0
100	1909	2.0 - 3.0	< 6.8	< 0.9	11.0 ± 0.8
100	1909	3.0 - 4.0	< 3.8	< 0.6	2.8 ± 0.3
100	1909	4.0 - 5.0	< 7.5	< 1.1	8.8 ± 0.7
100	1909	5.0 - 6.0	< 4.4	< 0.8	< 1.2
100	1909	6.0 - 7.0	< 3.6	< 0.8	4.1 ± 0.5
100	1909	7.0 - 8.0	< 3.3	< 0.6	< 0.9
100	1909	8.0 - 10.0	< 0.9	< 0.3	< 0.6
100	1909	10.0 - 12.0	< 1.1	< 0.3	< 0.4
101	1605	0.0 - 0.5	< 3.6	< 0.6	< 1.0
101	1605	0.0 - 1.0	< 5.8	< 1.1	< 1.7
101	1605	4.0 - 5.0	< 1.5	< 0.4	< 0.5
101	1605	6.0 - 8.0	< 1.5	< 0.4	< 0.6
101	1605	8.0 - 9.0	< 2.6	< 0.6	< 1.1
101	1605	9.0 - 10.0	< 3.1	< 0.8	< 1.1

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TABLE 5-1

(continued)

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Coordinates[a] East	Coordinates[a] North	Depth (ft)	Concentration (pCi/g ± 2 sigma) Uranium-238	Radium-226	Thorium-232
104	1883	0.0 - 2.0	< 3.2	< 0.8	< 1.6
104	1883	4.0 - 5.0	< 3.9	< 0.9	< 1.4
104	1883	8.0 - 9.0	< 4.0	< 0.8	< 1.4
108	1806	0.0 - 2.0	< 5.3	3.6 ± 0.4	< 2.1
108	1806	4.0 - 6.0	< 2.7	< 0.6	< 0.8
108	1806	6.0 - 8.0	< 3.1	< 0.8	< 1.2
108	1806	8.0 - 10.0	< 2.9	< 0.6	< 1.1
108	1806	10.0 - 12.0	< 2.4	< 0.5	< 0.7
109	1950	0.0 - 0.5	< 5.9	< 2.3	11.6 ± 0.8
109	1950	0.0 - 1.0	< 9.9	< 1.4	57.6 ± 2.1
109	1950	1.0 - 2.0	<12.7	< 1.9	91.5 ± 2.1
109	1950	2.0 - 3.0	<10.4	< 1.6	72.0 ± 33.0
109	1950	3.0 - 4.0	< 5.7	< 1.3	12.1 ± 0.7
109	1950	6.7 - 7.4	< 4.3	< 1.1	< 1.7
110	1543	0.0 - 1.0	< 4.4	< 1.2	< 1.7
110	1543	4.0 - 5.0	< 6.3	< 1.6	< 2.0
110	1543	7.0 - 8.0	< 2.6	< 0.7	< 0.7
110	1543	8.0 - 10.0	< 1.8	< 0.4	< 0.9
114	1928	0.0 - 2.0	< 2.5	< 0.9	< 1.0
114	1928	5.0 - 6.0	< 2.4	< 0.5	< 0.9
114	1928	10.0 - 11.0	< 2.5	< 0.6	< 1.0
114	1928	12.0 - 13.0	< 3.4	< 0.8	< 1.3
114	1928	13.0 - 13.5	< 3.2	< 0.8	< 1.1

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TABLE 5-1

(continued)

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Coordinates[a] East	Coordinates[a] North	Depth (ft)	Concentration (pCi/g ± 2 sigma) Uranium-238	Radium-226	Thorium-232
117	1903	0.0 - 2.0	< 3.0	< 0.8	< 1.0
117	1903	2.0 - 3.0	< 3.0	< 0.7	< 1.2
117	1903	3.0 - 4.0	< 7.1	< 1.1	21.2 ± 1.3
117	1903	4.0 - 5.0	< 8.0	< 1.7	< 4.1
117	1903	6.0 - 8.0	< 2.3	< 0.5	< 1.0
144	1881	0.0 - 2.0	< 3.6	< 0.8	< 1.0
144	1881	4.0 - 6.0	< 3.2	< 0.7	< 1.1
144	1881	8.0 - 10.0	< 2.3	< 0.6	< 0.8
145	1932	0.0 - 2.0	< 2.6	< 0.6	< 1.0
145	1932	4.0 - 6.0	< 1.8	< 0.4	< 0.7
145	1932	8.0 - 10.0	< 4.3	< 1.1	< 1.5
145	1932	10.0 - 12.0	< 2.8	< 0.6	< 1.1
154	1853	0.0 - 1.0	< 2.2	< 0.6	< 0.7
154	1853	8.0 - 9.0	< 3.5	< 1.0	< 1.7
154	1853	10.0 - 11.0	< 5.1	< 1.5	< 2.0
154	1853	13.0 - 14.0	< 3.5	< 0.9	< 1.2
154	1853	14.0 - 15.0	< 2.7	< 0.5	< 0.9
154	1853	15.0 - 16.0	< 3.7	< 0.9	< 1.3
154	1853	16.0 - 17.0	< 1.8	< 0.3	< 0.8
154	1853	17.0 - 18.0	< 2.8	< 0.8	< 1.1
156	1772	0.0 - 1.0	< 3.4	< 0.8	< 1.5
156	1772	4.0 - 5.0	< 2.0	< 0.6	< 0.7
156	1772	9.0 - 10.0	< 2.9	< 0.8	< 0.9

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TABLE 5-1

(continued)

Coordinates[a] East	Coordinates[a] North	Depth (ft)	Concentration (pCi/g ± 2 sigma) Uranium-238	Radium-226	Thorium-232
156	1825	0.0 - 1.0	< 2.3	< 0.6	< 0.8
156	1825	5.0 - 6.0	< 4.7	< 1.4	< 1.8
156	1825	11.0 - 12.0	< 4.7	< 1.1	< 1.9
157	1722	0.0 - 2.0	< 6.7	< 1.7	< 2.3
157	1722	8.0 - 9.0	< 3.1	< 0.8	< 1.3
157	1722	9.0 - 10.0	< 3.4	< 0.8	< 0.9
157	1722	10.0 - 11.0	< 3.1	< 0.8	< 1.1
157	1722	11.0 - 12.0	< 2.9	< 0.7	< 1.1
157	1722	12.0 - 13.0	< 2.1	< 0.5	< 0.8
157	1722	13.0 - 14.0	< 2.8	< 0.7	< 1.3
157	1722	16.0 - 18.0	< 2.3	< 0.6	< 0.7
157	1722	18.0 - 20.0	< 2.9	< 0.8	< 1.0
157	1722	20.0 - 22.0	< 1.8	< 0.4	< 0.6
168	1545	0.0 - 1.0	< 2.7	< 0.7	< 1.1
168	1545	4.0 - 5.0	< 2.9	< 0.8	< 1.1
168	1545	7.0 - 8.0	< 2.1	< 0.6	< 0.8
168	1545	8.0 - 10.0	< 1.6	< 0.4	< 0.8
171	1928	0.0 - 2.0	< 3.0	< 0.7	< 0.9
171	1928	2.0 - 3.0	< 8.5	< 1.5	14.4 ± 2.5
171	1928	3.0 - 4.0	< 3.1	< 0.7	< 1.6
171	1928	7.0 - 8.0	< 3.2	< 0.8	< 1.5
171	1928	10.0 - 12.0	< 2.9	< 0.6	< 1.1
171	1928	12.0 - 13.0	< 2.6	< 0.5	< 1.1
171	1928	13.0 - 14.0	< 1.7	< 0.4	< 0.8

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TABLE 5-1

(continued)

Coordinates[a] East	Coordinates[a] North	Depth (ft)	Concentration (pCi/g ± 2 sigma) Uranium-238	Radium-226	Thorium-232
171	1928	14.0 - 15.0	< 4.1	< 1.1	< 1.6
171	1928	15.0 - 15.5	< 4.8	< 1.1	< 2.1
189	1986	0.0 - 0.5	< 2.0	< 0.5	< 0.9
189	1986	0.0 - 1.0	< 4.2	< 1.3	< 1.6
189	1986	3.0 - 4.0	< 1.8	< 0.5	< 1.1
189	1986	4.0 - 6.0	< 1.6	1.1 ± 0.1	< 0.6
189	1986	6.0 - 7.0	< 4.3	< 1.4	< 1.8
189	1986	7.0 - 8.0	< 1.7	< 0.7	< 1.1
201	1892	0.0 - 2.0	< 3.4	< 0.9	< 1.3
201	1892	4.0 - 6.0	< 2.1	< 0.5	< 0.9
201	1892	8.0 - 10.0	< 3.8	< 0.9	< 1.4
201	1910	0.0 - 2.0	< 2.3	< 0.6	< 1.0
201	1910	2.0 - 4.0	< 1.7	< 0.5	< 0.6
201	1910	4.0 - 6.0	< 5.7	< 1.3	< 2.7
201	1910	8.0 - 10.0	< 3.3	< 0.7	< 1.3
206	1954	0.0 - 1.0	< 7.0	< 1.6	14.7 ± 0.4
206	1954	1.0 - 2.0	< 7.7	< 1.1	32.6 ± 0.2
206	1954	2.0 - 3.0	< 9.5	< 1.5	45.7 ± 0.2
206	1954	3.0 - 4.0	<10.7	< 1.6	70.1 ± 1.5
206	1954	4.0 - 5.0	< 8.2	< 1.5	19.2 ± 0.1
206	1954	5.0 - 6.0	< 3.2	< 0.8	< 1.3
206	1954	8.0 - 9.0	< 2.6	< 0.5	2.9 ± 0.3

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TABLE 5-1

(continued)

Coordinates[a] East	Coordinates[a] North	Depth (ft)	Concentration (pCi/g ± 2 sigma) Uranium-238	Radium-226	Thorium-232
207	1792	1.0 - 2.0	< 2.7	< 0.5	< 1.1
207	1792	8.0 - 9.0	< 2.9	< 0.6	< 1.1
207	1792	13.0 - 14.0	< 2.1	< 0.5	< 0.7
207	1792	14.0 - 15.0	< 1.9	< 0.5	< 0.7
207	1792	15.0 - 16.0	< 4.5	< 1.1	< 1.9
207	1792	16.0 - 17.0	< 2.6	< 0.6	< 1.3
207	1792	17.0 - 18.0	< 3.0	< 0.6	< 1.0
214	1755	0.0 - 1.0	< 7.4	< 1.8	< 2.7
214	1755	4.0 - 5.0	< 3.3	< 0.7	< 1.4
214	1755	9.0 - 10.0	< 3.5	< 0.9	< 1.3
220	1892	0.0 - 0.5	< 3.5	< 0.8	< 1.1
220	1892	0.0 - 1.0	< 5.1	< 0.8	< 1.2
220	1892	4.0 - 5.0	< 3.6	< 0.6	< 1.1
220	1892	7.0 - 8.0	< 5.5	< 0.9	< 1.3
225	1546	0.0 - 1.0	< 5.8	< 1.5	< 1.7
225	1546	4.0 - 6.0	< 1.9	< 0.5	< 0.8
225	1546	8.0 - 10.0	< 3.1	< 0.8	< 0.9
235	1932	0.0 - 2.0	< 3.6	< 0.9	< 1.6
235	1932	6.0 - 7.0	< 3.9	< 1.0	< 1.4
235	1932	8.0 - 9.0	< 3.5	< 0.8	< 3.5
235	1932	13.0 - 14.0	< 4.5	< 1.2	< 1.6
235	1932	14.0 - 15.0	< 4.5	< 1.2	< 1.9
235	1932	15.0 - 16.0	< 2.4	< 0.5	< 1.1
235	1932	16.0 - 17.0	< 1.5	< 0.8	< 0.6
235	1932	17.0 - 18.0	< 3.3	< 0.7	< 1.4

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TABLE 5-1

(continued)

Coordinates[a] East	Coordinates[a] North	Depth (ft)	Concentration (pCi/g ± 2 sigma) Uranium-238	Radium-226	Thorium-232
247	1806	0.0 - 1.0	< 3.5	< 0.6	< 1.1
247	1806	1.0 - 2.0	< 2.5	< 0.6	< 0.9
247	1806	4.0 - 5.0	< 2.3	< 0.5	< 1.0
247	1806	7.0 - 8.0	< 2.2	< 0.6	< 0.7
247	1806	8.0 - 9.0	< 4.3	< 0.8	< 1.7
254	1849	0.0 - 0.5	< 3.3	< 0.8	< 1.4
254	1849	0.0 - 1.0	< 2.6	< 0.4	< 0.9
254	1849	4.0 - 5.0	< 2.8	< 0.8	< 1.1
254	1849	7.0 - 8.0	< 3.3	< 0.6	< 1.0
254	1849	8.0 - 9.0	< 3.5	< 0.7	< 1.0
258	1892	0.0 - 0.5	< 6.7	< 1.2	< 1.7
258	1892	4.0 - 5.0	< 3.5	< 0.7	< 1.2
258	1892	5.0 - 6.0	< 6.2	< 1.0	5.4 ± 0.5
258	1892	6.0 - 7.0	11.3 ± 2.2	< 0.8	< 1.6
258	1892	8.0 - 9.0	< 6.1	< 1.1	< 1.3
262	1953	0.0 - 1.0	< 4.6	< 1.3	< 1.8
262	1953	3.0 - 4.0	< 4.8	< 1.0	< 2.2
262	1953	4.0 - 5.0	<24.0	< 3.7	12.2 ± 1.2
262	1953	5.0 - 6.0	< 4.5	2.4 ± 0.2	10.4 ± 0.7
262	1953	7.0 - 8.0	< 3.8	< 0.8	< 1.4
262	1953	13.0 - 14.0	< 1.9	< 0.5	< 0.7
262	1953	14.0 - 15.0	< 3.3	< 0.9	< 1.3
262	1953	15.0 - 16.0	< 3.5	< 0.8	< 0.8
262	1953	16.0 - 17.0	< 4.2	< 0.9	< 1.4

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TABLE 5-1

(continued)

Coordinates[a] East	Coordinates[a] North	Depth (ft)	Concentration (pCi/g ± 2 sigma) Uranium-238	Radium-226	Thorium-232
272	1707	0.0 - 1.0	< 3.3	< 0.8	< 1.5
272	1707	8.0 - 9.0	< 2.8	< 0.6	< 1.0
272	1707	9.0 - 10.0	< 3.3	< 0.7	< 1.1
272	1707	10.0 - 11.0	< 2.5	< 0.7	< 1.0
272	1707	11.0 - 12.0	< 3.4	< 0.7	< 1.1
272	1707	12.0 - 13.0	< 2.5	< 0.6	< 1.0
272	1707	13.0 - 14.0	< 3.3	< 0.8	< 1.0
272	1707	14.0 - 15.0	< 2.9	< 0.7	< 1.3
272	1707	15.0 - 16.0	< 3.8	< 1.0	< 1.0
272	1707	16.0 - 17.0	< 2.9	< 0.6	< 1.3
272	1707	17.0 - 18.0	< 3.3	< 0.8	< 0.9
272	1707	18.0 - 19.0	< 4.5	< 1.1	< 1.3
272	1707	19.0 - 20.0	< 2.5	< 0.6	< 0.9
272	1707	20.0 - 21.0	< 1.9	< 0.6	< 0.6
272	1707	21.0 - 22.0	< 2.4	< 0.6	< 0.8
283	1506	0.0 - 0.5	< 3.5	< 0.7	< 1.3
283	1506	0.0 - 1.0	< 4.8	< 1.2	< 1.7
283	1506	3.0 - 4.0	< 3.9	< 0.9	< 1.5
283	1506	6.0 - 7.0	< 3.3	< 0.6	< 0.9
283	1506	7.0 - 8.0	< 4.0	< 0.8	< 1.1
286	1611	0.0 - 0.5	< 4.2	< 0.9	< 1.5
286	1611	0.0 - 1.0	< 3.9	< 1.0	< 1.4
286	1611	3.0 - 4.0	< 4.5	< 1.0	< 1.6
286	1611	7.0 - 8.0	< 2.8	< 0.7	< 1.1

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TABLE 5-1

(continued)

Coordinates[a] East	Coordinates[a] North	Depth (ft)	Concentration (pCi/g ± 2 sigma) Uranium-238	Radium-226	Thorium-232
286	1927	0.0 - 1.0	< 2.9	< 0.8	< 1.0
286	1927	2.0 - 2.5	< 2.3	< 0.6	< 0.9
286	1927	3.5 - 5.5	< 3.3	< 0.6	< 1.5
290	1928	0.0 - 2.0	< 3.5	< 0.6	< 1.3
290	1928	2.0 - 4.0	< 3.6	< 0.9	< 1.6
290	1928	4.0 - 6.0	< 6.2	< 1.1	13.3 ± 0.3
290	1928	6.0 - 7.0	< 7.6	< 1.2	22.9 ± 1.4
290	1928	8.0 - 9.0	4.9 ± 1.3	< 0.8	< 1.4
290	1928	9.0 - 10.0	< 2.9	< 0.7	< 0.9
290	1928	10.0 - 12.0	< 3.6	< 0.9	< 1.2
299	1991	0.0 - 0.5	< 2.9	< 0.7	< 1.0
299	1991	0.0 - 2.0	< 3.4	< 0.7	< 1.1
299	1991	4.0 - 6.0	< 2.9	< 0.7	< 1.0
299	1991	7.0 - 8.0	< 3.1	< 0.7	< 1.3
307	1819	0.0 - 1.0	< 4.0	< 0.6	< 0.9
307	1819	1.0 - 2.0	< 3.2	< 0.5	< 0.9
307	1819	5.0 - 6.0	< 5.5	< 1.0	< 1.2
307	1819	7.0 - 8.0	< 4.0	< 0.6	< 1.1
307	1819	8.0 - 9.0	< 3.2	< 0.6	< 1.0
307	1819	9.0 - 10.0	< 4.0	< 0.6	< 1.0
307	1819	10.0 - 11.0	< 2.3	< 0.5	< 0.8
327	1753	0.0 - 1.0	< 6.2	< 0.8	< 1.7
327	1753	1.0 - 2.0	< 4.3	< 0.6	< 1.1
327	1753	4.0 - 5.0	< 4.3	< 0.6	< 1.1
327	1753	8.0 - 9.0	< 3.7	< 0.6	< 0.9

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TABLE 5-1

(continued)

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Coordinates[a] East	Coordinates[a] North	Depth (ft)	Concentration (pCi/g ± 2 sigma) Uranium-238	Radium-226	Thorium-232
329	1855	0.0 - 1.0	< 5.9	< 0.8	< 1.3
329	1855	1.0 - 2.0	< 4.6	< 0.9	< 1.4
329	1855	4.0 - 5.0	< 3.6	< 0.7	< 1.4
329	1855	5.0 - 6.0	< 4.9	< 0.8	< 1.4
329	1855	6.0 - 7.0	< 7.0	< 1.0	9.3 ± 0.8
329	1855	8.0 - 9.0	< 6.3	< 0.9	< 1.5
329	1855	9.0 - 11.0	< 4.0	< 0.7	< 1.3
329	1899	0.0 - 1.0	< 5.2	< 0.9	< 1.4
329	1899	3.0 - 4.0	< 2.9	< 0.4	< 0.9
329	1899	4.0 - 5.0	< 0.7	< 0.9	11.6 ± 1.2
329	1899	5.0 - 6.0	< 1.0	< 1.3	23.0 ± 1.7
329	1899	6.0 - 7.0	< 7.1	< 1.1	< 2.0
329	1899	7.0 - 8.0	< 4.0	< 0.7	< 1.1
329	1899	8.0 - 9.0	< 7.0	< 1.1	< 1.7
330	1930	0.0 - 1.0	< 3.4	< 0.8	< 1.6
330	1930	1.0 - 2.0	< 3.2	< 0.8	< 1.3
330	1930	2.0 - 3.0	< 2.7	< 0.9	< 1.0
330	1930	3.0 - 4.0	< 3.9	< 0.7	< 1.9
330	1930	4.0 - 5.0	< 7.6	< 1.6	< 3.4
330	1930	5.0 - 6.0	<15.0	< 2.2	93.1 ± 2.5
330	1930	6.0 - 7.0	17.0 ± 4.2	5.3 ± 0.4	28.0 ± 2.1
330	1930	8.0 - 10.0	< 2.3	< 0.6	< 0.8
330	1930	10.0 - 12.0	< 2.8	< 0.9	< 1.0
330	1930	12.0 - 13.0	< 3.1	< 0.8	< 1.1
330	1930	13.0 - 14.0	< 3.2	< 0.8	< 1.2
330	1930	14.0 - 15.0	< 4.4	< 1.1	< 1.6
330	1930	15.0 - 18.0	< 3.1	< 1.0	< 1.3

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TABLE 5-1

(continued)

Coordinates[a] East	Coordinates[a] North	Depth (ft)	Concentration (pCi/g ± 2 sigma) Uranium-238	Radium-226	Thorium-232
335	1953	0.0 - 0.5	< 2.9	< 0.6	< 1.3
335	1953	0.0 - 1.0	< 4.2	< 0.9	< 1.5
335	1953	1.0 - 2.5	< 2.8	< 0.6	< 1.1
335	1953	7.5 - 8.5	< 4.6	< 0.9	< 1.3
335	1953	8.5 - 9.4	< 2.7	< 0.6	< 1.0
347	1814	0.0 - 1.0	< 5.3	< 0.8	< 1.3
347	1814	1.0 - 2.0	< 3.1	< 0.6	< 1.1
347	1814	3.0 - 4.0	< 7.0	< 1.1	35.9 ± 2.5
347	1814	4.0 - 5.0	< 5.9	< 0.7	< 1.6
347	1814	8.0 - 9.0	< 3.9	< 0.7	< 1.4
355	1700	0.0 - 1.0	< 5.6	< 1.5	< 1.8
355	1700	8.0 - 9.0	< 2.9	< 0.7	< 0.9
355	1700	9.0 - 10.0	< 3.3	< 0.8	< 1.3
355	1700	10.0 - 11.0	< 2.3	< 0.5	< 0.7
355	1700	11.0 - 12.0	< 3.3	< 0.7	< 0.7
355	1700	12.0 - 13.0	< 3.3	< 0.8	< 0.9
355	1700	13.0 - 14.0	< 3.0	< 0.8	< 1.0
355	1700	14.0 - 15.0	< 3.2	< 0.9	< 1.3
355	1700	15.0 - 16.0	< 3.4	< 1.0	< 1.2
355	1700	16.0 - 17.0	< 3.3	< 0.9	< 1.1
355	1700	17.0 - 18.0	< 3.9	< 0.8	< 1.2
355	1700	18.0 - 19.0	< 2.9	< 0.7	< 1.1
355	1700	19.0 - 20.0	< 3.8	< 0.7	< 1.2
355	1700	20.0 - 21.0	< 2.9	< 0.7	< 1.2
355	1700	21.0 - 22.0	< 3.6	< 0.8	< 1.3

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TABLE 5-1

(continued)

