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ENVIRONMENTAL SITE CHARACTERIZATION

Oak Walk Redevelopment Site
Emeryville, California

for

BAYROCK
RESIDENTIAL

VOLUME 1 of 6

Text, Tables, Figures, Plates
and Appendices I and II

April 2005

Project No.: 0004.083

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PROFESSIONAL CERTIFICATION AND LIMITATIONS

This site characterization report was prepared under the direction of the engineer whose seal and signature appear below. The work was performed in accordance with generally accepted standards of engineering practice based on information available to us at the time of its preparation and within the limits of the scope of work directed by the client. No other representation, express or implied, and no warranty or guarantee is included or intended as to professional opinions, recommendations, or field or laboratory data provided.

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1.0 INTRODUCTION

This environmental site characterization report was prepared by The San Joaquin Company Inc. (**SJC**) of Oakland, California. It describes a site characterization program performed for Bay Rock Residential LLC (**Bay Rock**) of Emeryville, California at the "Oak Walk Redevelopment Site," which is located in the City of Emeryville and, in some early planning and technical documents, has also been referred to as the "Emeryville Corners" site. The work was undertaken to comply with regulatory direction issued by Alameda County Environmental Health Care Services (**ACEHCS**) (Alameda County Environmental Health Care Services 2004). However, it is important to note that Bay Rock is not a responsible party for any of the chemicals of concern that have been found on the Oak Walk Site or for any of the sites from which those chemicals migrated onto the subject property.

For the purposes of this report, the subject property will be designated the "Oak Walk Site," the location of which is shown on Figure 1. Plate 1 is an aerial photograph of the subject property and nearby properties taken on April 19, 2003 and photo-enlarged to scale of 1:100. Figure 2 is a site plan that shows the existing structures on the property. As is shown on that drawing, the Oak Walk Site occupies the major portion of the city block that is surrounded by San Pablo Avenue, 41st Street, Adeline Street and 41st Street. Except for a small parcel of land at the corner of 40th and Adeline Streets that is currently used by the Alameda - Contra Costa Transit District (**AC Transit**), the subject property is separated from Adeline Street by private residential property, which, for ease of description will be designated as the "Ennis Property" to reflect its ownership. As noted, the characterization program described herein was conducted at the direction of ACEHCS, which agency has assigned the case number R02733 for the site (Alameda County Environmental Health Care Services 2004).

With the exception of the small parcel at the intersection of 40th and Adeline Streets that is the site of an AC Transit drivers' restroom, the whole of the Oak Walk Site is currently owned by the Oaks Club, a California Limited Partnership (**Oaks Club**), which entity acquired individual parcels of the property over a period of many years. The site is currently occupied by now-vacant residences of considerable age, three commercial buildings, which are either vacant or in temporary use by the Oaks Club, the AC Transit restroom building built in the 1990s, and parking lots. Bay Rock is evaluating the viability of redeveloping the Oak Walk Site for mixed residential and commercial use. Figure 3 is an architect's drawing showing a preliminary plan view of the development that is currently being considered for the property.

In November 2003, Bay Rock contracted with SJC to make a preliminary assessment of the environmental condition of the subject property for the purpose of assessing the likely scope of a full program of site characterization, remediation and environmental management that was anticipated to be necessary for the proposed redevelopment of the site.

A review of ACEHCS files and other records, including engineering reports in SJC's files from site characterization and remediation projects we have conducted in the neighborhood of the subject property, indicated that there was strong evidence that the subject property had likely been affected by releases of fuel hydrocarbons and solvents from adjacent and nearby sites. Those sites include: 1) the former Celis' Alliance Service Station (**Celis Site)** at 4000 San Pablo Avenue, adjacent to the southern boundary of the subject property and that is today occupied by a portion of 40th Street where it intersects with San Pablo Avenue; 2) the former Frank W. Dunne (**Dunne Paint**) and **Boysen Paint Sites**, at 4050 Adeline Street and 1007 41st Street, respectively, from either one or both of which sites paint solvents have migrated westward down the groundwater gradient to the Oak Walk Site; and 3) the former locations of leaking underground storage tanks at the former San Francisco French Bread Company facility (**SFFBC Site**), which was located at 4070 San Pablo Avenue and which tank locations are today partially located beneath the Oak Walk Site and partially beneath 40th Street. The locations of those sites of fuel hydrocarbon and solvent releases are shown on Figure 4.

Because it was highly probable from the available records that the Oak Walk Site had been contaminated by releases of regulated materials from the sites described above, to obtain a preliminary understanding of the extent to which the subsurface beneath the proposed redevelopment site has been affected by chemicals of concern, an initial program of exploratory trenching was undertaken on the subject property in December 2003. That exploratory program, the scope of which is summarized in Section 4.1 below, revealed that soil and groundwater over almost the entire Oak Walk Site is affected by fuel hydrocarbons and by solvents that can be classified as paint thinners. The principal results of that preliminary investigation, which included excavation of eight exploratory trenches at the locations shown on Figure 2, were immediately, but informally, communicated to ACEHCS. Details of the conditions found were included in an engineering report (The San Joaquin Company 2004c), which was submitted to ACEHCS under cover of a formal letter of notification that was transmitted to that agency on August 12, 2004 (The San Joaquin Company 2004a). As noted earlier, based on that report, ACEHCS directed that a complete environmental site characterization of the property be conducted. That work has now been performed and is the subject of this report.

1.1 Postal Addresses Included in Oak Walk Site

As is shown on Figure 2, the Oak Walk Site contains a number of postal addresses on San Pablo Avenue and 41st Street and one address on Adeline Street. Because the section of 40th Street that runs between San Pablo Avenue and Adeline Street was not constructed until the mid-1990s, none of the parcels included on the site have 40th Street addresses. The included postal addresses are those for:

- 4070 San Pablo Avenue, which extends some 375 ft. east from San Pablo Avenue and today flanks the northern boundary of 40th Street;

- The small parcel where the AC Transit bathroom facility now stands, but which, after redevelopment is completed, is expected to be the site of the multi-family residence currently located at 1077 41st Street and, at its new location, to have the postal addresses 3341-3357 Adeline Street;
- the commercial properties at 4086 and 4090 San Pablo Avenue;
- a parking lot at 4098 San Pablo Avenue, at the intersection of that street with 41st Street;
- residential lots at 1077*****, 1079, 1081, 1083, 1085, 1087, and 1089 41st Street; and
- a lot occupied by residences having the addresses 1089B and 10891/2 41st Street, which lot has access to 41st Street via a lane that runs along the western side of 1089 41st Street.

*** Note:**

> The residence at 1077 41st Street will not be demolished. As noted above, that three-story building will be moved to 3341-3357 Adeline Street as a historic preservation component of the redevelopment plan.

As has been stated previously, those addresses are collectively referred to as the Oak Walk Site in this report.

1.2 Site Codes

The concerned regulatory agencies have issued the site codes noted below for the Oak Walk Site and for the adjacent and nearby sites shown on Figure 4 at which petroleum hydrocarbons, including fuel hydrocarbons and paint solvents, have been released to the subsurface.

1.2.1 Celis Site

Note:

The automobile service station that was previously located at 4000 San Pablo Avenue was known as Celis' Alliance Service Station, which designation reflected the name of Constantino Celis, who owned the service station prior to the purchase of the property by the City of Emeryville. However, in many reports prepared by others and in regulatory citations, it is variously named "Celi's Alliance Service Station" or "Celis Service Station." Based on review of additional regulatory files, we conclude that the proper usage is Celis' Alliance

> Service Station. Accordingly, that facility will be referred to as Celis' Alliance Service Station (**Celis Site**).

The Celis Site at 4000 San Pablo Avenue, at which the discharge of petroleum hydrocarbons from underground storage tanks to the subsurface occurred, is recorded in California regulatory databases with the identifiers shown below:

> The California State Water Resources Control Board (**SWRCB**) has established the following Global ID for the Celis Site: T0600101794
>
> The California Regional Water Quality Control Board - San Francisco Bay Region (**RWQCB**) has been assigned the following case number to the Celis Site: 01-1938
>
> The ACEHCS Local Oversight Program (**LOP**), which is the lead agency for the site, has assigned the following case number to the Celis Site: RO453/RO567

1.2.2 Dunne Paint Site

The former Dunne Paint property at 4050 Adeline Street, at which the discharge of solvents to the subsurface occurred historically, is now the site of the Green City [residential] Lofts, which are in the late stages of construction. The ACEHCS LOP has assigned the following case number to the Dunne Paint Site: RO72/RO73

1.2.3 Boysen Paint /Oakland One Site

The large building that once housed the Boysen Paint Company, at which property discharges of solvents to the subsurface occurred, historically had the address 1007 41st Street, Emeryville. Now the home of One Color Communications, a pre-press packaging design firm, the building's entrance is now located at the postal address 1001 42nd Street, Oakland. The former Boysen Paint site is also referenced as the "Oakland One" site in some regulatory databases and in reports prepared by others. The ACEHCS LOP has assigned the following case number to the Boysen Paint/Oakland One Site: RO79

1.2.4 San Francisco French Bread Company Site

The SFFBC Site at 4070 San Pablo Avenue, at which a discharge of petroleum hydrocarbons from underground storage tanks to the subsurface occurred, is recorded in California databases with the identifications shown below.

> The SWRCB has established the following Global ID for the SFFBC Site: T0600101186
>
> The RWQCB has been assigned the following case number to the SFFBC Site: 01-1289

> The ACEHCS LOP, which is the lead agency for the site, has assigned the following case number to the SFFBC Site: RO171

1.2.5 SNK Andante Project Site

No leaks or spills occurred at this site, that formerly had the address 3992 San Pablo Avenue, but, following construction of a condominium complex on the property, now has new addresses. As can be seen on Figure 4, it is south across 40th Street from the Oak Walk Site. For the purposes of administrative review of work plans and engineering reports and the regulatory oversight of the remediation program performed there, the ACEHCS LOP assigned the following Case Number to the SNK Andante Project Site at 3992 San Pablo Avenue: RO2529

The assignment of a case number to the site by ACEHCS does not indicate that the property has been identified by that agency as the site of an unauthorized release of regulated petroleum hydrocarbons to the subsurface. ACEHCS recognizes that the hydrocarbons that affected the subsurface beneath the SNK Andante Project Site were discharged on property to the north and that no discharge occurred on the 3992 San Pablo Avenue property itself.

1.2.6 Oak Walk Site

With the possible exception of a small area of the former SFFBC property that is included in the Oak Walk Site, the subject property is not a source of contamination. As was the case with the SNK Andante Project Site, in order to provide oversight of the site characterization and possible future remediation of the Oak Walk Site, the ACEHCS LOP has assigned the following case number to the Oak Walk Site: RO2733.

2.0 SITE HISTORY

Ohlone Indians were the principal inhabitants of the eastern shore of San Francisco Bay when, in 1820, the neighborhood of the subject property, like most of present-day Alameda County, was awarded by Spain to Luis Maria Peralta. The land grant specified that Peralta promote European settlement of the area, which the Spaniards called Encinal, the "grove of evergreen oaks," and which Peralta called Rancho San Antonio. By 1842, new settlers had established full-scale logging operations in the oak and redwood forests of the East Bay and the Ohlones and most of their culture had been obliterated by European diseases and settler hostility.

In the late 1800s, Atchison, Topeka and Santa Fe (**AT&SF**) Railroad tracks were constructed to the east of the subject property along the center of Adeline Street on a north-northeast to south-southwest alignment, but, at the intersection of Adeline and 40th Streets, the line curved to the west toward San Pablo Avenue before crossing that street and continuing westward into the industrial areas that were, at that time, beginning to develop in the city of Emeryville. Those topographical features are shown on the Sanborn Fire Insurance Map (**Sanborn**$^{©}$ **Ma**p) for 1903, a copy of which is included in Appendix I. As can be seen on that map, the area that is today the site of the proposed Oak Walk redevelopment was occupied by residences, each associated with areas of open land, outbuildings and stables.

By 1911, residential sites that were formerly adjacent to the AT&SF Railroad line had become areas of open land and, as can be seen on the Sanborn$^{©}$ Map for that year, which is also included in Appendix I, stores and "saloons" had been constructed along the northern portion of the San Pablo Avenue frontage of the subject property and additional residences had been constructed that fronted onto 41st Street. The topographic features of those areas of the site had, therefore, developed more urban characteristics when compared to the low-density residential characteristics that had been the case in 1903.

With the growth of population in the East Bay, development of industries accelerated in the one-square mile city of Emeryville in the early 20th Century. The AT&SF Railroad transported materials and workers to the industrial areas to the west of San Pablo Avenue along the eastern shore of San Francisco Bay. There were no rail yards or locomotive maintenance shops to the east of that thoroughfare. None of the environmental problems associated with such facilities have been discovered on any of the properties adjacent to the Oak Walk Site. The open ground adjacent to the AT&SF Railroad and the commercial and residential properties on the northern portion of the subject property, as they appeared in 1930, are shown on the aerial photograph reproduced on Plate 2. Although some sharpness of image was lost by doing so, that photograph is magnified to a scale of 1:100, so that the structures present at that time can be more easily identified.

Industry in many Emeryville neighborhoods expanded rapidly during the 1939 to 1945 World War (World War II), but that development had little effect on the property included within the Oak Walk Site. However, as is shown on the 1951 Sanborn$^{©}$ Map, wholesale storage and warehousing facilities were developed on the previously open lands to the south and north of the AT&SF Railroad line between Adeline and San Pablo Avenue. An automobile service station, which in its last years of existence was known as Celis' Alliance Service Station, had been constructed along the eastern side of San Pablo Avenue and a wholesale plumbing supply business occupied the building to the east of that service station.

The 1951 Sanborn© Map also shows that a tire sales and service business that included a gasoline and oil dispensing station was, by that time, located on the southeast corner of the intersection of San Pablo Avenue and 41st Street. (**Note:** There are no regulatory records regarding the number or location of storage tanks associated with that service station facility.) That parcel of land is now in use as a private parking lot for the Oaks Club.

The 1967 Sanborn© Map shows that an upholsterer occupied the commercial building shown on Figure 2 at 4086 San Pablo Avenue. That upholstery business later expanded to occupy the warehouse previously used by the wholesale plumbing supply facility that was located to the rear of the gasoline service station located at 4000 San Pablo Avenue.

Later, in the 1970s, the commercial building that is today located at 4070 San Pablo Avenue was constructed and used by the SFFBC as a bakery. That company installed two underground fuel storage tanks: a 10,000-gallon gasoline tank and a 10,000-gallon diesel tank. They were used to fuel their delivery vehicles. The former locations of those tanks, as well as the tank sites at the former service station site at 4000 San Pablo Avenue are shown on Figure 4.

By the 1980s, many of the industrial facilities in western Emeryville had begun to decay and increasingly became idle. In the 1990s, the City of Emeryville through its redevelopment agency, the Emeryville Redevelopment Agency (**ERDA)**, began an ambitious undertaking to clean up and redevelop former industrial areas of the City and other tracts where commercial and residential properties had become rundown. Included in that redevelopment program was construction of a major new thoroughfare formed by extending 40th Street from its previous termination at Adeline Street westward to the frontage of Interstate 80, which passes along the eastern shore of San Francisco Bay, some 0.85 miles to the west of the Oak Walk Site. The highway construction included the extension of 40th Street from Adeline Street to San Pablo Avenue, for which purpose the City of Emeryville procured the land along the alignment of that extension and demolished the former carpet and upholstery warehouse described above. The automobile service station at 4000 San Pablo Avenue was also razed at that time.

Construction of the extension of 40th Street also took a portion of the land previously occupied by the SFFBC, including the southern half of the former sites of the gasoline and diesel underground storage tanks located on that property. Subsequent to that highway construction, the commercial building at 4070 San Pablo Avenue and its surrounding yard were purchased by the Oaks Club, which uses the building as a carpentry and maintenance shop and has converted the frontage land into a private parking lot. These features are shown on Figure 2.

Until it was vacated in early 2005, the commercial building at 4086 San Pablo Avenue was, historically, the site of an upholstery business and, later, a specialty hydraulic hose fitting shop that neither dispensed nor used hydraulic oil or similar liquid material. The latter business also occupied the ground floor of the adjacent building at 4090 San Pablo Avenue, which had historically been a restaurant and the upper floor of which is occasionally used by the Oaks Club for staff training.

The other structures on the Oak Walk Site are either single or multi-family residential buildings with either garages or outbuildings. None of those structures are compliant with modern building codes and are generally in a very dilapidated condition. By late 2004, all had been vacated and they remain empty at the present time (April 2005).

2.1 Existing Structures on the Site

Following is an inventory of existing structures on the site. The addresses and locations of the structures are shown on Figure 2.

2.1.1 <u>Currently Extant Residences</u>

Two existing residences have been on the Oak Walk Site since circa 1903, the date of the earliest historical source.

1081 41st Street	vacated in 2004
1083 41st Street	vacated in 2004

By 1911, the following residences had been constructed.

1087 41st Street	vacated in 2004
1077 41st Street	vacated in 2004

Between 1911 and 1930, the following residences were built.

1077½ 41st Street	vacated in 2004
1079 41st Street	vacated in 2004
1089 41st Street	vacated in 2004
1089½ 41st Street	vacated in 2004
1089B 41st Street	vacated in 2004

2.1.2 <u>Currently Extant Commercial Buildings</u>

There were no commercial structures on the subject property in 1903.

By 1911, the commercial building at the following address had been constructed: 4086 San Pablo Avenue. It was vacated in early 2005.

Between 1911 and 1930, a commercial structure at the following address had been built: 4090 San Pablo Avenue. Its first floor is now vacant; the second floor is used occasionally to train Oaks Club staff.

Between 1930 and 1969, no currently-extant commercial structures were constructed on the subject property.

The commercial building at 4070 San Pablo Avenue that used to be the location of the SFFBC and which today houses the Oaks Club carpentry and maintenance facility was constructed after 1969.

The AC Transit building at the corner of Adeline and 40th Streets was built in conjunction with the 40th Street extension in the mid-1990s. It serves as a bathroom for bus drivers calling at the transportation loading and unloading bays that are located on both sides of 40th Street.

3.0 SITE SETTING

The general geological, hydrologic and hydrogeological setting of Oak Walk Site is discussed below, together with a description of subsurface contamination under adjacent and neighboring properties that were the sources of contamination affecting the site.

3.1 Site North

As previously noted, Figures 1, 2 and 3 show the location of the subject property, a site plan of the property prior to the construction work that is proposed, and an architect's site plan of the development as it will be configured when construction is complete. On those Figures, and others presented in this report, true north at the Oak Walk Site is slightly to the west of the center line of Adeline Street which is located a short distance to the east of the subject property. However, to simplify discussion, in this report, we have established a "Site North" that parallels the alignment of San Pablo Avenue, which runs along the western side of the property. Thus, the boundary of the Oak Walk Site where it fronts onto 41st Street will be assumed to run from east to west and will be designated the "northern" boundary. Other references to boundaries and features of the site and adjacent property will be consistently based on that assigned "Site North." Unless otherwise stated, or in cases where true north is shown on drawings, all compass directions referenced in this report should be interpreted in the context of that directional construction.

3.2 Topography

The Oak Walk site has a total area of some 79,360 sq. ft. (1.8 acres) and occupies a major part of the city block that is bounded by 41st Street, Adeline Street, 40th Street and San Pablo Avenue.

The site has a mean elevation close to 45.5 ft. above mean sea level (**MSL**). Except for a slight east to west slope, It is, for all practical purposes, flat, with no significant relief except for minor changes of elevation (typically less than one foot) that occur where one parcel of land into which the site is currently divided adjoins another. At the scale of the property as a whole, it has a downward slope from east to west (*i.e.*, from Adeline Street to San Pablo Avenue). Along the subject property's southern frontage, 40th Street slopes down toward San Pablo Avenue at a gradient of 1.35% while along the northern frontage on 41st Street frontage the corresponding slope is only 0.78%.

The whole of the Oak Walk Site is surrounded by public streets except along its eastern boundary, beyond most of which are residential sites that front onto Adeline Street (see Figure 2).

3.3 Regional Geology

The subject property is situated on the eastern side of San Francisco Bay in the California Coast Ranges section of the Pacific Border physiographic province.

Trenches and borings excavated on the property reveal that, as is typical of sites in the neighborhood, the subject property is underlain by fill that varies in thickness from approximately 3 to 10 feet. Beneath the fill are strata of alluvial fan deposits of the Quaternary-age Temescal Formation that is comprised of inter-fingering lenses of clayey gravel, sandy silty clay and sand-clay-silt mixtures (Radbruch 1957). At the site, this formation is some 20 ft. to 30 ft. thick and lies unconformably over earlier Quaternary continental and marine sands, clays and gravels of the Alameda Formation, the maximum thickness of which has not been fully explored in the region around the subject property, but is known to exceed 1,050 feet.

Figure 5 is an abstract from the United Sates Geological Survey's (**USGS**) digital map of the Quaternary geology of the San Francisco Bay Region (Helley and Graymer 1997). The USGS database maps an area of materials described as "natural levee deposits" of Holocene age a short distance to the north-northwest of the Oak Walk Site. In a map in their *East Bay Plane Groundwater Basin Beneficial Use Evaluation Report - Alameda and Contra Costa Counties,* the RWQCB identifies those same deposits as "stream channels" (California Regional Water Quality Control Board - San Francisco Bay Region 1999). Based on our discovery of obvious and well-delineated paleo-stream bed deposits on the subject property and beneath other land in the neighborhood (see discussion in Section 5.0 of this report), SJC believes that stream bed deposits and their associated natural levee deposits extend to the south of 40th Street and, given historical street names in the neighborhood such as "Spring Street," which is today known as Yerba Buena Avenue, stream channel deposits may, in fact, be present beneath superficial fill at least as far south as MacArthur Boulevard (see Figure 1 for location).

3.4 Regional Hydrology

Temescal Creek flows in underground culverts along a generally east to west course approximately 0.5 miles to the north of the subject property and discharges into San Francisco Bay, the shore of which is today some 0.85 miles to the west of the site. Prior to circa 1880, after which it was filled to become the site of a housing tract, there was a 30-acre tidal flat that formed an embayment in the shoreline of the Bay at a distance of some 0.6 miles southwest of the Oak Walk Site.

Temescal Creek and the tidal flats of San Francisco Bay dominated the regional hydrology of the area prior to its urbanization in the late 19th Century. However, there were no known streams that existed during the historical period in the vicinity of the Oak Walk Site closer than Temescal Creek. Today, substantially all precipitation running from roofs and paved areas on the site flow to storm water drains that are part of the City of Emeryville's storm water management system. That system drains to San Francisco Bay.

3.5 Regional Hydrogeology

The depth to the groundwater table in the area of the subject property reflects long term weather cycles as well as seasonal variations in local precipitation in the San Francisco Bay Area. Depending upon those factors, the piezometric level of the regional groundwater may be at elevations that vary between approximately 4 and 12 feet BGS (The San Joaquin Company Inc. 2003).

In May, 2004, the depth to groundwater measured in wells installed at the Oak Walk Site varied from approximately 4.5 to 10 feet below the existing ground surface. By November of 2004, the water table beneath the site had, on average, risen about 0.4 ft from its May 2004 elevation.

Regionally, the general direction of groundwater flow is west toward San Francisco Bay. However, at any given location the direction of groundwater flow can be substantially different because it is influenced by the local presence of high-permeability facies in the subsurface that were deposited by paleo-stream beds and other geomorphologic processes typical of those that influence the depositional environment of alluvial fans. At the scale of the site, the direction of groundwater flow beneath the Oak Walk Site itself is to the west at an average gradient, as computed from depth to groundwater data obtained on November 8, 2004, of 0.0094 ft/ft. Locally, due to the influence of channels of high permeability sands and gravels in what are otherwise a dominantly clayey facies, the direction of groundwater flow may be the northwest or southwest, or in intermediate compass directions, at gradients as great as 0.02 ft/ft or as little as 0.01 ft/ft (See Figure 18).

3.6 Sources of Contamination Affecting the Oak Walk Site

The majority of the mass of components of fuel hydrocarbons, which are the principal source of chemicals of primary concern found in soil and groundwater beneath the Oak Walk Site, migrated onto the property from adjacent land that is, today, located beneath 40th Street, at the southern boundary of the subject property. Solvents, which are present in groundwater over essentially the whole area of the site, were released at former paint manufacturing plants to the east of the site, across Adeline Street. The primary leakage of fuels was from a number of underground storage tanks that were located on the Celis Site that was previously located at 4000 San Pablo Avenue but is today beneath 40th Street. That source and others are discussed below. More detailed information obtained from the site characterization work that is the subject of this report is discussed in Sections 4.0 and 6.0 below.

3.6.1 <u>Environmental Conditions Beneath 40th Street</u>

Subsurface investigations beneath 40th Street have been conducted by Science and Engineering Analysis Corporation (**SECOR**), Levine-Fricke, and Woodward Clyde, each of whom served as consulting engineers to the several parties that, over time, owned some or all of the property that is, today, occupied by the extension of 40th Street that runs between Adeline Street and San Pablo Avenue.

As can be seen on Figure 4, the major source of the contamination found beneath the 40th Street right-of-way can be attributed to releases that occurred on the Celis Site and, to some degree, to leakage from underground storage tanks that were located on property at the rear of 4070 San Pablo Avenue that was owned by the SFFBC (The San Joaquin Company Inc. 2003). However, analytes of concern were also detected in soil and groundwater beneath 40th Street that, because of their hydrogeological juxtaposition relative to those sites at which underground storage tanks are known to have leaked, are difficult to explain without considering other potential sources of contamination. Such sources also appear to have been located in what is now the 40th Street right-of-way or, if not on that property itself, at hydrogeologically up-gradient locations.

As is described above, significant releases of paint thinner and other solvents are known to have occurred on property on both the north and south sides of 41st Street where it intersects with Adeline Street (Clayton Group Services 2003). The closest of those sites, the former Dunne Paint manufacturing facility at 4050 Adeline Street, is located some 450 ft. to the east of the Oak Walk Site. However, because information from Clayton's off-site investigations at the Dunne Paint Site and the site characterization of the Oak Walk Site that is described herein was not then available, there was insufficient information for the investigations conducted along the 40th Street right-of-way for a firm conclusion to be reached that some of the contamination present beneath that thoroughfare had its source at the Dunne or Boysen Paint Sites. A final resolution of that issue is beyond the scope of this report, although the information provided herein may be of assistance to engineers or regulatory agencies having jurisdiction over the release sites in the area.

Levine-Fricke investigated the environmental condition of the subsurface beneath what is now 40th Street for Catellus Development Corporation, the real-estate arm of the Southern Pacific Railroad (Levine-Fricke 1994a, 1994b, 1994c, 1993a, 1993b). Woodward Clyde conducted subsurface investigations and directed remedial excavations in that street’s right-of-way where it had been occupied by the Celis Station for the City of Emeryville’s ERDA (Woodward Clyde International Americas 1998a, Woodward Clyde Consultants 1995, 1994). SECOR investigated groundwater quality beneath the street’s right-of-way due to leakage from underground storage tanks previously located at the SFFBC facility (Science and Engineering Analysis Corporation 1994), a portion of which was also incorporated into the 40th Street right-of-way when its extension was constructed in 1995. The locations of the borings and groundwater-quality monitoring wells that were drilled in the 40th Street right-of-way in the 1990s are shown on Figure 6. The available results of analyses of samples of soil and groundwater recovered from them by the several consultants noted above are compiled in Tables 1 and 2, respectively.

In Tables 1 and 2, concentrations of analytes that exceed their 2005 Tier I Risk-based Environmental Screening Level (**ESL**s) published by the RWQCB (Regional Water Quality Control Board - San Francisco Bay Region 2005) are shown in **bold** font. The ESLs cited are for soil and groundwater at sites where contaminated soil is present at depths of less than 3 meters (9 ft.) BGS, the soil materials are assumed to be porous and groundwater beneath a site is not a source of drinking water.

At selected locations where concentrations of total petroleum hydrocarbons (**TPH**) or benzene, toluene, ethyl benzene and xylene isomers (the **BTEX** compounds) were detected in borings at high concentrations, soil was excavated to a depth of 10 ft. BGS from the 40th Street right-of-way and transported off-site for disposal. These remedial excavations included a 20 x 20 ft. area in the vicinity of LFB-4, a 15 x 15 ft. area in the vicinity of LFB-3, a 10 x 10 ft. area around LFSB-12, LFSB-15 and LFSB-16, a 10 x 10 ft. area centered around LFSB-18, and a 10 x 10 ft. area around LFSB19 (Levine-Fricke 1994a). The locations of those local remedial excavations, which were in addition to the major remediation of soil by excavation and off-site disposal that was conducted on the Celis Site are shown on Figure 7.

3.6.1.1 Celis' Alliance Service Station at 4000 San Pablo Avenue

As has been noted previously, a gas station, owned by a succession of petroleum companies and independent owners, operated from approximately 1936 until 1993 on the land that, over those years, had the address 4000 San Pablo Avenue, and which was adjacent to and south of the Oak Walk Site. The last owner of the service station was Constantino Celis and in the latter years of its operation, it was known as Celis' Alliance Service Station. The former location of the service station is shown on Figure 4, which also shows the former locations of six underground fuel and waste oil tanks that were present on that site. Over their lifetime, those tanks leaked and diesel, gasoline and waste oil were released into the subsurface. The sizes and uses of the tanks are tabulated below (Woodward-Clyde Consultants 1994).

One 7,000 gallon tank containing diesel
One 6,000 gallon tank containing regular gasoline
One 4,000 gallon tank containing unleaded gasoline
One 2,000 gallon tank containing unleaded gasoline
One 3,500 gallon tank containing high-octane unleaded gasoline
One 550 gallon tank containing waste oil

The tanks were removed from the Celis Site in May 1994 (Levine-Fricke 1994b). Prior to the construction of the 40th Street extension in 1995, the City of Emeryville's Redevelopment Agency (**ERDA**) took title to the land by condemnation. By that action, the City of Emeryville became a "responsible party" for the former Celis Site at 4000 San Pablo Avenue.

In June 1994, at the request of ERDA, Woodward-Clyde prepared a Remediation Work Plan for the 4000 San Pablo Avenue site (Woodward-Clyde International Americas 1994) that was approved by ACEHCS. That engineering company then directed the initial phases of the remediation program. In 1994, affected soil within the property boundaries of the 4000 San Pablo Avenue site was removed by excavation. Some 3,200 cu. yds. (loose measure) of affected soil were shipped from the Celis Site and disposed at Allied

Waste Industries Inc.'s Class II Forward Landfill in Manteca, California. The remedial excavation extended laterally to the site boundaries and vertically to approximately 9 ft. BGS, which depth was just above the groundwater table at the elevation it was at that time.

After the affected soil had been excavated from the former Celis Site, the remedial excavation on that property was backfilled with clean, engineered fill. The 40th Street extension now occupies the former Celis Site and runs along the southern boundary of the Oak Walk property from Adeline Street to San Pablo Avenue.

As part of a pilot program to remove floating product that had been observed on the water table beneath the former Celis Site, a recovery well (designated as WCEW-1 in this report) was installed in the northwestern corner of the former Celis property. An ejector pump was installed in that well and it was pumped from September of 1996 through July of 1998, removing a total of 2,035 gallons of free product and water from the subsurface.

The results of analyses of the confirmation samples recovered by Woodward-Clyde from the floor and walls of the remedial excavation opened on the Celis Site are reproduced in Table 3. The sampling locations are shown on Figure 8.

Concentrations of gasoline (**TPHg**) in the soil in the floor of the remedial excavation on the 4000 San Pablo Avenue property ranged from 540 mg/kg to 1,000 mg/kg at sampling locations WC B-G-1 and WC BC-2, respectively. The concentrations of diesel (**TPHd**) in the samples recovered from those locations ranged from undetectable to 75 mg/kg. As can be seen in Table 3, at both locations low concentrations of the BTEX compounds were detected in the soil in the floor of the remedial excavation. Analysis of the sample from location WC B-G-1 detected the presence of 120 mg/kg of Total Recoverable Petroleum Hydrocarbons (**TRPH**), but none were detectable in the sample from location WC B-C-2 at a concentration above 50 mg/kg.

At the sampling locations numbered WC N-1 through WC N-4 which, as is shown in Figure 8, were distributed along the northern wall of the remedial excavation at 4000 San Pablo Avenue, concentrations of gasoline ranged from 85 mg/kg to 920 mg/kg, diesel concentrations ranged from 10 mg/kg to 310 mg/kg, but the concentrations of the BTEX compounds were relatively low.

Although all work required by the approved, but aerially limited, remediation plan for removal of contaminated soil from the Celis Site was completed, it did not address the soil affected by hydrocarbons that had migrated under a portion of the Oak Walk Site, nor any other co- or down-gradient property.

As a matter of record, it should be noted that the Celis Site has not yet been "closed" by ACEHCS or the RWQCB. Although ACEHCS concurred with ERDA's consulting engineers that no additional remediation of soil on the Celis property was required after the remediation program that was conducted on that site had removed a large mass of soil affected by fuel hydrocarbons from the subsurface, the Agency directed, *inter alia*, that a groundwater-quality monitoring program be implemented to demonstrate that the plume of affected groundwater emanating from that site was stable (Alameda County Health Care Services Agency 1997). A groundwater-quality monitoring program that would define adequately the lateral extent of the groundwater plume has not, to date (April 2005) been implemented at the Celis Site and it is for that reason, among others, that the site remains as an "open" case in ACEHCS records.