Coordinates[a] East	Coordinates[a] North	Depth (ft)	Concentration (pCi/g ± 2 sigma) Uranium-238	Radium-226	Thorium-232
360	1920	0.0 - 1.0	< 4.5	< 0.7	< 1.2
360	1920	1.0 - 2.0	< 2.6	< 0.4	< 0.7
360	1920	3.0 - 4.0	< 3.9	< 0.7	< 1.2
360	1920	4.0 - 5.0	< 5.0	< 0.7	< 1.6
360	1920	5.0 - 6.0	< 4.5	< 0.6	< 1.5
360	1920	8.0 - 8.4	< 4.8	< 0.7	2.7 ± 0.6
372	1878	0.0 - 1.0	< 3.0	< 0.6	< 0.9
372	1878	1.0 - 2.0	< 5.0	< 0.7	< 1.2
372	1878	3.0 - 4.0	< 3.1	< 0.7	< 0.9
372	1878	4.0 - 5.0	< 5.4	< 0.8	< 1.5
372	1878	5.0 - 6.0	< 5.2	< 0.6	7.8 ± 0.9
372	1878	7.0 - 8.0	< 8.0	< 0.9	11.1 ± 0.1
372	1878	8.0 - 9.0	< 4.0	< 0.6	< 1.4
372	1878	9.0 - 11.0	< 5.9	< 0.9	< 1.4
378	1954	0.0 - 0.5	< 3.9	< 1.0	< 1.3
378	1954	0.0 - 1.0	< 2.2	< 0.5	< 0.9
378	1954	4.0 - 6.0	< 2.1	< 0.4	< 0.7
378	1954	7.0 - 8.0	< 4.0	< 1.0	< 1.2
378	1954	8.0 - 9.6	< 2.2	< 0.5	< 0.8
378	1954	9.6 - 10.6	< 3.0	< 0.7	< 0.9
378	1954	10.6 - 11.6	< 2.2	< 0.4	< 0.8
382	1799	0.0 - 1.0	< 4.3	< 0.6	< 0.8
382	1799	1.0 - 2.0	< 3.4	< 0.5	< 0.7
382	1799	2.0 - 4.0	< 2.9	< 0.4	< 0.5
382	1799	4.0 - 5.0	< 2.7	< 0.4	< 0.6

0 6 3 6 8 2

TABLE 5-1

(continued)

Coordinates[a] East	Coordinates[a] North	Depth (ft)	Concentration (pCi/g ± 2 sigma) Uranium-238	Radium-226	Thorium-232
382	1799	5.0 - 6.0	< 3.4	< 0.4	< 0.8
382	1799	6.0 - 7.0	< 3.3	< 0.4	< 0.6
382	1799	7.0 - 8.4	< 3.8	< 0.4	< 0.7
382	1799	8.4 - 8.8	< 3.6	< 0.5	< 0.8
382	1799	8.8 - 10.4	< 3.4	< 0.4	< 0.7
382	1799	10.4 - 10.9	< 4.1	< 0.5	< 0.9
382	1799	10.9 - 11.4	< 3.6	< 0.6	< 0.7
382	1825	0.0 - 1.0	< 1.5	< 0.6	< 1.0
382	1825	0.0 - 2.0	< 1.4	< 0.4	< 0.8
382	1825	3.0 - 5.0	< 1.4	< 0.4	3.0 ± 0.3
382	1825	6.0 - 6.0	< 1.5	< 0.4	2.8 ± 0.4
382	1825	6.0 - 8.0	< 1.2	< 0.4	< 0.8
382	1825	8.0 - 10.0	< 1.1	< 0.4	< 0.7
382	1825	10.0 - 12.0	< 1.1	< 0.3	< 0.8
382	1825	12.5 - 12.5	< 1.5	< 0.4	< 0.9
382	1825	12.5 - 14.0	< 1.1	< 0.3	< 0.6
390	1795	0.0 - 0.5	< 3.9	< 0.5	< 0.8
390	1795	0.5 - 1.0	< 3.7	< 0.5	< 0.7
390	1795	1.0 - 2.0	< 3.9	< 0.6	< 0.8
390	1795	2.0 - 2.5	< 4.2	< 0.6	< 0.9
398	1890	0.0 - 0.5	< 4.6	< 0.9	< 1.2
398	1890	0.0 - 1.0	< 3.5	< 0.8	< 1.1
398	1890	2.0 - 3.0	< 2.8	< 0.7	< 1.2
398	1890	3.0 - 4.0	< 3.1	< 0.5	< 0.8

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TABLE 5-1

(continued)

Coordinates[a] East	Coordinates[a] North	Depth (ft)	Concentration (pCi/g ± 2 sigma) Uranium-238	Radium-226	Thorium-232
398	1890	4.0 - 5.0	< 5.9	< 0.9	9.2 ± 1.4
398	1890	5.0 - 6.0	< 0.9	< 1.1	24.2 ± 1.1
398	1890	6.0 - 7.0	10.4 ± 3.0	< 1.4	16.4 ± 0.4
398	1890	7.0 - 8.0	22.0 ± 2.9	4.1 ± 0.2	7.3 ± 0.4
398	1890	8.0 - 9.0	< 3.1	< 0.5	< 0.9
412	1661	0.0 - 1.5	< 4.9	< 1.3	< 2.1
412	1661	2.0 - 4.0	< 2.7	< 0.7	< 1.4
412	1661	6.0 - 8.0	< 2.7	< 0.7	< 1.0
412	1661	8.0 - 10.0	< 1.6	< 0.4	< 0.6
412	1661	10.0 - 12.0	< 2.4	< 0.6	< 0.7
412	1661	12.0 - 14.0	< 2.4	< 0.6	< 1.0
414	1845	0.0 - 2.0	< 2.7	< 0.5	< 1.1
414	1845	2.0 - 4.0	< 9.1	< 1.5	32.5 ± 1.6
414	1845	4.0 - 5.0	< 3.6	< 0.7	5.3 ± 1.3
414	1845	8.0 - 9.0	< 5.4	< 1.3	< 2.3
414	1845	15.0 - 16.0	< 2.0	< 0.4	< 0.8
415	1761	0.0 - 2.0	< 3.4	< 0.9	< 1.2
415	1761	5.0 - 6.0	< 2.4	< 0.6	< 0.9
415	1761	8.0 - 9.0	< 4.3	< 1.0	< 1.5
415	1761	9.0 - 10.0	< 2.7	< 0.7	< 1.2
415	1761	10.0 - 11.0	< 4.0	< 0.8	< 1.2
415	1761	11.0 - 12.0	< 3.7	< 0.9	< 1.3
416	1952	0.0 - 1.0	< 3.7	< 0.7	< 1.4
416	1952	4.7 - 5.5	< 1.8	< 0.4	< 0.7

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TABLE 5-1

(continued)

Coordinates[a] East	Coordinates[a] North	Depth (ft)	Concentration (pCi/g ± 2 sigma) Uranium-238	Radium-226	Thorium-232
416	1952	7.1 - 7.7	< 3.0	< 0.8	< 1.1
416	1952	7.7 - 8.7	< 1.8	< 0.4	< 0.8
416	1952	8.7 - 9.8	< 2.3	< 0.5	< 0.8
424	1909	0.0 - 2.0	< 3.2	< 0.7	< 1.3
424	1909	8.0 - 9.0	< 4.7	< 1.0	< 1.6
424	1909	13.0 - 14.0	< 2.7	< 0.6	< 1.0
424	1909	14.0 - 16.0	< 3.5	< 0.8	< 1.0
424	1909	16.0 - 18.0	< 2.2	< 0.5	< 0.9
426	1823	0.0 - 1.0	< 4.2	< 0.9	< 1.7
426	1823	4.0 - 5.0	< 4.1	< 0.9	< 1.1
426	1823	8.0 - 9.0	< 3.3	< 0.8	< 1.2
426	1823	9.0 - 10.0	< 3.7	< 1.0	< 1.2
426	1875	0.0 - 1.0	< 3.4	< 0.8	< 1.2
426	1875	2.0 - 4.0	< 5.2	< 1.3	< 1.7
426	1875	4.0 - 5.0	< 4.7	< 0.9	< 2.2
426	1875	9.0 - 10.0	< 5.7	< 1.3	< 2.1
428	1718	0.0 - 1.0	< 2.6	< 0.5	< 0.8
428	1718	1.0 - 2.0	< 3.2	< 0.5	< 1.0
428	1718	6.7 - 7.7	< 5.1	< 0.9	< 1.5
428	1718	7.7 - 8.7	< 3.0	< 0.5	< 1.0
428	1718	8.7 - 9.7	< 3.4	< 0.5	< 1.0
428	1718	9.7 - 10.7	< 2.5	< 0.4	< 0.8
428	1718	10.7 - 11.7	< 4.9	< 0.8	< 1.2
428	1718	11.7 - 12.7	< 4.4	< 0.6	< 1.0

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TABLE 5-1

(continued)

Coordinates[a] East	Coordinates[a] North	Depth (ft)	Concentration (pCi/g ± 2 sigma) Uranium-238	Radium-226	Thorium-232
439	1838	0.0 - 1.0	< 2.5	< 0.6	< 1.0
439	1838	1.0 - 2.0	< 5.2	< 1.0	7.4 ± 0.1
439	1838	4.0 - 5.0	< 2.8	< 0.7	< 1.0
439	1838	5.0 - 6.0	< 5.8	< 1.0	8.9 ± 0.5
439	1838	7.0 - 8.0	< 2.8	< 0.7	< 1.1
439	1838	8.0 - 9.0	< 5.0	< 1.0	< 1.5
439	1838	9.0 - 10.0	< 3.3	< 0.7	< 1.4
439	1838	10.0 - 11.0	< 5.1	< 1.3	< 1.6
451	1763	0.0 - 0.5	< 7.7	< 1.0	< 1.3
451	1763	0.5 - 2.0	< 3.0	< 0.6	< 0.9
451	1763	6.0 - 8.0	< 5.3	< 0.8	< 1.4
451	1763	8.0 - 9.0	< 5.1	< 0.9	< 1.7
451	1763	9.0 - 10.0	< 6.5	< 1.0	< 1.8
462	1870	0.0 - 0.5	< 7.4	< 1.3	< 2.1
462	1870	0.0 - 1.0	< 3.5	< 0.7	< 1.4
462	1870	4.0 - 5.0	< 7.1	< 1.1	< 1.7
462	1870	8.0 - 9.0	< 7.7	< 1.2	< 2.0
462	1870	9.0 - 10.0	< 5.1	< 0.9	< 1.8

[a]Sampling locations are shown in Figure 4-2.

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TABLE 5-2

DOWNHOLE GAMMA LOGGING RESULTS

FOR KENNEDY PARK

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1185R			
36	1902	0.5	9000
36	1902	1.0	10000
36	1902	1.5	9000
36	1902	2.0	9000
36	1902	2.5	9000
36	1902	3.0	10000
36	1902	3.5	11000
36	1902	4.0	11000
36	1902	4.5	11000
36	1902	5.0	11000
36	1902	5.5	11000
36	1902	6.0	10000
36	1902	6.5	10000
36	1902	7.0	10000
36	1902	7.5	9000
36	1902	8.0	10000
36	1902	8.5	10000
Borehole 1084R[d]			
74	1731	0.5	8000
74	1731	1.0	8000
74	1731	1.5	8000
74	1731	2.0	7000
74	1731	2.5	6000
74	1731	3.0	6000
74	1731	3.5	6000
74	1731	4.0	6000
Borehole 1204R[d]			
77	1941	0.5	24000
77	1941	1.0	27000
77	1941	1.5	30000
77	1941	2.0	40000
77	1941	2.5	53000
77	1941	3.0	63000
77	1941	3.5	47000
77	1941	4.0	44000
77	1941	4.5	38000

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TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1204R (continued)[d]			
77	1941	5.0	21000
77	1941	5.5	15000
77	1941	6.0	14000
77	1941	6.5	14000
Borehole 1062R[d]			
88	1762	0.5	7000
88	1762	1.0	10000
88	1762	1.5	10000
88	1762	2.0	9000
88	1762	2.5	9000
88	1762	3.0	8000
88	1762	3.5	6000
88	1762	4.0	6000
88	1762	4.5	5000
88	1762	5.0	6000
88	1762	5.5	6000
88	1762	6.0	6000
88	1762	6.5	5000
Borehole 1133A[d]			
94	1986	0.5	8000
94	1986	1.0	8000
94	1986	1.5	8000
94	1986	2.0	8000
94	1986	2.5	8000
94	1986	3.0	8000
94	1986	3.5	8000
94	1986	4.0	8000
94	1986	4.5	7000
94	1986	5.0	9000
94	1986	5.5	9000
94	1986	6.0	9000
94	1986	6.5	9000
94	1986	7.0	8000
94	1986	7.5	8000

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TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1063R[d]			
99	1671	0.5	6000
99	1671	1.0	8000
99	1671	1.5	9000
99	1671	2.0	9000
99	1671	2.5	9000
99	1671	3.0	8000
99	1671	3.5	7000
99	1671	4.0	6000
99	1671	4.5	5000
99	1671	5.0	5000
99	1671	5.5	5000
99	1671	6.0	4000
Borehole 1001R[d]			
100	1909	0.5	8000
100	1909	1.0	11000
100	1909	1.5	12000
100	1909	2.0	12000
100	1909	2.5	28000
100	1909	3.0	76000
100	1909	3.5	59000
100	1909	4.0	17000
100	1909	4.5	11000
Borehole 1186R[d]			
101	1605	0.5	8000
101	1605	1.0	9000
101	1605	1.5	9000
101	1605	2.0	9000
101	1605	2.5	8000
101	1605	3.0	7000
101	1605	3.5	6000
101	1605	4.0	5000
101	1605	4.5	5000
101	1605	5.0	5000
101	1605	5.5	5000

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TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1186R (continued)[d]			
101	1605	6.0	5000
101	1605	6.5	6000
101	1605	7.0	5000
101	1605	7.5	6000
Borehole 1071R[d]			
108	1806	0.5	9000
108	1806	1.0	9000
108	1806	1.5	8000
108	1806	2.0	8000
108	1806	2.5	8000
108	1806	3.0	8000
108	1806	3.5	8000
108	1806	4.0	8000
108	1806	4.5	8000
108	1806	5.0	7000
108	1806	5.5	7000
108	1806	6.0	7000
Borehole 1110R[d]			
110	1888	0.5	8000
110	1888	1.0	10000
110	1888	1.5	11000
110	1888	2.0	11000
110	1888	2.5	11000
110	1888	3.0	11000
110	1888	3.5	10000
110	1888	4.0	10000
110	1888	4.5	11000
110	1888	5.0	11000
110	1888	5.5	11000
110	1888	6.0	11000
110	1888	6.5	11000
110	1888	7.0	11000
110	1888	7.5	11000
110	1888	8.0	11000

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TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1107R[d]			
110	1543	0.5	7000
110	1543	1.0	9000
110	1543	1.5	8000
110	1543	2.0	8000
110	1543	2.5	8000
110	1543	3.0	7000
110	1543	3.5	7000
110	1543	4.0	8000
110	1543	4.5	6000
110	1543	5.0	6000
110	1543	5.5	6000
110	1543	6.0	6000
110	1543	6.5	6000
110	1543	7.0	6000
110	1543	7.5	6000
Borehole 1080R[d]			
111	1951	0.5	78000
111	1951	1.0	132000
111	1951	1.5	159000
111	1951	2.0	257000
111	1951	2.5	220000
111	1951	3.0	95000
111	1951	3.5	57000
Borehole 1080R-A[d]			
112	1951	0.5	93000
112	1951	1.0	135000
112	1951	1.5	147000
112	1951	2.0	254000
112	1951	2.5	200000
112	1951	3.0	82000
112	1951	3.5	42000
112	1951	4.0	18000
112	1951	4.5	12000
112	1951	5.0	10000
112	1951	5.5	10000
112	1951	6.0	9000
112	1951	6.5	7000

TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1080R-A (continued)[d]			
112	1951	7.0	7000
112	1951	7.5	7000
Borehole 1051R[d]			
114	1928	0.5	10000
114	1928	1.0	13000
114	1928	1.5	18000
114	1928	2.0	15000
114	1928	2.5	13000
114	1928	3.0	13000
114	1928	3.5	10000
114	1928	4.0	10000
114	1928	4.5	11000
114	1928	5.0	13000
114	1928	5.5	22000
114	1928	6.0	18000
114	1928	6.5	13000
114	1928	7.0	12000
114	1928	7.5	11000
114	1928	8.0	9000
114	1928	8.5	7000
114	1928	9.0	7000
114	1928	9.5	7000
114	1928	10.0	7000
Borehole 1075R[d]			
117	1903	0.5	10000
117	1903	1.0	10000
117	1903	1.5	12000
117	1903	2.0	13000
117	1903	2.5	14000
117	1903	3.0	28000
117	1903	3.5	67000
117	1903	4.0	36000
117	1903	4.5	17000
117	1903	5.0	12000
117	1903	5.5	11000
117	1903	6.0	12000
117	1903	6.5	13000

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TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1072R[d]			
144	1881	0.5	9000
144	1881	1.0	9000
144	1881	1.5	10000
144	1881	2.0	9000
144	1881	2.5	9000
144	1881	3.0	8000
144	1881	3.5	8000
144	1881	4.0	9000
144	1881	4.5	9000
144	1881	5.0	10000
144	1881	5.5	10000
144	1881	6.0	11000
144	1881	6.5	12000
144	1881	7.0	12000
144	1881	7.5	12000
144	1881	8.0	11000
144	1881	8.5	11000
Borehole 1069R[d]			
145	1932	0.5	13000
145	1932	1.0	21000
145	1932	1.5	20000
145	1932	2.0	16000
145	1932	2.5	14000
145	1932	3.0	14000
145	1932	3.5	16000
145	1932	4.0	17000
145	1932	4.5	20000
145	1932	5.0	37000
145	1932	5.5	55000
145	1932	6.0	32000
145	1932	6.5	18000
145	1932	7.0	15000
145	1932	7.5	13000
145	1932	8.0	13000
145	1932	8.5	13000

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TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1056R[d]			
154	1853	0.5	9000
154	1853	1.0	10000
154	1853	1.5	9000
154	1853	2.0	10000
154	1853	2.5	10000
154	1853	3.0	10000
154	1853	3.5	10000
154	1853	4.0	10000
154	1853	4.5	10000
154	1853	5.0	9000
154	1853	5.5	9000
154	1853	6.0	9000
154	1853	6.5	9000
154	1853	7.0	10000
154	1853	7.5	10000
154	1853	8.0	10000
154	1853	8.5	11000
154	1853	9.0	11000
154	1853	9.5	11000
154	1853	10.0	11000
154	1853	10.5	11000
154	1853	11.0	11000
154	1853	11.5	10000
154	1853	12.0	10000
154	1853	12.5	9000
154	1853	13.0	8000
154	1853	13.5	8000
Borehole 1070R[d]			
157	1722	0.5	10000
157	1722	1.0	9000
157	1722	1.5	8000
157	1722	2.0	8000
157	1722	2.5	7000
157	1722	3.0	6000
157	1722	3.5	5000
157	1722	4.0	5000
157	1722	4.5	5000
157	1722	5.0	5000
157	1722	5.5	6000

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TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1070R (continued)[d]			
157	1722	6.0	6000
157	1722	6.5	6000
157	1722	7.0	6000
157	1722	7.5	6000
157	1722	8.0	6000
157	1722	8.5	6000
Borehole 1108R[d]			
168	1545	0.5	4000
168	1545	1.0	5000
168	1545	1.5	7000
168	1545	2.0	9000
168	1545	2.5	8000
168	1545	3.0	8000
168	1545	3.5	7000
168	1545	4.0	7000
168	1545	4.5	6000
168	1545	5.0	5000
168	1545	5.5	4000
168	1545	6.0	5000
168	1545	6.5	4000
168	1545	7.0	5000
168	1545	7.5	5000
Borehole 1229R[d]			
169	1462	0.5	10000
169	1462	1.0	9000
169	1462	1.5	8000
169	1462	2.0	8000
169	1462	2.5	8000
169	1462	3.0	9000
169	1462	3.5	10000
169	1462	4.0	11000
169	1462	4.5	11000
169	1462	5.0	12000
169	1462	5.5	13000
169	1462	6.0	13000
169	1462	6.5	13000
169	1462	7.0	13000

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TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1229R (continued)[d]			
169	1462	7.5	13000
169	1462	8.0	12000
Borehole 1052R[d]			
171	1928	0.5	8000
171	1928	1.0	10000
171	1928	1.5	11000
171	1928	2.0	17000
171	1928	2.5	34000
171	1928	3.0	26000
171	1928	3.5	17000
171	1928	4.0	14000
171	1928	4.5	11000
171	1928	5.0	12000
171	1928	5.5	12000
171	1928	6.0	14000
171	1928	6.5	14000
171	1928	7.0	10000
171	1928	7.5	10000
171	1928	8.0	10000
171	1928	8.5	10000
171	1928	9.0	8000
171	1928	9.5	7000
171	1928	10.0	6000
171	1928	10.5	6000
Borehole 1134R			
189	1986	0.5	7000
189	1986	1.0	8000
189	1986	1.5	8000
189	1986	2.0	7000
189	1986	2.5	8000
189	1986	3.0	8000
189	1986	3.5	7000
189	1986	4.0	7000
189	1986	4.5	10000
189	1986	5.0	12000
189	1986	5.5	12000

TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1219R[d]			
196	1697	0.5	8000
196	1697	1.0	8000
196	1697	1.5	7000
196	1697	2.0	7000
196	1697	2.5	7000
196	1697	3.0	7000
196	1697	3.5	6000
196	1697	4.0	6000
196	1697	4.5	5000
196	1697	5.0	5000
196	1697	5.5	5000
196	1697	6.0	5000
196	1697	6.5	5000
196	1697	7.0	6000
196	1697	7.5	6000
Borehole 1073R[d]			
201	1892	0.5	9000
201	1892	1.0	10000
201	1892	1.5	10000
201	1892	2.0	8000
201	1892	2.5	10000
201	1892	3.0	10000
201	1892	3.5	8000
201	1892	4.0	8000
201	1892	4.5	8000
201	1892	5.0	8000
201	1892	5.5	9000
201	1892	6.0	11000
201	1892	6.5	11000
201	1892	7.0	12000
201	1892	7.5	12000
201	1892	8.0	13000
201	1892	8.5	12000
Borehole 1074R[d]			
201	1910	0.5	10000
201	1910	1.0	12000
201	1910	1.5	11000

TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1074R (continued)[d]			
201	1910	2.0	11000
201	1910	2.5	12000
201	1910	3.0	13000
201	1910	3.5	21000
201	1910	4.0	37000
201	1910	4.5	32000
201	1910	5.0	14000
201	1910	5.5	11000
201	1910	6.0	11000
201	1910	6.5	12000
201	1910	7.0	13000
201	1910	7.5	13000
201	1910	8.0	13000
201	1910	8.5	13000
Borehole 1081R[d]			
206	1952	0.5	58000
206	1952	1.0	129000
206	1952	1.5	177000
206	1952	2.0	190000
206	1952	2.5	254000
206	1952	3.0	327000
206	1952	3.5	202000
206	1952	4.0	90000
206	1952	4.5	48000
206	1952	5.0	30000
206	1952	5.5	22000
206	1952	6.0	18000
206	1952	6.5	15000
206	1952	7.0	14000
206	1952	7.5	13000
Borehole 1054R[d]			
207	1792	0.5	10000
207	1792	1.0	12000
207	1792	1.5	10000
207	1792	2.0	8000
207	1792	2.5	8000
207	1792	3.0	8000

TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1054R (continued)[d]			
207	1792	3.5	8000
207	1792	4.0	9000
207	1792	4.5	10000
207	1792	5.0	12000
207	1792	5.5	12000
207	1792	6.0	12000
207	1792	6.5	12000
207	1792	7.0	12000
207	1792	7.5	11000
207	1792	8.0	11000
207	1792	8.5	11000
207	1792	9.0	10000
207	1792	9.5	9000
207	1792	10.0	8000
207	1792	10.5	9000
207	1792	11.0	9000
207	1792	11.5	9000
207	1792	12.0	8000
207	1792	12.5	8000
207	1792	13.0	8000
207	1792	13.5	8000
Borehole 1095R[d]			
220	1819	0.5	7000
220	1819	1.0	9000
220	1819	1.5	9000
220	1819	2.0	11000
220	1819	2.5	11000
220	1819	3.0	11000
220	1819	3.5	10000
220	1819	4.0	11000
220	1819	4.5	15000
220	1819	5.0	11000
220	1819	5.5	11000
220	1819	6.0	9000
220	1819	6.5	9000

TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1109R[d]			
225	1546	0.5	7000
225	1546	1.0	8000
225	1546	1.5	9000
225	1546	2.0	9000
225	1546	2.5	9000
225	1546	3.0	8000
225	1545	3.5	8000
225	1545	4.0	7000
225	1545	4.5	6000
225	1545	5.0	6000
225	1545	5.5	6000
225	1545	6.0	5000
225	1545	6.5	5000
225	1545	7.0	5000
225	1545	7.5	6000
225	1545	8.0	6000
Borehole 1053R[d]			
235	1932	0.5	9000
235	1932	1.0	10000
235	1932	1.5	11000
235	1932	2.0	12000
235	1932	2.5	12000
235	1932	3.0	13000
235	1932	3.5	14000
235	1932	4.0	13000
235	1932	4.5	13000
235	1932	5.0	13000
235	1932	5.5	13000
235	1932	6.0	21000
235	1932	6.5	41000
235	1932	7.0	26000
235	1932	7.5	15000
235	1932	8.0	13000
235	1932	8.5	12000
235	1932	9.0	12000
235	1932	9.5	12000
235	1932	10.0	12000
235	1932	10.5	12000
235	1932	11.0	10000

TABLE 5-2
(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1053R (continued)[d]			
235	1932	11.5	8000
235	1932	12.0	7000
235	1932	12.5	7000
235	1932	13.0	8000
235	1932	13.5	8000
Borehole 1200R[d]			
246	1806	0.5	9000
246	1806	1.0	10000
246	1806	1.5	10000
246	1806	2.0	9000
246	1806	2.5	9000
246	1806	3.0	9000
246	1806	3.5	9000
246	1806	4.0	9000
246	1806	4.5	9000
246	1806	5.0	9000
246	1806	5.5	9000
246	1806	6.0	10000
246	1806	6.5	12000
246	1806	7.0	13000
Borehole 1091R[d]			
254	1849	0.5	9000
254	1849	1.0	9000
254	1849	1.5	8000
254	1849	2.0	9000
254	1849	2.5	10000
254	1849	3.0	9000
254	1849	3.5	8000
254	1849	4.0	8000
254	1849	4.5	8000
254	1849	5.0	9000
254	1849	5.5	9000
254	1849	6.0	12000
254	1849	6.5	11000
254	1849	7.0	8000
254	1849	7.5	8000

TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1090R[d]			
258	1892	0.5	6000
258	1892	1.0	7000
258	1892	1.5	10000
258	1892	2.0	10000
258	1892	2.5	10000
258	1892	3.0	10000
258	1892	3.5	11000
258	1892	4.0	12000
258	1892	4.5	14000
258	1892	5.0	25000
258	1892	5.5	50000
258	1892	6.0	82000
258	1892	6.5	39000
258	1892	7.0	19000
258	1892	7.5	13000
258	1892	8.0	12000
258	1892	8.5	13000
Borehole 1055R[d]			
263	1933	0.5	10000
263	1933	1.0	11000
263	1933	1.5	12000
263	1933	2.0	16000
263	1933	2.5	18000
263	1933	3.0	22000
263	1933	3.5	36000
263	1933	4.0	101000
263	1933	4.5	197000
263	1933	5.0	87000
263	1933	5.5	33000
263	1933	6.0	16000
263	1933	6.5	11000
263	1933	7.0	10000
263	1933	7.5	10000
263	1933	8.0	10000
263	1933	8.5	10000
263	1933	9.0	11000
263	1933	9.5	11000
263	1933	10.0	11000
263	1933	10.5	11000

TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1055R (continued)[d]			
263	1933	11.0	10000
263	1933	11.5	11000
263	1933	12.0	11000
263	1933	12.5	11000
263	1933	13.0	11000
Borehole 1064R[d]			
272	1707	0.5	8000
272	1707	1.0	9000
272	1707	1.5	8000
272	1707	2.0	7000
272	1707	2.5	7000
272	1707	3.0	7000
272	1707	3.5	7000
272	1707	4.0	7000
272	1707	4.5	7000
272	1707	5.0	6000
272	1707	5.5	7000
272	1707	6.0	7000
272	1707	6.5	7000
272	1707	7.0	7000
272	1707	7.5	7000
272	1707	8.0	6000
Borehole 1190R[d]			
283	1506	0.5	8000
283	1506	1.0	9000
283	1506	1.5	10000
283	1506	2.0	10000
283	1506	2.5	10000
283	1506	3.0	10000
283	1506	3.5	10000
283	1506	4.0	10000
283	1506	4.5	11000
283	1506	5.0	10000
283	1506	5.5	10000
283	1506	6.0	8000
283	1506	6.5	6000

TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1187R			
286	1611	0.5	9000
286	1611	1.0	10000
286	1611	1.5	10000
286	1611	2.0	10000
286	1611	2.5	10000
286	1611	3.0	10000
286	1611	3.5	10000
286	1611	4.0	10000
286	1611	4.5	9000
286	1611	5.0	8000
286	1611	5.5	8000
286	1611	6.0	8000
286	1611	6.5	6000
286	1611	7.0	8000
286	1611	7.5	7000
286	1611	8.0	6000
Borehole 1028R[d]			
286	1927	0.5	9000
286	1927	1.0	10000
286	1927	1.5	11000
286	1927	2.0	11000
286	1927	2.5	13000
286	1927	3.0	17000
286	1927	3.5	19000
286	1927	4.0	18000
286	1927	4.5	20000
Borehole 1114R[d]			
290	1928	0.5	14000
290	1928	1.0	15000
290	1928	1.5	16000
290	1928	2.0	17000
290	1928	2.5	29000
290	1928	3.0	51000
290	1928	3.5	78000
290	1928	4.0	79000
290	1928	4.5	75000
290	1928	5.0	86000

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TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1114R (continued)[d]			
290	1928	5.5	105000
290	1928	6.0	78000
290	1928	6.5	35000
290	1928	7.0	15000
290	1928	7.5	8000
290	1928	8.0	12000
290	1928	8.5	12000
Borehole 1135R			
299	1999	0.5	6000
299	1999	1.0	7000
299	1999	1.5	7000
299	1999	2.0	7000
299	1999	2.5	7000
299	1999	3.0	7000
299	1999	3.5	9000
299	1999	4.0	9000
299	1999	4.5	8000
299	1999	5.0	8000
299	1999	5.5	9000
Borehole 1099R[d]			
318	1821	0.5	8000
318	1821	1.0	9000
318	1821	1.5	10000
318	1821	2.0	10000
318	1821	2.5	9000
318	1821	3.0	10000
318	1821	3.5	9000
318	1821	4.0	10000
318	1821	4.5	9000
318	1821	5.0	8000
318	1821	5.5	8000
318	1821	6.0	9000
318	1821	6.5	9000
318	1821	7.0	12000
318	1821	7.5	11000

TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 2042R			
326	1988	0.5	7000
326	1988	1.0	7000
326	1988	1.5	8000
326	1988	2.0	10000
326	1988	2.5	8000
326	1988	3.0	8000
326	1988	3.5	9000
326	1988	4.0	9000
326	1988	4.5	9000
326	1988	5.0	9000
326	1988	5.5	9000
326	1988	6.0	10000
326	1988	6.5	11000
326	1988	7.0	12000
326	1988	7.5	13000
326	1988	8.0	13000
326	1988	8.5	13000
326	1988	9.0	13000
326	1988	9.5	11000
326	1988	10.0	12000
Borehole 1098R[d]			
329	1753	0.5	6000
329	1753	1.0	8000
329	1753	1.5	7000
329	1753	2.0	8000
329	1753	2.5	7000
329	1753	3.0	7000
329	1753	3.5	7000
329	1753	4.0	7000
329	1753	4.5	7000
329	1753	5.0	6000
329	1753	5.5	6000
329	1753	6.0	6000
329	1753	6.5	6000
329	1753	7.0	5000
329	1753	7.5	5000
329	1753	8.0	5000

TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1093R[d]			
329	1855	0.5	7000
329	1855	1.0	12000
329	1855	1.5	13000
329	1855	2.0	12000
329	1855	2.5	12000
329	1855	3.0	12000
329	1855	3.5	13000
329	1855	4.0	16000
329	1855	4.5	32000
329	1855	5.0	49000
329	1855	5.5	36000
329	1855	6.0	47000
329	1855	6.5	24000
329	1855	7.0	13000
329	1855	7.5	11000
329	1855	8.0	12000
Borehole 1094R[d]			
329	1899	0.5	8000
329	1899	1.0	11000
329	1899	1.5	12000
329	1899	2.0	13000
329	1899	2.5	14000
329	1899	3.0	14000
329	1899	3.5	19000
329	1899	4.0	36000
329	1899	4.5	50000
329	1899	5.0	132000
329	1899	5.5	87000
329	1899	6.0	37000
329	1899	6.5	17000
329	1899	7.0	12000
Borehole 1113R[d]			
330	1930	0.5	13000
330	1930	1.0	15000
330	1930	1.5	27000
330	1930	2.0	34000
330	1930	2.5	43000

TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1113R (continued)[d]			
330	1930	3.0	41000
330	1930	3.5	45000
330	1930	4.0	96000
330	1930	4.5	306000
330	1930	5.0	373000
330	1930	5.5	137000
330	1930	6.0	78000
330	1930	6.5	48000
330	1930	7.0	22000
330	1930	7.5	14000
330	1930	8.0	10000
330	1930	8.5	9000
Borehole 1085R[d]			
334	1953	0.5	13000
334	1953	1.0	18000
334	1953	1.5	33000
334	1953	2.0	28000
334	1953	2.5	15000
334	1953	3.0	9000
334	1953	3.5	7000
334	1953	4.0	7000
334	1953	4.5	8000
334	1953	5.0	10000
334	1953	5.5	12000
334	1953	6.0	12000
334	1953	6.5	12000
334	1953	7.0	13000
334	1953	7.5	13000
Borehole 1096R[d]			
347	1814	0.5	8000
347	1814	1.0	11000
347	1814	1.5	11000
347	1814	2.0	11000
347	1814	2.5	12000
347	1814	3.0	21000
347	1814	3.5	52000
347	1814	4.0	52000

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TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1096R (continued)[d]			
347	1814	4.5	14000
347	1814	5.0	9000
347	1814	5.5	9000
347	1814	6.0	8000
347	1814	6.5	8000
347	1814	7.0	9000
347	1814	7.5	10000
347	1814	8.0	10000
Borehole 1065R[d]			
355	1700	0.5	9000
355	1700	1.0	9000
355	1700	1.5	10000
355	1700	2.0	9000
355	1700	2.5	8000
355	1700	3.0	8000
355	1700	3.5	8000
355	1700	4.0	7000
355	1700	4.5	7000
355	1700	5.0	7000
355	1700	5.5	7000
355	1700	6.0	7000
355	1700	6.5	7000
355	1700	7.0	7000
355	1700	7.5	7000
355	1700	8.0	7000
355	1700	8.5	7000
Borehole 1038R			
360	1920	0.5	10000
360	1920	1.0	10000
360	1920	1.5	11000
360	1920	2.0	11000
360	1920	2.5	11000
360	1920	3.0	13000
360	1920	3.5	16000
360	1920	4.0	26000
360	1920	4.5	58000
360	1920	5.0	135000

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TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1038R (continued)			
360	1920	5.5	57000
360	1920	6.0	18000
360	1920	6.5	12000
360	1920	7.0	10000
360	1920	7.5	9000
360	1920	8.0	9000
360	1920	8.5	9000
Borehole 1092R[d]			
372	1878	0.5	10000
372	1878	1.0	10000
372	1878	1.5	12000
372	1878	2.0	12000
372	1878	2.5	14000
372	1878	3.0	17000
372	1878	3.5	21000
372	1878	4.0	36000
372	1878	4.5	105000
372	1878	5.0	132000
372	1878	5.5	53000
372	1878	6.0	24000
372	1878	6.5	15000
372	1878	7.0	13000
372	1878	7.5	13000
Borehole 1082R[d]			
378	1955	0.5	9000
378	1955	1.0	9000
378	1955	1.5	8000
378	1955	2.0	7000
378	1955	2.5	8000
378	1955	3.0	8000
378	1955	3.5	8000
378	1955	4.0	8000
378	1955	4.5	8000
378	1955	5.0	8000
378	1955	5.5	9000
378	1955	6.0	11000
378	1955	6.5	12000

TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1082R (continued)[d]			
378	1955	7.0	12000
378	1955	7.5	12000
Borehole 1005R[d]			
382	1799	0.5	9000
382	1799	1.0	10000
382	1799	1.5	11000
382	1799	2.0	10000
382	1799	2.5	10000
382	1799	3.0	9000
382	1799	3.5	10000
382	1799	4.0	10000
Borehole 1002R[d]			
382	1825	0.5	9000
382	1825	1.0	10000
382	1825	1.5	11000
382	1825	2.0	16000
382	1825	2.5	40000
382	1825	3.0	48000
382	1825	3.5	40000
382	1825	4.0	16000
382	1825	4.5	11000
382	1825	5.0	9000
Borehole 1004R			
390	1795	0.5	9000
390	1795	1.0	10000
390	1795	1.5	11000
390	1795	2.0	10000
390	1795	2.5	10000
390	1795	3.0	10000
390	1795	3.5	10000
390	1795	4.0	9000
390	1795	4.5	9000

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TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1089R[d]			
398	1890	0.5	16000
398	1890	1.0	15000
398	1890	1.5	15000
398	1890	2.0	16000
398	1890	2.5	25000
398	1890	3.0	46000
398	1890	3.5	88000
398	1890	4.0	179000
398	1890	4.5	186000
398	1890	5.0	91000
398	1890	5.5	70000
398	1890	6.0	81000
398	1890	6.5	76000
398	1890	7.0	59000
398	1890	7.5	32000
398	1890	8.0	19000
398	1890	8.5	18000
Borehole 1068R[d]			
412	1661	0.5	9000
412	1661	1.0	10000
412	1661	1.5	10000
412	1661	2.0	10000
412	1661	2.5	11000
412	1661	3.0	12000
412	1661	3.5	11000
412	1661	4.0	10000
412	1661	4.5	9000
412	1661	5.0	7000
412	1661	5.5	6000
Borehole 1066R[d]			
414	1845	0.5	16000
414	1845	1.0	20000
414	1845	1.5	24000
414	1845	2.0	39000
414	1845	2.5	88000
414	1845	3.0	116000
414	1845	3.5	57000

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TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1066R (continued)[d]			
414	1845	4.0	25000
414	1845	4.5	14000
414	1845	5.0	11000
414	1845	5.5	11000
414	1845	6.0	12000
414	1845	6.5	12000
414	1845	7.0	12000
414	1845	7.5	12000
414	1845	8.0	11000
414	1845	8.5	11000
414	1845	9.0	11000
414	1845	9.5	12000
414	1845	10.0	12000
414	1845	10.5	11000
414	1845	11.0	12000
414	1845	11.5	11000
414	1845	12.0	10000
414	1845	12.5	9000
414	1845	13.0	9000
414	1845	13.5	9000
414	1845	14.0	10000
414	1845	14.5	11000
414	1845	15.0	11000
414	1845	15.5	11000
414	1845	16.0	11000
Borehole 1067R[d]			
415	1761	0.5	10000
415	1761	1.0	10000
415	1761	1.5	10000
415	1761	2.0	10000
415	1761	2.5	10000
415	1761	3.0	10000
415	1761	3.5	10000
415	1761	4.0	10000
415	1761	4.5	10000
415	1761	5.0	10000
415	1761	5.5	11000
415	1761	6.0	12000
415	1761	6.5	12000

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TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1067R (continued)[d]			
415	1761	7.0	11000
415	1761	7.5	11000
415	1761	8.0	11000
415	1761	8.5	11000
Borehole 1083R[d]			
416	1952	0.5	9000
416	1952	1.0	9000
416	1952	1.5	9000
416	1952	2.0	9000
416	1952	2.5	8000
416	1952	3.0	8000
416	1952	3.5	8000
416	1952	4.0	7000
416	1952	4.5	7000
416	1952	5.0	8000
416	1952	5.5	8000
416	1952	6.0	8000
416	1952	6.5	9000
416	1952	7.0	10000
416	1952	7.5	11000
Borehole 1076R[d]			
424	1909	0.5	8000
424	1909	1.0	9000
424	1909	1.5	8000
424	1909	2.0	7000
424	1909	2.5	7000
424	1909	3.0	7000
424	1909	3.5	8000
424	1909	4.0	9000
424	1909	4.5	10000
424	1909	5.0	11000
424	1909	5.5	12000
424	1909	6.0	12000
424	1909	6.5	13000
424	1909	7.0	13000
424	1909	7.5	13000
424	1909	8.0	13000

TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1076R (continued)[d]			
424	1909	8.5	12000
424	1909	9.0	12000
424	1909	9.5	12000
424	1909	10.0	12000
424	1909	10.5	11000
424	1909	11.0	11000
424	1909	11.5	11000
424	1909	12.0	11000
424	1909	12.5	11000
424	1909	13.0	11000
424	1909	13.5	10000
Borehole 1112R[d]			
426	1823	0.5	12000
426	1823	1.0	13000
426	1823	1.5	10000
426	1823	2.0	9000
426	1823	2.5	9000
426	1823	3.0	9000
426	1823	3.5	9000
426	1823	4.0	10000
426	1823	4.5	13000
426	1823	5.0	14000
426	1823	5.5	14000
426	1823	6.0	13000
426	1823	6.5	13000
426	1823	7.0	13000
426	1823	7.5	13000
426	1823	8.0	13000
426	1823	9.5	12000
Borehole 1111R[d]			
426	1875	0.5	11000
426	1875	1.0	11000
426	1875	1.5	13000
426	1875	2.0	14000
426	1875	2.5	17000
426	1875	3.0	84000
426	1875	3.5	49000

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TABLE 5-2

(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1111R (continued)[d]			
426	1875	4.0	21000
426	1875	4.5	16000
426	1875	5.0	11000
426	1875	5.5	11000
426	1875	6.0	11000
426	1875	6.5	12000
426	1875	7.0	13000
426	1875	7.5	12000
426	1875	8.0	12000
Borehole 1039R[d]			
428	1718	0.5	7000
428	1718	1.0	9000
428	1718	1.5	8000
428	1718	2.0	8000
428	1718	2.5	8000
428	1718	3.0	7000
428	1718	3.5	7000
428	1718	4.0	7000
428	1718	4.5	5000
428	1718	5.0	8000
428	1718	5.5	7000
428	1718	6.0	6000
428	1718	6.5	5000
428	1718	7.0	5000
428	1718	7.5	5000
428	1718	8.0	6000
Borehole 1088R[d]			
439	1838	0.5	10000
439	1838	1.0	15000
439	1838	1.5	13000
439	1838	2.0	11000
439	1838	2.5	11000
439	1838	3.0	11000
439	1838	3.5	11000
439	1838	4.0	14000
439	1838	4.5	22000
439	1838	5.0	34000

TABLE 5-2
(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1088R (continued)[d]			
439	1838	5.5	35000
439	1838	6.0	23000
439	1838	6.5	15000
439	1838	7.0	13000
Borehole 1183R[d]			
451	1763	0.5	9000
451	1763	1.0	9000
451	1763	1.5	9000
451	1763	2.0	9000
451	1763	2.5	9000
451	1763	3.0	9000
451	1763	3.5	9000
451	1763	4.0	9000
451	1763	4.5	10000
451	1763	5.0	12000
451	1763	5.5	12000
451	1763	6.0	12000
451	1763	6.5	13000
451	1763	7.0	12000
451	1763	7.5	12000
451	1763	8.0	12000
451	1763	8.5	12000
Borehole 1182R[d]			
462	1870	0.5	6000
462	1870	1.0	8000
462	1870	1.5	9000
462	1870	2.0	10000
462	1870	2.5	10000
462	1870	3.0	10000
462	1870	3.5	11000
462	1870	4.0	12000
462	1870	4.5	11000
462	1870	5.0	11000
462	1870	5.5	10000
462	1870	6.0	11000
462	1870	6.5	13000
462	1870	7.0	13000

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TABLE 5-2
(continued)

Coordinates[a] East	Coordinates[a] North	Depth[b] (ft)	Count Rate[c] (cpm)
Borehole 1182R (continued)[d]			
462	1870	7.5	13000
462	1870	8.0	13000
462	1870	8.5	12000

[a]Borehole locations are shown in Figure 4-1.

[b]The variations in depths of boreholes and corresponding results given in this table are based on the boreholes penetrating the contamination or the drill reaching refusal.

[c]Instrument used was 5.0- by 5.0-cm (2- by 2-in.) thallium-activated sodium iodide gamma scintillation detector.

[d]Bottom of borehole collapsed.

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TABLE 5-3

GAMMA RADIATION EXPOSURE RATES

FOR KENNEDY PARK

Coordinates[a]		Rate[b]
East	North	(μR/h)
95	1950	13
110	1955	22
150	1945	15
195	1955	18
240	1950	17
270	1950	5

[a]Measurement locations are shown in Figure 4-3.

[b]Measurements include background.