3.6.1.2 Underground Fuel Storage Tanks at 4070 San Pablo Avenue

Another source of fuel hydrocarbons affecting the Oak Walk Site was the former underground fuel tanks that were installed on what was, at that time, the San Francisco French Bread Company (**SFFBC**) bakery at 4070 San Pablo Avenue. The SFFBC owned and operated two 10,000-gallon underground fuel storage tanks on its property (see Figure 4 for locations). One held diesel and the other held gasoline. Those tanks were removed in May 1989 when SFFBC still owned the property. At the time they were removed, they were found to have leaked (Levine-Fricke 1994b).

When the tanks were installed by SFFBC, which did business as the Toscana Baking Company, properties that are today partially under 40th Street and partially within the Oak Walk property boundary were the site of two large structures. One of the two, prior to its demolition to permit construction of the 40th Street extension, was occupied by Anderson Carpet. The other, which is still standing today and retains the 4070 San Pablo Avenue address, was used by SFFBC. It is currently used by the Oaks Club as a carpentry shop and for storing maintenance equipment. After its use by the SFFBC, but prior to its purchase by the Oaks Club, that building had been occupied by Tire Center Inc.

At the direction of ACEHCS, a groundwater-quality monitoring well (SMW-1 on Figure 6) was installed a short distance down-gradient from the tank site on the former SFFBC property in September 1992 and groundwater samples were recovered from the well and analyzed at quarterly intervals from September 11, 1992, through March 8, 1994. The results of those analyses are included in Table 2. During that period, concentrations of gasoline in the samples ranged from undetectable to 5,800 μg/L. The concentration ranges for benzene, toluene, ethyl benzene and total xylene isomers were undetectable to 1,700 μg/L, undetectable to 430 μg/L, undetectable to 230 μg/L, and undetectable to 490 μg/L, respectively. It is notable that, in each case, the highest concentrations listed, all of which are very much greater than concentrations previously detected in the well, were present in the sample recovered on March 8, 1994, when the depth to groundwater was 5.09 ft., the shallowest depth at which the water table had been measured over the 18-month life of that groundwater monitoring program.

Through a series of mergers and corporate by-outs, the property at 4070 San Pablo Avenue passed from the SFFBC to the Metz Baking Company of Deerfield, Illinois, to Earth Grain of St. Louis, Missouri, and, finally, to Interstate Brands Corporation of Pomona, California before the property that included the former locations of the underground storage tanks passed into the ownership of the Oaks Club, which does business at 4097 San Pablo Avenue in Emeryville, California. However, to construct the extension of 40th Street from Adeline Street to San Pablo Avenue, the City of Emeryville took ownership of the greater part of the former location of the underground storage tanks at the 4070 San Pablo Avenue property by eminent domain. When that street extension was constructed, Monitoring Well SMW-1 was destroyed and groundwater-quality monitoring ceased. The well was never replaced.

As noted previously, soil affected by high concentrations of fuel hydrocarbons that had leaked from the SFFBC tanks when that company owned the property, and possibly from releases at other locations, was excavated from a 20 x 20 x 10 ft. deep area in the 40th Street right-of-way to the south of, and adjacent to, those underground storage tanks.

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3.6.2 Sites of Former Paint Manufacturing Plants East of Adeline Street

As is shown on Figure 4, two paint manufacturing facilities were formerly located east of the Oak Walk Site beyond the adjoining Ennis property and Adeline Street. The former sites of those facilities, which had the addresses 4050 Adeline Street and 1001 41st Street, respectively, are located opposite from each other on either side of 41st Street. The Dunne Paint Site, which is of principal concern in the context of this report, has frontages on both 41st and Adeline Streets.

As noted previously, significant releases of paint thinner and other solvents occurred on property on both the north and south sides of 41st Street where it intersects with Adeline Street. When SJC prepared its Phase I report on the 3992 San Pablo Avenue property in 2000, it was judged that, based on what was at that time known about the conditions at that site, the local hydrogeology of the area, and its distance from San Pablo Avenue, that the Dunne and Boysen Paint Sites were unlikely to be sources of contamination affecting that property.

3.6.2.1 The Former Frank Dunne Paint Site

When a Phase I environmental assessment of the Dunne Paint Site was made in 2003 (Clayton Services Group 2003), as many as 70 regulated materials and wastes were found on the property. There were also six underground storage tanks that contained solvents situated under the sidewalk on the south side of 41st Street. One had a 6,000-gallon capacity, two had a 3,000-gallon capacity and three had a capacity of 200 gallons. Some or all of those tanks, the locations of which are shown on Figure 4, had leaked. The solvents were used as components of paints, varnishes and other coatings.

The condition of the subsurface beneath the former Frank Dunne property itself has been characterized by Clayton for the current property owner, Green City Lofts LLC. In addition, contaminated soil and groundwater beneath that property have been remediated to an extent sufficient for ACEHCS and the RWQCB to release the site for construction of a multi-family residence (Green City Lofts) on the former paint facility site. The remediation program included excavation and off-site disposal of affected soil and pumping and treatment of contaminated groundwater.

Site characterization studies to define fully the lateral and vertical extent of the contaminant plume emanating from the former Dunne Paint Site are currently incomplete, but borings and groundwater-quality monitoring wells have been installed along both sides of Adeline Street and a short distance to the west of that street on the south side of 41st Street. Where they are known to SJC, the locations of those wells and borings are shown on Figure 4. Logs of those holes that are available to SJC are included in Appendix II of this report. Results from analyses of soil and groundwater recovered from wells and borings at the Dunne Paint Site that are on file at ACEHCS are included in Tables 4 and 5, respectively.

Results of the on-going study at the former Frank Dunne paint property show that groundwater beneath Adeline Street to the east of the Oak Walk and Ennis properties is affected by mineral spirits-range petroleum hydrocarbons (Clayton Group Services 2004). 12,000 μg/L of those compounds were detected in a sample of groundwater recovered from Clayton Well OB-2; 1,400 mg/Kg of the same compound were detected in a sample of soil recovered from boring OB-10 (see Figure 4 for locations).

SJC has some concern about the suite of analytes included in Clayton's laboratory protocol. We have insufficient information to determine whether or not the concentrations of mineral spirits cited in Tables 4 and 5 reflect the concentration of a mixture of compounds that matches the laboratory standard for mineral spirits, or if the published results relate only to the concentration of a mixture of middle distillate petroleum hydrocarbon compounds that are within the same chromatographic range as mineral spirits. The danger here is that laboratories are careful to report only the presence and concentrations of chemicals of concern specified in the request for analysis documentation. If the laboratory is asked to make analyses for mineral spirits but no other mixtures within the middle distillate range (*e.g.*, diesel, of which the mineral spirits range of compounds is a sub-range), then, properly, only the concentrations of compounds in the mineral spirits range will be reported.

It is standard practice to annotate the certificate of analysis so as to flag results from analyses where the reported mixture did not match the mineral spirits range, but SJC has not seen copies of the certificates of analysis from the samples recovered by Clayton. Thus, we are unable to determine whether mineral spirits was specifically identified in them or if the mixture of hydrocarbons the samples contained were from different industrial solvents, or mixture of solvents, in the same chromatographic range as mineral spirits. Analyses conducted in compliance with a restricted protocol of the type conducted by Clayton may correctly report components of a solvent that fall within the mineral spirits range but leave unreported other major components in the volatile organic compound (including gasoline) range and large fractions of middle distillates (or diesel) compounds that do not fall within the mineral spirits sub-range. If such problems exist, they can often be identified by examination of the complete set of chromatograms produced from each analysis that was performed on the Clayton Dunne Paint Site samples.

Potential problems related to the correct identification of mixtures of petroleum hydrocarbons often arise when investigating sites where the subsurface is known to be affected by industrial solvents, particularly if those include paint thinners, which usually contain significant fractions of compounds in the mineral spirits range. Without a more extensive analysis, an unknown mixture of weathered petroleum hydrocarbons may be erroneously interpreted to be derived from only a mineral spirits source, when, in fact, the hydrocarbons affecting the subsurface may be from a solvent mixture that includes significant concentrations of material in the gasoline and diesel ranges, or possibly be a commingling of mineral spirits with fuel hydrocarbons.

For the reasons stated above and given the knowledge that paint solvents had been released at the former Dunne Paint Site, SJC's laboratory protocol provided that analysis of samples of soil and groundwater recovered from the Oak Walk Site include analyses for the complete EPA Method 8260 list of volatile organic compounds (that includes the BTEX compounds and fuel oxygenates such as MTBE), the full suite of PNAs in the EPA Method 8270 list, for gasoline fuel and for diesel fuel as well as for mineral spirits by EPA Method 8015M.

In the absence of data from a fully-scoped laboratory program, it is not known whether gasoline-range or other volatile hydrocarbons compounds or middle distillate-range hydrocarbons other than components of mineral spirits would have been detected in the samples of soil and groundwater recovered from the wells and borings at the Dunne Paint Site. However, given the analytes detected in samples of soil and groundwater from borings and wells that are located on the Oak Walk Site, the probability is high that the additional analytes are present beneath the Dunne Paint Site and its adjacent properties and that their concentrations are relatively high. If that is not the case, it is difficult to find any explanation for the presence of high concentrations of a mixture of petroleum hydrocarbons that, as is detailed in Section 4.2.15 of this report, include compounds in the gasoline and diesel ranges, but which do not match our laboratory's standards for those fuels, in many areas of the subsurface of the Oak Walk Site. Such is the case, for example, in Monitoring Well MWT-14, where recovered samples of groundwater contained 4,600 μg/L of gasoline-range petroleum hydrocarbon compounds as well as 1,200 μg/L of mineral spirits-range compounds, but where the mixture of compounds matches neither our laboratory's standard for gasoline fuel nor for mineral spirits. Well MWT-14 is, as later explained in Sections 4.0 and 6.0, located directly down the groundwater gradient from the Dunne Paint Site, but is hydraulically isolated from 40th Street, where sites that released fuel hydrocarbons are located (see Figures 4 and 18). The best explanation of the condition of the groundwater in that monitoring well is that it is affected by components of paint solvents that migrated there after having been released into the subsurface at a site or sites to the east of the Oak Walk property.

In January 2005, ACEHCS issued a directive to the responsible parties for the former Dunne Paint Site to extend the area investigated to include an assessment of contaminants in soil and groundwater beneath the Ennis property, which is to the west of the former Dunne Paint Site on the other side of Adeline Street and which adjoins the Oak Walk Site

(Alameda County Environmental Health Care Services 2005). However, results from any investigations that may have been completed in that area are not yet available to SJC.

Based on the general hydrogeology of the region, the known westward general direction of groundwater flow in the area and the chemical characteristics of the materials released at the Dunne Paint Site, SJC surmised at the preliminary stages of our assessment of the environmental condition of the Oak Walk Site that contamination had probably migrated onto that property from the former Dunne Paint Site east of Adeline Street, across the Ennis property on the west side of that street, and spread over at least part of the Oak Walk Site. Because those condition were confirmed by SJC's preliminary subsurface explorations of the Oak Walk property (The San Joaquin Company Inc. 2004b) (see Section 4.1), analyses of samples of soil and groundwater for chemicals of concern of the type contained in paint thinners and similar solvents became an important part of the extended site characterization program conducted at the Oak Walk Site that is reported herein.

3.6.2.2 The Former Boysen Paint Site

One underground storage tank that contained paint solvents that leaked into the subsurface was present at the former Boysen Paint Site. The location of that tank is also shown on Figure 4, together with the location of a sump on that property where it is believed that solvents and other paint manufacturing wastes were discharged into the subsurface.

SJC has insufficient information to adjudicate whether or not contaminants released to the subsurface at the former Boysen Paint facility contributed to the contamination of soil and groundwater beneath the Oak Walk Site by commingling with material released from the former Dunne Paint Site. However, the geologic, hydrogeologic and geochemical data available to us from regulatory records related to those sites and from the information gathered from the site characterization work now completed at the Oak Walk Site suggest that if contaminants from the Boysen Paint Site reached the Oak Walk property, they are, compared to those originating on the Dunne Paint Site, likely to represent a small fraction of the chemicals of concern affecting the Oak Walk Site and that they commingled with releases from the Dunne Paint Site before they reached the western side of Adeline Street.

SJC understands that ACEHCS has also requested that the parties responsible for the former Boysen Paint Site undertake additional site characterization work to evaluate the lateral and vertical extent of the plume of affected groundwater in the areas hydrogeologically co-gradient to and down-gradient from that property.

Because, at the present time, a variety of questions remain unanswered about the geometries of the relationship between the contaminant plumes at the Dunne Paint and Boysen Paint Sites, SJC, for the general purposes related to an evaluation of the environmental condition of the subsurface at the Oak Walk Site, has considered the two sites as if they were a single area source rather than attempt to assess separately the effects on the Oak Walk Site of contaminants released from them.

4.0 SITE CHARACTERIZATION PROGRAM

The first direct evidence regarding the environmental condition of the subsurface beneath the Oak Walk Site was obtained from SJC's program of exploratory trenching that was conducted in December 2003 (The San Joaquin Company Inc. 2004c). The scope of that preliminary investigation is summarized in Section 4.1 below. That summary is followed by sections describing the engineering procedures used to conduct the comprehensive site characterization program that was conducted at the site in response to the direction of the ACEHCS (Alameda County Environmental Health Care Services 2004). Results presented in tables or otherwise documented from the preliminary and comprehensive site characterization programs have been integrated and should be considered as a whole, rather than as separate data compilations.

4.1 Excavation of Exploratory Trenches and Pits

On December 3 and 4, 2003, SJC excavated a total of eight exploratory trenches at locations spread over the area of the Oak Walk Site. The trench locations are shown on Figure 2. The trench logs are included in Appendix I. In addition to logging the geological material exposed in the trenches, SJC used visual and olfactory indicators to detect the potential presence of components of fuel hydrocarbons and other hydrocarbon compounds affecting the subsurface soil.

Samples of soil were recovered from the bottoms of the trenches and at other selected depths below the ground surface (**BGS**) and selectively analyzed for diesel, mineral spirits and gasoline, for benzene, toluene, ethyl benzene and total xylene isomers (the **BTEX** compounds) and for volatile and semi-volatile organic compounds. Where groundwater accumulated in the bottom of the trenches, that fluid was also analyzed for a similar suite of compounds.

Borings and wells drilled and trenches dug as part of the geotechnical and site characterization work on the property reveal that the site is underlain by imported fill, beneath which are alluvial soils of the Temescal Formation. In the test trenches excavated in December 2003, where the fill could be positively identified due to the full exposure of the shallow subsurface materials in the trench walls, the fill thickness varies from about 3 feet near the northwestern corner of the site (Trench 7) to 10 feet near the southeastern corner (Trench 3) (The San Joaquin Company Inc. 2004c). Deeper fill associated with recent backfilling of underground storage tank (**UST**) excavations was encountered locally in a portion of Trench 3. The fill material is highly variable across the site, but most commonly consists of soft to medium-stiff silty clay, usually black or dark gray in color. Occasional construction rubble (such as brick and concrete fragments), as well as organic material, was observed in some of the fill.

4.1.1 Chemicals of Concern in Soil and Groundwater Samples from Trenches

The results of the analyses of the soil and groundwater samples recovered from the exploratory trenches are compiled in Tables 8 and 10. Copies of the related Laboratory

Certificates of Analysis are included in Appendix II-A in Volume 2. Concentrations of analytes that exceeded the current 2005 RWQCB Tier 1 Residential Screening Levels are shown in **bold** in the Tables. Tier I Screening Levels are used to assess whether or not additional evaluation of a site is required before it can be released for construction of residences or for other uses. The applicable 2005 Tier I screening levels (also known as **ESL**s - Environmental Screening Levels) related to residential land use for chemicals of concern detected in soil and groundwater beneath the Oak Walk Site are presented in Table 11.

The data in Tables 8 and 10 and other information gathered from the preliminary subsurface investigation trenches confirmed that the Oak Walk property had been affected by fuel hydrocarbons that migrated onto the site from the former site of the Celis' Alliance Service Station at which underground fuel and waste-oil storage tanks released significant quantities of their contents into the soil and groundwater adjacent to the Oak Walk Site along the eastern portion of the latter site's southern boundary. (The former locations of those storage tanks are shown on Figures 4 and 6.) Contamination from that source appeared to have migrated in groundwater via zones of high permeability soil and via foundation excavations and utility trenches to affect soil and groundwater as far north as the western entrance to the Oaks Club parking lot at 41st Street and San Pablo Avenue. Subsurface contamination caused by a release of fuel hydrocarbons from the former SFFBC tanks (see Figure 4 for location) was also detected in Trench 3. However, based on the specific olfactory indicators detected in soil samples recovered from the trenches, particularly those from Trenches 5 and 8, it was also apparent that large areas of the subsurface beneath the site had been affected by one or more industrial solvents. This hypothesis was supported by the presence of some volatile organic and PNA analytes in the soil samples from Trenches 5 and 8 (See Table 8) of the type often found in industrial solvents. The findings from the exploratory trenching program were confirmed by the fully-scoped site characterization program that is described below.

4.2 Comprehensive Site Characterization

To further explore and characterize the environmental conditions beneath the Oak Walk Site, Bay Rock, in response to ACEHCS's request, retained SJC to extend the initial site characterization work completed at the property so as to complete a comprehensive site characterization study using exploratory borings and temporary and permanent groundwater-quality monitoring wells. To provide for efficient use of equipment and time, field work for a geotechnical investigation (The San Joaquin Company Inc. 2004b), ran concurrently with that for the environmental site characterization.

4.2.1 Types, Purposes and Locations of Borings and Wells

Following is a description and rationale for placement of all of the several types of borings and wells drilled as part of the extended characterization. Their locations can be seen on Figure 9.

4.2.1.1 Groundwater-quality Monitoring Wells

Well No.	**Total Depth**	**Screened Interval**	**Purpose**
WCEW-1 (Existing well)	21 ft.	6 to 20 ft.	Investigate analytes of concern in groundwater at southwest corner of site in the area previously occupied by the Celis Service Station. (Note: This well had been installed previously by Woodward Clyde, consultants to the City of Emeryville.)
MW-2	20 ft.	6 to 20 ft.	Investigate analytes of concern in soil and groundwater along the southern boundary of the site to the east of the Celis Site
MW-3	20 ft.	6 to 20 ft.	Investigate concentrations of analytes of concern close to the former site of the SFFBC tank site and to serve as a replacement for SECOR'S monitoring well SMW-1 that was destroyed by the construction of the extension to 40th Street but not replaced by the City of Emeryville.
MW-4	20 ft.	6 to 20 ft.	Investigate the environmental condition of the subsurface at the eastern end of the southern boundary of the Oak Walk Site.
MW-5	20 ft.	6 to 20 ft.	Investigate analytes of concern in soil and groundwater along the western boundary of the Oak Walk property to the north of the former Celis Site.
MW-6	20 ft.	6 to 20 ft.	Investigate the environmental condition of the subsurface at the northwestern corner of the Oak Walk Site.
MW-7	20 ft.	6 to 20 ft.	Investigate the environmental condition of the subsurface along the northern boundary of the Oak Walk Site.
MW-8	20 ft.	6 to 20 ft.	Investigate the environmental condition of the subsurface along the northern boundary of the Oak Walk Site.

4.2.1.2 Temporary Groundwater-quality Monitoring Wells

Well No.	**Total Depth**	**Screened Interval**	**Purpose**
MWT-1	20 ft.	6 to 20 ft.	Investigate analytes of concern in soil and groundwater along the western boundary of the property to the north of the former Celis Site.
MWT-2	20 ft.	6 to 20 ft.	Investigate analytes of concern in soil and groundwater in the interior of the Oak Walk site to the north of 40th Street.
MWT-3	20 ft.	5 to 20 ft.	Extend exploration of the environmental condition of the subsurface in the area of Trench 3.
MWT-4	20 ft.	5 to 20 ft.	Extend exploration of the environmental condition of the subsurface in the area of Trench 5.
MWT-5	20 ft.	6 to 20 ft.	Extend exploration of the environmental condition of the subsurface in the area of Trench 6.
MWT-6	20 ft.	6 to 20 ft.	Investigate the environmental conditions on the north side of the commercial buildings at 4086 and 4090 San Pablo Avenue.
MWT-7	20 ft.	6 to 20 ft.	Investigate the environmental condition of the subsurface in the center of the Oak Walk Site.
MWT-8	20 ft.	6 to 20 ft.	Investigate the environmental condition of the subsurface in the central area of the Oak Walk Site near the eastern boundary of the property.
MWT-9	20 ft.	6 to 20 ft.	Investigate the environmental condition of the subsurface along the northern boundary of the Oak Walk Site.

MWT-10	20 ft.	6 to 20 ft.	Investigate the environmental condition of the subsurface along the northern boundary of the Oak Walk Site.

In October 2004, the City of Emeryville requested that Bay Rock install four additional temporary groundwater-quality monitoring wells at the Oak Walk Site, apparently to further investigate the condition of the subsurface close to the residences that front onto 41st Street. Those wells, which were not called for by the California-registered engineer in responsible charge of the work, are listed below.

MWT-11	20 ft.	5 to 20 ft.	Installed at the request of the City Emeryville.
MWT-12	20 ft.	5 to 20 ft.	Installed at request of the City of Emeryville.
MWT-13	20 ft.	5 to 20 ft.	Installed at request of the City of Emeryville.
MWT-14	20 ft.	5 to 20 ft.	Installed at request of the City of Emeryville.

4.2.1.3 Environmental Soil Borings

Boring No.	**Total Depth**	**Purpose**
BE-1	25 ft.	Drilled as a member of an array of borings designed to explore the subsurface environmental conditions at the interior of the Oak Walk Site.
BE-2	25 ft.	Drilled as a member of an array of borings designed to explore the subsurface environmental conditions at the interior of the Oak Walk Site.
BE-3	20 ft.	Drilled as a member of an array of borings designed to explore the subsurface environmental conditions at the interior of the Oak Walk Site.
BE-4	20 ft.	Drilled as a member of an array of borings designed to explore the subsurface

		environmental conditions at the interior of the Oak Walk Site.
BE-5	20 ft.	Drilled as a member of an array of borings designed to explore the subsurface environmental conditions at the interior of the Oak Walk Site.
BE-6	20 ft.	Drilled as a member of an array of borings designed to explore the subsurface environmental conditions at the interior of the Oak Walk Site.
BE-7	20 ft.	Drilled as a member of an array of borings designed to explore the subsurface environmental conditions at the interior of the Oak Walk Site.

4.2.1.4 Geotechnical Borings

Boring No.	**Total Depth**	**Purpose**
BG-1	35 ft.	Geotechnical Engineering boring also used to investigate the environmental condition of the subsurface near the former Celis Site.
BG-2	30 ft.	Geotechnical Engineering boring also used to explore the environmental condition of the subsurface at the interior of the Oak Walk Site.
CPT-1		Geotechnical Engineering Cone Penetrometer Test site.
CPT-2		Geotechnical Engineering Cone Penetrometer Test site.

4.2.2 <u>Permitting</u>

Permits to install the borings and groundwater-quality monitoring wells were obtained from the Alameda County Public Works Agency (**ACPWA**). Wells in the 40th and 41st

Street rights-of-way required encroachment permits from the City of Emeryville. Because one well (MW-5) was installed in the sidewalk along San Pablo Avenue, it was also necessary to obtain a second encroachment permit for that well from the California Department of Transportation (**CalTrans**).

4.2.3 Detection of Underground Utilities and Site Preparation

To provide safe working conditions, before any site characterization work that involved digging, drilling or probing into the subsurface, the whole of the on-site and off-site area where such work was to be performed was surveyed by the United Services Agency (**U.S.A.**). That agency marked the locations of gas and water supply pipes, electric lines and other utility infrastructure present beneath the surface. Some utility companies were contacted individually for clearance. All responded in a timely manner. However, the engineer in responsible charge of the work, after inquiring of business owners in the area, was concerned that not all buried utilities had been marked or, if marked, inaccurately marked. Due to this concern, SJC contracted with Pipe Pros of Concord, California, who conducted an additional search for underground utilities. Pipe Pros' technician found a number of live underground utility lines, particularly beneath the sidewalk on the eastern side of San Pablo Avenue, that had not been marked by the technicians employed by U.S.A.

On March 31, 2004, SJC arrived on the site to prepare it for the various drilling activities that had been planned. Residential fencing and vegetation were removed from various parts of the property to permit access to the drilling sites and persons still resident on the site, who had been notified previously in writing about the drilling schedule and access requirements, were reminded to leave access for the rigs and trucks and to stay clear of the operating equipment.

4.2.4 Drilling and Well Construction

Gregg Drilling and Testing, Inc. of Martinez, California (**Gregg**), which holds a C-57 contractor's license issued by the California Contractors State License Board, mobilized to the site on April 1, 2004.

SJC's Registered Geologist or our Licensed Geotechnical Engineer logged or supervised the logging of all of the borings drilled and noted any visual and olfactory indicators of the presence of hydrocarbons and other chemicals of concern in the soil cores. (See Appendix II for Boring Logs.)

Borings were drilled using either a truck-mounted, masted drilling rig, a push probe drilling rig mounted on a medium-duty truck, or by a track-mounted, confined space rig, depending on site access conditions.

Geotechnical borings BG-1 and BG-2 were drilled using the masted, truck-mounted rig equipped with 8.0-inch diameter hollow stem augers. Cores from those borings were recovered from approximate intervals of 5 ft. from the ground surface to the total depth of excavation. As is shown on their logs in Appendix II, numerous additional samples were recovered from those borings for geotechnical engineering purposes. Those wells were not continuously cored but were logged either by SJC's Licensed Geotechnical Engineer or by an experienced geotechnical-engineering technician working under his directed supervision. The logs were developed by continuous observation of the drill cuttings and examination of the recovered soil samples.

Environmental borings, BE-1 through BE-8, that vary in depth from 20 ft. to 35 ft. BGS, were advanced by the push-probe rig. Soil was recovered from the borings in 4 ft. long, transparent, plastic core liners. These wells were logged by SJC's Registered Geologist.

For the cone penetrometer tests conducted at location CP-1 and CP-2, the instrumentation was set up on a track-mounted restricted-access drilling rig which served as a reaction block as the CPT probe was driven into the ground by hydraulically-powered pistons. The tests were supervised by a Licensed Geotechnical Engineer.

The groundwater-quality monitoring wells were of two types. The first consists of temporary wells SJC MWT-1 through MWT-10 (and, on November 5, 2004, the Emeryville City Council-requested wells MWT-11 through 14). MWT-1, 2, 5, and MWT-7 through 10 are set in 2-in. diameter borings opened by direct push technology that were advanced to depths of approximately 20 ft. BGS. They were constructed as simple 0.75-in. diameter PVC standpipes equipped with prefabricated bentonite seals located approximately 2 ft. above the top of the screened intervals. The intervals consist of 0.02-in. aperture, machine-cut slots that run over a length of 14 ft. to a threaded casing cap at the bottom of each well. No. 3 Monterey sand fills the annular space between the casing and the boring wall. MWT-3, 4, 6 and MWT-11 through 14 are of similar construction, except that below the prefabricated self-expanding bentonite seal, the 0.75 in. PVC well casing is screened using 0.01-in. aperture, machine-cut slots in a prefabricated sand and wire mesh filter that extends over the 14-ft. screened section of the well. Regardless of the details of the well construction, soil was continuously recovered from all of the MWT borings in 4 ft. long, transparent, plastic core liners.

The second group of wells, permanent groundwater-quality monitoring wells SJC MW-2 through SJC MW-8, also have total depths of approximately 20 ft. BGS. With the exception of Monitoring Wells MW-4 and MW-5, they were installed in 8-in diameter borings by hollow stem augers mounted on a masted rig. Borings for Monitoring Wells MW-4 and MW-5 were drilled by the tracked, limited access drilling rig that was equipped with 6-in. diameter, hollow stem augers. They are screened, as is shown on their well logs in Appendix II, with 0.02-in. aperture, machine-cut slots over the bottom 14 ft. of the 0.75-in. diameter, PVC well casing. A 2-ft. thick bentonite seal is located approximately one foot above the top of the screened interval and a conical PVC cap closes the bottom of the casing. No. 3 Monterey sand fills the annular space between the casing and the boring wall. The borings for Wells MW-2 through MW-8 were not continuously cored but were logged either by SJC's Registered Geologist or by an experienced geotechnical-engineering technician working under his direct supervision. As was the case for the other borings at the site that were drilled using 8-in. diameter hollow stem augers, the logs for theses wells were developed by continuous observation of the drill cuttings and examination of the recovered soil samples.

All 2-in diameter groundwater monitoring wells installed at the Oak Walk Site are equipped with water-tight, lockable casing caps. The 0.75-in. diameter wells have closely-fitting, PVC well caps.

4.2.5 Environmental Soil Sampling in Borings

While the 2-in. diameter exploratory borings and the borings of the same diameter that were used to install groundwater-quality monitoring wells were being drilled, the drilling equipment was used to recover soil cores that were removed from each boring in 2-in. diameter by 4-ft. long, transparent, plastic core liners. The geologist or geotechnical-engineering technician selected soil samples from sections of the continuous core for analysis. These were prepared for transport to the laboratory by cutting the plastic core liner at selected, typically 5 ft. depth intervals to yield an approximately 6-in. long core sample that remained within the liner. Each core sample was cleaned externally, its ends covered with Teflon foil and closed with tightly-fitting plastic caps secured with adhesive-less tape. Each sample was then labeled for identification, entered into chain-of-custody control and packed on chemical ice for transport, within 12 hours, to the Severn Trent Laboratories (**STL**) laboratory in Pleasanton, California. Soil samples, were also recovered from the borings drilled with the 6-in. and 8-in. diameter hollow stem augers. Those were recovered in 1.5-in. and 2-in. diameter brass tubes, respectively, each of which was 6 in. long. The sample tubes were closed, labeled and transported to the laboratory in same manner as was the case for the plastic-lined samples.

4.2.6 Analyses of Soil Samples from Borings

All samples of soil recovered from borings drilled at the Oak Walk Site were submitted to the laboratory, but to avoid unnecessary analytical cost they were analyzed in a sequential manner. Samples recovered from shallow depths in each boring were analyzed first. Those samples were generally analyzed for the following suite of analytes.

Analyte	**Method of Analysis**
Total Petroleum Hydrocarbons (quantified as Diesel)	EPA Method 8015M
Mineral Spirits	EPA Method 8015M
Total Petroleum Hydrocarbons (quantified as Gasoline)	EPA Method 8260B
Benzene	EPA Method 8260B
Toluene	EPA Method 8260B
Ethyl benzene	EPA Method 8260B
Total Xylene Isomers	EPA Method 8260B
67 Volatile Organic Compounds	EPA Method 8260B

However, if in a first analysis of each sample, any detectable concentrations of diesel-range compounds were found, an analysis for polynuclear aromatic compounds (**PNA**s) by EPA Method 8270C was also made.

The results of the analyses described above are included in Table 8. If none of the analytes in the suite described were detected in a sample recovered from a given depth in a boring, either no analyses were performed on samples of soil recovered from greater depths in that boring or, if hydrocarbons from only a limited class of analytes were detected in a sample, then a more limited suite of analyses was generally performed on samples from greater depth in that boring. However, if after a later, holistic evaluation of the results of the total suite of analyses performed on samples from a given boring, the licensed professional engineer in responsible charge of the work determined that it would be prudent to analyze other samples recovered from the borings, including samples from the greatest depth of exploration, such additional sample analyses were performed.

Although it was not expected that concentrations of metals at concentrations greater than those that occur naturally would be encountered in soil beneath the Oak Walk Site, to provide a conservative check, selected samples recovered from the borings were analyzed for the 17 heavy metals (the CAM 17 metals) identified in Title 22 of the California Code of Regulations (**CCR**) as being potentially hazardous. In the case of chromium, analyses were performed for both the Chromium II and Chromium VI forms of that metal. The results of the analyses for heavy metals are presented in Table 9

As noted above, the results of all analyses for hydrocarbon compounds that were conducted on soil samples recovered from borings on the Oak Walk Site are compiled in Table 8. The results of analyses of samples of soils for heavy metals are presented in Table 9. Copies of the corresponding laboratory certificates of analysis are presented in Appendix III, Parts B through D in Volumes 3 through 5 of this report.

4.2.7 Soil Permeability Testing

The silty clay soil that covers essentially all of the Oak Walk Site is inter-bedded with, and confines, strata and lenses of more permeable silts, sands and gravels present in the subsurface. To evaluate the vertical permeability of the clayey soil, two undisturbed samples were recovered in 3-in. diameter California Modified sampling tubes from a depth of 6.5 ft. BGS in Boring BG-2 and from a depth of 6.0 ft. in the boring drilled for Monitoring Well MW-7. These samples were tested in a constant head permeameter at Fugro West, Inc.'s, Laboratory in Hayward, California. The locations of borings BG-2 and MW-7 are shown on Figures 2 and 18, and their logs, which in each case show the silty clay soils at the sampling depth in relation to the overlying and underlying strata, are included in Appendix II. A copy of Fugro West's Certificate of Analysis is presented as the first page in Appendix III-B, which is in Volume 3.

The sample of black silty clay recovered from boring BG-2 at a depth of 6.5 ft. had a permeability of 2.51 x 10^{-9} cm/sec. The sample of dark brown silty clay recovered from the boring drilled for Monitoring Well MW-7 at a depth of 6.0 ft. had a permeability of 2.95 x 10^{-8} cm/sec.

The test data confirm the extremely low permeability of the silty clays beneath the site and confirm SJC's hydrogeological interpretation that the pattern of migration of contaminants in groundwater moving through the subsurface of the site is controlled by the distribution of silts, sands and gravels that were deposited on the site in large lenses, paleo-stream bed channels and alluvial outwash areas during the Recent geological era.