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063982

APPENDIX A

GEOLOGIC DRILL LOGS FOR JOHN F. KENNEDY PARK

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1185R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
Sidney St. (LODI)	N 1,902 E 36	Vertical	

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
12-2-87	12-2-87	E.D.I.	MOBILE B-57	6.5"	10.0		10.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
7.0/70		5			6.7/ 12/2/87	

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/ 30 in.	NONE	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADV. LEN. CORE	SAMPLE REC. CORE REC.	SAMPLE "N" BLOWS / % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME MIN.	ELEV.	DEPTH	GRAPHICS	SYMBOLS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.5	17-23 27-20								0.0 - 3.3 Ft. GRAVEL, Gravelly SILT and SILT FILL (GP, GM-ML, OL).	Borehole advanced 0-10 Ft. using 6.5 in. o.d. hollow-stem auger. Radiologically sampled and gamma-logged by TMA-Eberline, Inc.
SS	2.0	1.6	12-16 16-24								0.0-3.1 Ft. Gravelly SILT, mixed black with dark grayish brown silty sand, some Brunswick sandstone gravel, broken basalt gravel on top.	
SS	2.0	0.7	15-12 18-18					5			2.3-3.1 Ft. Broken basalt gravel.	
											3.1-3.3 Ft. SILT, black.	
SS	2.0	1.3	10-15 13-14								3.3 - 4.5 Ft. Sandy SILT (ML, FILL?). Light gray (5Y6/1). Very fine-grained, dry, crumbles to powder with finger pressure.	Eberline collected supplimentary sample from auger for 4-6'.
SS	2.0	1.8	9-10 14-20								4.2-4.5 Ft. Pinkish gray (7.5YR7/2).	
								10			4.5 - 10 Ft. SILT (ML). Weak red (2.5YR5/2) becoming gray downward, brown (5Y4/3) when mixed on augers.	6.7 Ft. Groundwater observed.
											4.5-6.7 Ft. Iron-oxide stained.	
											8.8-10.0 Ft. Laminated, gray and light gray layers 3-5 mm. thick.	
											Bottom of borehole at 10.0 Ft. Borehole backfilled with spoils, 12/2/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
Sidney St. (LODI)	1185R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1084R

SITE	COORDINATES	ANGLE FROM HORIZ	BEARING
J.F.Kennedy Park (LODI)	N 1,731 E 74	Vertical	

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-3-87	11-4-87	G. Engel; BNI	Minuteman Auger	4"	18.8		18.8

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
16.1/85		19				

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/ 30 in	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	0.6									0.0 - 1.0 Ft. Sandy silty CLAY (CL-ML). Very dusky red (10R2/2) mottled with moderate reddish brown (10R4/6). Fine- to medium-grained sand. Some pieces of glass. Humus.	Borehole advanced 0-18.8 Ft. using 3" i.d. split-spoon sampler and 4" o.d. solid-stem augers.
SS	1.0	0.4										
SS	0.5	0.6										
SS	0.5	0.5										
SS	1.0	1.0									1.0 - 2.5 Ft. SAND (SP). Dark yellowish brown (10YR4/2), mottled with pale yellowish brown (10YR6/2). Fine- to very coarse-grained decreasing to medium coarse-grained with depth.	
SS	0.8	0.4										
SS	1.0	1.0						5				
SS	1.0	1.0									2.5 - 3.0 Ft. Sandy SILT (ML). Pale yellowish brown (10YR6/2). Fine- to medium-grained sand component.	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	1.0	1.0										
SS	1.0	0.6									3.0 - 18.7 Ft. SAND (SP). Dark yellowish brown (10YR4/2), fine- to very coarse-grained.	
SS	1.0	1.0										
SS	1.0	1.0						10			4.0-5.4 Ft. Pale brown (5YR5/2).	Augered to 9.0 Ft. Gamma-scanned to 4.0 Ft.
SS	1.0	1.0									5.4-6.5 Ft. Clayey; grayish brown (5YR5/2).	
SS	1.0	1.0									6.5-10.0 Ft. Moderate brown (5YR3/4).	
SS	1.0	1.0									7.3-7.5 Ft. Small pebbles.	
SS	1.0	1.0										
SS	1.0	1.0						15			10.0-18.7 Ft. Pale brown.	
SS	1.0	1.0									11.0-11.2 Ft. Increased very coarse-grained fraction; pebbles.	
SS	2.0	2.0									15.7 - 16.6 Ft. Silty SAND (SM). Grayish red (10R4/2), very fine- to fine-grained.	
											16.6 - 16.8 Ft. SAND (SP). Moderate brown (5YR3/4), fine- to very coarse-grained with pebbles.	
											16.8 - 18.8 Ft. Silty SAND (SM). Same as 15.7 - 16.6 Ft.	
											Bottom of borehole at 18.8 Ft. Borehole backfilled with spoils, 11/4/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1084R

0039822

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1204R

SITE	COORDINATES	ANGLE FROM HORIZ	BEARING
J.F.Kennedy Park (LODI)	N 1,941 - E 77	Vertical	-------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
12-3-87	12-3-87	G. Engel; BNI	Minuteman Auger	3"	9.0		9.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
6.9/77		9			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs./18 in.	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME MIN MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	0.8									0.0 - 0.8 Ft. Silty Sandy CLAY (CL-ML). Dusky brown (5YR3/2), fine- to medium-grained.	Borehole advanced 0-9.0 Ft. using 3" i.d. split-spoon sampler and 4" o.d. solid-stem augers.
SS	1.0	0.8									0.8 - 1.6 Ft. Clayey Silty SAND (SC-SM). Moderate reddish brown (10R4/6), fine- to medium-grained.	
SS	1.0	0.8									1.6 Ft. Basalt fragment.	
SS	1.0	1.0									1.6 - 3.4 Ft. Silty SAND (SM). Moderate brown (5YR3/4), fine- to coarse-grained grayish black (N2) specks.	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	1.0	0.9						5			3.4 - 4.5 Ft. CLAY (CL). Dark yellowish brown (10YR4/2).	
SS	1.0	1.0									3.5 Ft. Moderate red (5R4/6).	
SS	1.0	0.8									3.9-4.5 Ft. Grayish black (N2).	
SS	2.0	0.8									4.5 - 5.9 Ft. SAND (SP). Olive gray (5Y4/1), fine- to very coarse-grained with pebbles.	Augered and gamma-logged to 6.5 Ft.
											5.1-5.6 Ft. Black (N1).	
											5.6-5.9 Ft. Olive gray (5Y4/1).	
											5.9 - 9.0 Ft. Silty CLAY (CL-ML). Pale red (5R6/2) layered with light brownish gray (5YR6/1) with light olive brown (5Y5/6) at top of the sequence.	
											5.9-6.2 Ft. Brunswick sandstone clasts.	
											Bottom of borehole at 9.0 Ft. Borehole backfilled with spoils, 12/3/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1204R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1062R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,762 E 88	Vertical	-------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-26-87	10-26-87	E.D.I.	MOBILE B-57	6.5"	14.0		14.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
10.2/85		7			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in.	NA	D. Harnish

SAMP. TYPE AND NUMBER	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS - N % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SYMBOL	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.0	2-4-6-6								0.0 - 2.0 Ft. Silty SAND (SM-OL). Very dark grayish brown (10YR3/2), fine-grained, organic.	Borehole advanced 0-14 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp. 4-14 Ft. Very wet.
SS	2.0	1.3	3-7-10 21								0.7-2.0 Ft. Bits of charcoal and white powdery material.	
SS	2.0	1.4	6-7-8-8					5			2.0 - 4.0 Ft. SAND (SP). Fine-grained, bits of dark reddish brown shale.	
SS	2.0	1.1	2-6-6-4								2.6-3.2 Ft. Gravelly sand, coarse-grained.	
SS	2.0	2.0	3-6-8 60								4.0 - 14.0 Ft. Silty SAND (SM). Dark brown (7.5YR3/4), fine- and medium-grained, wet.	
SS	2.0	1.8	7-6 10-8					10			6.0-8.3 Ft. Coarse-grained, some gravel of dark reddish brown Brunswick sandstone.	
SS	2.0	1.7	3-4-6-7								9.3-10.0 Ft. Silt and sand, fine-grained, interbedded with 7mm-4cm layers.	
											10.0-13.0 Ft. Sand, fine-grained.	
											Bottom of borehole at 14.0 Ft. Borehole backfilled with spoils, 10/26/87.	14.0 Ft. Hole collapsed; sand heave into auger.

Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1062R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1133R

SITE	COORDINATES	ANGLE FROM HORIZ	BEARING
Money St. (LODI)	N 1,986 E 94	Vertical	--------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-13-87	11-13-87	E.D.I.	MOBILE B-57	6.5"	10.0		10.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
4.8/48		5			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs./30 in.	NONE	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE.	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	0.0	13-19 15-16								0.0 - 4.0 Ft. Silty GRAVEL and SILT FILL.	Borehole advanced 0-10 Ft. using 6.5 in. o.d. hollow-stem auger. Radiologically sampled and gamma-logged by TMA-Eberline, Inc.
SS	2.0	0.0	4-8-10 8								0.0-1.0 Ft. Silty gravel. 1.0-4.0 Ft. Silt. Very dark gray (10YR 3/2). Pieces of bluish gray clay and coal.	
SS	2.0	1.6	2-5-3-6					5			4.0 - 4.9 Ft. Organic SILT (FILL) (ML). Gray (10YR5/1) with some yellowish brown iron-oxide stain. 4.5-4.7 Ft. Black, liquefied.	
SS	2.0	1.9	7-13 9-13								4.9 - 6.7 Ft. CLAY (CL). Light greenish gray, minor iron-oxide mottling.	
SS	2.0	1.3	2-4-14 21								6.7 - 8.5 Ft. Silty SAND (SM). Grayish brown, very fine-grained, minor gravel. 6.7-6.9 Ft. Light greenish gray.	Hole caved in to 2.5 Ft. Redrilled to 8.0 ft. for gamma log.
											8.5 - 10.0 Ft. Silty SAND (SM). Dark reddish gray, medium-grained, some soft clay rip-ups, round gravel. Stream sand.	
											Bottom of borehole at 10.0 Ft. Borehole backfilled with spoils, 11/13/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
Money St. (LODI)	1133R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1063R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,671 E 99	Vertical	--------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-26-87	10-26-87	E.D.I.	MOBILE B-57	6.5"	12.0		12.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
9.3/78		6			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NA	D. Harnish

SAMP. TYPE AND NUM.	SAMP. ADJ. LEN CORE	PENETR. RES. CORE REC.	SAMPLE BLOWS-IN % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.4	2-3-8-7							0.0 - 6.0 Ft. SILT and SAND FILL (ML-OL, SP-SC).	Borehole advanced 0-12 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp. 5-12 Ft. Saturated.
SS	2.0	1.4	3-7-10 6							0.0-1.1 Ft. Silt, very dark grayish brown (10YR3/2); nail at 0.5 Ft, organic topsoil.	
										1.1-2.7 Ft. Sand, strong brown (7.5YR4/6), fine-grained, loose, slightly damp.	
SS	2.0	1.5	2-7-11 6					5		2.7-6.0 Ft. Gravelly sand, strong brown (7.5YR4/6), medium-grained.	
SS	2.0	1.5	3-15 10-10							6.0 - 12.0 Ft. SAND (SM). Reddish brown (5YR4/3), medium- and fine-grained, wet.	
SS	2.0	2.0	2-4-5 57								
SS	2.0	1.5	2-2-7 21					10		9.8-10.0 Ft. Clay, reddish brown (5YR4/3).	
										10.0-12.0 Ft. Pressurized, liquefied, saturated sands.	
										Bottom of borehole at 12.0 Ft. Borehole backfilled with spoils, 10/26/87.	10-12 Ft. Hole collapsed to 7 Ft. Sand heave into auger.
											Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1063R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1001R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,909 E 100	Vertical	-------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
9-26-87	9-28-87	G. Engel; BNI	Minuteman Auger	4"	14.0		14.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
/		8			5.0/ 8/28/87	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
N/A	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.9										0.0 - 3.8 Ft. Silty CLAY (CL-ML). Red-brown, powdery dry.	Borehole advanced 0-14 Ft. using 3" split-spoon sampler and 4" o.d. solid-stem auger.
SS	1.1										2.0-2.3 Ft. Transition to brown.	
SS	0.8										2.2-3.8 Ft. Black fragments (<0.25 in.) in matrix of dark gray material.	Borehole gamma-logged and sampled for radiological contamination by TMA-Eberline, Corp. Moist at 1.5 Ft. Saturated at 6.0 Ft.
SS	1.8							5			3.8 - 4.5 Ft. Silty SAND (SM). Tan-brown, variegated red, black, gray, and tan.	
SS	0.9										4.5 - 6.0 Ft. Clayey Sandy SILT (ML). Brown, fine-grained sand component.	
SS	0.3										6.0 - 13.8 Ft. Silty SAND (SM). Brown, fine- to medium-grained. Decreasing silt and increasing coarse-grained component with depth.	
								10			6.9-7.4 Ft. Brown Silty CLAY.	
											13.8 - 14.0 Ft. Sandy CLAY (CL-ML). Red-brown.	
											Bottom of borehole at 14.0 Ft. Borehole backfilled with grout, 8/28/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1001R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1186R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,605 E 101	Vertical	

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
12-2-87	12-2-87	E.D.I.	MOBILE B-57	6.5"	10.0		10.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
7.6/76		5			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NONE	D. Harnish

SAMP. NO. & TYPE	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SOIL DESC.	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.4	2-7-10 6								0.0 - 3.3 Ft. Silty SAND FILL (SM). Dark yellowish brown (10YR5/6), fine- to medium-grained, uniformly graded; top is dark brown (10YR3/3) topsoil.	Borehole advanced 0-10 Ft. using 3" I.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	1.6	6-10 8-10									
SS	2.0	1.7	16-20 16-20					5			3.3 - 10.0 Ft. SAND (SP). Brown (10YR4/3), fine-grained, some silt and gravel, wet.	
SS	2.0	1.3	7-9-9 11								6.0-6.7 Ft. Gravelly.	
SS	2.0	1.7	17-19 20-21					10			Bottom of borehole at 10.0 Ft. Borehole backfilled with spoils, 12/2/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1186R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 of 1	1110R

SITE	COORDINATES	ANGLE FROM HORIZ	BEARING
J.F.Kennedy Park (LODI)	N 1,888 E 110	Vertical	--------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-3-87	11-3-87	E.D.I.	MOBILE B57	6.5"	9.0		9.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
5.6/62		5			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY
140 lbs/30 in	NONE	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN. CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	0.8	1-7-7-2								0.0 - 5.9 Ft. Silty GRAVEL and SAND FILL (GM, SP).	Borehole advanced 0-9 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	0.8	1-1-1-1								0.0-0.5 Ft. Topsoil, dark brown (10YR3.3).	
SS	1.0	0.4	15-11 50/0"					5			0.5-4.0 Ft. Silty gravel, dusky red (2.5YR3/2), decomposed Brunswick sandstone and shale, poorly compacted.	
SS	2.0	1.8	10-9 9-15								4.0-5.5 Ft. Sand, yellowish brown (10YR5/6), very fine-grained.	
SS	2.0	1.8	9-15 17-19								5.5-5.9 Ft. Sandy gravel, rounded.	
											5.9 - 9.0 Ft. SILT and CLAY (ML, CL). Weak red (2YR4/2) and light gray with some iron-oxide mottling, laminated.	
											7.0-8.1 Ft. Silt, brown (7.5YR4/2).	
											Bottom of borehole at 9.0 ft. Borehole backfilled with spoils, 11/3/87.	
												Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1110R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1071R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,806 E 108	Vertical	--------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-28-87	10-28-87	E.D.I.	MOBILE B-57	6.5"	17.0		17.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
8.4/70	6				/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NA	D. Harnish

SAMP. TYPE AND NO.	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS IN % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	0.5	2-3-6-5								0.0 - 0.5 Ft. Silty SAND (SM-OL). Dark brown (7.5YR3/2), topsoil.	Borehole advanced 0-17 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	1.5	2-5-10 17								0.5 - 4.0 Ft. Silty SAND FILL (SM). Some gravel.	
SS	2.0	1.4	20-27-24					5			0.5-2.6 Ft. Dusky red (7.5R3/4), very fine-grained, hard, imported decomposed Brunswick sandstone.	
SS	2.0	1.1	9-11 10-11								2.6-4.0 Ft. Strong brown (7.5YR5/6), medium-grained, some subangular gravel, wet.	
SS	2.0	1.9	13-13 17-18								4.0 - 8.7 Ft. SAND (SW). Dark gray (10YR4/1), medium-grained, some gravel, loose, wet.	4.0 Ft. Groundwater observed.
SS	2.0	2.0	2-4-7 30					10			8.7 - 9.2 Ft. SILT (ML). Dark yellowish brown (10YR4/4).	
											8.9-9.0 Ft. Sand, fine-grained.	
											9.2 - 17.0 Ft. Silty SAND (SM). Reddish brown (5YR5/3), medium-grained, some gravel.	Sand heave in auger after 10-12 Ft. sample attempted.
											10.7-10.8 Ft. Sandy gravel.	14.0 Ft. Sampler refusal.
								15				
											Bottom of borehole at 17.0 Ft. Borehole backfilled with spoils, 10-28-87.	17.0 Ft. Auger refusal.
												Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1071R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 of 1	1080R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,951 E 111	Vertical	

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-30-87	10-30-87	G. Engel; BNI	Minuteman Auger	4"	7.4		7.4

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
5.7/77		8			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. ADVL. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	PRESS. P.S.I.	TIME MIN.	ELEV.	DEPTH	GRAPHICS	SYMBOL	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	0.6									0.0 - 1.0 ft Silty Sandy CLAY (CL-ML). Grayish brown (5YR5/3), mottled with dark reddish brown (10R3/4). Fine- to medium-grained sand.	Borehole advanced 0-7.4 Ft. using 3" i.d. split-spoon sampler and 4" o.d. solid-stem augers.
SS	1.0	0.7									1.0 - 2.0 Ft. Silty CLAY (CL). Dusky brown (5YR3/2), mottled with brownish black (5YR2/1).	
SS	1.0	1.0									2.0 - 4.7 Ft. CLAY (CL). Dusky brown with specks of moderate red (5YR4/6) - probably brick.	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	1.0	0.4									4.7 - 5.7 Ft. Sandy CLAY (CL). Pale brown (5YR5/2), with fine- to medium-grained sand.	
SS	1.0	1.0						5			5.7 - 6.9 Ft. Clayey SAND (SC). Pale yellowish brown (10YR6/2), fine- to medium-grained sand.	
SS	1.0	0.6									6/9 - 7/4 Ft. Sandy Silty CLAY (CL-ML). Grayish red (10R4/2) mottled with moderate reddish brown (10R4/6).	Augered to 5.0 Ft. Gamma-scanned to 3.5 Ft.
SS	1.0	1.0										
SS	0.7	0.5										
SS	1.0	1.0										
SS	0.7	0.5										

Bottom of borehole at 7.4 Ft.
Borehole backfilled with spoils, 10/30/87.

Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1080R

0613982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1107R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,543 E 110	Vertical	-------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-3-87	11-3-87	E.D.I.	MOBILE B57	6.5"	10.0		10.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
8.8/88		5			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NONE	D. Harnish

SAMP. TYPE AND NO.	SAMP. ADVA LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.9	4-7-4-4							0.0 - 4.5 Ft. SILT and SAND FILL (ML-OL, SP).	Borehole advanced 0-10 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	1.9	3-3-3-3							0.0-0.3 Ft. Sand, yellow (10YR3/6).	
SS	2.0	1.3	3-5-11 11					5		0.3-0.8 Ft. Sand, dark brown to black (10YR2/1).	
SS	2.0	2.0	11-11 16-11							0.8-2.4 Ft. Sand, reddish brown (5YR4/4), fine-grained; minor black silt interbedded at base.	
SS	2.0	1.7	7-10 14-20							2.4-4.5 Ft. Sand, yellowish brown (10YR5/6), fine-grained, some small pebbles.	
										4.5 - 10.0 Ft. Silty SAND (SM). Dark brown (10YR4/3), medium-grained, some small gravel, subrounded.	
								10		7.0-7.2 Ft. Silt.	
										8.0-8.2 Ft. Clay.	
										9.7-10.0 Ft. Fine-grained, bedded.	
										Bottom of borehole at 10.0 Ft. Borehole backfilled with spoils, 11/3/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1107R

06398.2

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1080AR

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,951 E 112	Vertical	

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-30-87	10-30-87	G. Engel; Bill	Minuteman Auger	4"	9.0		9.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
/					/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
N/A	NONE	R. Migues

BAND AND TYPE	SAMP. AND LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS 6"	% CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
									5			0.0 - 9.0 Ft Geologic drill log not recorded. This borehole was gamma-logged and sampled, only.	Borehole advanced 0-9 Ft. using 3" i.d. split-spoon sampler and 4" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
												Bottom of borehole at 9.0 Ft. Borehole backfilled with spoils, 10/30/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1080AR

06398-2

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1051R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,928 E 114	Vertical	-------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-21-87	10-21-87	E.D.I.	MOBILE B-57	6.5"	13.5		13.5

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
9.9/73		7			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NA	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	0.5	3-5-8 11								0.0 - 6.0 Ft. Organic silty SAND, Sandy SILT, and Gravelly sandy SILT FILL (SM-OL, ML, GM-SM-ML).	Borehole advanced 0-13.5 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers.
SS	2.0	0.8	5-19-6 3								0.0-1.5 Ft. Organic silty sand, dark brown (10YR2/3) topsoil.	
SS	2.0	1.4	6-5-3 19					5			1.5-2.3 Ft. Sandy silt, dark grayish brown (10YR4/2), fine- to medium-grained.	
SS	2.0	2.0	21-10 11-10								2.3-6.0 Ft. Gravelly sandy silt, brown, medium-grained sand; bits of charcoal, brick, broken gravel.	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp. 13.5 ft. Sampler and auger refusal.
SS	2.0	1.2	3-10-11 12								6.0 - 13.4 Ft. Gravelly SAND, Silty SAND (SW, SM). Brown, coarsens downward, wet.	
SS	2.0	2.0	3-3-10 11					10			8.0-8.4 Ft. Clay, brown (10YR4/2).	
SS	1.5	1.5	14-22 100/5"								8.4-12.0 Ft. Medium- to coarse-grained.	
											12.0-13.4 Ft. Medium-grained sand with medium- to coarse-grained gravel.	
											13.4 - 13.5 Ft. CLAY (CL). Weak red residual clay.	
											Bottom of borehole at 13.5 Ft. Borehole backfilled with spoils, 10/21/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1051R

0639.82

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1075R

SITE	COORDINATES	ANGLE FROM HORIZ	BEARING
J.F.Kennedy Park (LODI)	N 1,903 E 217	Vertical	

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-29-87	10-29-87	E.D.I.	MOBILE B-57	6.5"	8.0		8.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
7.1/89		4			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NA	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.5	1-3-3-3							0.0 - 6.9 Ft. Silty SAND and SILT FILL (SM, ML, OL).	Borehole advanced 0-8 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	1.8	6-11-3 4							0.0-2.3 Ft. Silty sand, dusky red (10R5/4), fine-grained, some dark green gravel.	
SS	2.0	2.0	1-2-3-6					5		2.3-4.4 Ft. Sandy silt, dark yellowish brown (10YR5/6), some gravel, charcoal bits.	
SS	2.0	2.0	5-8-10 12							4.4-6.9 Ft. Silt, black, some dark yellowish brown mixed in, minor white sand.	
										6.9 - 8.0 Ft. CLAY (CL-ML). Pinkish gray (5YR6/2) with yellowish brown iron-oxide stain, silty in places.	
										7.5-8.0 Ft. Reddish brown (5YR4/4).	
										Bottom of borehole at 8.0 Ft. Borehole backfilled with spoils, 10/29/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1075R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1072R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,881 E 144	Vertical	-------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-28-87	10-28-87	E.D.I.	MOBILE B-57	6.5"	10.0		10.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
7.1/71		5			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NA	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ACCU. LEN CORE	SAMPLE REQ. CORE REQ.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.5	6-8-9-5							0.0 - 4.0 Ft. SAND FILL (SP). Fine-grained, gravelly. 0.0-2.5 Ft. Weak red (7.5R4/2), some hard dusky red shale gravel. 2.5-4.0 Ft. Dark yellowish brown (10YR4/6); gravel is white, yellow; some pieces of charcoal.	Borehole advanced 0-10 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Perched groundwater observed in first sample. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	1.4	3-7 10-5								
SS	2.0	1.5	1-2-2-3					5		4.0 - 6.5 Ft. SAND (FILL)? (SM). Brown (7.5YR5/4), medium-grained, silty, damp.	
SS	2.0	1.5	2-6-9-9							6.5 - 8.5 Ft. SAND (SP). Reddish brown (5YR5/3) and gray, mottled with yellowish-brown iron stain, light gray toward base; very fine-grained, finely bedded with 2-3 mm layers.	
SS	2.0	1.6	6-12 13-17					10		8.5 - 10.0 Ft. SILT (ML). Weak red (2.5YR5/3), laminated. 9.5-9.9 Ft. Sand, medium-grained.	
										Bottom of borehole at 10.0 Ft. Borehole backfilled with spoils, 10/28/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1072R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1069R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,932 E 145	Vertical	--------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-27-87	10-27-87	E.D.I.	MOBILE B-57	6.5"	12.0		12.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
5.3/44		6			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NA	D. Harnish

SAMP. TYPE AND NUM.	SAMP. ADV. LEN CORE.	SAMPLE REC. CORE REC.	SAMPLE "N" BLOWS / % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.0	2-4-4-5							0.0 - 8.0 Ft. SAND and SILT FILL (SM, ML-OL).	Borehole advanced 0-12 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	1.0	5-6-4-2							0.0-2.0 Ft. Sand, dusky red (10R3/3), silty.	
SS	2.0	0.3	2-2-4-2					5		2.0-8.0 Ft. Silt, very dark brown to black (10YR2/2), organic, small pieces of orange silt, charcoal.	
SS	2.0	0.6	3-3-4-4								
SS	2.0	1.1	1-2-6-6							8.0 - 10.3 Ft. SILT and CLAY (ML, CL). Weak red (10R5/2) and gray (2.5R6/0), interbedded with 5 mm layers.	Fill was very soft. Easy drilling.
SS	2.0	1.3	1-11 17-14					10		10.3 - 10.6 Ft. CLAY (CL). Yellowish brown.	
										10.6 - 12.0 Ft. SAND (SW). Grayish brown (10YR5/2) to reddish brown (5YR5/4), medium-grained, some silt, some round gravel, wet.	
										Bottom of borehole at 12.0 Ft. Borehole backfilled with spoils, 10/27/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1069R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1056R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,853 E 154	Vertical	-------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-22-87	10-22-87	E.D.I.	MOBILE B-57	6.5"	20.0		20.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
10.8/54		9			6.3/ 10/22/87	

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NA	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS 6" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0		8-13 10-10							0.0 - 6.0 Ft. SAND and SILT FILL (SP, ML).	Borehole advanced 0-20 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers.
SS	2.0	1.3	7-13 10-7							0.0-2.2 Ft. Sand, dusky red (7.5R3/4), very fine-grained.	
SS	2.0	0.0	3-1-2-1					5		2.2-6.0 Ft. Silt, brown (7.5R3/4), with small, soft round pebbles of yellowish brown and reddish brown silt. Some black shiny (charcoal) fragments.	4-8 Ft. Very soft.
SS	2.0	0.4	1-1-2-4							6.0 - 8.0 Ft. SILT (ML). Reddish brown (5YR4/4).	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp. 6.3 Ft. Groundwater observed after hole open 5 hrs.
SS	2.0	1.7	6-9-8-9							8.0 - 14.0 Ft. CLAY and SILT (CL-ML). Weak red (2.5YR5/2), becoming dark reddish gray (5YR 4/2) with depth.	
SS	2.0	1.4	3-7-7-7					10		8.0-12.0 Ft. Silty, weak red (2.5YR5/2).	
SS	2.0	2.0	7-13 11-14							12.0-14.0 Ft. Dark reddish gray (5YR4/2).	
SS	2.0	2.0	3-1-5 10					15		14.0 - 20.0 Ft. SAND (SM). Dark yellowish brown (10YR4/4), fine- to coarse-grained, saturated.	
SS	2.0	2.0	5-6-6 14							14.0-15.0 Ft. Medium-grained.	
										15.0-17.5 Ft. Fine-grained.	
										17.5-18.0 Ft. Coarse-grained.	No sample 18-20 Ft.
								20		Bottom of borehole at 20.0 Ft. Borehole backfilled with spoils, 10/22/87.	20.0 Ft. Auger refusal.

Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1056R

J.F.Kennedy Park (LODI)

HOLE NO.
1070R

06398 2

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1108R

SITE	COORDINATES	ANGLE FROM HORIZ/BEARING
J.F.Kennedy Park (LODI)	N 1,545 E 168	Vertical

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-3-87	11-3-87	E.D.I.	MOBILE B57	6.5"	10.0		10.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
8.5/85		5			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NONE	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS IN 6" X CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.7	4-6-11 9							0.0 - 4.7 Ft. SILT and SAND FILL (OL, SM-SP).	Borehole advanced 0-10 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	2.0	4-5-4-5							0.0-0.3 Ft. Sand, yellow (10YR7/6).	
										0.3-0.8 Ft. Silt, black.	
SS	2.0	1.4	9-12 11-10					5		0.8-2.3 Ft. Sandy silt, yellowish brown (10YR5/6), and silt, dark brown (10YR4/3) mixed, some small gravel.	
										2.3-4.7 Ft. Sand, yellowish brown (10YR5/6), fine-grained, some gravel.	
SS	2.0	1.8	7-8-11 14							4.7 - 10.0 Ft. Silty SAND (SM). Dark brown (10YR4/3), medium- to fine-grained, subangular.	6.0 Ft. Groundwater observed.
SS	2.0	1.6	1-4-8 11							8.0-8.3 Ft. Silty clay, dark brown.	
								10		Bottom of borehole at 10.0 Ft. Borehole backfilled with spoils, 11/3/87.	
											Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1108R

0639.82

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1229R

SITE	COORDINATES	ANGLE FROM HORIZ/BEARING
J.F.Kennedy Park (LODI)	N 1,462 E 169	Vertical

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
12-8-87	12-8-87	E.D.I.	MOBILE B-57	6.5"	10.0		10.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
/		0			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
N/A	NONE	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SYMBOLS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
												Borehole advanced 0-10 Ft. using 6.5" o.d. hollow-stem augers.
											NO SAMPLES TAKEN	
								5				Borehole was gamma-logged by TMA-Eberline, Corp.
								10			BOTTOM OF HOLE 10.0 ft.	No samples.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1229R

06 3 9 8 2

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1052R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,928 E 171	Vertical	-------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-21-87	10-21-87	E.D.I.	MOBILE B-57	6.5"	15.7		15.7

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
12.1/77		7			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NA	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADV. LEN. CORE	SAMPLE REC. CORE REQ.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SYMBOLS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	0.9	5-77 22-7								0.0 - 0.3 Ft. Organic SILT (OL). Topsoil.	Borehole advanced 0-15.7 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers.
SS	2.0	1.8	5-10 17-15								0.3 - 8.5 Ft. Gravelly SILT FILL (GM). 0.3-2.0 Ft. Dusky red decomposed Brunswick sandstone.	
SS	2.0	1.5	4-7-7-4					5			2.0-6.0 Ft. Very dark brown (10YR2/2) with round pebbles, pieces of charcoal, slightly damp.	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp. 9.0 Ft. Groundwater observed.
SS	2.0	1.7	3-4-15 22								6.0-8.5 Ft. Silt, dark grayish brown (10YR4/2), with soft elliptical pebbles of several colors (green, reddish gray). Soft, damp (reddish gray pebbles are decomposed Brunswick sandstone).	
SS	2.0	1.8	6-8-15 13								8.5 - 9.0 Ft. CLAY (CL). Yellowish brown (10YR5/4).	
SS	2.0	0.7	1-2-1-5					10			9.0 - 13.8 Ft. SAND (SW). Yellowish brown (10YR5/4), medium- to coarse-grained, some gravel.	
SS	2.0	2.0	15-55 23-21								13.0-13.8 Ft. Coarse-grained, clean sand, rounded gravel.	
SS	1.7	1.7	21-40-32 100/2"					15			13.8 - 15.7 Ft. SAND and Clayey SILT (SM, ML). Weak red (10YR4/4), sand is very fine-grained and is above clayey silt and bedrock residuum.	15.7 Ft. Auger refusal.
											Bottom of borehole at 15.7 Ft. Borehole backfilled with spoils, 10/21/87.	
												Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1052R

0613982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1134R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
Money St. (LODI)	N 1,986 E 189	Vertical	-------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-13-87	11-13-87	E.D.I.	MOBILE B-57	6.5"	8.0		8.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
5.6/70		4			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs./ 30 in.	NONE	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.8	25-16 9-7								0.0 - 6.0 Ft. SAND and SILT FILL (SP, OL).	Borehole advanced 0-8Ft. using 6.5 in. o.d. hollow-stem auger. Radiologically sampled and gamma-logged by TMA-Eberline, Inc.
SS	2.0	1.8	1-2-3-6								0.0-0.6 Ft. Silty gravel. Broken basalt gravel, road sub-grade.	
SS	2.0	0.2	10-9 8-7					5			0.6-2.9 Ft. Silt. Dark grayish brown (10YR 4/2). Organic, some fine-grained sand.	
SS	2.0	1.8	11-15 17-18								1.8-1.9 Ft. Sand. Yellowish brown, fine-grained.	
											2.9-6.0 Ft. Sand. Yellowish brown (10YR5/6). Fine-grained.	
											6.0 - 8.0 Ft. CLAY (CL). Weak red (10R4/2) with yellowish brown iron-oxide mottling.	
											7.8-8.0 Ft. Thin interbeds of medium-grained, clean sand.	
											Bottom of borehole at 8.0 Ft. Borehole backfilled with spoils, 11/13/87.	

Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: Money St. (LODI)

HOLE NO. 1134R

061398

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1219R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,697 E 196	Vertical	-------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
12-8-87	12-8-87	E.D.I.	MOBILE B-57	6.5"	8.0		8.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
/		0			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
N/A	NONE	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE.	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	MODEL	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
								5			NO SAMPLES TAKEN	Borehole advanced 0-8 Ft. using 6.5" o.d. hollow-stem augers. Borehole was gamma-logged by TMA-Eberline, Corp.
											BOTTOM OF HOLE 8.0 ft.	No samples.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1219R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 of 1	1073R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,892 E 201	Vertical	

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-28-87	10-28-87	E.D.I.	MOBILE B-57	6.5"	10.0		10.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
7.5/75		5			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NA	D. Harnish

SAMP. TYPE AND NO.	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS/6" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SYMBOL	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.6	2-6-8-6								0.0 - 4.0 Ft. SAND and SILT FILL (SM-MP, ML-OL). Fine-grained, some gravel.	Borehole advanced 0-10 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	1.6	5-5-4-6								0.0-0.5 Ft. Dark brown (7.5YR3/2) topsoil.	
SS	2.0	1.7	4-6-4-8								0.5-2.2 Ft. Sand, dusky red (10R3/4).	
SS	2.0	1.3	8-7-16-9					5			2.2-3.3 Ft. Yellowish brown, clean sand.	
SS	2.0	1.3	5-7-7-6								3.3-4.0 Ft. SILT (ML-OL). Black, massive, soft, top is interlayered with fill above.	
											4.0 - 6.3 Ft. Silty SAND (SM). Dark yellowish brown (10YR4/6), fine-grained.	
											6.0-6.3 Ft. Gravelly sand.	
								10			6.3 - 9.2 Ft. SILT (ML). Dusky red (10R3/3) and light gray (5YR5/1), mottled with yellowish brown iron-oxide stain.	
											9.2 - 10.0 Ft. CLAY (CL). Gray (5YR5/1), medium stiff.	
											Bottom of borehole at 10.0 Ft. Borehole backfilled with spoils, 10/28/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1073R

06398 2

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1074R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,910 E 201	Vertical	--------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-29-87	10-29-87	E.D.I.	MOBILE B-57	6.5"	10.0		10.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
6.5/65		5			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NA	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADVA. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	PRESS. P.S.I.	TIME MIN.	ELEV.	DEPTH	GRAPHICS	SYMBOLS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.3	3-6-6-3								0.0 - 7.1 Ft. SAND and SILT FILL (SM-SP, ML).	Borehole advanced 0-10 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	0.5	6-7-6-6								0.0-0.5 Ft. Dark brown (7.5YR3/2) organic topsoil.	
SS	2.0	0.8	2-2-3-4					5			0.5-4.3 Ft. Sand, dusky red (7.5R3/2), fine-grained.	
SS	2.0	2.0	6-8-8 10								4.3-7.1 Ft. Silt, various colors mixed, reddish brown, black, greenish gray; some sand, chemical odor.	
SS	2.0	1.9	4-6-9 11								7.1 - 10.0 Ft. CLAY (CL). Weak red (10R5/2) with yellowish brown iron-oxide mottling.	
								10			Bottom of borehole at 10.0 Ft. Borehole backfilled with spoils, 10/29/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1074R

0613982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1081R

SITE	COORDINATES	ANGLE FROM HORIZ/BEARING
J.F.Kennedy Park (LODI)	N 1,952 E 206	Vertical

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-30-87	10-30-87	G. Engel; BNI	Minuteman Auger	4"	9.5		9.5

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
8.4/88		9			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	0.6								0.0 - 2.0 Ft. Silty Sandy CLAY (CL-ML). Dark reddish brown (10R3/4). Fine- to medium-grained sand fraction.	Borehole advanced 0-9.5 Ft. using 3" i.d. split-spoon sampler and 4" o.d. solid-stem augers.
SS	1.0	0.8								1.0-2.0 Ft. Very dusky red (10R2/2) with specks of moderate reddish brown (10R4/6).	
SS	1.0	1.0								2.0 - 5.3 Ft. CLAY (CL). Blackish red (5R2/2) mottled with moderate reddish brown and pale reddish brown (10R5/4).	
SS	1.0	0.7									
SS	1.0	1.0									
SS	1.1	1.1						5			
SS	0.9	0.9								5.3 - 7.0 Ft. Sandy CLAY (CL-ML). Moderate brown (5YR4/4) mixed with blackish red (10R4/6) clay.	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	1.0	1.0								7.0 - 8.3 Ft. Clayey SAND (SC). Dark gray (N3), fine- to medium-grained.	
SS	1.3	1.3								8.0-8.3 Ft. Olive gray (5Y4/1).	
SS	0.2	0.0								8.3 - 9.5 Ft. SAND (SP). Brownish black (5YR2/1), fine- to very coarse-grained. 9.2-9.5 Ft. Pebbles.	Augered to 9.0 Ft. Gamma-scanned to 7.5 Ft.
										Bottom of borehole at 9.5 Ft. Borehole backfilled with spoils, 11/2/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1081R

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1054R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,792 E 207	Vertical	--------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-22-87	10-22-87	E.D.I.	MOBILE B-57	6.5"	18.1		18.1

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
15.8/87		9			6.3/ 10/11/87	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NA	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.3	6-8-12 10							0.0 - 6.3 Ft. Silty SAND and SAND FILL (SM, SP). 0.0-2.0 Ft. Silty sand, reddish brown (5YR4/4), fine-grained, small gravel. 2.0 - 5.3 Ft. Sand, yellowish brown (10YR5/8), fine-grained, slightly damp.	Borehole advanced 0-18.1 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers.
SS	2.0	1.7	8-7-6 11								
SS	2.0	1.8	6-11 8-10					5			
SS	2.0	1.7	8-14 14-20							5.3 - 10.0 Ft. CLAY (CL). Light reddish brown (2.5YR6/4), mottled with iron hydroxide (light yellowish brown) stain, becomes dark brown downward. 6.0-8.0 Ft. Dark brown (7.5YR4/2), minor plant material. 9.1-10.0 Ft. Dark gray (10YR4/1), some silt.	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp. 6.3 Ft. Groundwater observed after hole open 5 hrs.
SS	2.0	2.0	14-13 8-7								
SS	2.0	2.0	7-3-7-9					10			10.0 Ft. Penetrate saturated soil.
SS	2.0	2.0	10-31 33-31							10.0 - 12.0 Ft. CLAY and SAND (CL, SM). Dark brown (7.5YR4/2), sand is fine-grained; interbedded with 0.3-0.5 ft. layers.	
SS	2.0	1.3	9-11 12-13							12.0 - 14.5 Ft. SAND (SP). Dark brown (7.5YR4/2), fine- to medium-grained, wet.	
SS	2.0	2.0	5-5-5-7					15		14.5 - 16.5 Ft. SILT (ML). Dark brown (7.5YR4/2), minor fine-grained sand and clay.	
										16.5 - 18.1 Ft. SAND (SW). Dark brown, (7.5YR4/2) coarse-grained, gravelly toward base; gravel is round to subrounded quartz and green slate.	18.1 ft. Auger refusal.
										Bottom of borehole at 18.1 Ft. Borehole backfilled with spoils, 10/22/87.	
											Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1054R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1095R

SITE	COORDINATES	ANGLE FROM HORIZ	BEARING
J.F.Kennedy Park (LODI)	N 1,819 E 220	Vertical	-------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-24-87	11-24-87	G. Engel; BNI	Tripod/Minuteman	4"	9.0		9.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
7.0/78		8			7.0/ 12/24/87	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/18 in.	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	0.8									0.0 - 1.2 Ft. SAND (SP). Light brown (5YR5/6). Fine- to medium-grained.	Borehole advanced 0-9.0 Ft. using 3" i.d. split-spoon sampler and 4" o.d. solid-stem augers.
SS	1.0	0.9									0.2-0.8 Ft. Silty clayey sand; dusky brown (5YR2/2), fine- to coarse-grained with small rounded pebbles.	
SS	1.0	1.0									0.8-1.2 Ft. Sand; light brown (5YR6/4), very fine- to fine-grained, mottled with dusky yellowish brown (10YR2/2).	
SS	1.0	1.0									1.2 - 3.3 Ft. Silty SAND (SM). Pale reddish brown (10R5/4).	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	1.0	0.8									1.2-1.4 Ft. Mottled with moderate red (5R4/6).	
SS	1.0	0.6									3.3 - 4.2 Ft. SAND (SP). Moderate yellowish brown (10YR5/4), fine- to coarse-grained with small rounded pebbles.	
SS	1.0	1.0									4.2 - 5.0 Ft. Sandy CLAY (CL-SC). Brownish gray (5YR4/1). Fine- to coarse-grained sand component, with pebbles to 0.5 in.	Sampled to 8.0 Ft. and gamma-logged to 6.0 Ft.
SS	1.0	1.0									4.2-4.4 Ft. Capped by brownish black (5YR2/1).	
											5.0 - 7.0 Ft. SAND (SP). Light olive gray (5Y5/2), fine- to very coarse-grained with rounded pebbles.	
											7.0 - 8.0 Ft. CLAY (CL). Pale red (5R6/2) mottled with light brown (5YR5/6) and grayish brown as blebs (5YR3/2).	
											Bottom of borehole at 8.0 Ft. Borehole backfilled with spoils, 12/24/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1095R

061398 2

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1109R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,546 E 225	Vertical	

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-3-87	11-3-87	E.D.I.	MOBILE B57	6.5"	10.0		10.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
7.4/74		5				

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NONE	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE "N" BLOWS X CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.8	2-4-3-2							0.0 - 6.0 Ft. SAND FILL (SP). 0.0-2.9 Ft. Yellowish brown (10YR5/4), very fine-grained. 2.9-6.0 Ft. Brown (10YR5/3), medium-grained, some silt and gravel.	Borehole advanced 0-10 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	1.7	4-8-NA								
SS	2.0	1.3	10-13 17-22					5			
SS	2.0	1.3	12-12 14-9							6.0 - 10.0 Ft. SAND (SP). 6.0-7.9 Ft. Grayish brown (10YR5/2), medium-grained, some silt. 7.9-8.0 Ft. Sand, coarse-grained, some gravel, well rounded. 8.0-10.0 Ft. Fine-grained, wet.	4-6 Ft. sample contacting something hard.
SS	2.0	1.3	6-4-4-4					10			
										Bottom of borehole at 10.0 Ft. Borehole backfilled with spoils, 11/3/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1109R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1053R

SITE	COORDINATES	ANGLE FROM HORIZ	BEARING
J.F.Kennedy Park (LODI)	N 1,932 E 235	Vertical	-------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-21-87	10-21-87	E.D.I.	MOBILE B-57	6.5'	18.0		18.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
12.2/68		9			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NA	D. Harnish

SAMP. TYPE AND NUM.	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	0.8	3-6-5-7							0.0 - 7.8 Ft. Sandy SILT, Gravelly SILT, and Silty SAND FILL (ML, GM, SM).	Borehole advanced 0-18 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers.
SS	2.0	0.3	3-14 5-22							0.0-4.0 Ft. Silty sand, dark reddish brown (2.5YR3/4), fine-grained, bits of charcoal and Brunswick sandstone gravel. Top is sandy silt topsoil, dark brown (10YR3/3).	
SS	2.0	0.5	6-3-4-5					5		4.0-7.8 Ft. Gravelly silt, dark gray (7.5YR4/6) and brown (7.5YR5/2); gravel is concrete, broken Brunswick shale, soft yellowish brown silt pebbles, and soft green and brown clay pebbles; minor dark brown decomposed plant pieces, moist.	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	2.0	5-5-4-4								
SS	2.0	2.0	2-4-5-9							7.8 - 8.0 Ft. SAND (SM). Black (7.5YR2/0), medium-grained, some charcoal, horizontally bedded.	
SS	2.0	1.8	3-6-6-8					10		8.0 - 14.3 Ft. CLAY, some SILT, minor SAND (CL-ML, SM).	
SS	2.0	1.1	10-16 19-20							8.0-10.0 Ft. Clay, pinkish gray (7.5YR6/2) mottled with yellow iron-hydroxide; slightly damp, moderately stiff.	
SS	2.0	1.7	5-10 15-13							10.0-11.0 Ft. Clay and silt, reddish gray (10R5/1).	
SS	2.0	2.0	4-10-25 100/2"					15		11.0-11.2 Ft. Sandy gravel.	
										11.2-12.0 Ft. Sand, grayish brown, medium-grained.	
										12.0-14.3 Ft. Clay, reddish gray (10R5/1).	18.0 ft. Sampler refusal.
										14.3 - 16.0 Ft. SAND and CLAY (SM, CL). Sand is dark yellowish brown (10YR4/4); Clay is 5-10 mm interbeds, weak, red (5YR5/2).	
										16.0 - 17.5 Ft. Gravelly SAND (SP). Strong brown (7.5YR4/6), fine- to medium-grained sand and dark green shale, subrounded.	
										17.5 - 18.0 Ft. CLAY (CL). Dusky red (7.5YR3/2). Bedrock, dark green Brunswick shale at base, horizontally fractured.	
										Bottom of borehole at 18.0 Ft. Borehole backfilled with spoils, 10/21/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1053R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1200R

SITE	COORDINATES	ANGLE FROM HORIZ	BEARING
J.F.Kennedy Park (LODI)	N 1,806 E 246	Vertical	-------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
12-1-87	12-1-87	G. Engel; BNI	Minuteman Auger	4"	8.4		8.4

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
7.6/90		9			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs./18 in.	NONE	R. Migues

SAMP. TYPE AND NO.	SAMP. ADJ. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	1.0								0.0 - 0.7 Ft. Silty SAND (SM). Moderate brown (5YR4/4). Fine- to medium-grained. Humus at the surface.	Borehole advanced 0-8.4 Ft. using 3" i.d. split-spoon sampler and 4" o.d. solid-stem augers.
SS	1.0	0.8								0.7 - 1.0 Ft. Clayey Silty SAND (SC-SM). Dusky yellowish brown (10YR2/2) mottled with moderate reddish orange (10R6/6) and light brown (5YR5/6).	
SS	1.0	1.0								1.0 - 5.6 Ft. SAND (SW). Moderate yellowish brown 10YR5/4), fine- to medium-grained.	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	1.0	1.0								1.0-1.7 Ft. Moderate red (5R4/6).	
SS	1.0	0.8								1.7-1.9 Ft. Dark yellowish brown (10YR4/2).	
SS	1.0	1.0						5		2.5-2.6 Ft. Dark yellowish brown (10YR4/2).	
SS	1.0	0.9								2.6-3.7 Ft. Light brown (5YR5/6).	Augered and gamma-logged to 7.0 Ft.
SS	1.0	1.0								5.6 - 6.4 Ft. Pebbly SAND (SG). Moderate reddish brown (10YR5/4) with pale yellowish brown (10YR6/2), fine- to very coarse-grained, and pebbles to 0.5 inches. Well rounded.	
SS	0.4	0.3								6.4 - 8.4 Ft. CLAY (CL). Moderate yellowish brown (10YR5/4) mottled with grayish orange pink (5YR7/3) and light brown (5YR5/6).	
										6.9-7.0 Ft. Slightly silty.	
										7.0-8.4 Ft. Pale red (5R6/2) mottled with moderate red (5R5/4) and dark yellowish orange (10R6/6).	Description and classification of soils by visual examination.

Bottom of borehole at 8.4 Ft.
Borehole backfilled with spoils, 12/1/87.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1200R

0639 82

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1091R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,849 E 254	Vertical	

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-17-87	11-17-87	G. Engel; Bl-1	Minuteman Auger	4"	9.0		9.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
8.6/95		9			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/18 in.	NONE	R. Migues

SAMP. TYPE AND STAT.	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	0.8									0.0 - 1.6 Ft. SAND (SP). Dark yellowish orange (10YR6/6) changing to dark yellowish brown (10YR6/3), fine- to very coarse-grained.	Borehole advanced 0-9.0 Ft. using 3" i.d. split-spoon sampler and 4" o.d. solid-stem augers.
SS	1.0	1.0										
SS	1.0	0.8									1.6 - 2.0 Ft. Clayey SAND (SC). Moderate red (5R4/6), fine- to very coarse-grained with fragments and pebbles to 1 in.	
SS	1.0	1.0										
SS	1.0	1.0						5				
SS	1.0	1.0									2.0 - 5.3 Ft. Silty SAND (SM). Moderate reddish brown 10YR5/4), fine- to medium-grained.	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	1.0	1.0									2.0-2.1 Ft. Clayey, oily(?) - dry zone. brownish black (5YR2/1).	
SS	1.0	1.0									5.0-5.1 Ft. Faint brownish black (5YR2/1) zone.	
SS	1.0	1.0									5.3 - 6.8 Ft. SAND (SP). Dark yellowish orange (10YR6/6), fine- to coarse-grained.	Augered to 9.0 Ft. Gamma-logged to 7.5 Ft.
											6.1 Ft. Brunswick SS clast, 0.5x2.0 in.	
											6.1-6.3 Ft. Very coarse-grained.	
											6.8 - 9.0 Ft. CLAY (CL). Pale red (5R6/4) mottled with grayish red (10R4/2) and light brown (5YR5/6).	
											8.5-9.0 Ft. Moderate yellowish brown (10YR5/4).	
											Bottom of borehole at 9.0 Ft. Borehole backfilled with clean sand in 3.0 Ft. lifts, 11/17/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1091R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1090R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,892 E 258	Vertical	-------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-17-87	11-17-87	G. Engel; BNI	Minuteman Auger	4"	9.0		9.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
8.5/94		10			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/18 in.	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	1.0								0.0 - 1.3 Ft. SAND (SP). Moderate yellowish brown (10YR5/4), fine- to very coarse-grained. FILL.	Borehole advanced 0-9.0 Ft. using 3" i.d. split-spoon sampler and 4" o.d. solid-stem augers.
SS	1.0	1.0								0.3-0.7 Ft. Light brown (5YR5/6).	
SS	1.0	1.0								0.7-1.3 Ft. Pale brown (5YR5/2) with grains of very pale orange (10YR8/2).	
SS	1.0	0.9								1.3 - 4.0 Ft. Silty Clayey SAND (SM). Moderate red (5R4/6), fine- to very coarse-grained with large pebbles (1.0 in.).	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	1.0	1.0						5		3.4-4.0 Ft. Dark yellowish brown (10YR4/2).	
SS	1.0	0.9								4.0 - 4.4 Ft. Clayey SAND (SC). Brownish gray (5YR4/1), fine- to medium-grained sand.	
SS	1.0	1.0								4.4 - 5.7 Ft. CLAY (CL). Light brownish gray (5YR5/1) mottled with medium light gray (N6), dark yellowish orange (10YR6/6), and grayish red (5R4/2).	Augered to 9.0 Ft. Gamma-logged to 8.5 Ft.
SS	1.0	0.7								5.3 Ft. Thin sand zone; dark yellowish orange (10YR6/6); fine- to coarse-grained.	
										5.4-5.7 Ft. Becoming darker to brownish gray (5YR4/1).	
										5.7 - 7.0 Ft. Silty Sandy CLAY (CL-ML). Brownish black (5YR3/1), fine- to medium-grained sand.	
										6.3-6.4 Ft. Brownish gray (5YR4/2).	
										7.0 - 7.4 Ft. Silty SAND (SM). Greenish gray (5G6/1), fine- to very coarse-grained mottled with moderate olive brown (5Y4/4) and moderate red (5R4/6).	
										7.4 - 9.0 Ft. CLAY (CL). Pale red (5R6/2) mottled with light brown (5YR5/6) and light gray (N8).	
										Bottom of borehole at 9.0 Ft. Borehole backfilled with spoils, 11/17/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1090R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1055R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,933 E 263	Vertical	------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-22-87	10-22-87	E.D.I.	MOBILE B-57	6.5"	17.0	0.1	17.3

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
12.5/74		9			5.3/ 10-22-87	17.0/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NA	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE	SAMPLE REC./ CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.8	3-6-6-4							0.0 - 0.3 Ft. TOPSOIL (PT-SM). Dark brown (10YR3/3).	Borehole advanced 0-17.1 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers.
SS	2.0	1.7	3-6-8-8							0.3 - 3.8 Ft. Silty SAND and SILT FILL (SM, ML). Strong brown (7.5YR4/6), very fine-grained, minor coarse-grained, damp toward base.	
SS	2.0	1.2	6-3-2-2					5		2.3-3.8 Ft. Silt, mixed very dark brown (10YR2/2) and black, small charcoal pieces, plant debris, minor gravel.	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp. 5.3 Ft. Groundwater observed after hole open 5 hrs.
SS	2.0	1.6	2-7-6-9							3.8 - 7.0 Ft. Clayey SILT FILL (ML). Black (10YR2/1), sandy toward base.	
SS	2.0	0.0	3-6-6-2							7.0 - 11.0 Ft. SAND (SM). Dark gray (10YR4/1) with bluish gray mottling, very fined-grained.	
SS	2.0	2.0	3-8-3-8					10		10.0-11.0 Ft. Interbeds of silt and medium-grained sand.	7-11 Ft. Distinct chemical odor on fresh surfaces.
SS	2.0	1.5	2-3-3-4							11.0 - 12.0 CLAY (CL). Weak red (2YR4/2).	
SS	2.0	2.0	7-3-6-9							12.0 - 13.8 Ft. SAND (SM). Gray (10YR5/1), fine-grained on top, coarsening with depth.	
SS	1.1	1.0	15-40 100/0"					15		13.8 - 14.2 Ft. SILT (ML). Yellowish brown (10YR5/6).	
										14.2 - 17.0 Ft. SAND (SW). Strong brown (7.5YR4/6), medium-grained, some subrounded gravel. 10.0-15.1 Ft. Some gravel. 16.5-17.0 Ft. Some subrounded gravel.	17.1 ft. Sampler refusal.
										17.0 - 17.1 Ft. SHALE. Dusky red (10YR3/2) Brunswick shale, top of bedrock?	
										Bottom of borehole at 17.1 Ft. Borehole backfilled with spoils, 10/22/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1055R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1064R

SITE	COORDINATES	ANGLE FROM HORIZ/BEARING
J.F.Kennedy Park (LODI)	N 1,707 * E 272	Vertical

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-26-87	10-26-87	E.D.I.	MOBILE B-57	6.5"	21.5	0.5	22.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
19.9/90		11			/	21.5/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in.	NA	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE	PAYELE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	2.7	3-4-7-7							0.0 - 4.0 Ft. SAND FILL (SP). Yellowish brown (10YR5/6), fine-grained.	Borehole advanced 0-22 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp. 8-22 Ft. Saturated.
SS	2.0	1.3	4-6-10 7								
SS	2.0	1.3	4-10 10-7					5		4.1 - 7.0 Ft. SAND (FILL?). Gray (10YR5/1), medium-grained, some coarse-grained sand and small gravel.	
SS	2.0	1.8	6-10 10-7							7.0 - 21.5 Ft. SAND (SP). Brown, fine- to medium-grained.	
SS	2.0	1.8	2-3-6-6							7.0-16.0 Ft. Brown (10YR5/3), some root hairs.	
SS	2.0	2.0	2-2-5-6					10			
SS	2.0	2.0	6-3-3-6								
SS	2.0	2.0	4-4-4-3							13.0-13.7 Ft. Medium-grained, some gravel.	
SS	2.0	2.0	3-2-6-3					15		16.0-20.0 Ft. Brown (7.5YR4/2).	
SS	2.0	2.0	3-3-3-5								
SS	2.0	2.0	WH-WH 1-50					20		19.1-20.0 Ft. Interbedded silt, reddish brown (5YR5/4).	Weight of hammer drove sampler 1 Ft., 1 blow dropped 6" to bedrock, and the last count is into bedrock. 22.0 Ft. Sampler refusal.
										20.0-21.0 Ft. Sand and silt, brown (7.5YR5/4), fine-grained sand.	
										21.5 - 22.0 Ft. BEDROCK. Dark reddish brown (5YR5/2), Brunswick shale.	
										Bottom of borehole at 22.0 ft. Borehole backfilled with spoils, 10/26/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1064R

06398 2

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1190R

SITE NAME	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,506 E 283	Vertical	--------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
12-2-87	12-2-87	E.D.I.	MOBILE B-57	6.5"	8.0		8.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
5.9/74		4			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY
140 lbs./ 30 in.	NONE	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. INT. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS GIN. G.P.M.	PRESS. P.S.I.	TIME MIN.	ELEV.	DEPTH	GRAPHICS	SYMBOLS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.5	3-6-4-4								0.0 - 4.2 Ft. Silty SAND and Sandy SILT FILL (SM, ML).	Borehole advanced 0-8 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	1.5	4-5-5-6								0.0-1.0 Ft. Silty sand, yellowish brown (10YR5/6), dark brown topsoil on top and at base, fine-grained; large piece of glass at base.	
SS	2.0	1.6	6-10 13-7					5			1.0-4.2 Ft. Silty sand, dark yellowish brown (10YR4/6), fine-grained with infrequent round gravel, loose.	
SS	2.0	1.3	11-11 16-27								4.2 - 8.0 Ft. SILT and SAND (ML, SM). Strong brown (7.5YR4/6), fine- to medium-grained, interbedded.	Hole caved in to 6.5 Ft.
											4.2-5.3 Ft. Silt.	
											5.3-6.0 Ft. Silty sand, fine-grained, some small gravel.	
											6.0-6.4 Ft. Silt.	
											6.4-8.0 Ft. Sand, fine- to medium-grained, slightly damp, loose.	
											Bottom of borehole at 8.0 Ft. Borehole backfilled with spoils, 12/2/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1190R

0639842

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1187R

SITE	COORDINATES	ANGLE FROM HORIZ	BEARING
J.F.Kennedy Park (LODI)	N 1,611 E 286	Vertical	--------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
12-2-87	12-2-87	E.D.I.	MOBILE B-57	6.5"	8.0		8.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
6.5/81		4			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NONE	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. LGTH. CORE LEN	SAMPLE REQ. CORE REQ.	SAMPLE BLOWS/IN. % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SYMBOLS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.7	2-6-6-3								0.0 - 4.0 Ft. Silty SAND and Gravelly SAND FILL (SM, SW).	Borehole advanced 0-8 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	1.7	3-4-8 16								0.0-0.6 Ft. Silty sand, dark grayish brown, topsoil.	
SS	2.0	1.6	12-18 16-13					5			0.6-3.2 Ft. Silty sand, yellowish brown (10YR5/6), fine-grained, slightly damp.	
SS	2.0	1.6	7-11 15-12								3.2-4.0 Ft. Gravelly sand, gray, gravel of broken and rounded basalt, Brunswick sandstone.	
											4.0 - 7.3 Ft. SAND (SP). Grayish brown (10YR5/2), very fine-grained, clean, faint bedding.	
											6.0-7.3 Ft. Minor iron-oxide stain.	
											7.3 - 8.0 Ft. Silty SAND (SM). Strong brown (7.5YR5/6), fine- to medium-grained, saturated.	
											Bottom of borehole at 8.0 ft. Borehole backfilled with spoils, 12/2/87.	

Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1187R

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1028R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,927 E 286	Vertical	--------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-20-87	10-20-87	G. Engel; BNI	Minuteman Auger	4"	5.6		5.6

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
3.7/66		5			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
N/A	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. ADVA. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	0.7									0.0 - 0.9 Ft. Silty CLAY (CL). Grayish red (5R4/2).	Borehole advanced 0-5.6 Ft. using 3" i.d. split-spoon sampler and 4" o.d. solid stem augers.
SS	1.0	0.7									0.9 - 2.0 Ft. Pebbly Silty SAND (SP). Moderate reddish brown (10R4/6), fine- to medium-grained. Pebbles to 1.0 in.	
SS	0.7	0.6									2.0 - 3.6 Ft. Silty Clayey SAND (SM). Moderate brown (5YR3/4) with streaks of dusky brown (5YR2/2) silt or silty sandy clay. Some decomposed wood.	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp. Augered and gamma-logged to 4.5 Ft.
SS	0.8	0.8									3.5 Ft. 1.0 in. thick layer of silty sandy clay.	
SS	2.1	0.9									3.6 - 5.6 Ft. Silty Sandy CLAY (CL-ML). Olive black (5Y2/1), fine- to coarse-grained sand. Decreasing sand content with depth.	
											Bottom of borehole at 5.6 Ft. Borehole backfilled with spoils, 10/20/87.	Hole was abandoned after high toxic OVA readings were taken and driller was not qualified for controlled-area drilling.

Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1028R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1114R

SITE	COORDINATES	ANGLE FROM HORIZ/BEARING
J.F.Kennedy Park (LODI)	N 1,928 E 290	Vertical

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-4-87	11-4-87	E.D.I.	MOBILE B-57	6.5"	12.0		12.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
8.5/71		6			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NONE	D. Harnish

SAMP. TYPE AND NUM.	SAMP. ADV. LEN CORE.	SAMPLE REC. CORE REC.	SAMPLE BLOWS IN % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.1	1-2-4-4							0.0 - 6.8 Ft. Silty SAND and SILT FILL (SM, ML, CL).	Borehole advanced 0-12 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	0.9	1-2-6-8							0.0-2.0 Ft. Sand, yellowish brown (10YR5/6), fine-grained, mixed with dark brown topsoil.	
SS	2.0	1.3	3-6-12 26					5		2.0-4.0 Ft. Silty sand, dark grayish brown (10YR4/2), fine-grained, wet.	
										4.0-4.8 Ft. Silt and silty sand, reddish brown and gray.	
SS	2.0	2.0	8-6-5-7							4.8-6.8 Ft. Silt, black (10YR2/1), pieces of plywood and cement, oily wood and gravel.	6-8 Ft. OVA reads 90 ppm 6" into open hole.
SS	2.0	1.8	3-4-11 6							6.8 - 8.8 Ft. SAND and SILT (SP, SM). Light greenish gray, fine- to medium-grained, interbedded with silt beds 1-2 cm thick.	6.6-8.8 Ft. Distinct chemical odor. OVA reads 2 ppm in sample.
SS	2.0	1.4	2-3-5-5					10		8.8 - 9.1 Ft. CLAY (CL). Gray (7.5YR5/0).	
										9.1 - 10.7 Ft. Silty SAND (SM). Weak red, some rounded pea gravel, Brunswick sandstone gravel.	
										10.7 - 12.0 Ft. CLAY (CL). Weak red (5R5/2) and gray, interbedded 5-10 mm beds.	
										Bottom of borehole at 12.0 Ft. Borehole backfilled with spoils, 11/4/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1114R

061982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1135R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
Money St (LODI)	N 1,991 E 299	Vertical	--------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-13-87	11-13-87	E.D.I.	MOBILE B-57	6.5"	8.0		8.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
2.6/33		4			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs./ 30 in.	NONE	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS/6" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	0.1	10-9-8-7								0.0 - 6.0 Ft. Gravelly SILT and SAND FILL (GM-OL, SP).	Borehole advanced 0-8 Ft. using 6.5 in. o.d. hollow-stem auger. Radiologically sampled and gamma-logged by TMA-Eberline, Inc.
SS	2.0	0.5	4-6-9-8								0.0-2.4 Ft. Gravelly silt. Dark grayish brown (10YR4/2). Organic. Some broken basalt gravel.	
SS	2.0	0.0	22-34 24-24					5			2.4-6.0 Ft. Sand. Strong brown (7.5YR5/6), fine- to medium-grained.	
SS	2.0	2.0	8-9-13 20								6.0 - 8.0 Ft. CLAY (CL). Dark brown (10YR4/3). Sand is fine-grained; wet.	Eberline collected grab samples from auger flights for 0-6", 0-2', 2-4', and 4-6' samples.
											Bottom of borehole at 8.0 Ft. Borehole backfilled with spoils, 11/13/87.	1.5 Ft. Groundwater observed.
												Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
Money St (LODI)	1135R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1099R

SITE	COORDINATES	ANGLE FROM HORIZ	BEARING
J.F.Kennedy Park (LODI)	N 1,819 E 318	Vertical	

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
12-1-87	12-1-87	G. Engel; BNI	Minuteman Auger	4"	9.0		9.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
8.0/88		9			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/18 in.	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE #	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	0.8									0.0 - 2.1 Ft. Silty Clayey SAND (SM-SC). Moderate brown (5YR4/4), fine- to coarse-grained.	Borehole advanced 0-9.0 Ft. using 5" i.d. split-spoon sampler and 4" o.d. solid-stem augers.
SS	1.0	0.9										
SS	1.0	1.0									0.0-0.4 Ft. Humus; topsoil.	
SS	1.0	1.0									0.4-0.7 Ft. Dark yellowish orange (10YR6/6) fine- to very coarse-grained sand with some pebbles.	
SS	1.0	0.6										
SS	1.0	1.0						5			0.7-2.1 Ft. Increasing clay content. Decreasing silt content. Light brown (5YR5/6) mottled with dusky yellowish brown (10YR2/2), fine- to coarse-grained with scattered pebbles.	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	1.0	0.7										
SS	1.0	1.0										
SS	1.0	1.0									1.5-1.7 Ft. Alternating layers of moderate red (5R4/6) and brownish black (5YR2/1).	
											2.1 - 4.8 Ft. Silty SAND (SM). Moderate brown (5YR4/4), fine- to medium-grained.	Augered and gamma-logged to 8.0 Ft.
											2.1-2.3 Ft. Moderate red (5R4/6).	
											3.0-4.5 Ft. Moderate brown (5YR4/4).	
											4.8 - 5.0 Ft. Clayey SILT (CL-ML). Dusky yellowish brown (10YR2/2).	
											5.0 - 5.7 Ft. Clayey silty SAND (SC-SM). Dark yellowish brown (10YR4/2) mottled with light brown (5YR5/6), pale brown (5YR5/4), and grayish black (N2).	
											5.7 - 8.0 Ft. SAND (SW). Moderate yellowish brown (10YR5/4), fine- to medium-grained.	
											5.7-7.0 Ft. Scattered small pebbles.	
											7.5-8.0 Ft. Abundant small pebbles.	
											8.0 - 9.0 Ft. Silty CLAY (CL-ML). Light brown (5YR5/6).	
											Bottom of borehole at 9.0 Ft. Borehole backfilled with spoils, 12/1/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1099R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	2042R

SITE	COORDINATES	ANGLE FROM HORIZ	BEARING
Money St. (LODI)	N 1,988 E 326	Vertical	

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-4-88	10-4-88	EMPIRE SOILS	CME 45B	12"	10.0		10.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLE EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
/		4		7.0/ 10/4/88	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
300 lbs. / 24 in.	NONE	J. Lord

SAMP. TYPE AND DIAM.	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.5	1.5	6-5-5							0.0 - 0.5 Ft. ASPHALT & GRAVEL. MONEY ST.	Borehole advanced 0-10 ft. using 12 in. o.d. hollow-stem augers. Radiologically sampled and gamma-logged by TMA-Eberline, Inc.
SS	2.0	1.7	3-4-7-7							0.5 - 6.0 Ft. SAND (SG). Moderate yellowish brown (10YR5/4) medium to coarse, poorly sorted, loose, moist, adhesive sand. Subangular, mixed mineralogy.	
SS	2.0	0.0	5-6-7-9					5			7.0 Ft. Groundwater observed.
SS	2.0	2.0	5-5-5-6							6.0 - 6.4 Ft. Gravelly SAND (SG). Moderate brown (5YR3/4) coarse sand and gravel. Slightly moist, loose, poorly sorted. Subrounded grains.	
								10		6.4 - 10.0 Ft. Clayey SILT (M-C). Pale yellowish brown (10YR6/2) silt. Dry, dense, cohesive, slightly stiff, no thread.	
										Bottom of borehole at 10.0 Ft. Borehole backfilled with spoils, 10/4/88.	6.3 Ft. Top of undisturbed soil.
											Description and classification of soils by visual examination of samples.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: Money St. (LODI)

HOLE NO. 2042R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1098R

SITE	COORDINATES	ANGLE FROM HORIZ	BEARING
J.F.Kennedy Park (LODI)	N 1,753 E 329	Vertical	

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
12-1-87	12-1-87	G. Engel, BNI	Minuteman Auger	4"	11.0		11.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
9.5/86		10			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/18 in.	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN g.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	0.8									0.0 - 0.7 Ft. Clayey silty SAND (SC-SM). Dusky yellowish brown (10YR2/2), fine- to medium-grained.	Borehole advanced 0-11.0 Ft. using 3" i.d. split-spoon sampler and 4" o.d. solid-stem augers.
SS	1.0	0.8									0.7 - 10.2 Ft. SAND (SP). Light brown (5YR5/6), fine- to medium-grained.	
SS	1.0	0.9									2.1-4.3 Ft. Fine- to coarse-grained.	
SS	1.0	1.0									4.3 Ft. 2 in. layer of pebbles.	
SS	1.0	1.0									4.7-7.0 ft. Grayish orange pink (5YR7/2).	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	1.0						5			7.0-9.4 Ft. Grayish orange (10YR2/4).	
SS	1.0	1.0									9.4-10.2 Ft. Moderate yellowish brown (10YR5/4), fine- to medium-grained.	
SS	1.0	1.0									10.2 - 11.0 ft. Pebbly gravelly SAND (SG). Moderate yellowish brown (10YR5/4), fine- to very coarse-grained with well rounded pebbles and cobbles to 3 inches.	Augered and gamma-logged to 8.0 Ft.
SS	1.0	1.0						10			10.6-10.9 Ft. Dark reddish brown (10R3/4) and cemented.	
											10.9-11.0 Ft. Very pale orange (10YR8/2), fine- to medium-grained.	
											Bottom of borehole at 11.0 Ft. Borehole backfilled with spoils, 12/1/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1098R