The permeability testing was also prepared in anticipation of the need to design corrective action measures for the Oak Walk Site if an initial Tier II environmental assessment demonstrates such measure to be necessary before the property can be returned to beneficial use. As is noted in Section 4.2, geotechnical engineering concerns related to the design of foundations will require stripping of some 3 to 7 ft. of surficial material from the site, even if it proves to be free of chemicals of concern. Such clean material will be mixed, conditioned and reused as compacted engineering fill that will cover the entirety of the site (The San Joaquin Company Inc. 2004b).

SJC has experience with the engineered re-composition of the same shallow soils that are present at the Oak Walk Site from the design and implementation of similar soil improvement procedures that were conducted at the Andante Site that lies to the south of the Oak Walk property. The author of this report was the professional engineer in responsible charge of the design and technical oversight of the remedial program at the Andante Site, which work was undertaken to correct the effects of petroleum hydrocarbons that had migrated onto it from the Celis Site. (See Figure 4 for locations.) Permeability testing on samples of the surficial soil that was stripped and mixed at the Andante Site had a measured permeability of 5.65 x 10^{-7} cm/sec when compacted to 90% relative density (The San Joaquin Company Inc. 2003). When used as an engineered fill, that material served as a very low permeability cap for the remediated area of the Andante property and it was designated as such for the purposes of performing a Tier II risk-based environmental assessment for that site, the results of which were approved by ACEHCS and the RWQCB before that site was released for residential development.

4.2.8 Disposal of Drill Cuttings

To provide an economic and efficient means of disposal, all drill cuttings were transported to a holding area within the fenced enclosure that surrounds the building at 4070 San Pablo Avenue property, which is part of the Oak Walk Site. The cuttings are being held there in a stockpile which is underlain and covered by plastic sheeting. They will be disposed at a permitted disposal facility, either as part of a shipment of contaminated soil removed from the site when it is redeveloped or separately if for some reason redevelopment of the site is delayed for a prolonged period.

4.2.9 Well Development

Three weeks following installation, the temporary wells (MWT-1 through MWT-10) were developed by bailing and false bailing the well using 0.5-in. diameter disposable bailers and by pumping from the well using a peristaltic pump until a minimum of 20 casing volumes had been removed from each well. The well development water, which, due to the small diameter of the well casings, was limited in volume, was discharged into 5-gallon pails and transported to a 500-gallon capacity holding tank that had been installed in the fenced yard at 4070 San Pablo Avenue. It will be disposed at a permitted recycling facility when sufficient volume has been accumulated for that operation to be economically conducted or a holding tank is no longer needed at the site.

The additional temporary monitoring Wells MWT-11 through MWT-14, installed at the request of the City of Emeryville, were developed in the same manner as is described above, but in those cases, due to scheduling constraints, development was delayed only 48 hours after installation.

The seven new permanent, 2-in. diameter groundwater-quality monitoring wells, MW-2 thorough MW-8, installed at the Oak Walk Site were developed using a well-development rig until the development water ran clear and its pH, temperature and electrical conductivity had stabilized to within a plus or minus 10% range for each of those parameters. However, if the parameter stabilized before that stage of the work, a minimum of 20 casing volumes of groundwater was removed from each well. That well development water from those wells was also discharged into the 500-gallon tank located at 4070 San Pablo Avenue.

4.2.10 Well-head Survey

The location of each well and boring on the site was established by a triangulation survey by which well-heads were located relative to site features established by a topographic survey previously commissioned for the Oak Walk Site by Bay Rock. The site plan generated from those surveys is presented on Figure 2. The latitude and longitude of each well and boring were also determined by a high-resolution global positioning system (**GPS**) surveys conducted by SJC's California Licensed Land Surveyor. The surveyor also made an elevational survey to determine the top-of-casing elevation for each monitoring well and the elevation of the ground surface at the location of each well and boring. The elevations of the tops of the well casings were surveyed to an accuracy of plus or minus 0.01 ft. MSL relative to the elevation of Geodetic Survey Benchmark No. 7, which was established by the City of Oakland (but which is located within the City of Emeryville). That Benchmark is a bronze disc located on the west side of the concrete deck of the bridge that carries San Pablo Avenue over McArthur Street near the intersection of San Pablo Avenue, Adeline Street and 38th Street. That benchmark has an elevation of 34.78 ft. above the United States Geodetic Survey's Sea Level Datum of 1929. The latitudes and longitudes of the wells and borings, together with elevations of the ground surface at their locations and, in the case of the wells, the elevations of the top of their casings, are recorded in Table 6.

4.2.11 Groundwater Elevations, Gradients and Flow Directions

The groundwater-quality wells installed in April 2004 were left undisturbed for six days following well development. On May 19, 2004, a conductivity probe was used to measure the depth to the water table in each well extant at the site at that time (including in Well No. WCEW-1, which had been installed by Woodward Clyde some years before). Those depths and the computed elevations of the groundwater table are recorded in Table 7

Because, as noted above in Section 4.2.1.2, the Emeryville City Council asked that four additional temporary monitoring wells be installed on the Oak Walk Site, depths to groundwater in the complete array of wells then present on the site were measured on November 8, 2004.

The depths to groundwater on November 8, together with the surveyed elevations of the tops of the well casings, were used to construct the groundwater contours shown in Figure 18 and to assess the direction and gradient of groundwater flow.

On May 19 2004, depths to groundwater measured in the wells that were present at the site on that date ranged from 4.66 to 9.90 ft. The depths to groundwater in the same wells and the four that had been added by that time ranged from 4.94 to 10.99 ft. on November 8, 2005. The geometry of the groundwater contours constructed from the water-depth measurements made on the two dates was similar.

Examination of Figure 18 shows that, at the scale of the site, the direction of groundwater flow beneath the Oak Walk property on November 8, 2004, was to the west at an average gradient of 0.0094 ft/ft. However, locally, due to the influence of channels of high permeability sands and gravels in the subsurface which, as is discussed in Section 5.0 below, is otherwise dominantly composed of clayey facies, the direction of groundwater flow may be the northwest or southwest, or in intermediate compass directions, at gradients as great as 0.02 ft/ft. or as little as 0.01 ft/ft. (See Figure 18).

4.2.12 Groundwater Sampling and Analysis Procedure

Groundwater samples were recovered from all monitoring wells extant at the Oak Walk Site at that time on May 19, 2004. On November 6, 2004, groundwater samples were recovered from the four additional monitoring wells, MWT-11 through MWT-14, that were installed at the request of the City of Emeryville. The following protocol was used for both sampling rounds.

Prior to recovery of a groundwater sample, the well was purged of a minimum of five casing volumes. In the case of the 2-in. diameter wells, that was done using a submersible pump that discharged into a 5-gallon pail. In the case of the 0.75 in. diameter well, the purging was performed using a peristaltic pump. During purging, the stream of water discharged from each well was monitored for pH, temperature and electrical conductivity. Purging continued until those parameters had stabilized to within a plus or minus 10% range, unless, at that point, less than five casing volumes of groundwater had been extracted. In that case, purging continued until the five-casing volume minimum had been removed from the well. The purge water was decanted from the 5-gallon pails into an open-toped 55-gallon, steel drum and transported to the 500-gallon holding tank installed at the yard of the building at 4070 San Pablo Avenue.

Samples were recovered from each well using disposable, 0.5-in. or 1.75-in. diameter bailers, as appropriate for the casing diameter. Water brought to the surface was decanted from the bailers so as to completely fill clean glassware supplied by the laboratory. Sub-samples that were to be analyzed for extractable hydrocarbons were contained in 1-liter amber jars, while the sub-samples to be analyzed for volatile organic compounds and PNAs were contained in volatile organic analysis vials (**VOA**s) into which 1.0 ml. of hydrochloric acid had been dispensed by the laboratory as a preservative. The sample jars and VOAs were then tightly closed, labeled for identification, entered into chain-of-custody control and packed on chemical ice for transport, within 10 hours, to STL's laboratory in Pleasanton, California.

Groundwater samples were submitted to the laboratory and analyzed for the following suite of analytes.

Analyte	**Method of Analysis**
Total Petroleum Hydrocarbons (quantified as Diesel)	EPA Method 8015M
Mineral Spirits	EPA Method 8015M
Total Petroleum Hydrocarbons (quantified as Gasoline)	EPA Method 8260B
Benzene	EPA Method 8260B
Toluene	EPA Method 8260B
Ethyl benzene	EPA Method 8260B
Total Xylene Isomers	EPA Method 8260B
67 Volatile Organic Compounds*	EPA Method 8260B
17 Polynuclear Aromatic Compounds	EPA Method 8270C

***Note**: In the case of groundwater samples from Wells MWT-11 through MWT-14 analyses for volatile organic compounds were restricted to those for the BTEX compounds and the fuel oxygenates MTBE, TBA, DIPE , ETBE and TAME.

The results of analyses of groundwater samples recovered from the wells are presented in Table 10. Copies of the laboratory certificates of analysis are presented in Appendix III, Part-E which is in Volume 6 of this report.

4.2.13 Information Reports to State and Local Agencies

The formal information reports cited below have been submitted to the concerned State and local regulatory agencies. In addition to those formal submissions, SJC has routinely communicated the on-going results of the site characterization program to ACEHCS by means of meetings held at that agency, by telephonic communications and by transmittal of field data to the ACEHCS case officer on a regular basis as the work was progressing.

4.2.13.1 Well Location and Design Data

Location maps and design drawings for Monitoring Wells MW-2 through MW-8 (see Figure 2 for locations) were submitted to the City of Emeryville as part of the permitting process required to obtain encroachment permits for installation of those wells in the public streets. In the case of Monitoring Well MW-5, the same information was provided to CalTrans to support an application for a second encroachment permit for that well that was required due to its location in the sidewalk of a State highway.

4.2.13.2 Well Completion Reports

In compliance with Sections 13700 through 13806 of the California Water Code regulatory requirements, Well Completion Reports (Form 188), together with attached boring logs, well construction details and groundwater quality data were completed for each of the wells and filed with the California Department of Water Resources (**DWR**) and the ACPWA.

4.2.14 Chemicals of Concern in Soil and Groundwater

Examination of Tables 8 and 10 and Figure 2 shows that soil and groundwater over essentially the whole of the Oak Walk Site is affected by hydrocarbons that are typical of components of a mixture of distilled petroleum products that comprise automotive fuels and industrial solvents.

As was detailed above, analyses for the presence of petroleum hydrocarbons in both soil and groundwater were performed using gas chromatography/mass spectrometry in compliance with applicable US EPA Standard Methods that included analyses designed to detect compounds having carbon-chain lengths in the same range as diesel fuel, in the same range as gasoline, and in the range of generic mineral spirits.

The laboratory quantified the concentrations of compounds in the gasoline, diesel and mineral spirits range (which is a sub-range of the diesel range) as gasoline, diesel fuel, and mineral spirits, respectively. However, as is reflected in the notes to Tables 8 and 10, the laboratory flagged the instances where the chromatograms obtained from the sample analyses did not match their standard chromatogram for the specific hydrocarbon mixture that was used for the purpose of quantification of the concentrations of chemicals in the samples. These distinctions are important. At sites such as Oak Walk, where solvents in the subsurface in some areas were found to be mixed with fuel hydrocarbons, it is important, to the extent possible, to distinguish between areas where soil and groundwater have been affected only by components of fuels (particularly gasoline), from those that are affected by a commingling of petroleum fuel products and solvents, and from areas that are affected by industrial solvents alone.

Gasoline fuel contains significant concentrations of benzene, toluene, ethyl benzene and xylene isomers, which, because of their chemical characteristics, are of particular environmental concern. Conversely, if samples are affected by mixtures of gasoline-range hydrocarbon compounds that do not contain, or contain only very low concentrations of BTEX or other chemicals of particular concern, they pose a greatly reduced risk. Such distinctions between fuel hydrocarbons and other products such as industrial solvents are also important to an evaluation of the source or sources of chemicals of concern affecting different areas the subsurface beneath the Oak Walk Site.

Issues related to the specific mixtures of petroleum hydrocarbons present at different locations in the subsurface of the Oak Walk Site, their varying characteristics, and their relationship to known source sites are fully discussed later in this report in Sections 6.0 and 7.0, but, as is discussed in Sections 4.2.14.1 through 4.2.14.6 below, certain of the general characteristics of the chemicals of concern that were detected can be elucidated by a direct examination of the concentrations of analytes detected and the associated laboratory notes that are presented in Tables 8 and 10.

4.2.14.1 Diesel-range Compounds

It is notable that, as recorded in Table 10, no diesel fuel was found in any of the groundwater samples recovered from the monitoring wells and, with the exception of a single instance of a mixture of compounds in that range, at a concentration of 2,300 μg/L in the sample of groundwater recovered from Trench 3, the laboratory did not detect any other diesel-range compounds in the diesel fuel range in any groundwater sample. As is shown on Figure 2, Trench 3, which was excavated as part of the preliminary phase of site characterization discussed above in Section 4.1, crossed the backfilled pit in which the SFFBC underground storage tanks had been located. As is shown on Figure 4, it also intersected a zone of sand and gravel that appears to be part of the channel of paleo-stream bed deposits that were found when the Andante site was remediated and which have been projected to continue northeastward across 40th Street and onto the Oak Walk Site and from there onto the Ennis property.

As can be seen in Table 8, with the exception of a mixture of diesel-range compounds at a concentration of 1,200 μg/L in the sample of soil recovered from a depth of 9.5 ft. in boring BE-6, detections of those compounds in soil samples recovered from beneath the site were at very low concentrations and sparsely distributed. Few of those detections matched the laboratory's standard for diesel fuel. At sites where soils contain organic matter, as is the case at the Oak Walk Site, particularly in strata near the surface, such dispersed detections of low concentrations of diesel-range compounds often can be ascribed to the vegetable matter rather than a petroleum hydrocarbon (Zemo 1995, Zemo 1997).

4.2.14.2 Mineral Spirits-range Compounds

The other middle distillate petroleum hydrocarbon mixtures detected in the soil and groundwater were in the mineral spirits range. The detections of compounds in that range in soil were also dispersed, at very low concentrations and, with a few exceptions, did not match the laboratory standard for a mineral spirits petroleum product.

Unlike in soil, groundwater detections of mineral spirits and hydrocarbon mixtures in that range were very pronounced in samples recovered from many of the groundwater-quality monitoring wells and the detections were widely distributed over the area of the site. As can be seen in Table 10, the highest concentration of a mineral spirits-range hydrocarbon mixture was detected in the groundwater sample recovered from Monitoring Well MWT-11 at 3,500 μg/L. That well is located in the garden at the rear of the residence at 1087 41st Street. However, as was the case in the majority of instances, the chromatogram from that analysis did not match the laboratory's standard chromatogram for mineral spirits. Three samples of groundwater, those from Monitoring Well MW-3, MWT-7 and MWT-8, did contain petroleum hydrocarbon compounds that matched the laboratory's standard for a mineral spirits product.

Based on the above data, the hydrostratigraphy of the Oak Walk Site and adjoining property, and the locations at which solvents are known to have leaked to the subsurface, it is reasonable to conclude that the detected mixtures of compounds in the mineral spirits range had their source at one or more of the former paint manufacturing plants located to the east of Adeline Street (see Figure 4 for locations). It is not, however, clear whether the detected mixtures that did not match the laboratory standard for that product are degraded components of that specific petroleum product, or whether the mineral spirits detections where the chromatogram did match the standard for that product simply indicate the presence of compounds in the mineral spirits range that are, themselves, components of some other, more complex product, such as an industrial paint thinner.

4.2.14.3 Gasoline-range Compounds

In the case of detections of gasoline-range mixtures in soil and groundwater, the situation is clearer. While many of the detections of mixtures in this range in both media matched the laboratory's standard for gasoline fuel, a similar number did not. However, when the relative distribution of those two types of analytical results is reviewed, there is a clear pattern wherein detection of mixtures of compounds in the range that matched the laboratory standard for gasoline are generally clustered in close proximity to the on- and off-site locations where fuel hydrocarbons are known to have been released to the subsurface. For example, gasoline matching the laboratory's standard was detected at a concentration of 3,600 mg/Kg in a sample of soil recovered from a depth of 10 ft. BGS in Boring BE-1 and at concentrations of 3,700 μg/L and 49,000 μg/L in samples of groundwater recovered from Monitoring Wells WCEW-1 and MW-2, respectively. All three of those locations are close to the southern boundary of the Oak Walk Site and either adjacent to, or in close proximity to, the Celis Site beneath 40th Street where major releases of gasoline fuel into the subsurface are known to have occurred.

Conversely, detections of mixtures of gasoline-range hydrocarbons that did *not* match the laboratory's standard for gasoline were detected in soil and groundwater at locations that are generally a considerable distance removed from the locations at which fuel hydrocarbons were released. Examples are the 56,000 μg/L and 4,600 μg/L of gasoline-range hydrocarbon compounds detected in samples of groundwater recovered from Monitoring Wells MWT-7 and MWT-14, respectively. Those mixtures do not match the laboratory's standard for gasoline fuel and they are associated with high concentrations of mineral spirits-range compounds, at 3,200 μg/L and 1,200 μg/L, respectively. Those well locations are shown on Figures 2 and 4.

Based on the known locations of releases of fuel hydrocarbons in the neighborhood of the Oak Walk Site, it is unlikely that the gasoline-range compounds in Wells MWT-7 and MWT-14 represent a degraded fuel product and, while such cannot be concluded with absolute certainty, given their association with mineral spirits-range compounds, the preponderance of the evidence suggests that groundwater in those wells is affected by an industrial solvent (such as paint thinner) that includes components in both the gasoline and mineral spirits ranges.

It is also of note that BTEX compounds and MTBE are essentially absent in samples where the mixture of gasoline-range compounds did not match the laboratory's standard for that fuel, but are prevalent in each case where the chromatogram of the mixture of compounds in groundwater did match the standard for gasoline fuel. Examples of the latter include the high concentration of BTEX compounds and MTBE in the groundwater samples recovered from Monitoring Wells MW-2 and MWT-2 (see Table 10) which, as noted previously, are located in the southern portion of the Oak Walk Site in proximity to locations where gasoline fuel was released into the subsurface.

4.2.14.4 Volatile Organic Compounds

Because it was known that the subsurface beneath the Oak Walk Site was affected by releases of both fuel hydrocarbons and industrial solvents, the laboratory protocols for analysis of soil and groundwater samples included analyses for the general class of Volatile Organic Compounds (**VOC**s), as well as analyses specifically designed to detect gasoline and its components such as the BTEX compounds and MTBE, which are of particular concern in the context of environmental health. The analyses for VOCs was in the form of a scan of all such compounds included in the US-EPA Method 8260B standardized list.

The results of those analyses are also included in Tables 8 and 10.

> **Note**: Because the BTEX compounds and fuel oxygenates are volatile organic compounds, they can be measured in analyses that scan for that range of chemicals or by more restricted analyses specifically designed to detect them. This results in the BTEX compounds and MTBE being included in the Certificates of Analyses issued for the VOC scans as well as those from the separate analyses for components of gasoline fuel. To simplify presentation, redundant results for BTEX and MTBE are not included in Table 8 and 10. If there was a variance between the concentrations of those chemicals as measured in the two types of tests, the higher value was entered into the Tables. All of the duplicate results are reported in the Laboratory Certificates of

Analysis, copies of which are compiled in Appendix III.

The VOCs recorded in Tables 8 and 10, other than the BTEX compounds and MTBE that were detected in samples of soil and groundwater, were not detected at high concentrations. With the exception of traces of a very low concentration of acetone, which can be a breakdown product of fermented vegetable matter, all are known components of fuel hydrocarbons and some industrial solvents; thus, those detections do not raise any special concerns. It is again noteworthy that, in the great preponderance of instances, detections of those analytes were in samples from borings and wells in areas close to the known fuel hydrocarbon release sites, while there were few, if any, detections of those analytes in locations remote from those sites.

4.2.14.5 Polynuclear Aromatic Compounds

Because fuel hydrocarbons (particularly diesel fuel) and some industrial solvents contain PNAs, scanning analyses of select samples of soil and groundwater were made for the 17 compounds of that type that are included in the US-EPA's Method 8270C standard list. The list includes naphthalene, which can also be classified as a VOC, so duplicate results were obtained for those compounds from samples that were analyzed by both EPA Method 8260B for VOCs and EPA Method 8270C for PNAs. As was done in the case of the volatile BTEX compounds, only the larger of the concentrations reported from the separate tests was included in Tables 8 and 10.

The laboratory analyses for PNAs produced a number of detections of naphthalene, some of which were at relatively high concentrations. For example, as can be seen in Table 10, the concentrations of naphthalene detected in the groundwater samples recovered from Monitoring Wells MW-2 and MWT-2, at 490 μg/L and 340 μg/L, respectively. In Table 8, in the soil samples from a depth of 5.0 ft. in borings BE-1 and BE-2, 18 μg/L of naphthalene was detected. Analyses for 2-methylnaphthalene was also made for samples of both soil and groundwater. As can be seen in Tables 8 and 10, those detections generally occurred in samples of soil that were also affected by naphthalene. None was detected in samples of groundwater. No other PNAs were detected either in soil or groundwater.

The detections of the two PNAs were sparse and widely distributed over the area of the Oak Walk Site. This is consistent with their association with both fuel hydrocarbons and solvents and, for that reason, their presence does not raise unusual concern that releases of additional products may have occurred at some source(s) beyond the known releases of fuels and solvents.

4.2.14.6 Example Chromatograms

To illustrate some of the issues discussed above that relate to the identification of specific petroleum products in soil and groundwater, chromatograms produced from the laboratory analyses of samples of groundwater recovered from Monitoring Well MWT-14 and the soil sample recovered from a depth of 10. 5 ft BGS in the boring drilled for the installation of Monitoring Well MWT-6 are presented in Plates 3 through 6. Those chromatograms can be compared with the standard chromatograms for gasoline fuel, mineral spirits, Stoddard Solvent, paint thinner and diesel fuel that are presented in Plates 7 through 11.

The chromatogram from the EPA Method 8260B analysis for gasoline-range compounds performed on the sample of groundwater from Monitoring Well MWT-14 is shown on Plate 3. It clearly does not match the standard chromatogram for gasoline fuel that is shown on Plate 7. Compared to the gasoline fuel standard, the sample's chromatogram reflects the presence of many more compounds at high concentrations in the 10.0-minute to 12.5-minute range, while it lacks peaks similar to those seen in the standard in the 2.5-minute to 7.5-minute range. As is noted in Table 10, the laboratory could not match the detected mixture of hydrocarbon compounds present in the sample of groundwater recovered from Monitoring Well MWT-14 to that fuel, although for reporting purposes it did quantify its concentration as "equivalent" to 4,600 μg/L of gasoline.

The chromatogram on Plate 4 is from the analysis of a sub-aliquot of sample MWT-14 for total extractable petroleum hydrocarbons (**TEPH**) by EPA Method 8015. It shows the presence of hydrocarbons over a wide range of carbon-chain lengths that correspond to chemicals that emerged into the gas chromatograph in the 3-minute to 9-minute period following the injection of the sample into that equipment. The large numbers of compounds present are concentrated in two groups, those grouped around the 4.6-minute interval and those around the 7.0-minute interval. As can be seen in the standard chromatogram shown on Plate 11, compounds in that range are also present in diesel fuel, but the chromatographic pattern produced by the analysis of Sample MWT-14 for TEPH is dissimilar to the pattern for diesel fuel. The chromatogram does have a multiplicity of peaks in the mineral spirits range and the laboratory quantified the concentration of the detected mixture in terms of a similar concentration of mineral spirits (see Table 10). However, because it did not match either the laboratory standard for diesel fuel, the standard for mineral spirits or any other recognizable petroleum product, the specific product represented by the chromatogram shown on Plate 4 cannot be determined, nor can it be determined whether the chromatographic pattern represents a single product or two separate petroleum hydrocarbon mixtures that have commingled. When that chromatogram is taken together with chromatogram from the gasoline-range analysis of the sample, the most reasonable conclusion that can be reached is that groundwater at the location of monitoring well MWT-14 is affected by a petroleum hydrocarbon product, or a mixture of products, dissimilar in characteristics to fuel hydrocarbons, but which contain components with molecular length in the same range as solvents that are used in the paint manufacturing industry.

The above interpretation is consistent with the location of Monitoring Well MWT-14, which is hydrogeologically remote from sites adjacent to the southern boundary of the Oak Walk Site where releases of fuels are known to have occurred. It is also consistent with the fact that Monitoring Well MWT-14 intersects a channel of permeable facies that appears to be aligned with, and is likely a continuation of, the channels of high-permeability soil found on the former Dunne Paint manufacturing site to the east of

Adeline Street.

Chromatograms from analyses performed on the sample of soil recovered from a depth of 10.5 ft. BGS in the boring drilled for Monitoring Well MWT-6 (sample MWT-6-10.5) are shown on Plates 5 and 6. As is recorded on the well log included in Appendix II, soil at depth in that boring emitted a solvent odor and, as noted in Table 8, the laboratory detected 51 mg/Kg of a mineral spirits-range compound in a mixture that did match that product's standard. As is reported in Table 8, no other extractable petroleum hydrocarbon compounds were detected by the analyses performed on sample MWT-6-10.5, except for a mixture in the gasoline range at a concentration of 860 mg/Kg which, although quantified as such for reporting purposes, did not match the gasoline fuel standard.

Plate 5 is a reproduction of the chromatogram from the EPA Method 8260B analysis for gasoline-range compounds performed on sample MWT-6-10.5. It clearly does not match the standard chromatogram for gasoline fuel that is shown on Plate 7. As was the case for the groundwater sample from Monitoring Well MWT-14, compared to the gasoline fuel standard, the sample’s chromatogram reflects the presence of many more compounds at high concentrations in the 10.0-minute to 12.5-minute range, while it lacks peaks similar to those seen in the standard in the 2.5-minute to 7.5-minute range.

The chromatogram from the analysis of TEPH in sample MWT-6-10.5, when compared to the standard chromatogram for diesel that is presented on Plate 11, shows clearly that a diesel fuel product is not present. Only compounds in the approximate 3.5- to 7.0-minute range are prominent in the chromatogram from the sample, while there are no peaks in the remaining 7.0- to 12.0-minute interval where there are abundant peaks on the standard diesel fuel chromatogram. However, as the laboratory reported, the chromatogram from the analysis of sample MWT-6-10.5 for TEPH is a good match for the standard chromatogram for mineral spirits shown on Plate 8.

In summary, the chromatograms from sample MWT-6-10.5 show that the soil at the location of Monitoring MWT-6 appears not to be affected by petroleum hydrocarbons that can be ascribed to a source or sources where fuels were released to the subsurface, but, as is consistent with olfactory indicators detected in the field, the area is affected by solvents, the only known sources of which in the neighborhood of the Oak Walk property are the sites of the former paint manufacturing facilities that, as is shown on Figure 4, were located to the east of Adeline Street.

The various characteristics of the analytical results obtained for the sample of groundwater from Monitoring Well MWT-14 and soil from the boring drilled for Monitoring Well MWT-6 are, in several respects, shared by the results obtained for a large number of other soil and groundwater samples from the Oak Walk Site recovered from locations where the chemicals of concern could not be unambiguously identified as a fuel hydrocarbon such as gasoline. As is further discussed in Sections 6.0 and 7.0, it can be stated that areas of the site that are affected by releases of fuels are confined to an area in the south of the property adjacent to 40th Street where their unique chromatographic signatures have been clearly identified by the laboratory.

In the central and northern areas of the property that are to the south of its northern boundary along 41st Street, the subsurface appears to be affected by petroleum hydrocarbon mixtures that were not derived from fuels, but which have characteristics compatible with solvents used in the paint manufacturing industry.

It also appears that, in the southern portion of the site, there has been significant commingling of different petroleum products that include both fuel and solvents that were released from one or more of the sources that have been identified in the neighborhood of the Oak Walk property.

4.2.14.7 Heavy Metals

Table 9 presents the results of analyses of soil for the 17 heavy metals that are of significant regulatory concern at Brownfield sites. No heavy metals were detected at concentrations greater than those that are typical of their natural presence in the alluvial materials that originated in the Oakland Hills to the west of the subject site (Lawrence Berkeley National Laboratory 1995, Bradford *et al* 1996). As can also be seen in the Table, a sample recovered from a depth of 13.5 ft. in boring BE-1 (see Figure 2 for location), was, as a conservative check, analyzed for Chrome VI. None was detected.

4.2.14.8 Isocons of Analytes of Concern in Groundwater

When groundwater beneath a site has been affected by contaminants, it is traditional to construct isocons of the concentration of the chemicals of primary concern that have been detected in that medium. Similar isocons are sometimes constructed for contaminant concentration in soil. While such plots can be useful, they are often difficult or practically impossible to construct in many instances. This is particularly true at sites, such as is the case on the Oak Walk Site, located on alluvial fans where the subsurface includes channels and zones, often of small representative dimension, of high permeability facies in a matrix of clayey or otherwise low permeability facies.

As expected, we found that there was insufficient spatial continuity, even over relatively small areas, of the measured concentrations to plot meaningful isocons for many of the chemicals of primary concern, such as benzene, in the groundwater or soil at the Oak Walk Site. This finding simply reflects the fact that zones of sand and other permeable facies are distributed in a complex manner in what is, otherwise, essentially a continuum of nearly impermeable clay and silty clay soils.

It was possible to draw isocons for gasoline-range hydrocarbons and middle distillate petroleum hydrocarbons in groundwater. Those plots are shown on Figures 20 and 21, respectively. However, by necessity, they are interpretive and may present a somewhat misleading image of the distributions of those petroleum hydrocarbons across the site. For example, the isocons for gasoline-range compounds on Figure 20 rise to a peak of 56,000 μg/L at Monitoring Well MWT-7 and isocons with a 5,000 μg/L interval are closely clustered around it. This focuses the reader's attention to that spot, but the fact is that over large areas of the site where few, if any, isocons of gasoline-range compounds appear in Figure 20, the concentrations of gasoline-range compounds are interpreted to be as high as 5,000 μg/L, which concentration is greatly elevated compared to the applicable ESL of 640 μg/L. An alternate approach whereby a smaller isocons interval, even one as great as 1,000 μg/L, is selected would enable a reader to better understand the distributions of high concentrations of the gasoline-range compounds over a greater area of the site. Such selection would render the area around MWT-7 nothing more than a mass of color where the smaller interval isocons would be drawn essentially one upon the other.

The difficulties described above are somewhat less severe in the isocon plot for middle-distillate petroleum hydrocarbons that is shown on Figure 21, but SJC believes, in the case of this site, that the distribution and relative concentration of analytes of concern in the subsurface are best understood by examination of the area plots that are presented on Figures 22 through 25. Those diagrams clearly indicate affected areas of the site and indicate the general ranges of concentration of contaminants in soil and groundwater without distinguishing between the two media. Meaningful interpretation of the contaminant concentration data beyond that is, we believe, likely to be, at best, misleading and, at worst, erroneous. The construction and interpretation of Figures 22 through 25 are described in Sections 6.0 and 7.0.

4.3 Geotechnical Engineering Site Investigation

To provide for a cost-effective and holistic technical program, a geotechnical site investigation was run in parallel with the environmental site characterization studies. That investigation has been reported separately (The San Joaquin Company Inc. 2004b).

The borings drilled for the environmental and geotechnical investigations were used as common sources of information about the sedimentary geology of the subject site and to provide for the recovery of samples for both environmental engineering and geotechnical engineering purposes. In addition, the geotechnical program included two cone penetrometer tests, conducted at the locations CPT-1 and CPT-2 that are shown on Figure 9.

The nomenclature used on Figure 9 and elsewhere in this report reflects the principal purpose guiding the selection of the boring and well locations. Borings classified as “BG" were located so as to be in areas where knowledge of the geotechnical engineering properties of the subsurface soils was important. The borings classified as "BE" were located so as to provide an adequate network of points at which the environmental condition of the subsurface was investigated.

Groundwater-quality monitoring wells are classified in two groups, the "MW" group and the "MWT” group. As the acronym implies, wells in the MWT group are temporary and will have to be closed to permit redevelopment of the site, while wells in the MW group (including WCEW-1) will be left in place for a longer period, should such be necessary. It should be understood that the well and boring classifications were developed for purposes of site control and project management only. As stated above, data from all borings and wells was used integratively in both SJC's environmental and its geotechnical assessments of the Oak Walk Site.

The geotechnical engineering site studies demonstrated that the Oak Walk property could be redeveloped for construction of low- to medium-rise residential and commercial structures built on conventional slab, column support and strip foundations. However, due to the soft and plastic nature of the fill and shallow clayey soils that cover the site to varying depths of some 3 to 10 ft., those materials will have to be stripped, re-worked and replaced as compacted engineered fill before they will be suitable for use as a sub-base for light foundations and paved areas. As noted in Section 8.2 of this report, if environmental corrective actions must be implemented before the site is redeveloped, the geotechnical engineering need to lay down a stratum of low-permeability engineered fill over essentially all of the site can be incorporated advantageously into the design of such remedial measures.

5.0 HYDROSTRATIGRAPHY

To aid in developing an understanding of the geology and hydrogeology of the Oak Walk Site, hydrostratigraphic sections and isocore maps of permeable facies were prepared. These are discussed below.

5.1 Hydrostratigraphic Sections

Information from the logs of the trenches, borings and wells drilled on the site was synthesized to develop hydrostratigraphic sections along the lines A-A’, B-B’, C-C’, D-D’, E-E’, F-F’, G-G’ and H-H’ that are located as shown on Figure 9. The sections are shown on Figures 10 through 17.

The cross sections that are oriented from west to east across the site extend beyond the eastern boundary of the subject property, cross the adjoining Ennis property, and end on Adeline Street to the east. This arrangement permitted the hydrogeologic sections to include information from borings and wells drilled in Adeline, 40th and 41st Streets by Clayton as part of its characterization of the plume of contamination emanating from the former Dunne Paint Site (see Figure 4 for location).

Figure 9 also shows the location of a boring drilled on the Ennis property for its owner that was used to make a visual and olfactory inspection of the environmental condition of the subsurface beneath that site. SJC understands that the boring was not logged and no samples of soil or groundwater recovered from it were analyzed. However, it is reported that soil in the boring reeked of a petroleum solvent.

Given the complexity of the hydrostratigraphy of the area, SJC did not attempt to extrapolate the hydrostratigraphy shown in the cross sections across the Ennis property. However, it is clear that, hydrogeologically, there is free communication between permeable facies that underlie Adeline Street and the Dunne Paint Site to the east with the permeable facies that underlie the Oak Walk Site.

The hydrostratigraphy shown in the cross sections is an interpretation of the stratigraphic data from the boring, trench and monitoring well logs. The sections show the fill material that covers the site and the underlying alluvial sediments, which are divided into four classes: the very low-permeability clays and silty clays; the slightly more permeable sandy clay and clays with some silt, sand or gravel (*i.e.,* soils that are dominantly clayey, but which have small lenses and inclusions of coarser facies); permeable silts, clayey gravels and sands; and highly permeable gravels that are free of silty or clayey fractions. That presentation makes it possible to reduce the details of the stratigraphy to a tractable degree of complexity by distinguishing between the different soil types based on the properties that are of importance to the understanding of the distribution and transport of analytes of concern in the subsurface. It is not intended to represent the detailed geologic stratigraphy of the complex of inter-bedded and lenticular strata and paleo-streambed deposits that are present in the alluvial fan on which the Oak Walk Site is located.

Also shown on the cross sections are the locations from which soil samples were recovered from the borings and monitoring wells that were located on, or close to, the section lines. The concentrations of TPH(g), TPH (middle-distillates) and the critical analyte, benzene, that were detected in those samples are noted adjacent to the sampling locations.

The hydrostratigraphic cross sections reveal that beneath the central area of the Oak Walk Site there is a broad band of the subsurface that is hydrogeologically dominated by strata and in-filled channels of relatively high-permeability facies. That band of permeable facies runs from San Pablo Avenue to the eastern boundary of the site where it adjoins the Ennis property and appears to continue eastward from there to at least the eastern side of Adeline Street. The permeable strata are well represented on hydrostratigraphic section B-B' (Figure 11) that is aligned from west to east though the proximate center of the Oak Walk Site. Sections D-D', E-E', F-F' and G-G' on Figures 13, 14, 15 and 16, respectively, which are orthogonal to Section B-B', reveal that in several zones of the subsurface in the central area of the site, the most permeable soils were deposited in relatively narrow channels.

One of these channels is particularly prominent. It is present in Section D-D' (Figure 13) in the area between Monitoring Well MW-6 and Boring BE-5, to the north and south of Monitoring Well MWT-6 in Section E-E' (Figure 14), and on either side of Monitoring Well MWT-7 in Section F-F' (Figure 15). It is reflected in the highly-permeable gravels and the deeper silts and sands that were intersected by Monitoring Well MWT-14 (see Section G-G' on Figure 16). Because no hydrostratigraphic data is available from the Ennis property to the east of Section G-G', the continuity of that channel of permeable soils eastward across that property cannot be definitively ascertained, but it can be reasonably inferred that such continuity exists and the channel-like hydrostratigraphic feature present on the Oak Walk Site connects to the channel of permeable soils that was intersected by Clayton Boring CW-2. The geo-hydrology in proximity to that boring is shown on Section H-H' on Figure 17, and, as is shown on Figure 4, was interpreted as a partly gravel-filled channel by Clayton. Its alignment where it crosses Adeline Street as interpreted by Clayton conforms well to an interpretation that it continues westward beneath the Ennis property and is that same channel that appears on the north to south sections drawn across the Oak Walk property.

The channelization of permeable facies through the center of the Oak Walk Site is prominently reflected in the geometry of the groundwater contours shown on Figure 18, which was drawn before the hydrostratigraphic sections were developed and constructed independently using groundwater elevation data alone.

The geometry of groundwater contours also reflects other permeable zones and channels in the interior of the Oak Walk Site that can be well-correlated with the distribution of those features as they are seen in the cross sections. Compared to the hydrogeology of the interior areas of the site, there are relatively few high-permeability zones in the subsurface along the southern and northern boundaries of the site and, as can be seen in Sections A-A' and C-C', none of those that are present exhibit the west to east connectivity that is characteristic of the high-permeability sediments present in the interior of the site.

Due to its proximity to the underground storage tanks that leaked at the Celis and SFFBC Sites, soil and groundwater along a portion of the line of Section A-A', located on the southern boundary of the Oak Walk Site, are affected by high concentrations of petroleum hydrocarbons (see Tables 8 and 10). However, as is consistent with the hydrogeology in that area, soil and groundwater along the line of Section C-C' on the northern boundary of the site, with trivial exceptions, are free of petroleum hydrocarbons. This condition reflects the pronounced channelization of contaminant transport across the Oak Walk Site.

As is discussed above, the hydrostratigraphy of the Oak Walk Site is a primary factor controlling the distribution of chemicals of concern in the subsurface beneath the property. A more extensive discussion of the contaminant geochemistry of the site, the distributions of petroleum products released from the on- and off-site sources and their relationship to the hydrostratigraphy is presented in Section 7.2.

5.2 Net Permeable Facies

The net permeable facies diagram shown on Figure 19 was constructed to illuminate the areal distribution of permeable facies beneath the Oak Walk Site. Diagrams of that type, which are often colloquially referred to as "Net Sand Diagrams" by practitioners of petroleum exploration geology, express, in the form of isocores (*i.e,* lines joining points of equal net thickness of a stratigraphic unit or units of a given classification within a specified interval), the areal distribution of the net thickness of permeable soil facies within an interval. Facies that are defined as "permeable" are selected according to the phenomenon being studied. In this case, it is the migration of groundwater contaminated by petroleum hydrocarbon compounds of less specific gravity than water.

The selection of the interval over which the net permeable facies in each boring in the array is computed is based partially on data from a given interval that is available from the logs of all of the borings in the array and partially on the characteristics of the hydrostratigraphy and the engineering issues being studied. In the case of the Oak Walk Site, the 15-ft. interval between 5 ft. BGS and 20 ft. BGS was selected. Soil at depths shallower than five feet are above the groundwater table and, therefore, do not influence the transport of contaminants in that medium. Stratigraphic data is available from all borings and wells on the Oak Walk Site down to a depth of at least 20 ft. Because the contaminants of concern are less dense than water, the hydraulic properties of the soils at relatively shallow depth beneath the water table are those that principally affect the migration of chemicals of concern. As can be seen in Table 8, the concentrations of chemicals of concern at depths of 20 ft. BGS or greater are either very low or, as is the case in most instances, detectable concentrations are entirely absent.

It is recognized that at sites at which the hydrostratigraphy is complex, construction of a net permeable facies diagram, by necessity, requires application of professional judgment by the engineer who prepares it. When constructing isocores, that individual must consider available geochemical data and hydrogeologic interpretations developed from hydrostratigraphic cross sections in an integrated manner, as well as the simple "net permeable facies" percentages computed by direct examination of the boring logs. However, given those limitations, Figure 19, on which areas where the net permeable facies in the subsurface exceed 50% in the selected interval are highlighted, provides a good visual image of the areal distribution of permeable zones and channels beneath the site through which contaminants of concern have preferentially migrated across the Oak Walk Site following their release at the paint factory sites to the east of Adeline Street, at the Celis site beneath 40th Street, and at the former SFFBC site. The areal distribution of permeable soils in the shallow saturated strata beneath the water table that is reflected in the isocores is, in turn, generally reflective of the distributions of chemicals of concern in subsurface soils and groundwater that are diagrammed on Figures 22 though 25 and discussed in Section 6.0 below.

6.0 DISTRIBUTION OF CONTAMINANTS IN THE SUBSURFACE

As has been demonstrated in earlier sections of this report, soil and groundwater beneath the Oak Walk Site is affected by petroleum hydrocarbons that were released at two off-site locations and at a third location that is partially within the site perimeter and partially outside the property boundary. Following is a discussion of the distribution of chemicals of concern found in soil and groundwater beneath the site, together with comparisons of the concentrations of those chemicals with screening levels established by regulatory agencies for sites where construction of residences is planned.

6.1 Characteristics of Middle Distillate-range Petroleum Hydrocarbons

Paint solvents include compounds in the light (gasoline) and middle distillate range (which is also known as the diesel range and includes the mineral spirits range) of petroleum hydrocarbons. However, it is important to recognize that where gasoline-, diesel- or mineral spirits-range compounds have been detected at the site by laboratory analyses that are designed to detect hydrocarbon compounds with molecules within a specific carbon-chain length range, the quantified analytical results do not necessarily reflect the presence of the named fuel hydrocarbon mixtures in the sample.

The mixture of compounds detected in soil and groundwater beneath a very large portion of the Oak Walk Site includes those in a range that extends from the gasoline range through the diesel range, as is typical of solvents used in paint manufacture.

6.1.1 Differentiating among Compounds of Similar Carbon Unit Length

In a small area close to the western and southern perimeters of the Oak Walk Site, the paint solvents are commingled with gasoline and diesel that were released from nearby underground fuel storage tanks. By inspection of the chromatograms from the analyses performed on the samples, it is frequently possible to distinguish between gasoline and diesel fuels and other mixtures of hydrocarbons in the same range. Unfortunately, this is not always the case, particularly if the fuel hydrocarbons have been degraded (“weathered”) by exposure to the subsurface environment for long periods, or if fuel hydrocarbons are commingled with other petroleum hydrocarbon mixtures such as solvents. However, in the case of the Oak Walk Site, it was possible to distinguish with reasonable accuracy which areas are affected by fuel hydrocarbons commingled with paint solvents from those affected by paint solvents alone. This was done, in part, by study of the chromatograms produced by the analytical procedures employed to detect chemicals of concern in samples of soil and groundwater, and, in part, by examination of specific chemical components that are present in the samples.

Mixtures of gasoline- and diesel-range compounds present in paint solvents do not have chromatographic signatures typical of gasoline fuel or diesel fuel. Thus, if a mixture of compounds detected in a sample of soil or groundwater does not match the laboratory’s standard for the subject fuel hydrocarbon, even though the mixture contains an abundance of compounds of carbon unit length in the same range as the fuel hydrocarbon, it can, at the Oak Walk Site, at least preliminarily, be assumed that the detected compounds represent components of an industrial solvent rather than components of a fuel hydrocarbon. However, because components of both gasoline and diesel volatize and are broken down by both chemical metabolization and biogenic degradation when exposed to the subsurface environment, in the absence of other evidence, it is not possible to distinguish categorically between gasoline- or diesel-range hydrocarbons present due to releases of fuels from compounds in the same ranges that are components of a solvent.

Solvents include compounds that spread over a wide range of the chromatographic spectrum of petroleum hydrocarbons. Such is commonly the case for solvents that contain compounds in the same range as those in gasoline fuel and diesel fuels, but which, in terms of their relative abundance in the solvent mixture, are different in character from the components that form the mixtures of petroleum hydrocarbons that are produced as fuels.

Although the laboratory certificates of analysis compiled in Appendix III indicate whether gasoline-range or diesel-range hydrocarbons present in the samples of soil and groundwater did, or did not, match the chromatographic signatures of gasoline fuel or diesel fuel, for the reasons stated above, SJC did not attempt to segregate definitively the compounds detected in either of those ranges by source. Accordingly, as is shown on Figures 22 and 23, SJC separately delineated the areas of the Oak Walk Site where the subsurface is affected by gasoline-range hydrocarbons and middle distillate-range hydrocarbons without assigning them to a specific source or sources.

We elected instead to identify petroleum hydrocarbons that are often identified to be in the “diesel range” as middle distillate petroleum hydrocarbons because that nomenclature is better suited to components of solvents or mixtures of solvents and fuel hydrocarbons. The commonly used “diesel range” nomenclature can be misinterpreted to mean that the quantified results of an analysis of a sample containing a mixture of hydrocarbon compounds expressed at an equivalent concentration of diesel indicates the actual presence of that fuel and the absence of components of other products. In this faulty interpretation there can be failure to recognize that compounds detected may, in fact, be only a portion of the compounds in some different mixture, such as a solvent, that may be present in the sample.

Similar difficulties can arise when a mixture of compounds in a sample is quantified as mineral spirits but there is, in fact, no match between the chromatogram produced from the sample with the standard chromatogram for the specific product known as mineral spirits. Commercial mixtures of petroleum hydrocarbons that are used as solvents, such as paint thinners, can include compounds spread across a wide range of carbon unit lengths that, by technical necessity, is broken down into two or more sub-ranges (*i.e.*, the volatile organic compound, or gasoline, range and the total extractable hydrocarbon, or diesel range). Compounds within the separate general ranges also require different analytical methods to be used for their detection and quantification. For these reasons, although samples of soil and groundwater were analyzed for mineral spirits, when examining the distribution of chemicals of concern over the Oak Walk Site, SJC elected not to attempt to discriminate specifically that particular mixture of middle distillate compounds from others in the same general chromatographic range.

By examining the annotated results for mineral spirits-range compounds presented in Tables 8 and 10, it can be seen that, in many cases, the mixtures detected did not match the laboratory's standard for mineral spirits. As is the case for gasoline- and diesel-range compounds, this lack of correlation can be due to weathering of the mixture in the subsurface or to the fact that the compounds detected in the mineral spirits range are simply components of some other material, such as paint solvents, that is a mixture of compounds that includes molecules having carbon-chain length beyond those that are typical of mineral spirits.

SJC recognizes that, in some cases, the laboratory found that the chromatographs obtained from the samples recovered from beneath the subject site indicated the presence of a mixture of compounds in the mineral spirits range that was very similar to that used in that product. However, because many paint solvents and paint thinner products do include a large percentage of mineral spirits, or may be essentially 100% mineral spirits, it is possible for a chromatogram from an analysis of a sample known to contain solvents to match the specific signature of generic mineral spirits. Conversely, samples affected by proprietary brands of solvents similar to mineral spirits, such as Stoddard Solvent, which until recently was commonly used by dry cleaners, would not produce chromatograms that precisely match the standard for generic mineral spirits, although, for convenience of discussion, such solvents are often loosely referred to as mineral spirits. For these reasons, SJC did not make separate estimates of the areas of the Oak Walk Site affected by petroleum hydrocarbons included in the mineral spirits range, but instead treated laboratory results indicative of the presence of such compounds in common with results quantified in terms of a diesel equivalent as being in the middle distillate classification.

SJC believes that, at sites affected by solvents of the type present at the Oak Walk Site, it is unwise to design site characterization programs around laboratory protocols that limit analyses to compounds in the mineral spirits range alone or even to the total extractable hydrocarbon range alone. If that is done, there is a danger that, if samples analyzed do not produce chromatographs having the characteristic signature of the mineral spirits standard (or that for some similar product), the presence of the solvent or its weathered components in the subsurface may not be recognized. In the case of the Oak Walk Site, that easily might have been the case if the protocol specified for analyses had not included analyses for gasoline- and diesel-range compounds as well as mineral spirits-range compounds.

6.2 Characteristics of Gasoline-range Petroleum Hydrocarbons

The major sources of the fuel hydrocarbons that have commingled with the paint solvents released at the paint factories were released at the former Celis Site, which is today located beneath 40th Street on the eastern side of its intersection with San Pablo Avenue and, to a lesser degree, at the underground fuel storage tanks previously located at the

San Francisco French Bread facility at 4070 San Pablo Avenue. The latter tank site is today partially beneath the 40th Street right-of-way and partially within the Oak Walk Site boundary. Those two sites are described in Sections 3.6.1.1 and 3.6.1.2, respectively.

Diesel and gasoline fuels that leaked from the SFFBC Site have commingled to some degree with the larger plume of fuel hydrocarbons released from the Celis Site. To make approximate estimates of the areas of the Oak Walk Site where the subsurface is affected by releases of fuel hydrocarbons from those tanks and to distinguish them from the areas of the Oak Walk property affected only by components of the paint solvents released from the Dunne and Boysen Paint Sites to the east of Adeline Street, SJC considered the distribution in the subsurface of components of gasoline that are either not present or not abundant in solvent products.

Figures 24 and 25 show the estimated areas of the Oak Walk Site affected by benzene and MTBE, respectively. Benzene (together with other compounds of the BTEX family) is a significant component of gasoline fuel, but it is normally absent or is present in only extremely low concentrations in paint solvents. No MTBE is found in paint solvents, but may or may not be present in gasoline, depending upon the date of the gasoline's manufacture. MTBE and similar fuel oxygenates were not manufactured for use in gasoline for the general public's automobiles until the 1980s and were not commonly used in California until such use was mandated, starting in October 1992 (California Environmental Protection Agency 1997). Its presence, or lack of presence in samples of soil or groundwater, can aid an evaluation of the areal extent of a plume of contamination emanating from a given release point, even if gasoline released from one site has commingled with gasoline released at another site, if one of the sources of gasoline fuel is more likely to have contained MTBE than the other. This compound is particularly useful for this purpose because it tends, in any given time, to migrate to the greatest distance from the release point than any of the large number of compounds present in a gasoline formulation. This behavior is due to the fact that MTBE is metabolized only very slowly, primarily by conversion to tertiary-butyl alcohol - **TBA**, and it does not readily adhere to soil particles. Thus, it is little retarded as it moves through the subsurface.

The gasoline tank that leaked at the SFFBC Site was removed in May 1989, before MTBE was commonly used as a gasoline additive in California. Celis' Alliance Service Station continued in operation until 1994. Thus, it can be stated with reasonable confidence that, lacking alternate sources, the source of any MTBE found beneath the Oak Walk Site was the Celis Site, not the company gasoline tank that was located at the former SFFBC facility. Moreover, because of the speed at which MTBE is conveyed and dispersed in groundwater, it is a more reliable marker for use in delineating the maximum area affected by gasoline of which it is a component than is benzene, which is vented and metabolized relatively rapidly and is significantly retarded when it moves through a mass of soil.

6.3 Concentration of Analytes in Excess of the Environmental Screening Levels

To assess the need for detailed evaluation or possible remediation of Brownfields and other regulated sites where the subsurface has been affected by chemicals of concern, the RWQCB has established “Environmental Screening Levels” (**ESLs**) for many chemicals and for mixtures of chemicals such as gasoline. An assessment designed to determine whether or not chemicals of concern in the subsurface exceed the ESL values is often described as a Tier I Assessment.

6.3.1 Applicable ESLs

Different ESLs have been established for sites where the planned future use of the property is residential compared to commercial or industrial, for sites where soil is affected at shallow depth as opposed to at greater depth, and for sites where groundwater is a source of drinking water as opposed to sites where it is not (California Regional Water Quality Control Board - San Francisco Bay Region 2005).

The RWQCB has found that shallow groundwater in the region of the Oak Walk Site is not a source of drinking water (California Regional Water Quality Control Board - San Francisco Bay Region 1999). In the case of the Oak Walk Site, the planned redevelopment will include both residential and commercial structures. Risk evaluations that distinguish between the areas of the site that will be the locations of commercial as opposed to residential buildings can be made during the development of a remediation program, but, in the present site characterization stage, SJC has elected, conservatively, to use only the applicable ESLs that relate to residential use of an affected site. Due to the presence of contaminants in shallow soils on the subject property, the applicable ESLs are those for sites where chemicals of concern affect shallow soils at less than three meters (9 ft.) BGS and the groundwater is not a source of drinking water. To simplify the assessment and to provide for a suitable conservative evaluation at the present site characterization phase, this criteria has been applied even in areas of the site where chemicals of concern are not present at depths shallower than three meters. The applicable ESLs for the analytes of concern at the Oak Walk Site that have been selected based on those considerations are compiled in Table 11.

6.3.2 Purpose of ESL Evaluation Process

It is important to recognize that, if the concentration of one or more chemicals of concern in the subsurface beneath part or over the whole area of a site exceeds the applicable ESL(s), this fact does not mean that the site or any specific part of a site cannot be used for its planned purpose. Moreover, it does not necessarily mean that active remediation measures must be applied to the site in part or as a whole. It means only that additional evaluation is required to determine whether the site can be used without unacceptable risk to future users of the property or to the environment. Upon further evaluation, such risks may be shown to be acceptable without resorting to any corrective action measures, or, conversely, further evaluation may determine that some form of corrective action is required before the site can be redeveloped.

As noted above, the process of comparing the concentrations of chemicals of concern in soil and groundwater to the applicable ESLs is known as a Tier I assessment. Additional site assessments, which may include risk-based assessments with or without evaluation of active corrective action measures such as remediation of soil or groundwater or installation of engineered barriers to control migration of chemicals of concern, are called Tier II assessments. The latter are beyond the scope of this site characterization report but, as is noted in Section 7.0, below, such will be required to obtain regulatory approval of any proposed redevelopment of the Oak Walk Site.

In cases where analyses of samples of soil or groundwater recovered from the Oak Walk Site show a concentration that exceeds the 2005 RWQCB Tier 1 Residential Screening Levels, those results are shown in **bold** in Tables 8 and 10, respectively.

6.4 Distribution of Middle Distillate Petroleum Hydrocarbons

In addition to showing an estimate of the area where they are present in the subsurface at any concentration, Figure 23 shows the area where middle distillate petroleum hydrocarbons (in either the diesel range or in the mineral spirits sub-range) in soil or groundwater exceed the applicable ESLs. As can be seen on the Figure, the areas where the concentrations of those compounds exceed the ESLs are distributed in a wide band that runs from the San Pablo Avenue frontage of the property eastward to the boundary of the site where it adjoins the Ennis property. That band connects with a similar band that extends northward from the 40th Street frontage of the site through to the approximate center of the property. That distribution compares favorably with the distribution of high-permeability soils, which is expressed on the net permeable facies diagram shown on Figure 19.

6.5 Distribution of Gasoline-range Petroleum Hydrocarbons

In the case of gasoline-range petroleum hydrocarbons, the concentrations of those analytes in the subsurface exceed the ESL over an area that almost completely covers the site. This is reflective of the commingling of gasoline fuel released at the Celis and SFFBC Sites with the high concentrations of gasoline-range compounds in the paint solvents that migrated down the groundwater table from the Dunne and/or Boysen Paint Sites to the east of Adeline Street.

As is shown on Figure 24, concentrations of benzene in soil or groundwater beneath the site that exceed the applicable ESL are confined to a limited area along the 40th St. frontage of the site. That area extends northward from the Oak Walk Site's frontage with that thoroughfare no more than 55 ft., but it extends eastward some 210 ft. from San Pablo Avenue.

An examination of Tables 8 and 10 shows that, in addition to benzene, each of the three other compounds in the BTEX group (*i.e.*, toluene, ethyl benzene and xylene isomers) is also present at some locations beneath the site at concentrations that exceed their ESLs.

However, such instances are few, and where they occur, they are generally associated with the presence of benzene in the subsurface media.

As can also be seen by examining Tables 8 and 10, the concentrations of the gasoline additive MTBE in soil or groundwater beneath the property nowhere exceeds its ESL either in soil or groundwater.

6.6 Distribution of Polynuclear Aromatic Compounds and Other Analytes

Tables 8 and 10 also show that there are a few instances where the polynuclear aromatic compounds (**PNA**s), naphthalene and 2-Methyl-naphthalene, are present in soil and groundwater beneath the Oak Walk Site. These PNAs may be present in diesel fuel or solvents. At the Oak Walk Site, they were at their highest concentrations in groundwater in samples recovered from monitoring wells MW-2 and MWT-2 (see Figure 9 for locations), which suggests that they are principally associated with diesel released from the former Celis service station site. Some very low concentrations of PNAs were detected in some soil samples from more widely-dispersed locations, but the preponderance of those additional detections was also in areas that are believed to have been affected by fuel hydrocarbons.

6.7 Absence of Analytes of Concern in Subsurface in Area around Well MWT-5

It is notable that, regardless of which chemicals of concern are being examined, none were detected in samples of soil or groundwater recovered from Monitoring Well MWT-5. As can be see on Figures 22, 23, 24 and 25, the area around Monitoring Well MWT-5 is free of contaminants, but contamination is found to its north, south and west. East of that Monitoring Well is a strip of land that has a northeasterly alignment and extends across the site boundary onto the Ennis property, within which localized area the subsurface also appears to be free of contaminants. The geometry of that strip is consistent with contaminants being transported by groundwater from east of the Oak Walk Site, migrating along separate channels that pass to the north and south of Monitoring Well MWT-5, and coalescing a short distance to its west. That interpretation is also supported by the geometry of the groundwater contours shown on Figure 18 and the channelized zones of high-permeability sedimentary facies shown in Section A-A' on Figure 10 and in Section G-G’ on Figure 16.

7.0 FINDINGS

A preliminary site investigation had shown that soil and groundwater beneath the Oak Walk Site is affected by petroleum hydrocarbons that have been released from off- and on-site locations. Subsequent to the initial site investigation and guided by its results, a formal environmental site characterization was undertaken. SJC's principal findings derived from the site characterization work are presented below, together with discussions of our reasoning in cases where some of our findings required application of professional judgment supported by a preponderance of the evidence.

7.1 Site Hydrogeology

In addition to the geographic locations at which contaminants were released into the subsurface, the hydrogeology of the Oak Walk Site and its environs had a major influence on the distribution of chemicals of concern beneath the property. As has been described in Section 5.0, the regional direction of groundwater flow at the site is essentially from east to west but, locally, it is greatly influenced by zones and channels of permeable sands and gravels that are present in the subsurface. Areas where channels and zones of high-permeability soils are present extend from east to west across the length of the site, but such permeable facies are relatively less pronounced along the southern boundary of the site at 40th Street, and, in close proximity to the northern boundary of the site along 41st Street, they are essentially absent. The presence or absence of these facies is reflected in the groundwater contours shown on Figure 18. The geometry of the piezometric contours is strongly indicative of areas that have zones and channels of relatively permeable soils in a matrix of lower-permeability soils and shows how those zones are flanked to the north and south by strata that are dominated by low-permeability clays and silty clays.

The relatively permeable soils beneath the center of the Oak Walk Site are not confined to that property alone. They extend westward beneath San Pablo Avenue and eastward beneath the adjoining Ennis property. The preponderance of the evidence is that they also continue further to the east and are continuous with those of the same complex of sandy and gravelly deposits that have been found beneath the former Dunne Paint Site at 4050 Adeline Street. Although a broad band of dominantly permeable strata running from east to west beneath the site can be identified, within that band the hydrostratigraphy is complex, with zones of clay and silty clay interspersed between the more permeable sands and gravels, which at many locations, when seen in cross section, have the form of in-filled channels.

At the scale of the site, the groundwater contours and hydrostratigraphy indicate that the principal route of relatively rapid groundwater flow beneath the Oak Walk Site is in a broad band that is aligned east to west through the central area of the site. There is also evidence that there is a second, narrow, but very pronounced channel of paleo-stream bed deposits present under the Ennis property to the east that crosses the Oak Walk Site in a northeast to southwest direction and continues beneath 40th Street. That paleo channel is shown on Figure 4, but it should be noted that the sandy and gravelly deposits it contained were entirely removed where it ran beneath the Andante Site to the south of 40th Street when that site was remediated in 2003. In addition, the channel, where it crossed the property boundary between 40th Street and the Andante Site, was also plugged by clay at that time.

The hydrogeologic features described above, including the paleo-stream bed deposits, are features compatible with the published geology of the region, which is covered by an alluvial fan that includes, in the neighborhood of the Oak Walk Site, bands of stream and levee deposits.

7.2 Sources of Contamination

The program of environmental site characterization completed at the Oak Walk Site has shown that soil and groundwater beneath the property is affected by both fuel hydrocarbons and paint thinners (solvents). Those materials were released into the subsurface at three separate locations. Two of the sources, one where paint solvents were released and one where fuel hydrocarbons were released, are located off the Oak Walk Site, while the third, at which a release of fuel hydrocarbons occurred, is today, partially outside and partially inside the site boundary. Each of those sources is discussed below, together with an evaluation of the relative degrees to which they affected the subsurface environment of the Oak Walk Site.

7.2.1 The Former Dunne and Boysen Paint Sites

These sites are in close proximity to each other and are situated to the east of the Oak Walk property beyond the adjacent Ennis property and Adeline Street. Their locations are shown on Figure 4. Paint was manufactured and paint solvents were stored in underground tanks at both of these sites. In the case of the former Boysen Paint Site, contamination is also known to have been released from a sump on that property. Both are cited in regulatory records as the source of releases of regulated materials to the subsurface. Because, with the currently available information, it is not possible to know precisely whether the solvents released at Boysen Paint commingled with solvents released at the Dunne Paint Site and are a contributor to the plume of paint solvents found to be affecting the subsurface beneath the Oak Walk Site, for the purposes of this report, those two release sites will be treated as if they are a single source. SJC is aware that ACEHCS has directed the current owners of both the Boysen Paint Site and the Dunne Paint Site to investigate further the extent and characteristics of the plume of contamination that has sources on those sites, but the results of those investigations were not available to us at the time of writing of this report.

Petroleum hydrocarbons in the gasoline and middle distillate ranges, including compounds in the diesel and mineral spirits range, which can be ascribed to releases of solvents at the Dunne Paint Site and possibly at the Boysen Paint Site, have been detected over essentially the whole area of the Oak Walk Site and there is clear evidence that those materials are present at high concentrations in soil and groundwater under the Ennis property, which is adjacent to the Oak Walk Site and lies between it and the former paint manufacturing sites.

7.2.2 The Former Celis' Alliance Automobile Service Station

The location of the former Celis service station, which is today beneath the 40th Street right-of-way and adjacent to the Oak Walk Site to the south, is also shown on Figure 4. As was discussed in Section 3.6.1.1, large quantities of fuel hydrocarbons were released from underground storage tanks on that site. The releases contaminated soil and groundwater over a wide area that is, today, occupied by the 40th Street right-of-way, a portion of the Andante condominium housing site south of the former Celis Site, and a significant portion of the Oak Walk Site to the north. After the City of Emeryville Redevelopment Agency acquired the Celis Site by eminent domain for the purpose of extending 40th Street west from Adeline Street, a portion of the area of the subsurface affected by the release at that site was remediated by removal of contaminated soil down to, but not deeper than, some 9 ft. BGS and by a limited program of groundwater pumping. Some limited areas beneath the 40th Street right-of way to the east of and up the hydrogeologic gradient from the tanks were also partially remediated by excavation and off-site disposal of contaminated soil.

The area of subsurface beneath the Andante Site to the south that was affected by contamination that migrated from the Celis Site has been remediated at the expense of the owner of that property. The corrective action measures implemented there permitted that property to be redeveloped as a residential site with regulatory compliance having been demonstrated by a conservatively-designed Tier II environmental assessment, which included computation of health risks by utilizing the protocol specified by ASTM Standard E1577-00. The input parameters were agreed to by ACEHCS and the RWQCB, both of which agencies approved release of the Andante property for residential use after the corrective action measures had been implemented.

To date, the affected areas of the Oak Walk Site adjacent and to the north of the Celis Site have not been remediated. Release of fuel hydrocarbons (and to limited extent motor oil) from the Celis Site commingled beneath the Oak Walk Site with the paint solvents released at the Boysen and Dunne Paint Sites to the east. Due to this commingling and because both fuel hydrocarbons and paint solvents contain petroleum hydrocarbon compounds in both the gasoline and diesel ranges, it is not possible to determine reliably which fraction of the gasoline-range or diesel-range analytes detected in the area of commingling had its source at the Celis Site as opposed to the paint manufacturing sites. However, it is possible to make a reasonable estimate of the limits of the portion of the Oak Walk Site that was affected by the release of fuel hydrocarbons from the Celis Site, without regard for whether part or all of that area is also affected by commingled petroleum hydrocarbons released at the former paint-manufacturing sites to the east. The estimate can be made by examining the concentration and distribution of benzene and MTBE in soil and groundwater.

7.2.2.1 Benzene Released at the Celis Site

In addition to being a chemical of very significant concern when evaluating the remediation required to permit redevelopment of a site affected by releases of gasoline fuel, benzene is present in gasoline formulations in substantial quantity. It may also be present in some industrial solvents, but it is present in paint thinners in only very limited quantities, if at all. Thus, the presence of elevated concentration of benzene in soil or groundwater is indicative of the presence of components of gasoline fuel. As is shown on Figure 24, benzene detected in samples of soil and groundwater was generally confined to an area along the 40th Street frontage of the Oak Walk Site that, with the exception of a more limited conjoined area near the center of the property area, that area extends, on average, only some 50 ft. along the San Pablo Avenue frontage of the site and approximately 260 ft. from San Pablo Avenue eastward along the 40th Street frontage of the site. Based on known patterns of migration of fuel hydrocarbons at sites similar to the Oak Walk property, it is reasonable to conclude that, in that area, benzene is a component of gasoline fuel released at the former Celis Site

In the area near the center of the site where benzene is present in the subsurface at low concentrations, the precise source of that chemical is more difficult to determine. It is possible that, due to the presence of areas and channels of relatively high permeability media in the subsurface, the benzene detected there did emanate from the Celis Site, but the possibility that the paint solvents that migrated from the paint company sites to the east of Adeline Street contain a small benzene fraction cannot be excluded.