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1093R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,855 E 329	Vertical	-------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-23-87	11-23-87	G. Engel; BNI	Minuteman Auger	4"	11.0		11.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
9.2/83		10			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/18 in.	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. ADVA LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	1.0								0.0 - 1.9 Ft. SAND (SP).	Borehole advanced 0-11.0 Ft. using 3" i.d. split-spoon sampler and 4" o.d. solid-stem augers.
SS	1.0	0.7								0.0-0.8 Ft. Dark yellowish orange (10YR6/6), fine- to coarse-grained fill.	
SS	1.0	0.9								0.8-1.9 Ft. Pale brown (5YR5/2), fine- to medium-grained.	
SS	1.0	1.0								1.9 - 3.2 Ft. Silty Clayey SAND (SM).	
SS	1.0	1.0						5		1.9-2.6 Ft. Moderate red (5R4/6) fine- to coarse-grained sand with scattered clasts and pebbles to 0.25 in.	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	1.0	1.0								2.6-3.2 Ft. Dark yellowish brown (10YR4/2), fine- to medium-grained.	
SS	1.0	1.0								3.2 - 3.7 Ft. Sandy CLAY (CL-ML). Moderate yellowish brown (10YR5/4), fine- to medium-grained.	
SS	1.0	1.0								3.7 - 4.4 Ft. Clayey SAND (SC). Moderate yellowish brown (10YR5/4), fine- to medium-grained.	Augered and gamma-logged to 8.0 Ft.
SS	1.0	0.7								4.4 - 5.0 Ft. Sandy CLAY (CL-ML). Grayish brown (5YR3/2) with pebbles. Fine- to very coarse-grained sand component. Mottled with moderate brown (5YR3/4).	
SS	1.0	0.9						10		5.0 - 5.7 Ft. Clayey SAND (SC). Moderate yellowish brown (10YR5/4). Fine- to medium-grained.	
										5.7 - 6.7 Ft. Silty CLAY (CL-ML). Dark greenish gray (5GY4/1) mottled with light gray (N7), olive gray (5Y4/1), and moderate brown (5YR4/4).	
										6.7 - 8.2 Ft. CLAY (CL). Grayish black (N2).	
										7.1-8.2 Ft. Light gray (N7) mottled with moderate olive brown (5Y4/4), and black (N1).	
										8.2 - 8.8 Ft. SAND (SP). Light olive gray (5Y5/2) mottled with light olive brown (5Y5/6) and moderate reddish brown (10R4/6).	
										8.8 - 11.0 Ft. CLAY (CL). Pale red (5R6/2) mottled with light gray (N7) and moderate brown (5YR4/4).	
										Bottom of borehole at 11.0 Ft. Borehole backfilled with spoils, 11/23/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1093R

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1094R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,899 E 329	Vertical	--------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-24-87	11-24-87	G. Engel; L.H	Minuteman Auger	4"	9.0		9.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
9.7/96		9			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/18 in.	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE	SAMPLE REQ. CORE REQ.	SAMPLE BLOWS "N"	% CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SYMBOLS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	1.0										0.0 - 0.3 Ft. SAND (SP). Dark yellowish orange (10YR6/6), fine- to coarse-grained gravel; FILL.	Borehole advanced 0-9.0 Ft. using 3" i.d. split-spoon sampler and 4" o.d. solid-stem augers.
SS	1.0	0.7										0.3 - 1.2 Ft. Clayey SAND (SC). Dusky brown (5YR2/2), fine- to medium-grained.	
SS	1.0	1.0										1.2 - 1.8 Ft. Silty SAND (SM). Moderate reddish brown (10R4/6), fine- to coarse-grained with pebbles (to 1.5 in.).	
SS	1.0	1.0										1.8 - 2.0 Ft. SAND (SP). Fine- to coarse-grained.	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp. 7.0-8.0 Ft. Penetrated water-bearing interval.
SS	1.0	1.0										2.0 - 4.1 Ft. Clayey silty SAND (SC-SM). Moderate brown (5YR4/4), fine- to medium-grained with pebbles.	
SS	1.0	1.0										4.1 - 4.3 Ft. SAND (SP). Dusky yellowish brown (10YR2/4), fine- to medium-grained.	
SS	1.0	1.0										4.3 - 5.0 Ft. Silty CLAY (CL-ML). Brownish black (5YR2/1).	Augered and gamma-logged to 7.5 Ft.
												5.0 - 5.3 Ft. SAND (SP). Dark yellowish orange (10YR6/6). Fine- to coarse-grained.	
												5.3 - 7.0 Ft. Silty CLAY (CL-ML). Brownish black (5YR2/1) mottled with moderate brown (5YR5/4) and light gray (N7). Some roots and a few rusty nails.	
												7.0 - 8.0 Ft. SAND (SP). Olive gray (5Y4/1), fine- to very coarse-grained with very small pebbles. Mottled with light olive brown(5Y5/6), and moderate red (5YR4/6).	
												8.0 - 9.0 Ft. CLAY (CL). Pale red (5R6/2) mottled with light brown (5YR5/6) and light brownish gray (5YR6/1).	Description and classification of soils by visual examination.

Bottom of borehole at 9.0 Ft.
Borehole backfilled with soil/grout mixture, 11/24/87.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1094R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1113R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,930 E 330	Vertical	------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-4-87	11-4-87	E.D.I.	MOBILE B-57	6.5"	16.0		16.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
12.8/80		8			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NONE	D. Harnish

SAMP. AND TYPE	SAMP. ADJ. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.7	3-4-3-1							0.0 - 6.0 Ft. SILT AND Silty SAND FILL (ML, SM-ML).	Borehole advanced 0-16 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp. 5.0 Ft. Radioactive activity detected with HP-210. 6-8 Ft. Distinct chemical odor; sets off OVA alarm.
SS	2.0	1.7	HW-HW HW-5							0.0-0.5 Ft. Topsoil, dark brown (10YR3/3).	
										0.5-1.1 Ft. Silt, dusky red (10R3/2).	
SS	2.0	1.3	4-4-2-2					5		1.1-3.2 Ft. Sand, brown (10YR4/3), fine-grained, small pieces of gravel, loose, wet.	
SS	2.0	1.7	2-2-9-6							3.2-4.0 Ft. Silt, very dark gray to black (10YR3/1).	
										4.0-4.5 Ft. Mixed sand, gray, and silt, weak red.	
SS	2.0	1.1	2-2-2-5							4.5-6.0 Ft. Silt, black, interlayered with sand, white, very fine-grained, 3-5 mm layers, possible cross beds. Reworked fill?	
SS	2.0	1.5	6-11 9-9					10		6.0 - 8.4 Ft. SILT and Silty SAND (FILL?) (ML, SM). Dark gray (10YR4/1), fine-grained.	
SS	2.0	1.6	3-5-14 13							8.0-8.4 Ft. Silt, light gray (10YR7/1).	
SS	2.0	2.0	5-20 9-24					15		8.4 - 11.0 Ft. Silty SAND (SM). Light gray (10YR7/1), fine-grained.	
										10.3-11.0 Ft. Some light brownish gray (10YR6/2) mottling.	
										11.0 - 11.2 Ft. Gravelly CLAY (GC). Dark reddish brown (5YR3/3), Brunswick shale gravel.	
										11.2 - 13.3 Ft. CLAY and SAND (CL, SP). Clay is dusky red (10R3/2), sand is light gray, very fine-grained; interbedded 5-10 mm thick layers.	
										13.3 - 16.0 Ft. Gravelly SAND and SAND (SW, SP). Brown (7.5YR4/2), gravel is rounded, sand is fine- to coarse-grained.	
										14.7-14.8 Ft. Clay.	
										14.8-16.0 Ft. Gravelly sand, coarse-grained.	
										Bottom of borehole at 16.0 Ft. Borehole backfilled with spoils, 11/4/87.	

Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1113R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1085R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,953 E 334	Vertical	

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-4-87	10-4-87	G. Engel; BNI	Minuteman Auger	4"	9.4		9.4

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
6.0/63		8			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. LENG. CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS - N % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SYMBOL	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	0.6									0.0 - 4.5 Ft. Silty Sandy CLAY (CL-ML). Dusky brown (5Y2/2) mottled with moderate brown (5YR4/4). Fine- to medium-grained sand component. Some humus.	Borehole advanced 0-9.4 Ft. using 3" i.d. split-spoon sampler and 4" o.d. solid-stem augers.
SS	1.5	0.5										
SS	2.0	0.5									1.0-2.5 Ft. Increasing sand content with some pebbles.	
SS	1.0	1.0						5			2.5-4.5 Ft. Mottled with light brown (5YR6/4) and brownish black (5YR2/1).	
SS	1.0	0.6									4.5 - 5.5 Ft. Clayey SAND (SC). Pale brown (5YR5/2), fine- to medium-grained. Some stringers of dusky yellowish brown (10YR6/2).	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	1.0	0.9										
SS	1.0	0.6									5.5 - 9.4 Ft. CLAY (CL). Moderate brown (5YR4/4) and light brown (5YR6/4).	
SS	0.9	0.9									8.6-9.4 Ft. Grayish red (10R4/2).	Augered to 7.5 Ft. Gamma-scanned to 7.5 Ft.
											Bottom of borehole at 9.4 Ft. Borehole backfilled with spoils, 10/4/87.	
												Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1085R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1096R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,814 E 347	Vertical	

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-24-87	11-24-87	G. Engel; BNI	Hammer & Tripod	4"	9.0		9.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
/		9			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs./18 in.	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. ADV. LEN CORE	SAMPLE REQ. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0										0.0 - 1.7 Ft. SAND (SP). Moderate yellowish brown (10YR5/4), fine- to coarse-grained; FILL.	Borehole advanced 0-9.0 Ft. using 3" i.d. split-spoon sampler and 4" o.d. solid-stem augers.
SS	1.0										1.7 - 3.5 Ft. Clayey SAND (SC). Dark yellowish brown (10YR5/4).	
SS	1.0										1.7-2.3 Ft. Mottled with moderate red (5R4/6).	
SS	1.0										3.5 - 4.2 Ft. SAND (SP). Dark yellowish brown (10YR5/4), fine- to very coarse-grained with angular, flat fragments (to 2 in. in the flat direction).	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	1.0										4.1-4.2 Ft. Grayish orange (10YR7/4).	
SS	1.0										4.2 - 6.0 Ft. Clayey SAND (SC). Moderate yellowish brown (10YR5/4), fine- to coarse-grained with very small pebbles.	
SS	1.0										6.0 - 8.1 Ft. Pebbly SAND (SG). Light olive gray (5Y6/1), fine- to very coarse-grained with rounded white (N9) pebbles.	Augered and gamma-logged to 8.0 Ft.
											8.0-8.1 Ft. Pale reddish brown (10R5/4).	
											8.1 - 9.0 Ft. CLAY (CL). Grayish red (10R4/2).	
											Bottom of borehole at 9.0 Ft. Borehole backfilled with spoils, 11/24/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1096R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1065R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,700 E 355	Vertical	-------

BEGUN ON	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-26-87	10-26-87	E.D.I.	MOBILE B-57	6.5"	22.0		22.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
16.6/75		11			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NA	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE	SAMPLE REQ. CORE REQ.	SAMPLE "N" BLOWS % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.7	4-13 8-11							0.0 - 8.0 Ft. SAND FILL (SP). 0.0-1.9 Ft. Strong brown (7.5YR4/6), fine-grained, loose, damp.	Borehole advanced 0-22 Ft. using 3" I.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	1.7	6-10 11-12							1.9-2.4 Ft. Medium-grained, some gravel.	
SS	2.0	1.6	6-10 8-8					5		2.4-6.0 Ft. Sand, brown (10YR5/3), fine-grained, infrequent decomposed plant fragments.	
SS	2.0	1.8	4-6-7-7							6.0-8.0 Ft. Brown (10YR4/3).	
SS	2.0		3-6-9-9							8.0 - 14.0 Ft. SAND (SP). Dark yellowish brown (10YR4/4), very fine-grained, liquefies when shaken, saturated.	
SS	2.0	2.0	4-7-10 12					10		10.0-12.0 Ft. Dark yellowish brown (10YR4/3).	
SS	2.0	2.0	NA							12.0-14.0 Ft. Olive brown (2.5YR4/4).	
SS	2.0	2.0	4-5-5-7							14.0 - 21.0 Ft. SAND (SP). Olive brown (2.5Y4/4), wet, fine-grained, some medium-grained, thin interbedded silts.	
SS	2.0	2.0	3-5-5-6					15			
SS	2.0		7-12 14-14								
SS	2.0	1.8	7-4-15 36					20			
										21.0 - 22.0 ft. SILT and SAND (ML, SM). Silt is light gray (5Y7/1); sand is reddish brown (5YR4/3). BEDROCK RESIDUUM.	22.0 Ft. Sampler refusal.
										Bottom of borehole at 22.0 Ft. Borehole backfilled with spoils, 10/26/87.	
											Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1065R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1038R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,920 E 360	Vertical	-------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-9-87	11-10-87	G. Engel; BNI	Minuteman Auger	4"	8.5		8.5

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
7.9/92		9			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
N/A	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	1.0								0.0 - 1.0 Ft. Clayey Silty SAND (FILL). Dark yellowish orange (10YR6/6), fine- to medium-grained.	Borehole advanced 0-8.5 Ft. using 3" i.d. split-spoon sampler and 4" o.d. solid-stem augers.
SS	1.0	1.0								0.2-0.5 ft. Dusky yellowish brown (10YR2/2), decreased clay.	
SS	1.0	0.8								0.5-1.0 Ft. Pale yellowish brown (10YR6/2), fine- to medium-grained.	
SS	1.0	1.0									
SS	1.0	0.7						5		1.0 - 2.0 Ft. Clayey Silty SAND (SM). Moderate brown (5YR4/4), fine- to medium-grained. Some pebbles.	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	1.0	1.0								1.2-2.0 Ft. Decreasing clay content.	
SS	1.0	0.9								1.3-1.4 Ft. Black (N1) specks.	
SS	1.0	1.0								2.0 - 3.7 Ft. SAND (SW). Dark yellowish brown (10YR4/2), fine- to medium-grained.	
SS	0.5	0.5								3.0-3.7 Ft. Pale brown (5YR5/2).	
										3.7 - 4.0 Ft. Sandy CLAY (CL). Moderate brown (5YR3/4), fine- to medium-grained sand.	
										4.0 - 6.4 Ft. Silty Sandy CLAY (CL-ML). Dusky brown (5YR2/2), fine- to coarse-grained sand.	
										4.0-5.5 Ft. Some brick fragments.	
										5.5-5.8 Ft. Olive black (5Y2/1).	
										5.8-6.4 Ft. Dark greenish gray (5G4/1).	
										6.4 - 8.5 Ft. Sandy Silty CLAY (CL-ML). Dark greenish gray, mottled with moderate brown (5YR4/4) and moderate olive gray (5Y3/2). Fine- to coarse-grained sand. Sand fraction decreasing with depth.	
										7.0-8.2 Ft. Decrease silt content; sand fraction becomes coarser.	
										8.2-8.5 Ft. Olive gray (5Y3/2).	
										Bottom of borehole at 8.5 Ft. Borehole backfilled with spoils, 11/13/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1038R

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1092R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,878 E 372	Vertical	-------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-23-87	11-23-87	G. Engel; SNI	Minuteman Auger	4"	11.0		11.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
9.9/90		10			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs./18 in.	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS 1's % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	1.0								0.0 - 1.6 Ft. SAND (SP). Dark yellowish orange (10YR6/6), fine- to coarse-grained. FILL.	Borehole advanced 0-11.0 Ft. using 3" i.d. split-spoon sampler and 4" o.d. solid-stem augers.
SS	1.0	0.8								0.3-0.7 Ft. Grayish orange (10YR7/4).	
SS	1.0	1.0								0.7-1.6 Ft. Pale yellowish brown (10YR6/2).	
SS	1.0	1.0									
SS	1.0	0.9						5		1.6 - 3.3 Ft. Clayey SAND (SC). Moderate brown (5YR4/4), very fine- to coarse-grained.	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp. 7.2-8.1 Ft. Saturated and mucky, but no sign of free water in the borehole.
SS	1.0	1.0									
SS	1.0	1.0								3.1-3.3 Ft. Pale yellowish brown (10YR6/2), fine- to medium-grained.	
SS	1.0	1.0									
SS	1.0	1.0								3.3 - 5.3 Ft. Silty Sandy CLAY (FILL).	
SS	2.0	1.2								3.3-3.4 Ft. Light brown (5YR6/4).	
								10		3.4-5.3 Ft. Dark reddish brown (10R3/4) with scattered clasts and pebbles to 0.5 in., mottled with dusky yellowish brown (10YR6/6). Fine- to medium-grained sand component.	Augered and gamma-logged to 7.5 Ft.
										5.0 Ft. Aluminum Foil scrape.	
										5.3 - 7.2 Ft. CLAY (CL). Brownish black (5YR2/1), locally near black (N1).	
										7.2 - 8.1 Ft. Silty Clayey SAND (SM). Moderate brown (5YR4/4) and brownish gray (5YR4/1), fine- to medium-grained.	
										8.1 - 8.5 Ft. SAND (SW). Dark greenish gray (5GY4/1), fine- to medium-grained.	
										8.5 - 11.0 Ft. CLAY (CL). Pale red (5R6/2) mottled with medium light gray (N6) and moderate yellowish brown (10YR5/4).	
										Bottom of borehole at 11.0 Ft. Borehole backfilled with mechanically mixed spoils, 11/23/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1092R

06 3 9 8 2

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1082R

SITE	COORDINATES	ANGLE FROM HORIZ/BEARING
J.F.Kennedy Park (LODI)	N 1,955 E 378	Vertical / --------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-2-87	11-2-87	G. Engel; BNI	Minuteman Auger	4"	11.6		11.6

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
7.6/65		9			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NONE	R. Migues

SAMP. TYPE AND BY/AT.	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	STRATA	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	0.4									0.0 - 0.3 Ft. Sandy silty CLAY (CL-ML). Dusky yellow brown (10YR2/2). Fine- to medium-grained sand fraction.	Borehole advanced 0-11.6 Ft. using 3" i.d. split-spoon sampler and 4" o.d. solid-stem augers.
SS	1.0	0.6									0.2 - 4.0 Ft. Silty SAND (SM). Light brown (5YR5/6). Fine- to coarse-grained.	
SS	1.0	0.7									1.4-2.0 Ft. Increasing clay fraction. Dusky yellowish brown (10YR2/2).	
SS	2.0	1.0						5			3.0-4.0 Ft. Mottled with brownish black (5YR2/1) and moderate brown (5YR4/4).	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	1.0	0.8									4.0 - 6.6 Ft. SAND (SP). Brownish gray (5YR4/1), fine- to very coarse-grained.	
SS	1.0	1.0									4.7-6.6 Ft. Moderate brown (5YR4/4).	
SS	1.7	1.3									6.6 - 11.6 Ft. Silty CLAY (CL-ML). Light brown (5YR5/4) mottled with dusky yellowish brown (10YR2/2).	Augered to 8.0 Ft. Gamma-scanned to 7.5 Ft.
SS	1.0	1.0									7.0-8.0 Ft. Grayish red (5YR4/2).	
SS	0.9	0.9									7.0-11.6 Ft. Decreasing silt content.	
											7.5-9.6 Ft. Dusky yellowish brown (10YR2/2) patches.	
											Bottom of borehole at 11.6 Ft. Borehole backfilled with spoils, 11/2/87.	
												Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1082R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1005R

SITE	COORDINATES	ANGLE FROM HORIZ.
J.F.Kennedy Park (LODI)	N 1,799 E 382	Vertical

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
9-15-87	9-15-87	G. Engel; BNI.	Minuteman Auger	4"	11.4		11.4

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
9.0/79		11			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
N/A	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS/IN % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SOIL CODE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	0.6									0.0 - 1.6 Ft. Sandy Silty CLAY (SM). Very dusky red (10R2/2) and moderate brown (5YR4/4), mixed. Fine- to medium-grained sand.	Borehole advanced 0-11.4 Ft. using 3" split-spoon sampler and 4" o.d. solid-stem augers. Borehole gamma-logged and sampled for radiological contamination by TMA-Eberline, Corp.
SS	0.7	0.7										
SS	0.6	0.0										
SS	0.6	0.5										
SS	1.1	0.6									1.6 - 2.0 Ft. Silty SAND (SM). Blackish red (5R2/2) fine- to very coarse-grained sand with pebbles up to 1.5 in.	
SS	2.0	1.4						5			2.0 - 3.6 Ft. Sandy Silty CLAY (CL-ML). Moderate brown (5YR4/4) fine- to medium-grained sand and silty sand with a clay matrix. 2.0-2.3 Ft. Blackish red (5R2/2).	
SS	2.4	2.0										
SS	0.4	0.4									3.6 - 5.0 Ft. Silty SAND (SM). Dark yellowish brown (10YR4/2). Fine- to coarse-grained.	
SS	1.6	1.6						10			5.0 - 9.8 Ft. Silty Clayey SAND (SC). Dark yellowish brown, fine- to coarse-grained. 7.3-8.0 Ft. Silty clay. 8.0-8.5 Ft. Decreased clay content. Moderate brown. 8.5-9.8 Ft. Silty sand. Moderate brown, fine- to very coarse-grained.	
SS	0.5	0.5										
SS	0.5	0.5										
											9.8 - 11.4 Ft. CLAY & Clayey SILT (CL-ML). 9.8-11.3 Ft. Dark yellowish brown (10YR3/4) clay. 11.3-11.4 Ft. Clayey silt. Moderate brown (5YR4/4).	
											Bottom of borehole at 11.4 Ft. Borehole backfilled with spoils, 9/15/87.	Description and classification of soils by visual examination.

SS = 3" SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1005R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1002R

SITE	COORDINATES	ANGLE FROM HORIZ. BEARING
J.F.Kennedy Park (LODI)	N 1,825 E 382	Vertical

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
8-31-87	8-31-87	G. Engel; BNI.	Minuteman Auger	4"	14.0		14.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
9.1/65		11			5.0/ 8/31/87	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
N/A	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE	SAMPLE REQ. CORE REQ.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS, IN. G.P.M.	PRESS. P.S.I.	TIME MIN. MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.9	0.8								0.0 - 5.0 Ft. Silty Sandy CLAY (CL-ML). Dark brown, mottled with red-brown, and black specks.	Borehole advanced 0-14 Ft. using 3" split-spoon sampler and 4" o.d. solid-stem augers. Borehole gamma-logged and sampled for radiological contamination by TMA-Eberline, Corp. Saturated at 5.0 Ft.
SS	3.1	1.0									
SS	0.8	0.8						5		5.0 - 5.3 Ft. Silty SAND (SM). Brown, fine- to medium-grained.	
SS	0.9	0.9									
SS	4.8	3.0								5.3 - 6.2 Ft. Silty Sandy CLAY (CL-ML). Dark brown mottled with dark gray.	
										6.2 - 10.7 Ft. Silty SAND (SM). Moderate reddish brown (10R4/6), fine- to medium-grained.	
								10			
SS	0.5	0.5								10.7 - 11.8 Ft. Silty CLAY (CL-ML). Moderate yellowish brown (10YR5/4).	
SS	0.6	0.6									
SS	0.5	0.5								11.2-11.8 Ft. Increasing sand content. Dark yellowish brown (10YR4/2). Fine- to coarse-grained with small pebbles (<0.25 in.).	
SS	0.4	0.4									
SS	0.9	0.9									
SS	0.4	0.4									
										11.8 - 12.3 Ft. SAND (SC). Moderate brown (5YR4/4). Fine- to coarse-grained with pebbles (<0.25 in.), including some of granitic lithology [glacially derived].	
										12.3 - 14.0 Ft. Silty CLAY (CL). Brownish gray (5YR4/1).	
										12.5-13.6 Ft. Increased sand component. Same color.	
										Bottom of borehole at 14.0 Ft. Borehole backfilled with grout, 8/31/87.	
											Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1002R

0639842

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1004R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,795 E 390	Vertical	

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
9-14-87	9-14-87	G. Engel; BNI.	Minuteman Auger	4"	4.6		4.6

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
2.2/73%		4			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
N/A	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS/6" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	1.0									0.0 - 2.0 Ft. Sandy Silty CLAY (CL-ML). Dusky brown (5YR2/2). fine- to medium-grained sand component.	Borehole advanced 0-4.6 Ft. using 3" split-spoon sampler and 4" o.d. solid-stem augers. Borehole gamma-logged and sampled for radiological contamination by TMA-Eberline, Corp.
SS	1.0	0.6										
SS	0.6	0.6									2.0 - 2.6 Ft. Silty SAND (SM). Moderate brown (5YR4/4). Fine- to medium-grained.	
											2.6 - 4.6 Ft. No sample taken; sampler refusal. Auger to 4.6 Ft. for gamma-log.	
											Bottom of borehole at 4.6 Ft. Borehole backfilled with spoils, 9/2/87.	Description and classification of soils by visual examination.