7.2.2.2 MTBE Released at the Celis Site

Distinguishing the geometric area affected by releases of fuel hydrocarbons from the former Celis Site can be accomplished with less ambiguity by examination of the distribution of MTBE in the subsurface. Figure 25 shows the area of the Oak Walk Site where low concentrations of MTBE were detected in soil or groundwater. MTBE was introduced into gasoline fuel by State mandate in October 2002. The Celis automotive service station continued in operation until 1994, well after MTBE was required in all automotive gasoline used in California. This being the case, unless another significant source can be identified, which is unlikely (see discussion of the former SFFBC Site below), it can be concluded with confidence that gasoline originating at the former Celis Site migrated onto the Oak Walk Site so as to affect the area where MTBE has been detected in the subsurface.

The area of MTBE contamination shown on Figure 25 is shaped in the form of a quadrant of an ellipse, with its center near the southwestern corner of the Oak Walk Site, at the intersection of 40th Street and San Pablo Avenue. Its semi-minor axis extends some 100 ft. north from that point along the San Pablo Avenue frontage of the site and its semi-major axis extends some 270 ft. eastward from the same point along the 40th Street frontage of the property. The elliptical shape of that MTBE-contaminated area is typical of the shape of groundwater plumes emanating from sites where fuel hydrocarbons have been released into the subsurface. In this case, however, the distance up the groundwater gradient from the former tank sites at the Celis service station is somewhat greater than is normally seen.

The extent and geometry of the plume of MTBE on the Oak Walk Site is, however, very similar to the plume of fuel hydrocarbons that was found beneath the Andante Site to the south. The area of that site that was remediated to abate risks associated with components of fuel hydrocarbons in the subsurface is shown on Figure 4. In fact, it is easy to visualize that the area affected by releases at the former Celis Site on the Oak Walk property is a mirror image of the area similarly affected on the Andante Site. While recognizing that, at both sites, the up-gradient disposition of chemicals of concern is notably greater than is commonly seen at sites where fuel hydrocarbons have been released from underground storage tanks, the author of this report, who serves as the engineer in responsible charge of the characterization and remediation of both sites, believes, based on an integration of the geochemical and hydrogeological data gathered at both properties, that the distribution of fuel hydrocarbons that were released from the Celis Site is, to a first approximation, reflected by the distribution of MTBE shown on Figure 25.

It is likely that migration of contaminants at both sites was significantly influenced by their site-specific hydrogeology. Highly-permeable zones and channels of sands and gravels provide complex pathways, many of which are on a scale that makes them impossible to delineate by exploration from the surface, through the subsurface that permits contaminants to migrate to great distances from their source. Such situations were clearly evident when excavations were opened to implement the remediation of the Andante Site to the south of 40th Street (The San Joaquin Company 2003).

7.2.2.3 Commingling of Releases at Celis Site with Releases at Other Sites

It is important to understand that our estimate of the area of the Oak Walk Site contaminated due to releases of fuel hydrocarbons at the former Celis Site should not be taken to mean that no contaminants present within that area originated at the other two sources that contributed to the contamination of the property. As is discussed in Section 9.2.1, it is clear that within at least part of the area, gasoline- and middle distillate-range petroleum hydrocarbons that are components of the paint solvent releases at the former paint manufacturing sites to the east have commingled with compounds of the same carbon-chain length that can be attributed to the release of fuels at the Celis Site. It is also obvious that fuels from releases from the underground storage tanks that were present on the former SFFBC property, which is further discussed below, have also commingled with fuel components originating on the Celis Site, at least in the eastern portion of the Celis Site plume.

7.2.3 The Former San Francisco French Bread Site

As was described in Section 1.2.4, the San Francisco French Bread Company (**SFFBC**) formerly occupied a part of the Oak Walk Site that fronts onto 40th Street. The company used the building that remains extant on the site at the address 4070 San Pablo Avenue. SFFBC installed two ten thousand-gallon underground storage tanks at what was then their facility. One stored diesel and the other stored gasoline for use in the bread company's fleet of distribution vehicles. The former locations of the tanks are shown on Figures 4 and 9.

7.2.3.1 Monitoring Wells SMW-1 and SJC MW-3

Fuel was found to have leaked from one of the SFFBC tanks when they were removed in May 1989. In September 1992, at the direction of ACEHCS, SECOR installed a groundwater-quality monitoring well, MW-1 (referred to in this report as SMW-1), a short distance to the west of the former SFFBC tank pit. From September 1992 to March 1994, samples were periodically recovered from that well and analyzed for gasoline and the BTEX compounds. We assume from the analytic suite employed that it was believed that only the gasoline tank at the SFFBC Site had leaked. The results of the analyses are included in Table 2 of this report. No analyses for MTBE were made at the time. Over the period that groundwater-quality was monitored in that well, the concentration of gasoline ranged upward to 5,500 μg/L. Benzene concentrations reached 1,700 μg/L, with commensurate concentrations of toluene, ethyl benzene and xylene isomers.

The SFFBC well was closed for the City of Emeryville's Redevelopment Agency (which, by then, owned the land on which it was situated) by Levine-Fricke prior to construction of the extension to 40th Street. According to a report submitted to ACEHCS, the City of Emeryville intended to install a replacement for Well SMW-1 (Levine-Fricke 1994a). However, no such replacement well was installed. Levine-Fricke states that the well originally installed at the SFFBC Site was closed under the terms of a permit issued by the Alameda County Zone 7 Water Agency (**Zone 7**), but neither the staff of that agency, the Alameda County Public Works Agency, nor the California Department of Water Resources archivist could find any record of a well closure report having been filed with their agencies nor any trace of a well log or record of installation of that well.

As part of a corrective action measure implemented along the right-of-way of the extension of 40th Street that was directed by Levine-Fricke for the City of Emeryville, soil was excavated to a depth of 10 ft. over an approximately 20 ft. by 18 ft. rectangular area in that right-of-way, at a location coincident with the southern half of the former SFFBC tank pit. The location of that remedial excavation, which is adjacent to the fence that today separates the Oak Walk Site from 40th Street, is shown on Figure 4.

To obtain current groundwater-quality data for the site characterization program described herein, SJC installed, at Bay Rock's expense, a new well in the 40th Street sidewalk close to the location of the earlier well SMW-1. It is designated MW-3 and its location is shown on Figures 2, 4 and 9.

SJC's Well MW-3 was sampled on May 19, 2004. The sample contained gasoline fuel at a concentration of 1,300 μg/L, no detectable concentrations of benzene, ethyl benzene at 1.1 μg/L, 420 μg/L of mineral spirits-range petroleum hydrocarbons that did not match the laboratory's standard for that petroleum product, but no other diesel range compounds. SJC's protocol also included analysis for MTBE and that fuel oxygenate was detected at a concentration of 5.8 μg/L. The sample from MW-3 also contained a trace of the volatile organic compound n-butyl benzene, at 14 μg/L.

7.2.3.2 High-permeability Stream Channels

It is of interest to consider two issues related to the geologic location and geochemistry of the groundwater in Monitoring Well MW-3. As can be seen on Figure 18, groundwater contours constructed from the depth to groundwater data gathered at the Oak Walk Site on November 8, 2004, indicate that the direction of groundwater flow across the former SFFBC tank site is from east-southeast to west-northwest. If that flow direction prevailed historically, then gasoline that leaked from a tank on the former SFFBC Site would have migrated in the latter direction onto what is today the Oak Walk Site and commingled with gasoline-range petroleum hydrocarbons that had migrated into the area from the paint factory sites to the east of Adeline Street and from the former Celis Site. However, when the Andante Site across 40th Street to the south of the Oak Walk Site was remediated in 2003, paleo-stream bed deposits found in the subsurface on the former site were removed (see Figure 4) (The San Joaquin Company Inc. 2004) and clay seals were installed where those stream bed deposits had crossed beneath 40th Street. As is discussed below, that earthwork may have substantially changed the hydrogeologic regime in the local area.

In 2003, SJC found a distinct, high-permeability channel that crossed the northwestern corner of the Andante Site from 40th Street to San Pablo Avenue. When SJC conducted its initial subsurface reconnaissance at the Oak Walk Site, Trench 3, which is shown on Figures 4 and 9, was located so as to fall on a projection of the alignment of the paleo-stream bed found on the Andante Site. When the trench was excavated, sandy materials of the same type encountered in the paleo-stream bed deposits on the Andante Site were found. The distribution of these facies is seen on the log of Trench 3 that is included in Appendix II. Accordingly, SJC believes that the paleo-stream that laid down those deposits ran across the area that is today 40th Street, onto the Oak Walk Site and, most likely, onward from there so as to be present on what is, today, the Ennis property and possibly beyond.

Because such high-permeability channels in the subsurface are frequently reflected in the geometry of groundwater contours, it may seem incongruous that the contours shown on Figure 18 do not appear to show any such influence. This can be explained by the fact that the paleo-stream beds found on the Andante Site were entirely removed from that site to their full depth when that property was remediated and an impermeable clay plug was constructed where the paleo-stream bed left the Andante Site to pass under 40th Street (The San Joaquin Company, 2004). The clay plug would have essentially cut off groundwater flow along the alignment of the paleo-stream bed so that piezometric heads in and around the sandy deposits that were left under the Oak Walk Site would not reflect its presence. Under those circumstances, it is reasonable to assume that prior to 2003, when the paleo-stream channel was plugged, the groundwater flow regime in the vicinity of the former SFFBC tank site would have been significantly different from what it was in November 2004. Prior to that time, it is probable that groundwater flow across the tank site was to the south and away from the Oak Walk Site. In such circumstances, gasoline leaking from one of those tanks would have spread over a considerably smaller area of the Oak Walk Site than might be assumed based on the hydrogeologic conditions that have prevailed since 2003.

7.2.3.3 Source of MTBE in Monitoring Well MW-3

As noted above, MTBE at a concentration of 5.8 µg/L was detected in groundwater recovered from SJC's Monitoring Well MW- 3 in May 2004. However, a question arises as to the origin of that MTBE. The SFFBC tanks were removed in 1989 (Levine-Fricke 1994a), but as has also been noted previously, MTBE was not commonly used in California until such use was mandated by the State starting in October 1992. It is true that small quantities of MTBE were manufactured and used as an additive to gasoline as early as the 1980s. However, such use was rare and it is not usually seen in California groundwater affected by releases of gasoline from tanks that were withdrawn from service prior to 1992. The fact that the tanks at the SFFBC Site were used to fuel commercial vehicles rather than private automobiles also reduces the likelihood of MTBE being present in that fuel.

As is documented in Table 2, MTBE was also detected in Well MCEW-1 (see Figure 6 for location) that was installed by Woodward-Clyde on the former Celis Site. There, it has been present in concentrations up to 570 µg/L, with 170 µg/L of MTBE. Because SJC's Well MW-3 is located in close proximity to the former sites of the SFFBC tanks, and the remediation (soil excavation) conducted at the SFFBC Site and the Celis Site were very similar, it is reasonable to expect that the concentrations of MTBE in groundwater affected by a release of gasoline on the SFFBC Site would, if that compound had been present in SFFBC gasoline, be of the same order of magnitude as that detected on the Celis Site. It was not. The concentration of MTBE detected on the Celis Site in May 2004 (570 µg/L) was some two orders of magnitude greater than that detected at the SFFBC Site (5.8µg/L). Under these circumstances, particularly when the low probability that the SFFBC tanks ever contained MTBE is also considered, it appears likely that the low concentration of MTBE detected in Monitoring Well MW-3 originated at the Celis Site and not in a leak from an SFFBC tank. This interpretation is supported by the geometry of the area of the Oak Walk Site affected by MTBE that is shown on Figure 25. The distribution of MTBE on that Figure corresponds very well to the typical shape of contaminant plumes that result from release of fuel hydrocarbons into the subsurface.

The above analysis is not intended to make an argument for a finding that no part of the Oak Walk Site is affected by fuel hydrocarbons that leaked from one of the SFFBC tanks. In fact, it obviously is, if for no other reason that one-half of the area of the tank pit is on the Oak Walk side of the fence line that separates that property from 40th Street. What it does indicate is that while fuel leaking from the SFFBC tanks commingled with paint solvent released into the subsurface at the paint factories east of Adeline Street and fuel-hydrocarbons released at the former Celis Site, it did not affect as large an area of the Oak Walk Site as might at first be surmised. It is not possible to distinguish gasoline-range petroleum hydrocarbons detected in the subsurface that may have originated from the tanks at the SFFBC Site from those released at the Celis Site, but by considering a preponderance of the evidence, particularly the paleo-hydrogeologic interpretations described above and the distribution of MTBE on the site, SJC believes it is reasonable to assume that components of fuel hydrocarbons released at the Celis Site are present at least as far east as the former SFFBC tank site.

8.0 RECOMMENDATIONS

Based on the information obtained from the site characterization work that has been conducted at the subject property, our experience with similar projects, and to make the proposed redevelopment compliant with County, State and Federal regulations, SJC has the following additional recommendations.

8.1 Concentrations of Analytes of Concern in Excess of ESLs

As has been discussed in Sections 5.0 and 6.0, above, the site characterization program found concentrations of chemicals of concern in the subsurface of the Oak Walk Site that exceed the applicable Environmental Screening Levels for residential sites. Chemicals, the concentrations of which, in at least some areas of the property, exceed their ESLs were: gasoline-range petroleum hydrocarbon mixtures, middle distillate petroleum hydrocarbon mixtures (including diesel-range mixtures), benzene, toluene, ethyl benzene and xylene isomers. Some concentrations of the PNAs naphthalene and 2-methyl naphthalene were detected in a few samples from disparate locations and some of those were also at concentrations in excess of their ESLs.

The distributions of gasoline-range hydrocarbons, middle distillate-range hydrocarbons and benzene at concentrations above their ESLs are shown on Figures 22, 23 and 24, respectively.

As discussed in Section 6.3.2, the presence of a chemical of concern at a concentration greater than its ESL does not preclude development of the site for residential use. Those concentrations indicate the need for additional evaluation by calculations of the environmental risks. The results of those risk analyses can be used to assess the need, if any, for active corrective measures to be taken to improve the environmental condition of the site before it is released for future beneficial use.

Because the health risks posed by benzene are significantly greater than those posed by the other analytes cited above as being present in the subsurface of the Oak Walk Site, the concentrations of that chemical will “drive” decision making related to the selection of technologies and to the scope of any corrective action measures, either passive or active, that may be required at the site. Consequently, although gasoline- and middle distillate-range petroleum compounds are present at concentrations above their ESLs over wide areas of the site (essentially all, in the case of the gasoline-range compounds), the benzene associated with the release of gasoline from the former Celis Site (and to a lesser degree from the tanks previously located at the SFFBC Site), it is expected that the area shown on Figure 24 to have high concentrations of benzene in the subsurface could require, if any such are required, implementation of significantly more extensive and costly remediation than is likely to be required over the remaining areas of the Oak Walk Site. This is because the latter area is affected by paint solvents, which have been shown, at this site, to contain little or no benzene; they are thus of relatively less concern to the design of a corrective action program.

Procedures that can be used to assess the needed scope of corrective action measures, either active or passive, to manage safely the areas of the subsurface beneath the site where chemicals of concern exceed the applicable ESLs are outlined below.

8.2 Corrective Action Plan

A corrective action plan should be developed for the Oak Walk Site to improve its environmental condition to a point where any remaining petroleum hydrocarbons in the soil or groundwater beneath the property poses no meaningful risk to occupants of the residences and commercial premises that are planned for the property.

8.2.1 Tier II Environmental Site Evaluation

As noted in Section 8.1, the fact that there are chemicals of concern in the subsurface will not preclude redevelopment of the Oak Walk Site for residential use. To assess whether or not the whole or part of the site can be used for that purpose without active remediation measures being taken, as part of a remedial design study, a Tier II evaluation should be conducted in compliance with the applicable sections of ASTM Standards E2081-00 and E1739-95/2002 (American Society for Testing and Materials 2000, 2002). If the Tier II evaluation indicates that active remediation or other corrective action will be required, or such measures are required to comply with the directives of the concerned regulatory agencies, the procedure described in ASTM Standard E1739-95(rev.2002) can be employed, as is described below, to aid in the design of such corrective measures in a iterative manner to confirm the adequacy of the proposed corrective measures as the design is developed.

8.2.2 Expected Scope of Corrective Action Measures

The details of the remedial program that may have to be implemented at the Oak Walk Site cannot be determined *a priori*. However, based on SJC's experience with similar projects, including the design and implementation of corrective action for the recently-completed Andante development across 40th Street to the south of the Oak Walk Site, which was approved by both the ACEHCS and the RWQCB, we expect that the elements of the corrective action plan for the Oak Walk Site will be similar to those required at that site The hydrogeology, contaminant chemistry and extant/planned use of the two properties are similar.

Expected elements of a corrective action plan for the Oak Walk Site include a combination of removal and off-site disposal of soil contaminated by high concentrations of components of fuel hydrocarbons of greatest concern, laying down a low-permeability clay cap over the site, installation of engineered barriers, and recognition of the processes of natural attenuation that have been active in the subsurface of the site since the sources of the releases of chemicals of concern were removed from the on- and off-site source locations.

8.2.3 Importance of Qualified Engineering Supervision of Remediation Program

If a Tier II assessment shows active remediation by excavation and treatment or disposal of affected soil to be necessary, we recommend that the remedial excavation be conducted under the on-site direction of a licensed and experienced geotechnical engineer. Such remediation work can burden the site with very high corrective action costs, which are important to control while, at the same time, assuring that no material affected by contaminants at unacceptably high concentrations are left in the ground.

Although the site characterization program described in this report was unusually intensive in character, it is well established that precise delineation of contaminated zones in alluvial fans, particularly, as is the case at the Oak Walk Site where they are intersected by paleo-stream bed deposits, is notoriously difficult when exploration, by default, is generally restricted to drilling of small-diameter borings and installation of groundwater-quality monitoring wells (Salvany, J.M., et al. 2004). However, by application of the well-proved observational method that has been employed for many years in geotechnical engineering practice (Peck 1969), it is possible to remediate such sites economically and effectively if a flexible, holistic approach, rather that a prescriptive paradigm, is taken and the work is directed by a well-experienced engineer. As is well known in the earth sciences, a trench or pit opened by an excavator clearly reveals what it is in the ground, while no amount of drilling or indirect exploration can provide more than the proverbial view through a clouded glass

8.2.4 Integration of Geotechnical and Environmental Remediation Measures

Because geotechnical engineering measures will have to be taken to render the surficial soils at the site suitable for construction of buildings and paved areas, it will be important to integrate the design of corrective action measures with the geotechnical design elements of the proposed redevelopment. That would allow construction and remediation activities to proceed efficiently and to mutual benefit. For example, excavation of soft soil and its re-use as, or replacement by, engineered fill, can serve the dual purpose of providing suitable support for foundations and providing low-permeability materials to a suitable depth over the whole area of the site so that the vertical migration of any chemicals of concern that might remain in the subsurface after the work has been completed will be inhibited

8.2.5 Regulatory Review of Corrective Action Plan

The corrective action plan must be submitted to ACEHCS for review and approval before it is implemented and any structures are built on the site.

8.3 Submission of Site Characterization Report to Regulatory Agency

As directed by that agency, a copy of this site characterization report should be submitted to ACEHCS for review.

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TABLE 1

RESULTS OF ANALYSES OF SOIL SAMPLES RECOVERED FROM 40TH STREET RIGHT-OF-WAY [1]

Sample ID	**Date Sampled**	**Depth BGS** *ft.*	**TRPH** [2] *mg/Kg*	**TPHd Diesel** *mg/Kg*	**TPHg (gaso-line)** *mg/Kg*	**TPHmo (motor oil)** *mg/Kg*	**Ben-zene** *mg/Kg*	**Toluene** *mg/Kg*	**Ethyl-ben-zene** *mg/Kg*	**Total Xylenes** *mg/Kg*	**Methy-lene Chloride** *mg/Kg*	**Aroclor® 1260** *mg/Kg*	**Naphth-alene** *mg/Kg*	**2-Methyl-naphth-alene** *mg/Kg*	**4-Methyl-phenol** *mg/Kg*
LFSB1-7.0	08/08/93	7	**290**	**240**	**850**	27	**5.4**	ND [4]	**25**	**42**	n/a [3]	n/a	n/a	n/a	n/a
LFSB1-9.5	08/08/93	9.5	**130**	**220**	**180**	ND	**0.89**	1.1	4.3	**18**	n/a	n/a	n/a	n/a	n/a
LFSB1-14.5	08/08/93	14.5	60	ND	7.4	ND	**0.44**	0.44	0.14	0.61	n/a	n/a	n/a	n/a	n/a
LFSB2-7.0	08/08/93	7	**160**	**790**	**780**	57	**8**	ND	**31**	**140**	n/a	ND	n/a	n/a	n/a
LFSB2-9.5	08/08/93	9.5	**210**	**200**	**720**	ND	**2.4**	5.2	15	**59**	n/a	n/a	n/a	n/a	n/a
LFSB2-14.5	08/08/93	14.5	43	ND	1.0	12	**0.2**	0.21	0.021	0.12	n/a	ND	n/a	n/a	n/a
LFSB3-9.5	08/07/93	9.5	37	11	**580**	ND	**9.7**	**50**	15	**90**	n/a	ND	n/a	n/a	n/a
LFSB3-14.5	08/07/93	14.5	37	ND	0.9	ND	0.092	0.16	0.031	0.17	n/a	ND	n/a	n/a	n/a
LFSB4-7.0	08/08/93	7	70	13	**380**	ND	**3**	5.2	8.2	**18**	n/a	n/a	n/a	n/a	n/a
LFSB4-14.5	08/08/93	14.5	**210**	ND	ND	ND	0.026	0.005	0.019	0.023	n/a	n/a	n/a	n/a	n/a
LFSB5-7.0	08/08/93	7	37	15	**410**	ND	**2.4**	0.6	16	6.3	n/a	n/a	n/a	n/a	n/a
LFSB5-14.5	08/08/93	14.5	93	ND	ND	ND	0.011	ND	0.008	0.008	n/a	n/a	n/a	n/a	n/a
LFSB6-9.5	08/08/93	9.5	67	51	**490**	ND	**2.7**	ND	15	**15**	n/a	n/a	n/a	n/a	n/a
LFSB6-14.5	08/08/93	14.5	ND	ND	ND	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
LFSB7-9.5	08/07/93	9.5	**170**	52	**750**	66	**2.5**	**8.5**	22	**93**	n/a	n/a	n/a	n/a	n/a
LFSB7-14.5	08/07/93	14.5	ND	ND	2.8	ND	ND	ND	0.029	0.03	n/a	n/a	n/a	n/a	n/a
LFSB8-9.5	08/08/93	9.5	130	**110**	**2,800**	ND	**22**	**9.5**	**82**	**290**	n/a	n/a	n/a	n/a	n/a
LFSB8-14.5	08/08/93	14.5	37	ND	ND	11	0.009	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
LFSB9-7.0	08/07/93	7	ND	14	**210**	ND	**2.8**	**13**	5.1	**29**	n/a	n/a	n/a	n/a	n/a
LFSB9-9.5	08/07/93	9.5	n/a	n/a	**1,200**	n/a	**14**	**81**	26	**140**	n/a	n/a	n/a	n/a	n/a
LFSB9-14.5	08/07/93	14.5	77	ND	ND	ND	0.079	0.059	0.011	0.041	n/a	n/a	n/a	n/a	n/a
LFSB10-7.0	08/07/93	7	n/a	n/a	73	n/a	**2.6**	4.7	1.6	7.7	n/a	n/a	n/a	n/a	n/a
LFSB10-9.5	08/07/93	9.5	40	ND	**1,100**	ND	ND	7.8	ND	**22**	n/a	n/a	n/a	n/a	n/a
LFSB10-14.5	08/07/93	14.5	ND	ND	8.6	ND	**0.48**	0.29	0.1	0.48	n/a	n/a	n/a	n/a	n/a

Sample ID	Date Sampled	Depth BGS	TRPH [2]	TPHd Diesel	TPHg (gasoline)	TPHmo (motor oil)	Benzene	Toluene	Ethylbenzene	Total Xylenes	Methylene Chloride	Aroclor® 1260	Naphthalene	2-Methylnaphthalene	4-Methylphenol
		ft.	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*
LFSB11-14.5	08/09/93	14.5	40	ND	ND	11	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
LFSB12-1.0	08/09/93	1	**4,600**	ND	ND	**400**	n/a	n/a	n/a	n/a	n/a	ND	n/a	n/a	n/a
LFSB12-3.0	08/09/93	3	**420**	**560**	**6,500**	64	n/a	n/a	n/a	n/a	n/a	ND	n/a	n/a	n/a
LFSB13-5.0	08/09/93	5	63	ND	23	ND	n/a	n/a	n/a	n/a	n/a	ND	n/a	n/a	n/a
LFSB13-6.5	08/09/93	6.5	37	ND	13	ND	n/a	n/a	n/a	n/a	n/a	ND	n/a	n/a	n/a
LFSB14-2.0	08/09/93	2	**2,200**	ND	42	**480**	n/a	n/a	n/a	n/a	n/a	**0.22**	n/a	n/a	n/a
LFSB14-4.5	08/09/93	4.5	47	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	ND	n/a	n/a	n/a
LFSB15-4.5	08/09/93	4.5	**480**	**140**	**4,700**	12	n/a	n/a	n/a	n/a	n/a	ND	n/a	n/a	n/a
LFSB15-6.0	08/09/93	6	**120**	59	**3,700**	14	n/a	n/a	n/a	n/a	n/a	ND	n/a	n/a	n/a
LFSB16-4.5	08/09/93	4.5	60	ND	9	ND	n/a	n/a	n/a	n/a	n/a	ND	n/a	n/a	n/a
LFSB16-6.0	08/09/93	6	53	ND	8	ND	n/a	n/a	n/a	n/a	n/a	ND	n/a	n/a	n/a
LFSB17-4.5	08/09/93	4.5	70	40	**260**	ND	ND	**22**	12	**69**	**2.6**	ND	**1.6**	**1.8**	0.4
LFSB17-6.0	08/09/93	7	50	70	**440**	ND	ND	**27**	8	**43**	**2.0**	ND	**0.57**	**0.63**	ND
LFSB17-12.0	08/09/93	12	47	**130**	**500**	**190**	**190**	9	4	**23**	**0.660**	ND	**1.7**	**1.8**	ND
LFSB18-1.0	08/09/93	1	**2,200**	ND	1	**320**	n/a	n/a	n/a	n/a	n/a	ND	n/a	n/a	n/a
LFSB18-3.0	08/09/93	3	**1,100**	ND	ND	**390**	n/a	n/a	n/a	n/a	n/a	ND	n/a	n/a	n/a
LFSB19-1.5	08/09/93	1.5	**2,200**	ND	ND	**530**	n/a	n/a	n/a	n/a	n/a	ND	n/a	n/a	n/a
LFSB19-3.0	08/09/93	3	**3,600**	ND	1	**740**	n/a	n/a	n/a	n/a	n/a	ND	n/a	n/a	n/a
LF-1-4.5	08/07/93	4.5	77	**220**	**550**	16	**0.84**	1.2	5.6	2.7	n/a	n/a	n/a	n/a	n/a
LF-1-9.5	08/07/93	9.5	ND [4]	18	**470**	ND	**0.97**	ND	6.6	8.9	n/a	n/a	n/a	n/a	n/a
LF-1-14.5	08/07/93	14.5	60	16	8.4	ND	0.14	0.17	0.081	0.37	n/a	n/a	n/a	n/a	n/a
LF-2-9.5	08/07/93	9.5	30	14	**740**	ND	**4.70**	**35**	13	**68**	n/a	n/a	n/a	n/a	n/a
LF-2-14.5	08/07/93	14.5	ND	ND	ND	ND	0.009	0.012	ND	0.015	n/a	n/a	n/a	n/a	n/a
LF-3-9.5	08/07/93	9.5	37	ND	75	ND	0.062	0.28	1.1	1.1	n/a	n/a	n/a	n/a	n/a
LF-3-14.5	08/07/93	14.5	ND	ND	ND	ND	0.014	ND	0.01	0.007	n/a	n/a	n/a	n/a	n/a
LF-B1-2	08/30/94	2	ND	ND	0.8	n/a	0.008	ND	0.016	0.085	n/a	n/a	n/a	n/a	n/a
LF-B1-5	08/30/94	5	30	ND	**110**	n/a	**0.840**	0.520	3	**12**	n/a	n/a	n/a	n/a	n/a
LF-B1-10	08/30/94	10	30	ND	**690**	n/a	**12**	**50**	18	**99**	n/a	n/a	n/a	n/a	n/a
LF-B2-2	08/30/94	2	10	ND	**110**	n/a	**0.6**	2.9	3.3	**16**	n/a	n/a	n/a	n/a	n/a
LF-B2-5	08/30/94	5	10	1	66	n/a	**0.37**	0.8	0.79	3.5	n/a	n/a	n/a	n/a	n/a
LF-B2-10	08/30/94	10	30	ND	**830**	n/a	**13**	**52**	21	**110**	n/a	n/a	n/a	n/a	n/a
LF-B3-2	08/30/94	2	80	ND	**440**	n/a	**8.5**	**36**	12	**58**	n/a	n/a	n/a	n/a	n/a

Sample ID	**Date Sampled**	**Depth BGS** *ft.*	**TRPH**[2] *mg/Kg*	**TPHd Diesel** *mg/Kg*	**TPHg (gaso-line)** *mg/Kg*	**TPHmo (motor oil)** *mg/Kg*	**Ben-zene** *mg/Kg*	**Toluene** *mg/Kg*	**Ethyl-ben-zene** *mg/Kg*	**Total Xylenes** *mg/Kg*	**Methy-lene Chloride** *mg/Kg*	**Aroclor® 1260** *mg/Kg*	**Naphth-alene** *mg/Kg*	**2-Methyl-naphth-alene** *mg/Kg*	**4-Methyl-phenol** *mg/Kg*
LF-B3-5	08/30/94	5	**200**	8	**810**	n/a	**14**	**62**	22	**100**	n/a	n/a	n/a	n/a	n/a
LF-B3-10	08/30/94	10	50	ND	**390**	n/a	**7.1**	**22**	7.2	**38**	n/a	n/a	n/a	n/a	n/a
LF-B4-2	08/30/94	2	40	ND	49	n/a	0.14	0.12	2.3	**11**	n/a	n/a	n/a	n/a	n/a
LF-B4-5	08/30/94	5	**1,300**	28	**8,800**	n/a	**6.8**	7.3	**190**	**870**	n/a	n/a	n/a	n/a	n/a
LF-B4-10	08/30/94	10	**110**	3	**510**	n/a	**1.1**	0.96	3.4	**13**	n/a	n/a	n/a	n/a	n/a
LF-B5-2	08/30/94	2	10	ND	0.4	n/a	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
LF-B5-5	08/30/94	5	**2,400**	ND	ND	n/a	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
LF-B5-10	08/30/94	10	ND	ND	ND	n/a	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
LF-B6-2	08/30/94	2	20	ND	ND	n/a	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
LF-B6-5	08/30/94	5	10	ND	ND	n/a	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
LF-B6-10	08/30/94	10	ND	ND	ND	n/a	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
LF-B7-2	08/30/94	2	10	ND	27	n/a	**0.42**	ND	0.75	0.05	n/a	n/a	n/a	n/a	n/a
LF-B7-5	08/30/94	5	ND	ND	16	n/a	**0.67**	ND	ND	0.025	n/a	n/a	n/a	n/a	n/a
LF-B7-10	08/30/94	10	20	ND	**520**	n/a	**7.4**	**30**	14	**78**	n/a	n/a	n/a	n/a	n/a
LF-B8-2	08/30/94	2	50	5	3.4	n/a	**0.2**	ND	0.56	0.02	n/a	n/a	n/a	n/a	n/a
LF-B8-5	08/30/94	5	ND	ND	14	n/a	**0.3**	0.01	0.26	ND	n/a	n/a	n/a	n/a	n/a
LF-B8-10	08/30/94	10	20	ND	**140**	n/a	**2.1**	5.8	4	**21**	n/a	n/a	n/a	n/a	n/a
LF-B9-2	08/30/94	2	20	ND	2.8	n/a	**0.33**	0.005	0.41	0.07	n/a	n/a	n/a	n/a	n/a
LF-B9-5	08/30/94	5	ND	ND	40	n/a	**1.2**	0.013	2.6	0.15	n/a	n/a	n/a	n/a	n/a
LF-B9-10	08/30/94	10	20	ND	**190**	n/a	**4.3**	**11**	5.5	**28**	n/a	n/a	n/a	n/a	n/a
LF-B10-2	08/30/94	2	**150**	ND	29	n/a	0.038	0.048	0.18	**1.2**	n/a	n/a	n/a	n/a	n/a
LF-B10-5	08/30/94	5	30	ND	13	n/a	ND	0.02	0.05	ND	n/a	n/a	n/a	n/a	n/a
LF-B10-10	08/30/94	10	ND	ND	ND	n/a	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
LF-B11-2	08/30/94	2	20	ND	ND	n/a	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
LF-B11-5	08/30/94	5	ND	ND	1	n/a	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
LF-B11-10	08/30/94	10	40	ND	**250**	n/a	**1.1**	0.35	4.4	**21**	n/a	n/a	n/a	n/a	n/a
	08/30/94	2	30	ND	ND	n/a	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
LF-B12-5	08/30/94	5	ND	ND	0.9	n/a	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
LF-B12-10	08/30/94	10	30	ND	**160**	n/a	**0.97**	0.19	4.1	**20**	n/a	n/a	n/a	n/a	n/a
LF-B13-2	08/30/94	2	**600**	**220**	ND	n/a	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
LF-B13-5	08/30/94	5	40	10	4.2	n/a	ND	ND	0.02	ND	n/a	n/a	n/a	n/a	n/a
LF-B13-10	08/30/94	10	20	3	6.9	n/a	**0.36**	ND	0.45	0.13	n/a	n/a	n/a	n/a	n/a
LF-B14-2	08/30/94	2	**410**	ND	ND	n/a	ND	ND	ND	ND	**0.670**	n/a	n/a	n/a	n/a
LF-B14-5	08/30/94	5	ND	ND	1.6	n/a	0.01	ND	ND	ND	n/a	n/a	n/a	n/a	n/a

Sample ID	**Date Sampled**	**Depth BGS**	**TRPH** [2]	**TPHd Diesel**	**TPHg (gaso-line)**	**TPHmo (motor oil)**	**Ben-zene**	**Toluene**	**Ethyl-ben-zene**	**Total Xylenes**	**Methy-lene Chloride**	**Aroclor® 1260**	**Naphth-alene**	**2-Methyl-naphth-alene**	**4-Methyl-phenol**
		ft.	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*
LF-B14-10	08/30/94	10	ND	ND	2.9	n/a	0.006	ND	0.01	ND	**1.1**	n/a	n/a	n/a	n/a
LF-B15-2	08/30/94	2	**420**	ND	ND	n/a	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
LF-B15-5	08/30/94	5	ND	ND	ND	n/a	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
LF-B15-10	08/30/94	10	20	ND	ND	n/a	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
LF-B16-2	08/30/94	2	50	10	ND	n/a	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
LF-B16-5	08/30/94	5	ND	ND	28	n/a	0.16	ND	0.96	0.037	n/a	n/a	n/a	n/a	n/a
LF-B16-10	08/30/94	10	20	ND	**130**	n/a	**2.5**	5.4	2.6	**15**	n/a	n/a	n/a	n/a	n/a

Notes:

(1) Data Source: Levine-Fricke (1994)
(2) TRPH = Total Recoverable Petroleum Hydrocarbons
(3) n/a = Not Analyzed
(4) ND = Not Detected above the Method Detection Limit (MDL).
(5) Concentrations in **bold** script exceed the 2005 San Francisco Bay Area RWQCB's Environmental Screening Levels at sites where groundwater is not a source of drinking water and soils are shallow (<3m bgs).

TABLE 2

RESULTS OF ANALYSES OF GROUNDWATER SAMPLES RECOVERED FROM 40TH STREET RIGHT-OF-WAY [1]

Sample ID	**Date Sampled**	**TRPH** [2]	**TPHd (diesel)**	**TPHg (gasoline)**	**TPHmo (motor oil)**	**Benzene**	**Toluene**	**Ethyl-benzene**	**Total Xylenes**	**MTBE**	**PNA** (Napthalene)
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
SMW-1	09/11/92	n/a	n/a	**1,400**	n/a	**470**	45	43	**100**	n/a	n/a
	12/03/92	n/a	n/a	ND	n/a	ND	ND	1.6	ND	n/a	n/a
	03/04/93	n/a	n/a	**700**	n/a	1.1	ND	ND	1.1	n/a	n/a
	06/04/93	n/a	n/a	**2,900**	n/a	**340**	58	50	**140**	n/a	n/a
	09/02/93	n/a	n/a	**1,500**	n/a	**340**	ND	ND	**140**	n/a	n/a
	12/01/93	n/a	n/a	**810**	n/a	**170**	23	22	39	n/a	n/a
	03/08/94	n/a	n/a	**5,800**	n/a	**1,700**	**430**	230	**490**	n/a	n/a
LF-1AG	08/07/93	**11,000**	**41,000**	**100,000**	ND	**13,000**	**9,400**	**3,100**	**14,000**	n/a	n/a
LF-2AG	08/07/93	ND [3]	95	**13,000**	ND	**2,400**	**2,900**	**500**	**2,000**	n/a	n/a
LF-3AG	08/07/93	ND	**780**	**11,000**	ND	**1,500**	**170**	**2,900**	**5,100**	n/a	n/a
WCEW-1	09/26/97	n/a [4]	**41,000**	**180,000**	ND	**2,800**	**4,900**	**3,100**	**12,000**	ND	**120**
	12/05/97	n/a	95	**4,700**	ND	**2,100**	**1,800**	**2,500**	**10,000**	340	**170**
	03/13/98	n/a	**780**	**7,700**	ND	**2,500**	**1,300**	**1,000**	**3,400**	570	**420**
	06/02/98	n/a	**780**	**3,400**	550	**2,100**	**460**	**910**	**2,990**	350	**1,000**

Notes:

(1) Data Sources: Levine-Fricke (1994), Woodward-Clyde (1998)

(2) TRPH = Total Recoverable Petroleum Hydrocarbons

(3) ND = Not Detected above the Method Detection Limit (MDL).

(4) n/a = Not Analyzed.

(5) Concentrations in **bold** script exceed the 2005 San Francisco Bay Area RWQCB's Environmental Screening Levels at site where groundwater is not a source of drinking water and soils are shallow (<3m bgs).

TABLE 3

RESULTS OF ANALYSES OF SOIL SAMPLES FROM REMEDIAL EXCAVATION AT FORMER CELIS' ALLIANCE SERVICE STATION
4000 SAN PABLO AVENUE [1]

Sample ID	**TRPH** mg/Kg	**TPHd (diesel)** mg/Kg	**TPHg (gasoline)** mg/Kg	**Benzene** mg/Kg	**Toluene** mg/Kg	**Ethyl-benzene** mg/Kg	**Total Xylenes** mg/Kg
Samples Recovered from Walls of Excavation [3]							
WC N-1	ND [2]	21	**920**	**2.6**	**21**	11	**57**
WC N-2	ND	10	**250**	0.097	0.83	2.5	**11**
WC N-3	ND	96	**390**	**0.38**	3	3.6	**17**
WC N-4	**160**	**310**	85	0.16	ND	1	1.3
WC W-1 [5]	ND	ND	ND	ND	ND	ND	ND
WC W-2	ND	34	**230**	**0.34**	0.61	2.3	6.9
WC W-3	ND	**180**	20	0.012	0.01	0.029	0.043
WC W-4	**150**	**500**	80	ND	0.073	0.26	0.99
WC S-1 [5]	n/a [6]	n/a	**800**	**1.7**	6	9.9	**41**
WC S-2 [5]	ND	60	**430**	**0.4**	0.2	4	**12**
WC S-3 [5]	n/a	n/a	**730**	**1.4**	ND	11	1.7
WC S-4 [5]	ND	25	**560**	ND	ND	5.6	**13**
WC E-1	n/a	n/a	**240**	**0.33**	3.5	3.4	**16**
WC E-2	ND	2	**170**	**0.81**	3.4	1.8	8.9
WC E-3	n/a	n/a	**660**	**2.9**	**18**	9.2	**46**
WC E-4 [5]	ND	5.2	**380**	**2.6**	**12**	4.9	**24**
Samples Recovered From Floor of Excavation [4]							
WC B-C-1	ND	68	**260**	0.081	0.11	2	8.4
WC B-O&G-1	ND	**160**	**490**	**2.4**	**9.9**	6.3	**27**
WC B-D-1	**15,000**	**18,000**	**650**	**3.8**	1.7	8.1	**17**
WC B-G-1 [5]	**120**	ND	**540**	**0.64**	ND	6.5	**12**
WC B-C-2 [5]	ND	75	**1,000**	**2.4**	**10**	11	**49**
WC B-C-3	ND	29	**690**	**2.2**	**15**	7.3	**39**

Notes:

(1) Data: Woodward-Clyde Consultants, Remediation Report, January 1995, Figure 4.
(2) ND = Not Detected above the Method Detection Limit (MDL).
(3) Soil samples recovered from approx. 8 ft. B.G.S.
(4) Floor of excavation approx. 9.5 ft. B.G.S.
(5) Sampling location near property boundary shared with 3992 San Pablo Avenue.
(6) n/a = Not Analyzed.
(7) Concentrations in **bold** script exceed the 2005 San Francisco Bay Area RWQCB's Environmental Screening Levels in shallow soil (<3m bgs) and groundwater is not a source of drinking water.

TABLE 4

RESULTS OF ANALYSES OF SOIL SAMPLES FROM GREEN CITY (FORMER DUNNE PAINTS) INVESTIGATION [1]

Sample ID [2]	**Date Sampled**	**Sample Depth** *ft. BGS*	**Mineral Spirits** mg/Kg	**Acetone** mg/Kg	**sec-Butylbenzene** mg/Kg
OB-2	06/30/03	10.5	**160**	**21**	ND
OB-10	06/30/03	10	**430**	ND	ND

Notes:

(1) Data from Clayton Group Services 2003
(2) Sampling points be found on Figure 4.
(3) Concentrations in **bold** script exceed the 2005 San Francisco Bay Area RWQCB's Environmental Screening Levels (**ESL**s) in shallow soil (<3m bgs) where groundwater is not a source of drinking water.
(4) ND = Not detected

TABLE 5

RESULTS OF ANALYSES OF GROUNDWATER SAMPLES FROM GREEN CITY (FORMER DUNNE PAINTS) INVESTIGATIONS [1]

Sample ID [2]	**Date Sampled**	**Mineral Spirits** µg/L	**Tetrachloroethene** µg/L	**Trichloroethene** µg/L
OB-1	06/27/03	ND	ND	ND
OB-2	06/27/03	**12,000**	ND	ND
OB-3	06/27/03	ND	ND	ND
OB-4	06/27/03	ND	ND	ND
OB-5	06/27/03	ND	ND	**9.6**
OB-6	06/27/03	ND	**11**	**15**
OB-7	06/27/03	ND	ND	ND
OB-8	06/27/03	ND	ND	ND
OB-9	06/27/03	ND	ND	ND
OB-10	06/27/03	**5,800**	ND	ND
CW-1	11/12/03	85	*ns*	ND
	03/12/04	ND	*ns*	ND
CW-2	11/12/03	ND	*ns*	ND
	03/12/04	ND	*ns*	ND
CW-3	11/12/03	ND	*ns*	**5.1**
	03/12/04	ND	*ns*	ND
MW-D1	11/12/03	85	*ns*	ND
	03/12/04	**260**	*ns*	ND
MW-D2	11/12/03	**1,400**	*ns*	ND
	03/12/04	**330**	*ns*	ND

Notes:

(1) Data from Clayton Group Services 2003
(2) Sampling points can be found on Figure 4 unless they are beyond the coundaries of that Figure.
(3) Concentrations in **bold** script exceed the 2005 San Francisco Bay Area RWQCB's Environmental Screening Levels (**ESL**s) in shallow soil (<3 m bgs) and groundwater is not a source of drinking water.
(4) ND = Not detected

TABLE 6

ENVIRONMENTAL SITE CHARACTERIZATION BORING AND WELL LOCATIONS AND ELEVATIONS

Well/Casing ID	**Surface Elev.** ft. MSL	**Casing Elev.** ft. MSL	**Latitude** Degrees (N)	**Longitude** Degrees (W)
BG-1	43.33	-	37.83126586	122.27971459
BG-2	46.47	-	37.83157152	122.27901056
CPT-1	46.54	-	37.83157565	122.27899228
CPT-2	44.69	-	37.83159903	122.27956231
BE-1	44.96	-	37.83140061	122.27938970
BE-2	46.60	-	37.83141540	122.27892388
BE-3	48.48	-	37.83149306	122.27850527
BE-4	44.59	-	37.83154608	122.27931623
BE-5	43.84	-	37.83168812	122.27985103
BE-6	43.88	-	37.83163348	122.27970796
WCEW-1	42.09	41.73	37.83120830	122.27974368
MW-2	44.71	44.40	37.83131189	122.27912475
MW-3	45.95	45.49	37.83137871	122.27878729
MW-4	47.49	47.31	37.83145282	122.27838874
MW-5	42.86	42.51	37.83147167	122.27983901
MW-6	43.86	43.35	37.83183292	122.27986542
MW-7	45.24	44.75	37.83194879	122.27958321
MW-8	48.53	48.38	37.83210236	122.27875590
MWT-1	43.32	42.98	37.83138990	122.27976003
MWT-2	45.70	45.28	37.83146798	122.27918964
MWT-3	47.93	47.64	37.83151042	122.27863741
MWT-4	45.15	44.74	37.83156377	122.27949460
MWT-5	47.32	47.10	37.83159767	122.27883544
MWT-6	45.41	45.16	37.83175239	122.27951885
MWT-7a [1]	45.43	46.61	37.83164427	122.27918245
MWT-7b	45.60	45.69	37.83164424	122.27918258
MWT-8	47.43	47.23	37.83175750	122.27885735
MWT-9	46.14	45.78	37.83193666	122.27927581
MWT-10	47.38	47.22	37.83197238	122.27902606
MWT-11	45.50	46.63	37.83170803	122.27930198
MWT-12	46.10	47.97	37.83172816	122.27914423
MWT-13	46.30	48.16	37.83173814	122.27901118
MWT-14	47.80	47.85	37.83187913	122.27889705

Notes:

1) MWT-7 casing truncated by vandals. Elevation resurveyed on 11/10/04
2) Horizontal Datum: NAD 83
3) Vertical Datum: NAVD 88

TABLE 7

DEPTHS TO GROUNDWATER AT OAK WALK REDEVELOPMENT SITE

Well No.	**Date Measured**	**Casing Elevation ft. MSL**	**Groundwater Depth ft.**	**Groundwater Elevation ft. MSL**
WCEW-1		41.73		
	05/19/04		7.88	33.85
	11/08/04		7.13	34.60
MW-2		44.40		
	05/19/04		5.98	38.42
	11/08/04		4.94	39.46
MW-3		45.49		
	05/19/04		5.66	39.83
	11/08/04		5.89	39.60
MW-4		47.31		
	05/19/04		6.19	41.12
	11/08/04		5.81	41.50
MW-5		42.51		
	05/19/04		7.39	35.12
	11/08/04		7.09	35.42
MW-6		43.35		
	05/19/04		7.16	36.19
	11/08/04		6.93	36.42
MW-7		44.75		
	05/19/04		8.40	36.35
	11/08/04		8.10	36.65
MW-8		48.38		
	05/19/04		9.65	38.73
	11/08/04		9.05	39.33
MWT-1		42.98		
	05/19/04		8.43	34.55
	11/08/04		6.82	36.16
MWT-2		45.28		
	05/19/04		7.69	37.59
	11/08/04		7.17	38.11
MWT-3		47.64		
	05/19/04		7.64	40.00
	11/08/04		7.66	39.98
MWT-4		44.74		

Well No.	Date Measured	Casing Elevation ft. MSL	Groundwater Depth ft.	Groundwater Elevation ft. MSL
	05/19/04		8.43	36.31
	11/08/04		7.99	36.75
MWT-5		47.10		
	05/19/04		9.07	38.03
	11/08/04		8.84	38.26
MWT-6		45.21		
	05/19/04		9.05	36.16
	11/08/04		8.73	36.48
MWT-7 [1]		46.61		
	05/19/04		9.90	36.71
	11/08/04	45.69	8.60	37.09
MWT-8		47.23		
	05/19/04		9.65	37.58
	11/08/04		9.31	37.92
MWT-9		45.78		
	05/19/04		8.70	37.08
	11/08/04		8.23	37.55
MWT-10		47.22		
	05/19/04		9.53	37.69
	11/08/04		9.03	38.19
MWT-11		46.63		
	11/08/04		9.71	36.92
MWT-12		47.97		
	11/08/04		10.79	37.18
MWT-13		48.16		
	11/08/04		10.65	37.51
MWT-14		47.85		
	11/08/04		9.63	38.22

Notes:

1) MWT-7 casing truncated by vandals. Elevation resurveyed on 11/10/04

TABLE 8

RESULTS OF ANALYSES OF SOIL SAMPLES RECOVERED FROM SOIL BORINGS AT OAK WALK REDEVELOPMENT SITE

			Petroleum Hydrocarbons			**BTEX Compounds**				**Volatile Organic Compounds**													**PNAs**		
Sample ID	**Date Sampled**	**Depth BGS**	**Mineral Spirits**	**TPHd (diesel)**	**TPHg (gasoline)**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**	**Acetone**	**2-Butanone**	**n-Butylbenzene**	**sec-Butylbenzene**	**tert-Butylbenzene**	**Isopropylbenzene**	**p-Isopropylbenzene**	**p-Isopropyltoluene**	**n-Propylbenzene**	**1,2,4-Trimethylbenzene**	**1,3,5-Trimethylbenzene**	**Other VOCs by 8260B**	**Napthalene**	**2-Methylnapthalene**	**15 Other PNAs by 8270C**
		ft.	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	**GC/MS**	mg/Kg	mg/Kg	mg/Kg
Trenches - December 2003																									
T1 - 7.0	12/03/03	7.0	n/a	70	**530** [5]	ND	ND	8.3	4.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
T1 - 8.5	12/03/03	8.5	n/a	90	**1,400** [5]	ND	ND	10	1.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
T2 - 6.5	12/03/03	6.5	n/a	ND	3.8 [5]	0.026	ND	0.024	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
T2 - 8.5	12/03/03	8.5	n/a	1.5	**300** [5]	**1.1**	3.1	6.4	**27**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
T3 - 8.0	12/03/03	8.0	n/a	4.3	6.4	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	ND	n/a	n/a
T3 - 9.5	12/03/03	9.5	n/a	ND	ND	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
T4 - 10.5	12/03/03	10.5	n/a	ND	ND	ND	ND	ND	ND	ND	n/a	n/a	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	n/a	ND
T5 - 9.0	12/03/03	9	ND	70 [4]	**400**	ND	2.6	6.1	**36**	ND	n/a	n/a	ND	0.6	ND	0.88	ND	ND	3.9	25	7.6	ND	**4.1**	**1.8**	ND
T6 - 8.5	12/02/03	8.5	n/a	70	**3,000** [5]	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
T7 - 9.0	12/02/03	9.0	n/a	ND	ND	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
T8 - 8.5	12/02/03	8.5	n/a	**150**	**820** [5]	ND	ND	ND	ND	ND	n/a	n/a	0.51	0.81	ND	ND	ND	ND	ND	ND	ND	ND	ND	n/a	ND
Borings and Wells 2004																									
BE-1-5.0	04/02/04	5.0	62 [3]	ND	**540**	ND	ND	5.1	1.6	ND	ND	ND	8.4	3.1	ND	2.7	ND	0.29	13	12	3.8	ND [6]	**18**	**3.2**	ND [9]
BE-1-10.0	04/02/04	10.0	**130** [3]	ND	**3,600**	**13**	**140**	**80**	**430**	ND	ND	ND	3.7	ND	ND	1.4	ND	ND	6.2	32	12	ND	**7.5**	ND	ND
BE-1-13.5	04/02/04	13.5	n/a [2]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BE-1-15.0	04/02/04	15.0	ND	ND	7.9	0.096	0.029	0.12	0.6	0.011	ND	ND	0.014	ND	ND	ND	ND	ND	0.027	0.054	0.013	ND	0.12	ND	ND
BE-1-20.0	04/02/04	20.0	ND	ND	2.5	0.027	0.011	0.016	0.033	ND	0.031	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BE-1-25.0	04/02/04	25.0	ND	ND	ND	ND	0.0053	ND	0.011	0.012	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BE-2-5.0	04/02/04	5.0	27 [3]	ND	**340**	**1.3**	ND	5.7	**26**	ND	ND	ND	9.1	2.4	ND	2.5	ND	ND	12	37	14	ND	**18**	**1.4**	ND
BE-2-10.0	04/02/04	10.0	24 [3]	ND	**820**	**7.4**	**33.0**	16.0	**87.0**	ND	ND	ND	3.3	ND	ND	1.3	ND	ND	5.7	29	10	ND	**6.8**	**0.31**	ND
BE-2-15.0	04/02/04	15.0	ND	2.5 [8]	5.0	0.052	ND	0.027	ND	0.075	0.14	ND	0.046	0.019	ND	0.0097	ND	ND	0.046	ND	ND	ND	ND	ND	ND
BE-2-20.0	04/02/04	20.0	ND	2.4 [7]	ND	ND	ND	ND	0.0086	0.11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BE-2-25.0	04/02/04	25.0	ND	ND	ND	0.053	0.051	0.038	0.15	0.018	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0069	ND	ND	ND	ND	ND
BE-3-5.0	04/02/04	5.0	ND	1.1 [8]	ND	ND	ND	ND	ND	ND	0.11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BE-3-10.0	04/02/04	10.0	ND	ND	ND	ND	ND	ND	ND	ND	0.025	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BE-3-15.0	04/02/04	15.0	ND	1.3 [7]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BE-3-20.0	04/02/04	20.0	**190**	ND	**1,600** [5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

			Petroleum Hydrocarbons			BTEX Compounds				Volatile Organic Compounds													PNAs		
Sample ID	**Date Sampled**	**Depth BGS** *ft.*	**Mineral Spirits** mg/Kg	**TPHd (diesel)** mg/Kg	**TPHg (gasoline)** mg/Kg	**Benzene** mg/Kg	**Toluene** mg/Kg	**Ethylbenzene** mg/Kg	**Total Xylenes** mg/Kg	**MTBE** mg/Kg	**Acetone** mg/Kg	**2-Butanone** mg/Kg	**n-Butylbenzene** mg/Kg	**sec-Butylbenzene** mg/Kg	**tert-Butylbenzene** mg/Kg	**Isopropylbenzene** mg/Kg	**p-Isopropylbenzene** mg/Kg	**p-Isopropyltoluene** mg/Kg	**n-Propylbenzene** mg/Kg	**1,2,4-Trimethylbenzene** mg/Kg	**1,3,5-Trimethylbenzene** mg/Kg	**Other VOCs by 8260B** **GC/MS**	**Napthalene** mg/Kg	**2-Methylnapthalene** mg/Kg	**15 Other PNAs by 8270C** mg/Kg
BE-4-5.0	04/01/04	5.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BE-4-9.5	04/01/04	9.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BE-4-14.5	04/01/04	14.5	ND	1.3[8]	2.8	0.006	ND	0.047	0.024	ND	0.04	ND	0.081	0.027	ND	0.017	0.0099	ND	0.081	0.12	0.005	ND	0.086	ND	ND
BE-4-19.5	04/01/04	19.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BE-5-5.0	04/01/04	5.0	ND	4.5[7]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BE-5-10.0	04/01/04	10.0	14	ND	**340**[5]	ND	ND	ND	ND	ND	ND	ND	0.092	0.046	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BE-5-14.5	04/01/04	14.5	ND	2.5[7]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BE-5-19.5	04/01/04	19.5	ND	12[7]	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BE-6-4.0	04/01/04	4.0	ND	22[7]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BE-6-9.5	04/01/04	9.5	ND	**1,200**[7]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0066	ND	ND
BE-6-15.0	04/01/04	15.0	ND	11[8]	**130**[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BE-6-20.0	04/01/04	20.0	ND	4.9[8]	2.6[5]	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BG-1-5	04/06/04	5.0	ND	ND	1.30	ND	ND	ND	ND	ND	0.046	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1	ND
BG-1-10	04/06/04	10.0	35[3]	ND	**870**	ND	9.0	13	**75**	ND	ND	ND	2.6	ND	ND	1.1	ND	ND	4.4	23	8.1	ND	**4.2**	**3.5**	ND
BG-1-15	04/06/04	15.0	ND	3.7[8]	**270**	**1.1**	0.99	4.9	**24**	ND	0.065	ND	0.028	ND	ND	ND	ND	ND	0.025	0.160	0.056	ND	0.055	ND	ND
BG-1-20	04/06/04	20.0	ND	ND	ND	0.0062	ND	ND	ND	0.005	0.044	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BG-1-25	04/06/04	25.0	ND	ND	ND	ND	ND	0.0051	0.023	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BG-1-30	04/06/04	30.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	n/a	n/a
BG-1-35	04/06/04	35.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BG-2-5.0	04/06/04	5.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BG-2-10.5	04/06/04	10.5	47[3]	ND	**1,200**	ND	ND	16	**80**	ND	ND	ND	6.0	ND	ND	2.4	ND	ND	10	50	17	ND	**8.5**	**3**	ND
BG-2-15.0	04/06/04	15.0	ND	ND	ND	ND	ND	ND	ND	ND	0.028	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BG-2-18.0	04/06/04	18.0	ND	ND	ND	ND	ND	ND	ND	0.020	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BG-2-21.0	04/06/04	21.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BG-2-25.0	04/06/04	25.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BG-2-30.0	04/06/04	30.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BG-2-35.0	04/06/04	35.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MWT-1-4.0	04/02/04	4.0	ND	ND	ND	ND	ND	ND	0.0063	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-1-11.5	04/02/04	11.5	74	ND	**2,400**[5]	ND	ND	ND	ND	ND	ND	ND	ND	0.023	0.022	ND	ND	ND	ND	ND	ND	ND	ND	**1.7**	ND
MWT-1-15.0	04/02/04	15.0	ND	2.8[8]	ND	ND	ND	ND	ND	ND	ND	ND	0.0051	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-1-20[11]	04/02/04	20.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-2-5.5	04/02/04	5.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-2-10.0	04/02/04	10.0	12[3]	ND	**440**	ND	ND	2.3	6.8	ND	ND	ND	1.8	0.44	ND	0.500	ND	ND	2.4	10	3.8	ND	**1.2**	**0.93**	ND
MWT-2-15.0	04/02/04	15.0	ND	8.0[8]	**120**	ND	ND	0.67	1.2	ND	0.099	0.027	0.035	0.0079	ND	0.0055	ND	ND	0.032	0.18	0.047	ND	0.08	0.14	ND
MWT-2-20.0	04/02/04	20.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

			Petroleum Hydrocarbons			BTEX Compounds				Volatile Organic Compounds													PNAs		
Sample ID	**Date Sam-pled**	**Depth BGS** *ft.*	**Min-eral Spirits** mg/Kg	**TPHd (die-sel)** mg/Kg	**TPHg (gaso-line)** mg/Kg	**Ben-zene** mg/Kg	**Tolu-ene** mg/Kg	**Ethyl-ben-zene** mg/Kg	**Total Xy-lenes** mg/Kg	**MTBE** mg/Kg	**Ace-tone** mg/Kg	**2-Bu-ta-none** mg/Kg	**n-Bu-tylben-zene** mg/Kg	**sec-Bu-tylben-zene** mg/Kg	**tert-Bu-tylben-zene** mg/Kg	**Isopro-pylben-zene** mg/Kg	**p-Isopro-pylben-zene** mg/Kg	**p-Isopro-pyltol-uene** mg/Kg	**n-Pro-pylben-zene** mg/Kg	**1,2,4-Tri-methyl-benzene** mg/Kg	**1,3,5-Tri-methyl-benzene** mg/Kg	**Other VOCs by 8260B** **GC/MS**	**Naptha-lene** mg/Kg	**2-Methyl-napthalene** mg/Kg	**15 Other PNAs by 8270C** mg/Kg
MWT-3-5.0	04/02/04	5.0	ND	1.2[7]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-3-10.0	04/02/04	10.0	ND	7.5[8]	7.0[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.026	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-3-15.0	04/02/04	15.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-3-20.0	04/02/04	20.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-4-4.0	04/01/04	4.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-4-10.0	04/01/04	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-4-15.0	04/01/04	15.0	**150**	ND	**120**[5]	ND	ND	ND	ND	ND	ND	ND	0.026	0.015	0.0094	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-4-20.0	04/01/04	20.0	ND	2.4[8]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-5-5.0	04/02/04	5.0	ND	1.3[4]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-5-10.0	04/02/04	10.0	ND	1.1[4]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-5-15.0	04/02/04	15.0	ND	7.0[7]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-5-20.0	04/02/04	20.0	ND	7.6[7]	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MWT-6-5.0	04/01/04	5.0	ND	2.1[4]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-6-10.5	04/01/04	10.5	51	ND	**860[5]**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-6-14.5	04/01/04	14.5	ND	1.4[8]	9.0[5]	ND	ND	ND	ND	ND	0.064	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-6-19.5	04/01/04	19.5	ND	8.5[8]	13.0[5]	ND	ND	ND	0.09	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-7-5.0	04/01/04	5.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-7-10.0	04/01/04	10.0	ND	3.5[8]	4.40[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-7-15.0	04/01/04	15.0	ND	3.4[8]	7.20[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-7-20.0	04/01/04	20.0	ND	ND	ND	ND	ND	ND	ND	ND	0.088	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-8-5.5	04/02/04	5.5	ND	1.5[4]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-8-10.5	04/02/04	10.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-8-15.0	04/02/04	15.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MWT-8-18.0	04/02/04	18.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-9-4.0	04/01/04	4.0	ND	3.3[7]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-9-9.5	04/01/04	9.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-9-14.5	04/01/04	14.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MWT-9-19.5	04/01/04	19.5	ND	14[4]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-10-5.0	04/01/04	5.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-10-10.0	04/01/04	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-10-15.0	04/01/04	15.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MWT-10-20	04/01/04	20.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-11-5	11/05/04	5.0	ND	1.1[12]	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MWT-11-10	11/05/04	10.0	33[13]	ND	**170**[14]	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MWT-11-15	11/05/04	15.0	ND	1.4[12]	27[14]	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MWT-11-19.5	11/05/04	19.5	ND	ND	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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			Petroleum Hydrocarbons			BTEX Compounds				Volatile Organic Compounds													PNAs		
Sample ID	**Date Sampled**	**Depth BGS** *ft.*	**Mineral Spirits** mg/Kg	**TPHd (diesel)** mg/Kg	**TPHg (gasoline)** mg/Kg	**Benzene** mg/Kg	**Toluene** mg/Kg	**Ethylbenzene** mg/Kg	**Total Xylenes** mg/Kg	**MTBE** mg/Kg	**Acetone** mg/Kg	**2-Butanone** mg/Kg	**n-Butylbenzene** mg/Kg	**sec-Butylbenzene** mg/Kg	**tert-Butylbenzene** mg/Kg	**Isopropylbenzene** mg/Kg	**p-Isopropylbenzene** mg/Kg	**p-Isopropyltoluene** mg/Kg	**n-Propylbenzene** mg/Kg	**1,2,4-Trimethylbenzene** mg/Kg	**1,3,5-Trimethylbenzene** mg/Kg	**Other VOCs by 8260B** **GC/MS**	**Napthalene** mg/Kg	**2-Methylnapthalene** mg/Kg	**15 Other PNAs by 8270C** mg/Kg
MWT-12-5	11/05/04	5.0	ND	ND	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MWT-12-10	11/05/04	10.0	ND	ND	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MWT-12-15	11/05/04	15.0	ND	ND	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MWT-12-19.5	11/05/04	19.5	ND	ND	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MWT-13-5	11/05/04	5.0	ND	ND	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MWT-13-10	11/05/04	10.0	40[13]	ND	**520**[14]	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MWT-13-15	11/05/04	15.0	ND	ND	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MWT-13-19	11/05/04	19.0	ND	ND	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MWT-14-5	11/05/04	5.0	ND	ND	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MWT-14-10	11/05/04	10.0	**110**[13]	ND	**360**[14]	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MWT-14-15	11/05/04	15.0	12[13]	ND	1.2[14]	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MWT-14-19.5	11/05/04	19.5	15[13]	ND	82[14]	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MW-2-5.0	04/07/04	5.0	29[3]	ND	**860**	ND	ND	19	**87**	ND	ND	ND	2.9	ND	ND	0.098	ND	ND	4.4	27	9.8	ND	**7.2**	**1.1**	ND
MW-2-10.0	04/07/04	10.0	16[3]	ND	**530**	ND	2.4	9.2	**47**	ND	ND	ND	2.1	ND	ND	0.77	ND	ND	3.4	21	7.4	ND	**5.0**	0.23	ND
MW-2-15.0	04/07/04	15.0	ND	ND	ND	0.03	ND	0.021	0.029	ND	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0085	ND	ND
MW-2-20.0	04/07/04	20.0	ND	ND	ND	ND	0.0062	ND	0.037	0.12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-3-5.0	04/07/04	5.0	Lost	Core																					
MW-3-10.0	04/07/04	10.0	Lost	Core																					
MW-3-14.0	04/07/04	14.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-3-20.0	04/07/04	20.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4-5.5	4/30/2004	5.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4-10.5	4/30/2004	10.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4-15.5	4/30/2004	15.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4-19.5	4/30/2004	19.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-5-6.0	4/30/2004	6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-5-10.0	4/30/2004	10.0	27	ND	**1,000**[5]	ND	ND	0.55	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-5-15.5	4/30/2004	15.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-5-19.5	4/30/2004	19.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-6-5.0	04/07/04	5.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-6-10.0	04/07/04	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-6-15.0	04/07/04	15.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MW-6-20.0	04/07/04	20.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-7-5.0	04/06/04	5.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-7-10.0	04/06/04	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-7-15.0	04/06/04	15.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MW-7-20.0	04/06/04	20.0	ND	7.9[4]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

			Petroleum Hydrocarbons			BTEX Compounds				Volatile Organic Compounds													PNAs		
Sample ID	Date Sampled	Depth BGS ft.	Mineral Spirits mg/Kg	TPHd (diesel) mg/Kg	TPHg (gasoline) mg/Kg	Benzene mg/Kg	Toluene mg/Kg	Ethylbenzene mg/Kg	Total Xylenes mg/Kg	MTBE mg/Kg	Acetone mg/Kg	2-Butanone mg/Kg	n-Butylbenzene mg/Kg	sec-Butylbenzene mg/Kg	tert-Butylbenzene mg/Kg	Isopropylbenzene mg/Kg	p-Isopropylbenzene mg/Kg	p-Isopropyltoluene mg/Kg	n-Propylbenzene mg/Kg	1,2,4-Trimethylbenzene mg/Kg	1,3,5-Trimethylbenzene mg/Kg	Other VOCs by 8260B GC/MS	Napthalene mg/Kg	2-Methylnapthalene mg/Kg	15 Other PNAs by 8270C mg/Kg
MW-8-5.0	04/07/04	5.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-8-10.0	04/07/04	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-8-15.0	04/06/04	15.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MW-8-20.0	04/06/04	20.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

(1) ND = Not Detected above the Method Detection Limit (MDL).
(2) n/a = Not analyzed
(3) The laboratory reports that the detected hydrocarbon does not match its mineral spirits standard.
(4) The laboratory reports that the detected hydrocarbon does not match its Diesel standard.
(5) The laboratory reports that the detected hydrocarbon does not match its standard for gasoline.
(6) Laboratory Method EPA 8260B analyzes for 108 Volatile Organic Compounds. Only those found are listed separately in this table.
(7) The laboratory reports that the compound reported reflects individual or discrete unidentified peaks detected in the diesel range; the pattern does not match a typical fuel standard.
(8) The laboratory reports that the hydrocarbon reported is in the early Diesel range and does not match the laboratory's Diesel standard.
(9) Laboratory Method EPA 8270C analyzes for 17 Polynuclear Aromatics. Only those found are listed separately in this table.
(10) Concentrations in **bold** script exceed the 2005 San Francisco Bay Area RWQCB's Environmental Screening Levels in shallow soils (<3m bgs) where groundwater is not a source of drinking water.
(11) MWT-1-20.0 was also analyzed for 65 Semi-volatile chemicals by GC/MD - EPA8270C. None were detected in the sample.
(12) Quantity of unknown hydrocarbon(s) in sample based on Diesel
(13) Quantity of unknown hydrocarbon(s) in sample based on Mineral Spirits
(14) Quantity of unknown hydrocarbon(s) in sample based on Gasoline

TABLE 9

RESULTS OF ANALYSES FOR 17 CAM METALS IN SOIL SAMPLES RECOVERED FROM SELECTED SOIL BORINGS OAK WALK REDEVELOPMENT SITE

Sample No.	**Date Sampled**	**Depth BGS** ft.	**Antimony** mg/Kg	**Arsenic** mg/Kg	**Barium** mg/Kg	**Beryllium** mg/Kg	**Cadmium** mg/Kg	**Chromium III** mg/Kg	**Chromium VI** mg/Kg	**Cobalt** mg/Kg	**Copper** mg/Kg	**Lead** mg/Kg	**Molybdenum** mg/Kg	**Nickel** mg/Kg	**Selenium** mg/Kg	**Silver** mg/Kg	**Thallium** mg/Kg	**Vanadium** mg/Kg	**Zinc** mg/Kg	**Mercury** mg/Kg
BE-4-5.5	04/01/04	5.5	ND	2.6	110	ND	ND	27	n/a	2.6	17	4.3	ND	24	ND	ND	ND	22	31	ND
BE-1-13.5	04/02/04	13.5	ND	1.3	110	ND	ND	35	ND	4.9	12	4.1	ND	46	ND	ND	ND	24	28	0.053
BE-3-19.5	04/02/04	19.5	ND	2.1	150	ND	ND	30	n/a	6.9	19	5.4	ND	26	ND	ND	ND	25	32	ND

Notes:

(1) ND = Not Detected above the Method Detection Limit (MDL).