S3 = 3" SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1004R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1089R

SITE	COORDINATES	ANGLE FROM HORIZONTAL
J.F.Kennedy Park (LODI)	N 1,890 E 398	Vertical

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-16-87	11-16-87	G. Engel; BNI	Minuteman Auger	4"	9.0		9.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
8.3/92		11			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/18 in.	NONE	R. Migues

SAMP. TYPE AND NUM.	SAMP. ADJ. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	1.0								0.0 - 1.9 Ft. Sandy Silty CLAY (CL-ML). Dark yellowish brown (10YR4/2). FILL.	Borehole advanced 0-9.0 Ft. using 3" i.d. split-spoon sampler and 4" o.d. solid-stem augers.
SS	1.0	1.0								0.7-0.8 Ft. Sand zone, yellowish gray (5Y8/1).	
SS	1.0	1.0								1.2-1.3 Ft. Light brown (5YR5/6); decreased silt content.	
SS	1.0	1.0								1.3-1.9 Ft. Dusky yellowish brown (10YR3/2).	
SS	1.0	0.8						5			
SS	1.0	1.0								1.9 - 2.3 Ft. CLAY (CL). Moderate brown (5YR4/4).	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	1.0	0.5									
SS	1.0	1.0									
SS	1.0	1.0								2.3 - 2.7 Ft. SAND (SP). Dark yellowish brown (10YR4/2), fine- to coarse-grained.	
										2.7 - 3.0 Ft. CLAY (CL). Pale brown (5YR5/2) mottled with grayish orange pink (5YR7/2).	Augered and gamma-scanned to 8.5 Ft.
										3.0 - 3.6 Ft. Sandy CLAY (CL-ML). Moderate brown (5YR4/4), fine- to coarse-grained sand component.	
										3.6 - 4.0 Ft. SAND (SP). Dark yellowish brown (10YR4/2), fine- to coarse-grained.	
										4.0 - 5.0 Ft. CLAY (CL). Moderate yellowish brown (10YR5/4) layered with <1" streaks of grayish orange pink (5YR7/2), brownish black (5YR2/1), and brownish gray (5YR4/1).	
										5.0 - 5.5 Ft. Sandy CLAY (CL-ML). Dusky brown (5YR3/2), fine- to coarse-grained sand component.	
										5.5 - 7.7 Ft. Clayey SAND (SC). Olive gray (5Y4/1), fine- to very coarse-grained.	
										5.9-6.2 Ft. Increased clay content.	
										7.7 - 8.4 Ft. SAND (SP). Medium gray (N5), fine- to very coarse-grained.	
										8.4 - 9.0 Ft. CLAY (CL). Grayish red (10R4/2).	
										Bottom of borehole at 9.0 Ft. Borehole backfilled with spoils, 11/17/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1089R

0639824

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1068R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,661 E 412	Vertical	

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-27-87	10-27-87	E.D.I.	MOBILE B-57	6.5"	14.0		14.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
/0		7			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NA	David Harnish

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
S2	2.0	0.9	5 15								0 - 8.0 ft. SAND (SP-SW) FILL, gravelly, cobbly, medium to fine grained.	Drilled with hollow stem auger, 3.5" ID/6.5" OD. Large rock at 1.5 ft. Hole geophysically logged by Eberline Analytical. 3.5 - 4.0 ft., drilled through gravel
S2	2.0	1.1	50/0 4 4								0 - 0.4 ft. organic topsoil, dark brown, (10YR 3/3).	
S2	2.0	1.0	3 5 6					5			0.4 - 2.0 ft. dark yellowish brown (10YR 4/6), fine grained cobbles of cement and New Brunswick sandstone.	
S2	2.0	1.2	1 3 1								2.0 - 2.7 ft. strong brown (7.5YR 5/6), reddish brown (5YR 4/4), some gravel.	
S2	2.0	1.6	2 3 2 3								2.7 - 8.0 ft. strong brown (7.5YR 5/6), medium grained.	Water encountered at 8 ft.
S2	2.0	1.6	1 5 5					10			8.0 - 14.0 ft. SAND (SP-SM), brown (7.5YR 5/4), fine to medium grained, wet.	
S2	2.0	1.5	3 2 4 4									Auger filled with 3 ft. of sand after 12 - 14 ft. sample pulled.
			4 9 6 6 6								BOTTOM OF HOLE 14.0 ft.	

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE	HOLE NO.
J.F.Kennedy Park (LODI)	1068R

06398 2

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1066R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,845 E 414	Vert.	

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-27-87	10-27-87	E.D.I.	MOBILE B-57	6.5"	22.0		22.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
12.1/55		8			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NA	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADV. LEN CORE	SAMPLE REQ. CORE REQ.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.5	8-12 14-12							0.0 - 5.2 Ft. SILT and SAND FILL (ML, SM).	Borehole advanced 0-22 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp. 2.9-5.2 Ft. Elevated readings with HP-210.
SS	2.0	1.5	5-5-8-6							0.0-2.0 Ft. Silt, several colors mixed: yellowish brown, black, reddish brown; some gravel.	
SS	2.0	2.0	4-5-3-5							2.0-2.9 Ft. Silt, pinkish brown and yellowish brown.	
SS	2.0	2.0	5-7-8-10					5		2.9 - 5.2 ft. SAND (SM), dark brown and black, fine- and medium-grained.	
SS	2.0	1.5	3-5-7-6							5.2 - 5.8 Ft. Silty SAND (SM). Gray (5YR5/1), wet.	
SS	2.0		3-2-4-4							5.8 - 10.0 Ft. CLAY (CL).	
SS	2.0	2.0	7-7-13 13							5.8-6.8 Ft. Weak red (10R5/4).	
SS	2.0	2.0	7-6-8-7					10		6.8-9.0 Ft. Light gray and light yellowish brown (2.5Y6/4).	
										9.0-10.0 Ft. Reddish gray (2R5/1).	
										10.0 - 13.8 Ft. SILT and SAND (ML, SP). Weak red (10R5/3); sand is very fine-grained, interbedded with 7 - 15 mm layers. Silt increases downward.	
								15		13.8 - 14.2 Ft. Gravelly SAND (SW). Dark reddish brown (5YR3/2), coarse-grained, rounded gravel.	16-18 Ft. No sample. Sand heave up the auger.
										14.2 - 22.0 Ft. SAND (SP). Brown (7.5YR4/4), medium-grained abundant lithic fragments, subrounded to subangular, gravelly at base.	
								20		Bottom of borehole at 22.0 Ft. Borehole backfilled with spoils, 10/27/87.	22.0 Ft. Auger refusal.

Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1066R

06398 2

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1067R

SITE	COORDINATES	ANGLE FROM HORIZONTAL
J.F.Kennedy Park (LODI)	N 1,761 E 415	Vertical

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-27-87	10-27-87	E.D.I.	MOBILE B-57	6.5"	12.0		12.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	ELEV. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
9.5/79		6			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NA	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.5	8-5-5-7								0.0 - 5.2 Ft. SAND FILL (SP, SW). Brown and yellowish brown, fine- to coarse-grained, some gravel.	Borehole advanced 0-12 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	0.5	19-5-7 8								0.0-1.5 Ft. Brown (7.5YR5/4), fine-grained.	
											1.5-2.5 Ft. Coarse-grained gravel.	
SS	2.0	1.6	16-6 9-12					5			2.5-5.2 Ft. Dark yellowish brown (10YR4/4), coarse-grained.	
SS	2.0	2.0	17-10 9-15								5.2 - 6.9 Ft. Silty SAND (SM). Dark yellowish brown (10YR4/4), medium-grained, wet.	
SS	2.0	1.4	4-10 12-12								6.9 - 12.0 Ft. SILT, CLAY, and SAND (ML, CL, SP). Reddish brown (2.5YR4/4) and weak red (10R5/2), sand is very fine-grained. Bedding is 5 - 15 mm layers.	
SS	2.0	1.5	4-5-6-9					10			7.5-7.6 Ft. Gravelly sand, medium-grained.	
											10.7-12.0 Ft. Red (10R5/6), medium-grained, thin interbedded sand.	
											Bottom of borehole at 12.0 Ft. Borehole backfilled with spoils, 10/27/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1067R

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1083R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,952 E 416	Vertical	

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-3-87	11-3-87	G. Engel; BNI	Minuteman Auger	4"	1.5		9.8

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
1.1/73		2			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/ 30 in	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	0.8								0.0 - 0.5 Ft. Sandy Silty CLAY (CL-ML). Blackish red (5R3/2), fine- to coarse-grained sand.	Borehole advanced 0-9.8 Ft. using 3" i.d. split-spoon sampler and 4" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp. 4.0-5.0 Ft. Very slow drilling with considerable resistance.
SS	0.5	0.5								0.5 - 4.7 Ft. Clayey SAND (SC). Grayish brown (5YR5/2) mottled with light brown (5YR5/6), fine- to coarse-grained.	
								5		1.0-2.0 Ft. Grayish red (5R4/2).	
										2.0-4.7 Ft. Light brown (5YR5/6).	
										4.7 - 6.5 Ft. Sandy SILT (ML). Pale brown (5YR5/2), fine-grained sand.	
										5.5-6.0 Ft. Sand component is coarsening with depth.	Some moisture noted at 5.5 Ft.
										6.5 - 7.6 Ft. SAND (SP). Light olive gray (5Y5/2) mixed with brownish gray (5YR4/1). Fine- to medium-grained, increasing with depth to coarse-grained.	Augered to 8.0 Ft. Gamma-scanned to 7.5 Ft.
										7.6 - 9.8 Ft. CLAY (CL). Grayish red (5YR4/2).	
										Bottom of borehole at 9.8 Ft. Borehole backfilled with spoils, 11/3/87.	

Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1083R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1076R

SITE	COORDINATES	ANGLE FROM HORIZONTAL
J.F.Kennedy Park (LODI)	N 1,909 E 424	Vertical

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
10-29-87	10-29-87	E.D.I.	MOBILE B-57	6.5"	26.0		26.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
16.8/93		9			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NA	D. Harnish

SAMP. TYPE AND NO.	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.8	1-1-3-1							0.0 - 5.1 Ft. SAND FILL (SP). 0.0-1.0 Ft. Dark brown (7.5YR3/3) topsoil. 1.0-5.1 Ft. Sand, yellowish brown (10YR5/6), fine-grained. 2.0-2.7 Ft. Sand, black, fine-grained, some gravel.	Borehole advanced 0-26 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	1.7	6-6-4-4								
SS	2.0	1.6	2-2-4-2					5		5.1 - 14.0 Ft. CLAY (CL). 5.1-9.3 Ft. White and pinkish gray (5YR7/2), yellowish brown iron-oxide stain toward top.	
SS	2.0	2.0	7-10 10-10								
SS	2.0	2.0									
SS	2.0	2.0	6-12 15-17					10		9.3-14.0 Ft. Weak red (10R5/3) and gray, finely interbedded	
SS	2.0	2.0	10-20 21-27								
SS	2.0	2.0	12-14 15-27					15		14.0 - 19.0 Ft. CLAY, SILT, and SAND (CL, ML, SM). Weak red (10R5/3) and gray (2.5YR6/0); sand is very fine-grained, sand fraction increases downward. Finely interbedded with 5-10 mm layers. 16.0-18.0 Ft. Sand, saturated, liquefied. 17.0-19.0 Ft. Reddish brown.	18.0 Ft. Sampler refusal.
SS	2.0	2.0	9-12 14-18								
								20		19.0 - 26.0 Ft. SAND and SANDY GRAVEL (SP, GS). 19.0-22.0 Ft. Sandy gravel.	
								25		24.5-25.0 Ft. Sandy gravel.	
										Bottom of borehole at 26.0 Ft. Borehole backfilled with spoils, 10/29/87.	26.0 Ft. Auger refusal.

Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1076R

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1112R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,823 E 426	Vertical	--------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-3-87	11-3-87	E.D.I.	MOBILE B57	6.5"	10.0		10.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
7.4/74		5			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY
140 lbs/30 in	NONE	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS/6" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SOIL CLASS.	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.8	3-6-8-7								0.0 - 4.0 Ft. Gravelly SILT and SAND FILL (GM-ML, SP).	Borehole advanced 0-10 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	1.3	3-3-6-4								0.0-1.3 Ft. Gravelly SILT, dark brown (10YR3/3), mixed with dark gray (10YR4/1) silt; dusky red Brunswick sandstone gravel.	
SS	2.0	1.8	3-1-5-8					5			1.3-4.0 Ft. Sand, yellowish brown (10YR5/6), fine-grained, some small rounded gravel, silty in places.	
SS	2.0	1.3	7-9-13 17								4.0 - 4.7 Ft. Silty SAND (FILL) (SM). Reddish brown (2.5YR4/4), medium-grained, wet.	
SS	2.0	1.3	4-9-10 12								4.7 - 5.8 Ft. SAND (SP). Gray (2.5YR5/0), medium- to coarse-grained, gravelly at base (rounded).	8.0 Ft. Groundwater observed.
								10			5.8 - 10.0 Ft. CLAY and SILT (CL-ML). Finely interbedded.	
											5.8-6.9 Ft. Reddish brown (2.5YR4/4).	
											6.9-8.0 Ft. Gray (2.5YR5/0).	
											8.0-10.0 Ft. Clay is gray, silt is dusky red (7.5YR3/2), some very fine-grained sand; bedded with 3-5 mm layers.	
											Bottom of borehole at 10.0 Ft. Borehole backfilled with spoils, 11/3/87.	
												Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1112R

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 of 1	1111R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,875 E 426	Vertical	

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-3-87	11-3-87	E.D.I.	MOBILE B57	6.5"	10.0		10.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
6.3/63		4			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/30 in	NONE	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.7	6-11 7-8							0.0 - 4.2 ft. SILT, Gravelly SILT, SAND FILL (ML, GM, SP).	Borehole advanced 0-10 Ft. using 3" i.d. split-spoon sampler and 6.5" o.d. solid-stem augers. Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	1.3	4-3-3-2							0.0-0.4 Ft. Sand, reddish brown (5YR4/4), fine-grained, some gravel.	
										0.4-0.8 Ft. Sand, gray (7.5YR5/0), medium-grained, dry loose.	
SS	2.0	2.0	1-5-16 19					5		0.8-2.0 Ft. Silt, mixed dark brown, black, reddish brown and brown, some gravel.	
SS	2.0	1.4	14-9 7-10							2.0-4.2 Ft. Gravelly silt, brown (10YR4/3) with yellowish brown iron-oxide stain, gravel is broken basalt, coal.	5.9-10.0 Ft. Wet.
SS	2.0		4-5-6-7							4.2 - 5.0 Ft. SILT (OL). Black (10YR2/1), organic.	
								10		5.0 - 6.7 Ft. SAND and SILT (SM, SP, ML). Light gray to gray (10YR5/1), fine- to medium-grained, infrequent gravel, bedded.	
										5.1-5.8 Ft. Yellowish brown (10YR5/6), some silt.	
										6.7 - 10.0 Ft. SILT and CLAY (ML-CL). Reddish gray (10YR5/1) with some yellowish brown iron-oxide stain, beds are 3-5 mm thick.	Description and classification of soils by visual examination.

Bottom of borehole at 10.0 Ft.
Borehole backfilled with spoils, 11/3/87.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1111R

0639842

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1039R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,718 E 428	Vertical	

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-13-87	11-13-87	G. Engel; BNI	Minuteman Auger	4"	12.7		12.7

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
11.8/92		13			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
N/A	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. ADJ. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SOIL CODE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	0.7									0.0 - 0.2 Ft. Silty Sandy CLAY (CL-ML). Dusky yellow brown (10YR2/3), fine - to medium-grained sand.	Borehole advanced 0-12.7 Ft. using 3" i.d. split spoon sampler and 4" o.d. solid stem augers.
SS	1.0	0.8									0.2 - 12.7 Ft. Silty SAND (FILL). Moderate brown (5YR4/4), fine- to medium-grained.	
SS	1.0	0.9									1.4-1.7 Ft. Coarsening with depth to very coarse-grained.	
SS	1.0	1.0									2.0-4.1 Ft. Dark yellowish orange (10YR6/6).	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp. Augered to 9.0 Ft. Gamma-logged to 8.5 ft.
SS	0.7	0.6									4.1-4.7 Ft. Light brown (5YR5/6).	
SS	1.0	1.0						5			4.7-4.9 Ft. Dark yellowish brown (10YR4/2).	
SS	1.0	0.8									4.9-6.0 Ft. Dark yellowish orange.	
SS	1.0	1.0									6.0-9.0 Ft. Light brown.	
SS	1.0	1.0									9.0-12.7 Ft. Moderate yellowish brown (10YR6/4).	
SS	1.0	1.0						10				
SS	1.0	1.0										
SS	1.0	1.0										
											Bottom of borehole at 12.7 Ft. Borehole backfilled with sand, 11/13/87.	Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1039R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	4501-138	1 OF 1	1088R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
J.F.Kennedy Park (LODI)	N 1,838 E 439	Vertical	------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-16-87	11-16-87	G. Engel; BNI	Minuteman Auger	4"	11.0		11.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	ELEV. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
8.6/78		13			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs/18 in.	NONE	R. Migues

SAMP. TYPE AND DIAM.	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.0	0.5									0.0 - 1.0 Ft. Silty Sandy CLAY (CL-ML). Dusky brown (5YR2/2). Fine- to medium-grained sand component. Some mottling with moderate reddish brown (10R4/6). Humus.	Borehole advanced 0-11.0 Ft. using 3" i.d. split-spoon sampler and 4" o.d. solid-stem augers.
SS	1.0	0.8										
SS	1.0	1.0										
SS	1.0	1.0									1.0 - 4.3 Ft. Sandy Silty CLAY (CL-ML). Grayish brown (5YR3/2).	
SS	1.0	0.7									1.7-2.2 Ft. Light brown (5YR5/6).	
SS	1.0	1.0						5			2.2-4.3 Ft. Dark yellowish brown (10YR4/2) mottled with moderate brown (5YR4/4), and dusky yellowish brown (10YR2/2).	Borehole was radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	1.0	0.6										
SS	1.0	1.0									4.3 - 5.2 Ft. Clayey SAND (SC). Dark yellowish brown (10YR4/2), fine- to medium-grained.	
SS	1.0	0.6										
SS	1.0	1.0									5.2 - 6.5 Ft. Sandy CLAY (CL). Brownish black (5YR2/1), fine- to coarse-grained sand component.	
SS	1.0	0.4						10			5.4-5.5 Ft. Olive gray (5Y4/1) fine- to coarse-grained sand stringer.	Augered to 8.0 Ft. Gamma-scanned to 7.0 Ft.
											5.5-5.9 Ft. Olive black (5Y2/1).	
											5.9-6.4 Ft. Grayish black (N2).	
											6.4-6.5 Ft. Grayish olive (10Y4/2).	
											6.5 - 7.2 Ft. SAND (SP). Medium gray (N5), with grains of dusky red (5R3/4) and light gray (N7). Fine- to very coarse-grained.	
											7.2 - 11.0 Ft. CLAY (CL). Pale red (5R6/2) alternately layered with thin (<1") bands of grayish red (10R4/2) and brownish gray (5YR4/1).	
											8.0-9.8 Ft. Mottled with moderate yellowish brown (10YR5/4) and light olive brown (5Y5/6) and medium gray (N6).	
											Bottom of borehole at 11.0 Ft. Borehole backfilled with spoils, 11/17/87.	
												Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: J.F.Kennedy Park (LODI)

HOLE NO. 1088R

063982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1183R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
LODI Fire Station No. 2	N 1,763 E 451	Vertical	-------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
12-1-87	12-1-87	E.D.I.	MOBILE B-57	6.5"	10.0		10.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
4.8/48		5			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs./30 in.	NONE	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	1.5	1.3	11-10-8								0.0 - 6.0 Ft. GRAVEL, Silty SAND, and Gravelly SILT FILL (GP, SM, GM-ML).	Borehole advanced 0-10 Ft. with 3 in. i.d. split-spoon sampler and 6.5 in. o.d. hollow stem auger. Borehole radiologically sampled and gamma-logged by TMA-Eberline, Corp. 2.0-6.0 Ft. Poor recovery supplimented with grab samples fromauger.
SS	2.0	0.3	7-8-10 9								0.0-0.5 Ft. Gravel, broken basalt; road base.	
SS	2.0	0.3	15-23 22-13					5			0.5-2.0 Ft. Silty SAND, strong brown (7.5YR4/6), fine-grained with some round gravel, loose.	
SS	2.0	1.3	8-10 14-17								2.0-4.0 Ft. Gravelly SILT, dark brown topsoil with New Brunswick sandstone gravel, damp, soft.	
SS	2.0	1.7	6-16 25-30								4.0-6.0 Ft. Silty SAND, pinkish gray (7.5YR6/2) and dark brown (10YR3/3), some broken basalt gravel.	
								10			6.0 - 10.0 Ft. SILT (ML). Dark brown (7.5Y4/2) and weak red, faint laminations becoming more distinct at 7.4 Ft.	Identification and classification of samples by visual examination.
											8.0-8.4 Ft. Weak red.	
											8.4-10.0 Ft. Dark gray (10YR4/1).	
											Bottom of borehole at 10.0 Ft.W borehole backfilled with spoils, 12/1/87.	

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: LODI Fire Station No. 2

HOLE NO. 1183R

0613982

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	1182R

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
Brook St. (LODI)	N 1,870 E 462	Vertical	.....

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
12-1-87	12-1-87	E.D.I.	MOBILE B-57	6.5"	10.0		10.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
7.9/79		5			/	/

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 lbs./ 30 in.	NONE	D. Harnish

SAMP. TYPE AND DIAM.	SAMP. ADV. LEN CORE	SAMPLE REC. CORE REC.	SAMPLE BLOWS "N" % CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN O.P.M	PRESS. P.S.I.	TIME IN MIN.	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.5	25-27 23-12								0.0 - 4.2 Ft. GRAVEL and Gravelly SILT FILL (GP, ML-GM).	Borehole advanced 0-10 Ft. with 3 in. i.d. split-spoon sampler and 6.5 in. o.d. hollow stem auger. Borehole radiologically sampled and gamma-logged by TMA-Eberline, Corp.
SS	2.0	1.8	6-7-6-6								0.0-0.5 Ft. Gravel, angular broken basalt.	
SS	2.0	1.7	2-1-3-5					5			0.5-4.1 Ft. Gravelly silt, dark brown (10YR3/3), sandy, gravel is basalt and New Brunswick sandstone, small pebbles of black and pinkish brown silt.	
SS	2.0	1.1	12-12 12-12								4.1 - 5.2 Ft. SILT (ML). Dark gray with some iron-oxide, mottling, soft.	
SS	2.0	1.8	8-9-11 12					10			5.2 - 6.5 Ft. Sandy SILT (ML-SM). Light brownish gray (2.5Y6/2) with iron-oxide mottling increasing downward.	
											6.5 - 10.0 Ft. SILT (ML). Pale red (5R6/2), laminated on scale of 5-20 mm, thicker beds downward, some clay (?) beds, medium stiff.	
											8.0-10.0 ft. Weak red, some iron-oxide stained beds.	
											Bottom of borehole at 10.0 ft. Borehole backfilled with spoils, 12/1/87.	Identification and classification of samples by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: Brook St. (LODI)

HOLE NO. 1182R