(2) Concentrations in **bold** script exceed the 2005 San Francisco Bay Area RWQCB's Environmental Screening Levels in shallow soil (<3m bgs) and where groundwater is not a source of drinking water

TABLE 10

RESULTS OF ANALYSES OF GROUNDWATER SAMPLES RECOVERED FROM EXPLORATORY TRENCHES AND WELLS OAK WALK REDEVELOPMENT SITE

		Petroleum Hydrocarbons			**BTEX Compounds**				**Volatile Organic Compounds**												**PNAs**		
Sample ID	**Date Sampled**	**TPHd (diesel)** µg/L	**Mineral Spirits** µg/L	**TPHg (gasoline)** µg/L	**Benzene** µg/L	**Toluene** µg/L	**Ethylbenzene** µg/L	**Total Xylenes** µg/L	**MTBE** µg/L	**Acetone** µg/L	**2-Butanone** µg/L	**n-Butylbenzene** µg/L	**sec-Butylbenzene** µg/L	**tert-Butylbenzene** µg/L	**Isopropylbenzene** µg/L	**p-Isopropyl-benzene** µg/L	**p-Isopropyltoluene** µg/L	**n-pro--pyl-benzene** µg/L	**1,2,4-tri-methylbenzene** µg/L	**1,3,5-tri methylbenzene** µg/L	**Naphthalene** µg/L	**2-Methylnapthalene** µg/L	**15 Other PNAs by 8270C** µg/L
Trenches December 2003																							
T3-W	12/03/03	**2300**[3]	n/a	**6300**[5]	ND	ND	31	30	ND	ND	ND	100	47	ND	ND	23	ND	230	320	110	12	n/a	n/a
T7-W	12/02/03	ND	n/a	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	n/a	n/a	n/a
Wells 2004																							
WCEW-1	5/19/04	ND	**600**[6]	**3700**	**90**	0.66	48	56	170	ND	ND	ND	8.7	ND	12	1.8	ND	31	14	5.6	8.3	ND	ND
MW-2	5/19/04	ND	**2100**[6]	**49000**	**7900**	**2100**	**980**	**8300**	770	ND	ND	100	ND	ND	ND	ND	ND	ND	1600	460	**490**	ND	ND
MW-3	5/19/04	ND	**420**[6]	**1300**	ND	ND	ND	1.1	5.8	ND	ND	14	ND	ND	ND	ND	ND	ND	ND	12	ND	ND	ND
MW-4	5/19/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-5	5/19/04	ND	**330**[6]	**2600**[5]	ND	ND	ND	ND	17	ND	ND	ND	ND	2.5	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-6	5/19/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-7	5/19/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-8	5/19/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-1	5/19/04	ND	74[6]	350	ND	ND	ND	ND	ND	ND	ND	8.0	ND	ND	1.0	ND	ND	1.0	ND	ND	ND	ND	ND
MWT-2	5/19/04	ND	**3200**[6]	**28000**	**460**	ND	**1200**	**2700**	66	ND	ND	100	ND	ND	ND	ND	ND	310	1600	490	**340**	ND	ND
MWT-3	5/19/04	ND	**450**	**1000**[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND

		Petroleum Hydrocarbons			BTEX Compounds				Volatile Organic Compounds												PNAs		
Sample ID	**Date Sampled**	**TPHd (diesel)** µg/L	**Mineral Spirits** µg/L	**TPHg (gasoline)** µg/L	**Benzene** µg/L	**Toluene** µg/L	**Ethylbenzene** µg/L	**Total Xylenes** µg/L	**MTBE** µg/L	**Acetone** µg/L	**2-Butanone** µg/L	**n-Butylbenzene** µg/L	**sec-Butylbenzene** µg/L	**tert-Butylbenzene** µg/L	**Isopropylbenzene** µg/L	**p-Isopropylbenzene** µg/L	**p-Isopropyltoluene** µg/L	**n-pro--pylbenzene** µg/L	**1,2,4-trimethylbenzene** µg/L	**1,3,5-tri methylbenzene** µg/L	**Naphthalene** µg/L	**2-Methylnapthalene** µg/L	**15 Other PNAs by 8270C** µg/L
MWT-4	5/19/04	ND	88 ^{6}	**540** ^{5}	ND	ND	ND	ND	ND	ND	ND	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-5	5/19/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-6	5/19/04	ND	**980**	**4200** ^{5}	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.4	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-7	5/19/04	ND	**3200**	**56000** ^{5}	0.78	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-8	5/19/04	ND	**370**	**800** ^{5}	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.6	ND	ND	ND	ND	0.70	ND	ND	ND	ND
MWT-9	5/19/04	ND	ND	ND	ND	ND	ND	ND	0.79	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-10	5/19/04	ND	ND	59 ^{5}	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MWT-11	11/6/04	ND	**3500** ^{8}	**930** ^{9}	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	ND	ND	ND
MWT-12	11/6/04	ND	**830** ^{8}	**1400** ^{9}	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	ND	ND	ND
MWT-13	11/6/04	ND	**440** ^{8}	**1100** ^{9}	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	ND	ND	ND
MWT-14	11/6/04	ND	**1200** ^{8}	**4600** ^{9}	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	ND	ND	ND

Notes:

(1) ND = Not Detected above the Method Detection Limit (MDL).
(2) n/a = Not Analyzed.
(3) The laboratory reports that the detected hydrocarbon does not match its diesel standard.
(4) Laboratory Method 8260B looks for 66 Volatile Organic Comppunds. Only those detected are presented on this table.
(5) The laboratory reports that the detected hydrocarbon does not match its gasoline standard.
(6) The laboratory reports that the detected hydrocarbon does not match its mineral spirits standard.
(7) Concentrations in **bold** script exceed the 2005 San Francisco Bay Area RWQCB's Environmental Screening Levels for shallow soils (<3m bgs) and where groundwater is not a source of drinking water.
(8) Quantity of unknown hydrocarbons in sample based on Mineral Spirits
(9) Quantity of unknown hydrocarbons in sample based on gasoline

TABLE 11

RWQCB TIER 1 CONCENTRATION LIMITS (ESLs)
FOR CHEMICALS OF CONCERN IN SOIL AND GROUNDWATER

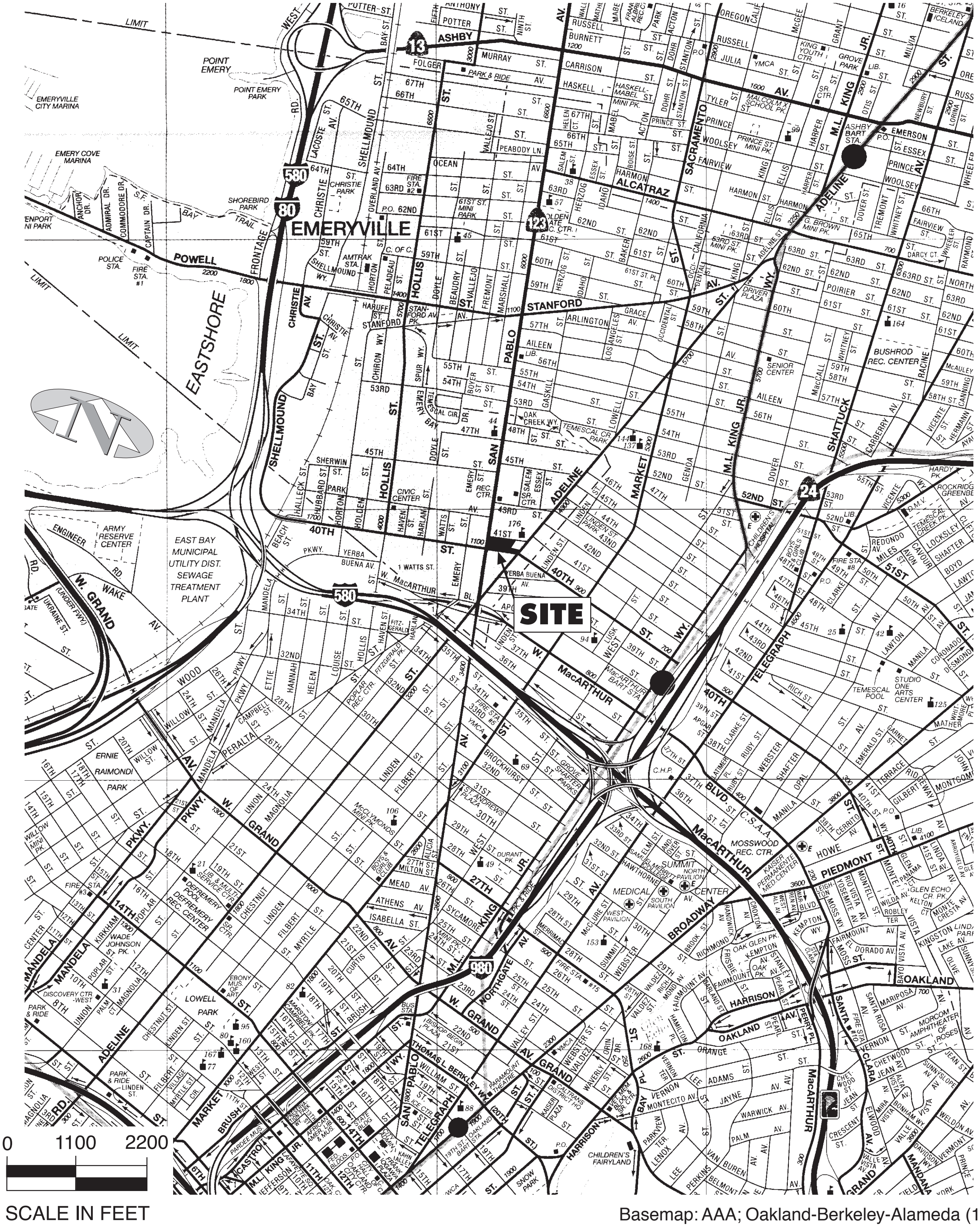
*In shallow soils (<3m bgs) at sites where groundwater is **not** a source of drinking water.*

Chemical of Concern	**Limiting Concentrations to Protect Human Health**		
	Soil		***Groundwater***
	Residential mg/Kg	Commercial mg/Kg	Resid. or Comm. µg/L
Acetone	0.50	0.50	1,500
Aroclor® 1260	0.22	0.74	0.014
Antimony	6.1	40	30
Arsenic	5.5	5.5	36
Barium	750	1,500	1,000
Benzene	0.18	0.38	46
Beryllium	4.0	8.0	2.7
2-Butatone (Metyl Ethyl Ketone)	13	13	14,000
n-Butylbenzene (1-Phenylbutane)	ne	ne	ne
sec-Butylbenzene (Butyl Benzene)	ne	ne	ne
tert-Butylbenzene	ne	ne	ne
Cadmium	1.7	7	1.1
Chromium III	750	750	180
Chromium VI	1.8	1.8	11
Cobalt	40	80	3.0
Copper	230	230	3.1
Ethyl benzene	32	32	290
Lead	150	750	2.5
Mercury	3.7	10	0.012
2-Methylnaphthalene	0.25	0.25	2.1
4-Methylphenol	ne	ne	ne
Methyl Teritary Butyl Ether	2.0	5.6	1,800
Methylene Chloride	0.52	1.5	2,200
Molybdenum	40	40	240
Naphthalene	0.46	1.5	24

Chemical of Concern	Limiting Concentrations to Protect Human Health		
	Soil		*Groundwater*
	Residential mg/Kg	Commercial mg/Kg	Resid. or Comm. µg/L
Nickel	150	150	8.2
Isopropylbenzene (Cumene)	ne	ne	ne
p-Isopropylbenzene	ne	ne	ne
p-Isopropyltoluene (p-Cymene)	ne	ne	ne
n-Propylbenzene (Isocumene)	ne	ne	ne
Selinium	10	10	5.0
Silver	20	40	0.19
Thallium	1.0	13	20
Toluene	9.3	9.3	130
TRPH (Total Recoverable Petroleum Hydrocarbons)	100	500	640
TPHd (Diesel)	100	500	640
TPHms (Mineral Spirits)	100	500	640
TPHg (Gasoline)	100	400	500
1,2,4 Trimethylbenzene	ne	ne	ne
1,3,5 Trimethylbenzene	ne	ne	ne
Vanadium	110	200	19
Xylene Isomers (Total)	11.0	11.0	100
Zinc	600	600	81

Note:

ne = not established in the RWQCB ESL guidance document (California Regional Water Quality Control Board - San Francisco Bay Region 2005).



Basemap: AAA; Oakland-Berkeley-Alameda (12/02)

SITE LOCATION

Oak Walk Redevelopmen Site

Emeryville, California

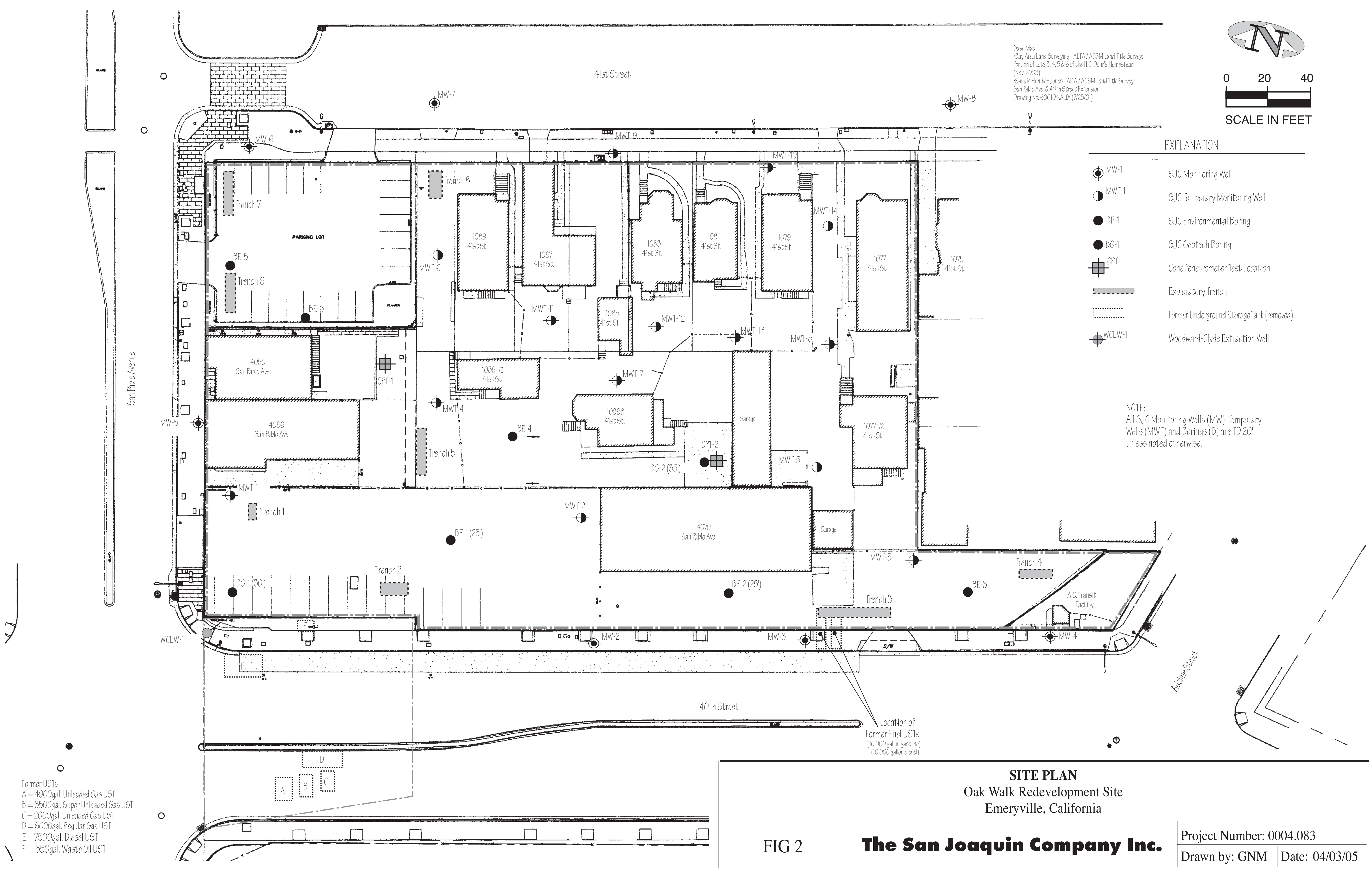
FIG 1

The San Joaquin Company Inc.

Project Number: 0004.083

Drawn by: GNM

Date: 04/05/05



Base Map:
•Bay Area Land Surveying - ALTA / ACSM Land Title Survey; Portion of Lots 3, 4, 5 & 6 of the H.C. Dohr's Homestead (Nov. 2003)
•Sandis Humber Jones - ALTA / ACSM Land Title Survey; San Pablo Ave. & 40th Street Extension Drawing No. 600104.ALTA (7/25/01)

NOTE:
All SJC Monitoring Wells (MW), Temporary Wells (MWT) and Borings (B) are TD 20' unless noted otherwise.

Former USTs
A = 4000gal. Unleaded Gas UST
B = 3500gal. Super Unleaded Gas UST
C = 2000gal. Unleaded Gas UST
D = 6000gal. Regular Gas UST
E = 7500gal. Diesel UST
F = 550gal. Waste Oil UST

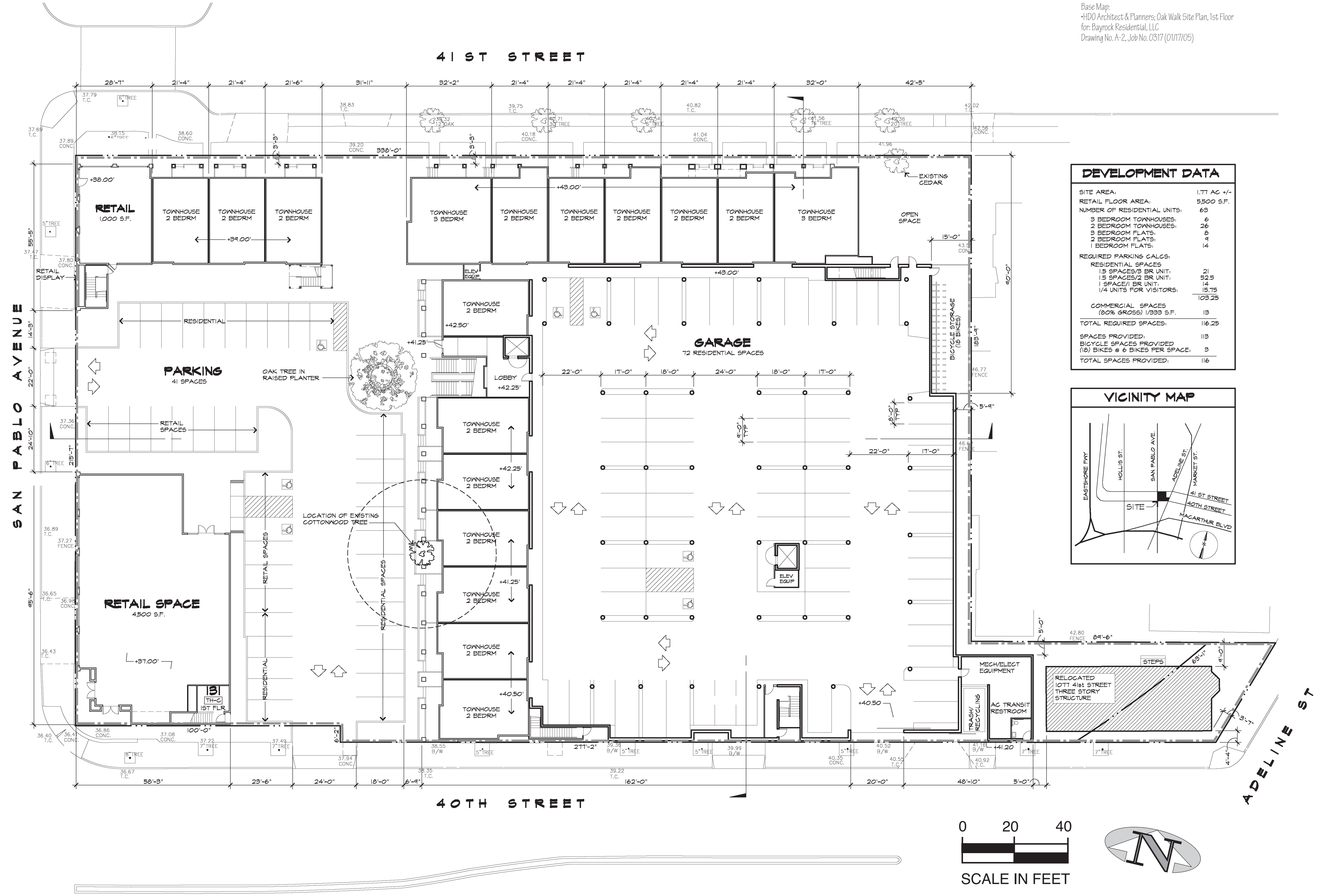
SITE PLAN
Oak Walk Redevelopment Site
Emeryville, California

FIG 2

The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 04/03/05

Base Map:
•HDO Architect & Planners; Oak Walk Site Plan, 1st Floor
for: Bayrock Residential, LLC
Drawing No. A-2, Job No. 0317 (01/17/05)



DEVELOPMENT DATA

SITE AREA:	1.77 AC +/-
RETAIL FLOOR AREA:	5,500 S.F.
NUMBER OF RESIDENTIAL UNITS:	63
3 BEDROOM TOWNHOUSES:	6
2 BEDROOM TOWNHOUSES:	26
3 BEDROOM FLATS:	8
2 BEDROOM FLATS:	9
1 BEDROOM FLATS:	14
REQUIRED PARKING CALCS:	
RESIDENTIAL SPACES	
1.5 SPACES/3 BR UNIT:	21
1.5 SPACES/2 BR UNIT:	52.5
1 SPACE/1 BR UNIT:	14
1/4 UNITS FOR VISITORS:	15.75
	103.25
COMMERCIAL SPACES (80% GROSS) 1/333 S.F.	13
TOTAL REQUIRED SPACES:	116.25
SPACES PROVIDED:	113
BICYCLE SPACES PROVIDED (18) BIKES @ 6 BIKES PER SPACE:	3
TOTAL SPACES PROVIDED:	116

revisions	by

HDO
architects • planners
2950 camino diablo
suite 110
walnut creek, ca
94597
(925) 256-6042

OAK WALK
EMERYVILLE, CALIFORNIA
FOR:
BAYROCK RESIDENTIAL, LLC

drawing
SITE PLAN
FIRST FLOOR

drawn
TJ
checked
RH
date
1/17/05
scale
1/16" = 1'-0"
job no.

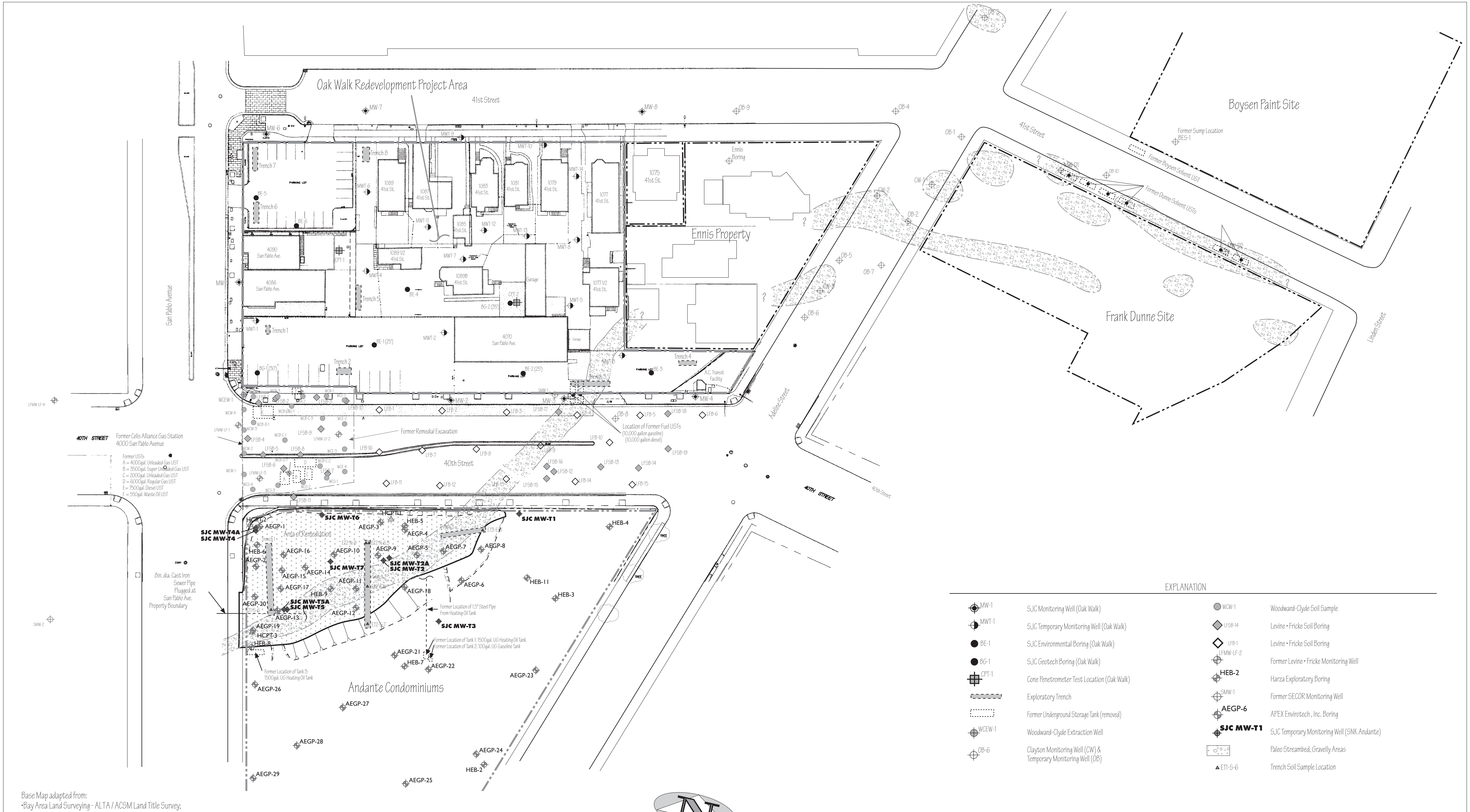
SITE PLAN - FIRST FLOOR
1/16" = 1'-0"

PLAN OF PROPOSED REDEVELOPMENT
Oak Walk Redevelopment Site
Emeryville, California

FIG 3

The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 08/04/04



Base Map adapted from:
•Bay Area Land Surveying - ALTA / ACSM Land Title Survey;
Portion of Lots 3, 4, 5 & 6 of the H.C. Dohr's Homestead
(Nov. 2003)
•Sandis Humber Jones - ALTA / ACSM Land Title Survey;
San Pablo Ave. & 40th Street Extension
Drawing No. 600104.ALTA (7/25/01)
•Clayton Group Services - Monitoring Well Locations
Former Dunner Paints 1007 41st St. Oakland,
Figure 2, Project No. 70-03365.04 (12/05/03)
•Clayton Group Services - Historical Subject Property Plan
1007 41st St & 4050 Adeline St., Oakland,
Figure 3, Project No. 70-03365.00 (09/06/02)

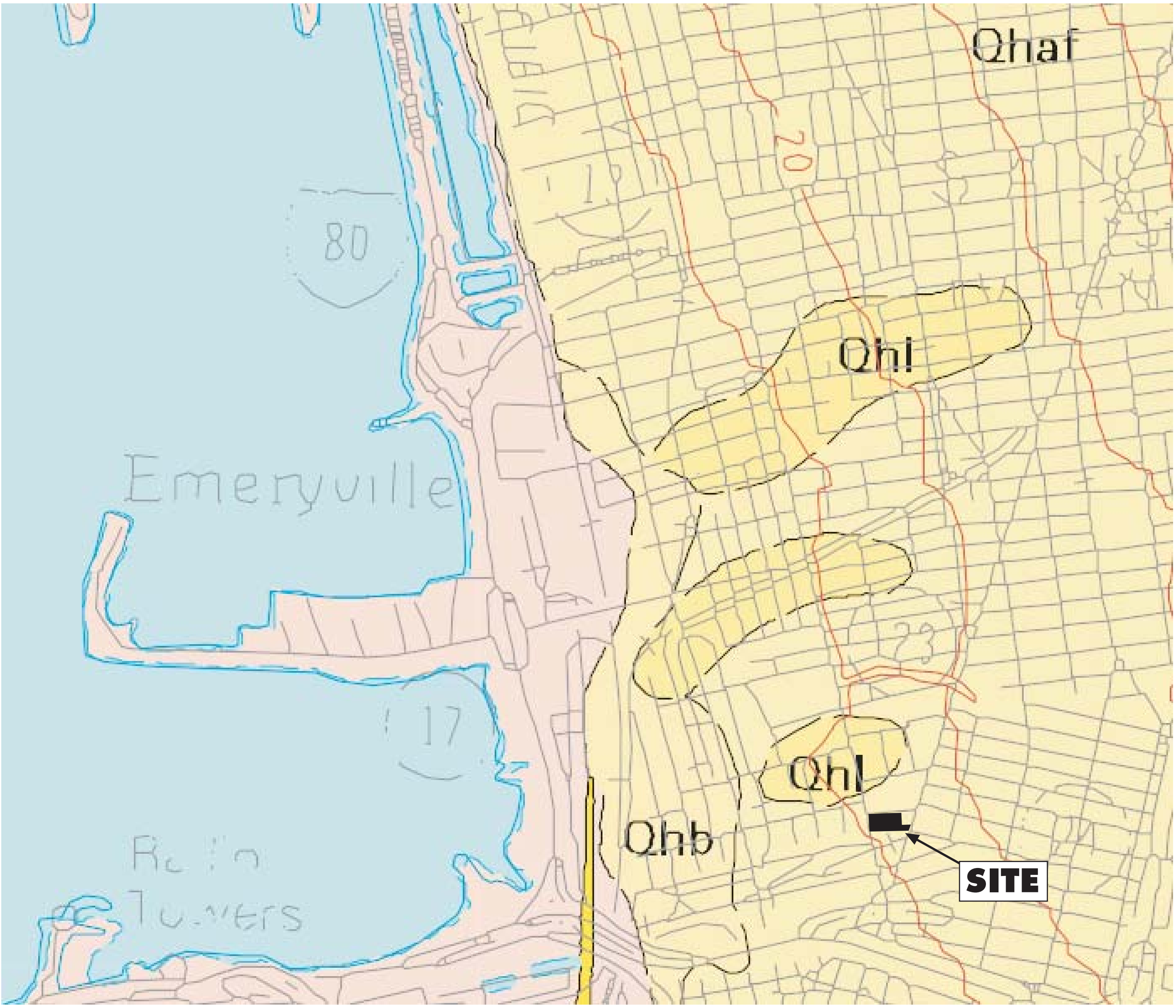
UNAUTHORIZED RELEASE SITES IN NEIGHBORHOOD OF SUBJECT PROPERTY

Oak Walk Redevelopmen Sitet
Emeryville, California

FIG 4

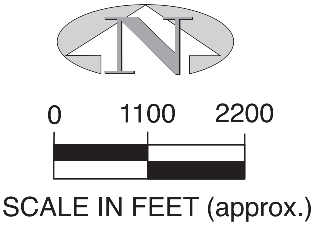
The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 04/07/05



EXPLANATION

Qhl:	Holocene Natural Levee Deposits
Qhb:	Holocene Basin Deposits
Qhaf:	Holocene Alluvial Fan and Fluvial Deposits



Basemap: Helley, E. J., and Graymer, R. W. (1997);
Quaternary Geology of Alameda County and Parts of Contra Costa, Santa Clara, San Mateo, San Francisco, Stanislaus and San Joaquin Counties, California: A Digital Data Base.
Open File 97-97. United States Geological Survey, Washington, D.C.

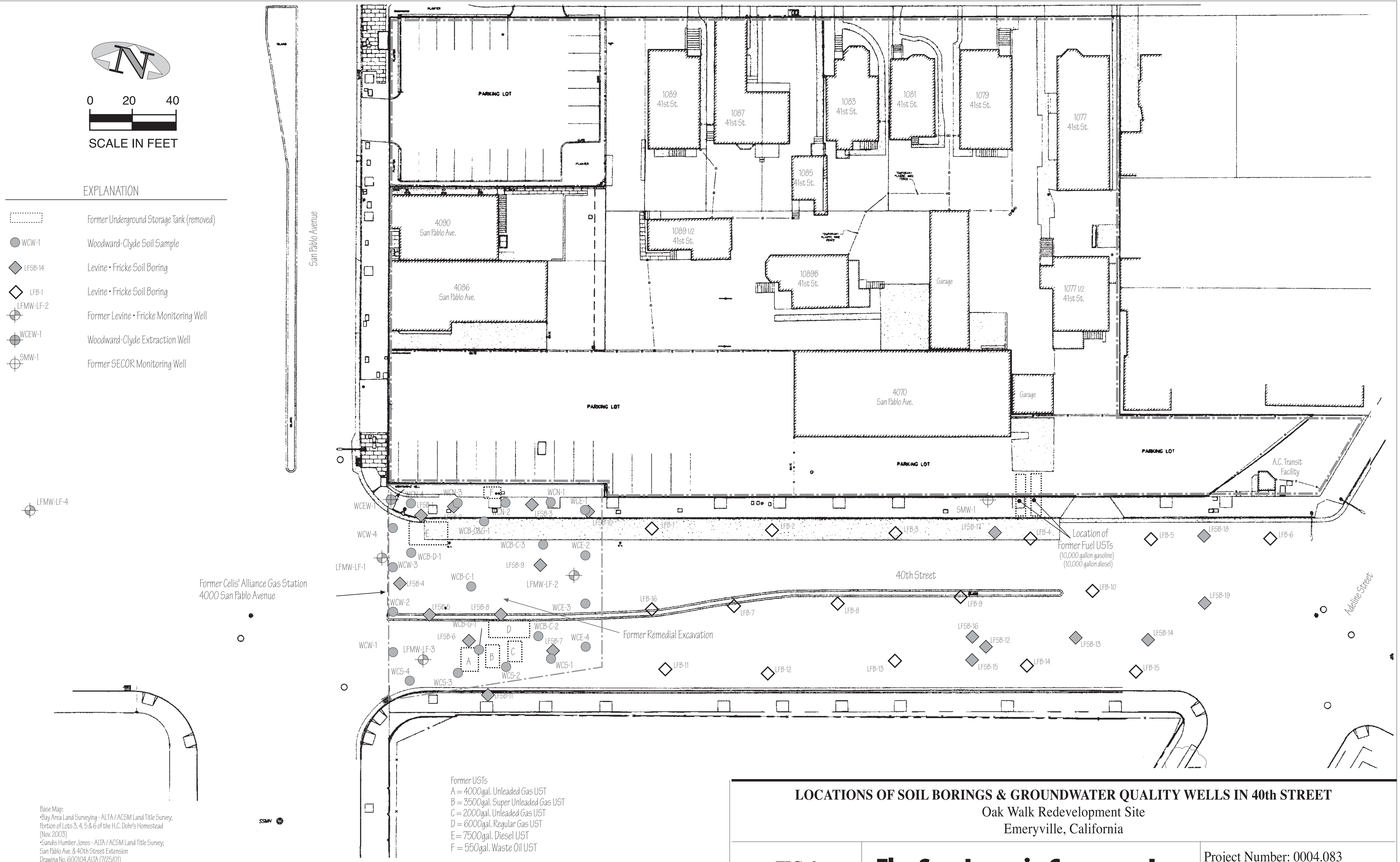
SURFICIAL GEOLOGY OF NEIGHBORHOOD OF SUBJECT PROPERTY

Oak Walk Redevelopment Site
Emeryville, California

FIG 5

The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 04/05/05



EXPLANATION

▭	Former Underground Storage Tank (removed)
● WCW-1	Woodward-Clyde Soil Sample
◆ LFSB-14	Levine • Fricke Soil Boring
◇ LFB-1	Levine • Fricke Soil Boring
⊕ LFMW-LF-2	Former Levine • Fricke Monitoring Well
⊕ WCEW-1	Woodward-Clyde Extraction Well
⊕ SMW-1	Former SECOR Monitoring Well

Former USTs
A = 4000gal. Unleaded Gas UST
B = 3500gal. Super Unleaded Gas UST
C = 2000gal. Unleaded Gas UST
D = 6000gal. Regular Gas UST
E= 7500gal. Diesel UST
F = 550gal. Waste Oil UST

Base Map:
•Bay Area Land Surveying - ALTA / ACSM Land Title Survey;
Portion of Lots 3, 4, 5 & 6 of the H.C. Dohr's Homestead
(Nov. 2003)
•Sandis Humber Jones - ALTA / ACSM Land Title Survey;
San Pablo Ave. & 40th Street Extension
Drawing No. 600104.ALTA (7/25/01)

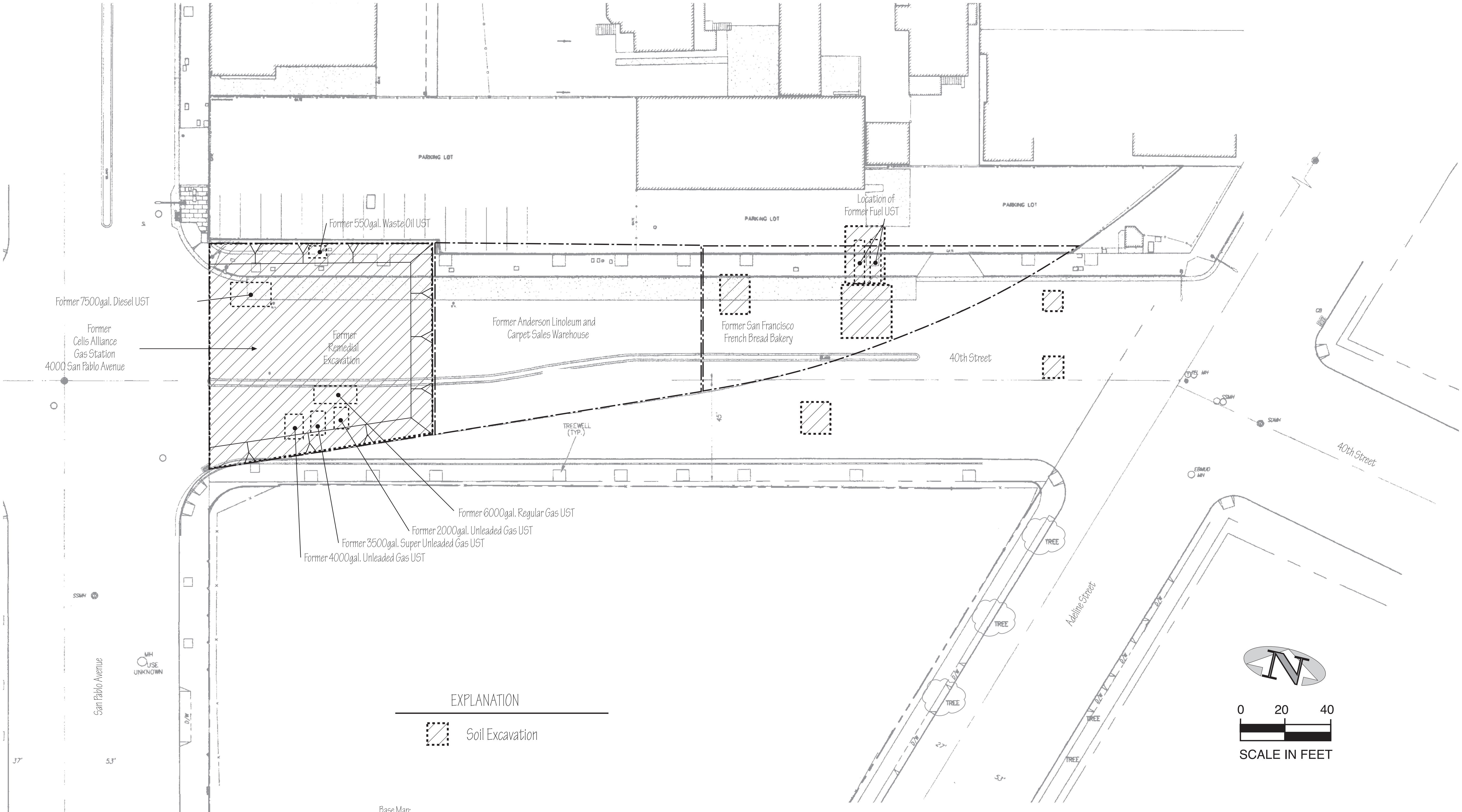
LOCATIONS OF SOIL BORINGS & GROUNDWATER QUALITY WELLS IN 40th STREET

Oak Walk Redevelopment Site
Emeryville, California

FIG 6

The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 04/05/05



▨	Soil Excavation

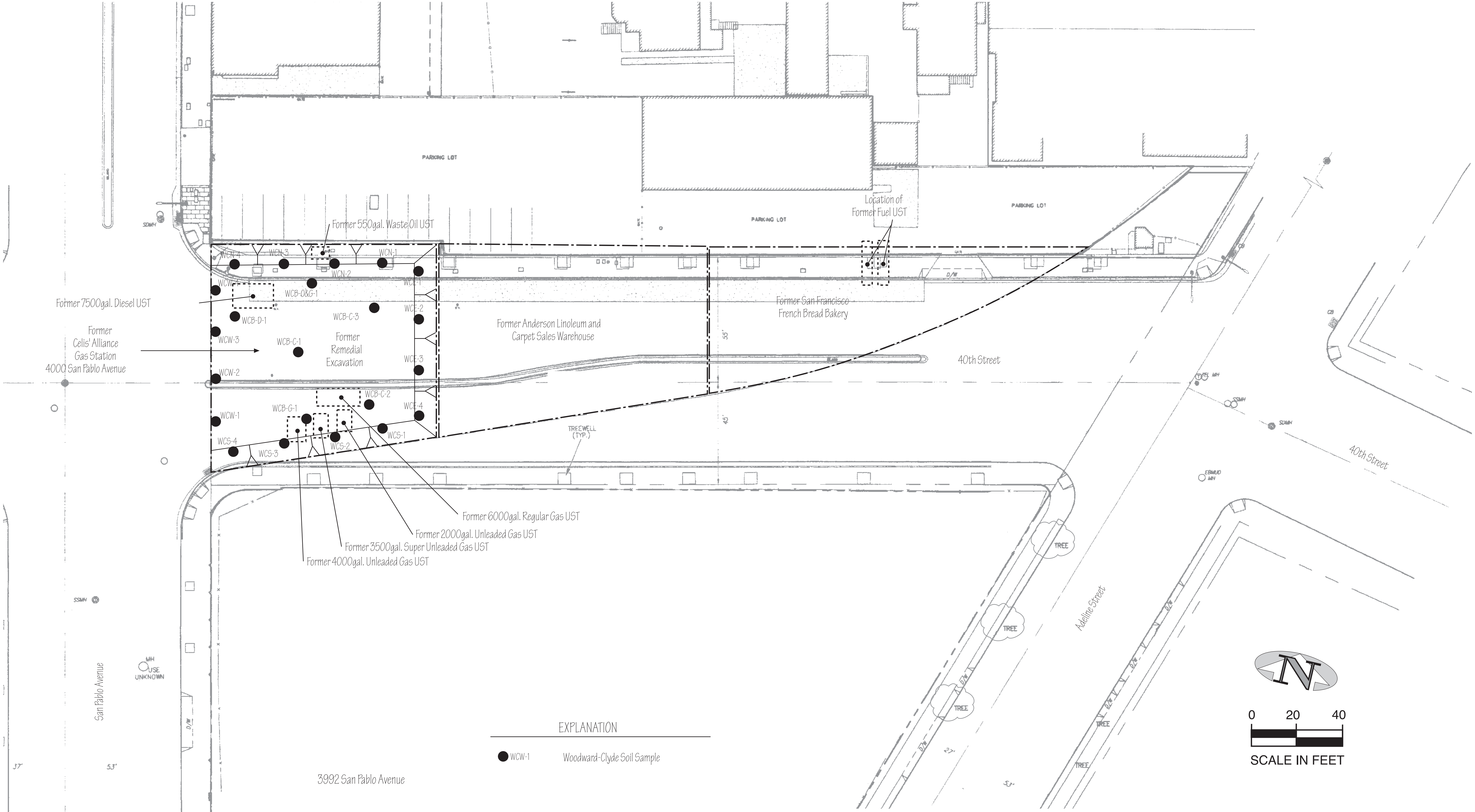
Base Map:
•Bay Area Land Surveying - ALTA / ACSM Land Title Survey;
Portion of Lots 3, 4, 5 & 6 of the H.C. Dohr's Homestead
(Nov. 2003)
•Sandis Humber Jones - ALTA / ACSM Land Title Survey;
San Pablo Ave. & 40th Street Extension
Drawing No. 600104.ALTA (7/25/01)
•Soil Excavation Locations from: Levine•Fricke;
Project 1649.00-034, Figure 2 (11/22/94)

REMEDIAL EXCAVATIONS IN 40th STREET
Oak Walk Redevelopment Site
Emeryville, California

FIG 7

The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 04/05/05



Base Map: Sandis Humber Jones
ALTA / ACSM Land Title Survey; San Pablo Ave. & 40th Street Extension
Drawing No. 600104.ALTA (7/25/01)

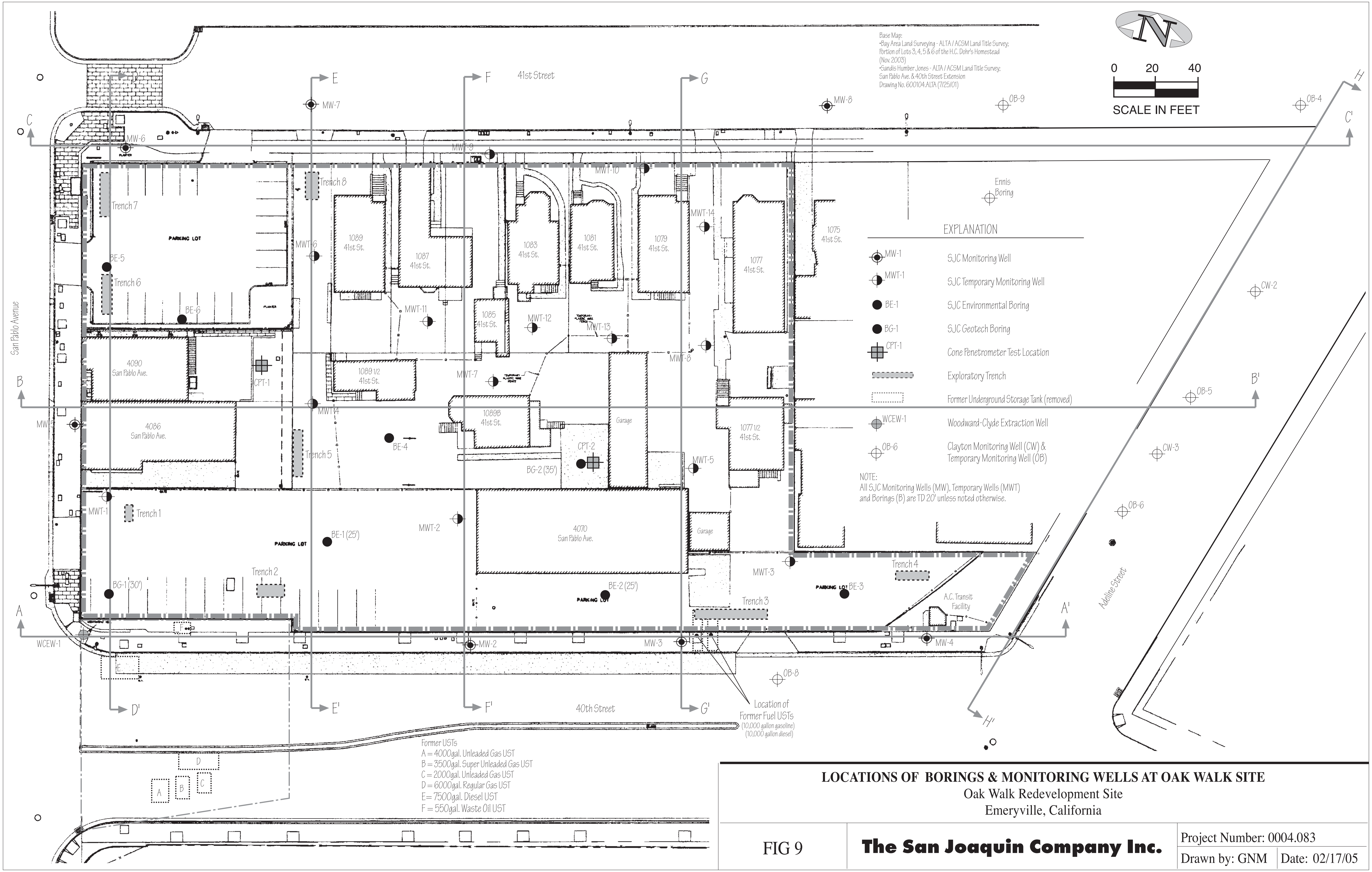
CONFIRMATION SAMPLING LOCATIONS AT CELIS SITE

Oak Walk Redevelopment Site
Emeryville, California

FIG 8

The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 04/04/05



Base Map:
•Bay Area Land Surveying - ALTA / ACSM Land Title Survey;
Portion of Lots 3, 4, 5 & 6 of the H.C. Dohr's Homestead
(Nov. 2003)
•Sandis Humber Jones - ALTA / ACSM Land Title Survey;
San Pablo Ave. & 40th Street Extension
Drawing No. 600104.ALTA (7/25/01)

EXPLANATION

MW-1	SJC Monitoring Well
MWT-1	SJC Temporary Monitoring Well
● BE-1	SJC Environmental Boring
● BG-1	SJC Geotech Boring
CPT-1	Cone Penetrometer Test Location
▨	Exploratory Trench
☐	Former Underground Storage Tank (removed)
WCEW-1	Woodward-Clyde Extraction Well
OB-6	Clayton Monitoring Well (CW) & Temporary Monitoring Well (OB)

NOTE:
All SJC Monitoring Wells (MW), Temporary Wells (MWT) and Borings (B) are TD 20' unless noted otherwise.

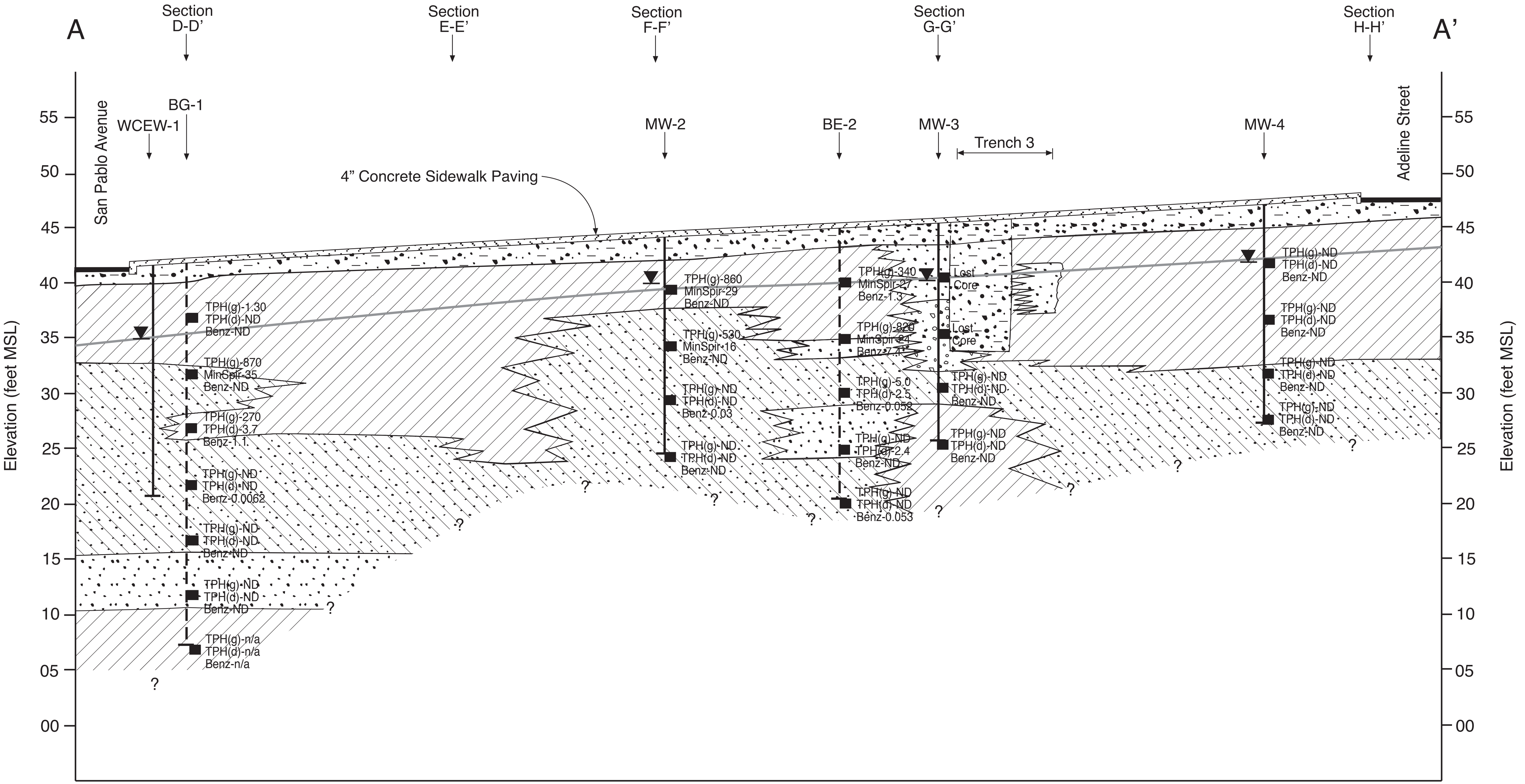
Former USTs
A = 4000gal. Unleaded Gas UST
B = 3500gal. Super Unleaded Gas UST
C = 2000gal. Unleaded Gas UST
D = 6000gal. Regular Gas UST
E= 7500gal. Diesel UST
F = 550gal. Waste Oil UST

LOCATIONS OF BORINGS & MONITORING WELLS AT OAK WALK SITE
Oak Walk Redevelopment Site
Emeryville, California

FIG 9

The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 02/17/05



EXPLANATION

▨ Clays and Silty Clays

▨ Sandy Clay and Clays with some Silt, Sand or Gravel

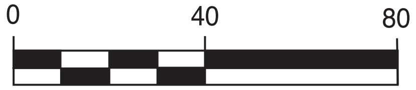
░ Silts, Clayey Gravel and Sands

░ Gravel

░ Gravelly Fill

▼ Water Table (11/08/04)

Gasoline-340
MineralSpirits/TPH(d)-27
Benzene-ND
Soil Sample Analysis Results (mg/kg)



HORIZONTAL SCALE IN FEET

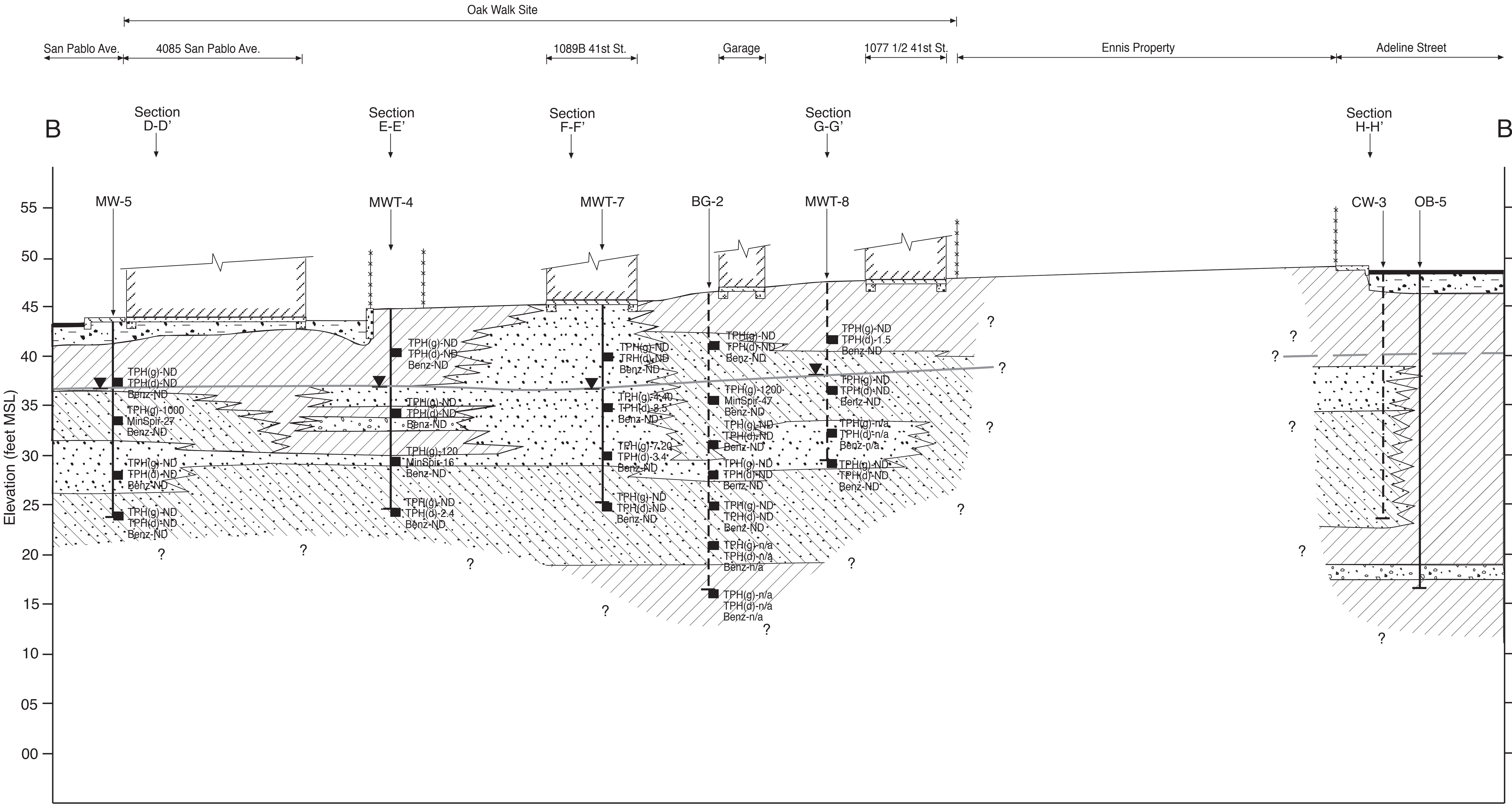
HYDROSTRATIGRAPHIC SECTION A-A'

Oak Walk Redevelopment Site
Emeryville, California

FIG 10

The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 04/12/05



EXPLANATION

- ▨ Clays and Silty Clays
- ▨ Sandy Clay and Clays with some Silt, Sand or Gravel
- ▨ Silts, Clayey Gravel and Sands
- ▨ Gravel
- ▨ Gravelly Fill
- ▼ Water Table (11/08/04)
- Gasoline-340 MineralSpirits/TPH(d)-27 Benzene-ND Soil Sample Analysis Results (mg/kg)

0 40 80

HORIZONTAL SCALE IN FEET

HYDROSTRATIGRAPHIC SECTION B-B'

Oak Walk Redevelopment Site
Emeryville, California

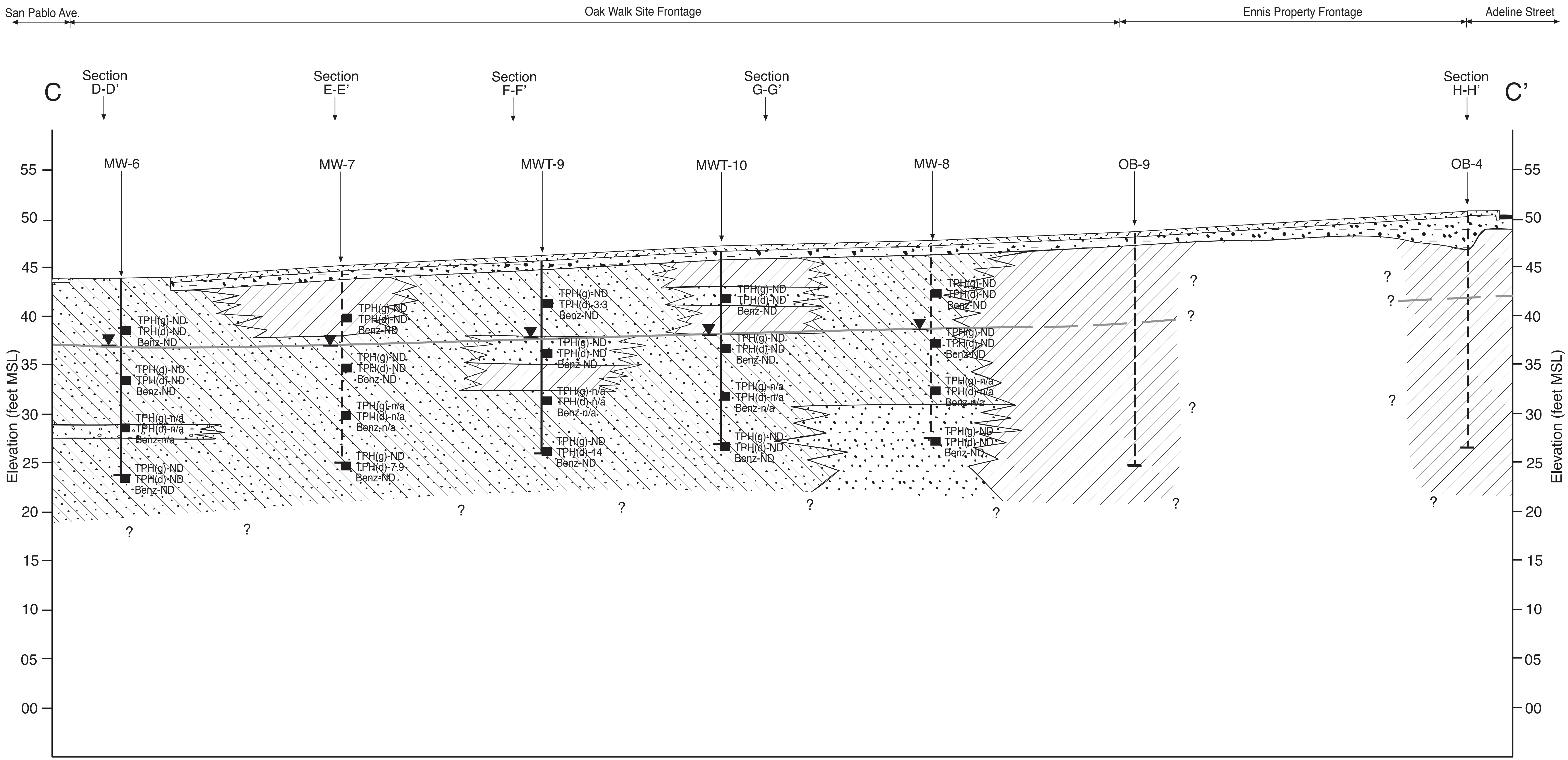
FIG 11

The San Joaquin Company Inc.

Project Number: 0004.083

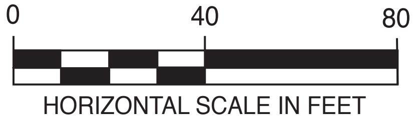
Drawn by: GNM

Date: 04/15/05



EXPLANATION

▨	Clays and Silty Clays	▨	Gravel
▨	Sandy Clay and Clays with some Silt, Sand or Gravel	▨	Gravelly Fill
▨	Silts, Clayey Gravel and Sands	▼	Water Table (11/08/04)
		Gasoline-340 MineralSpirits/TPH(d)-27 Benzene-ND	Soil Sample Analysis Results (mg/kg)

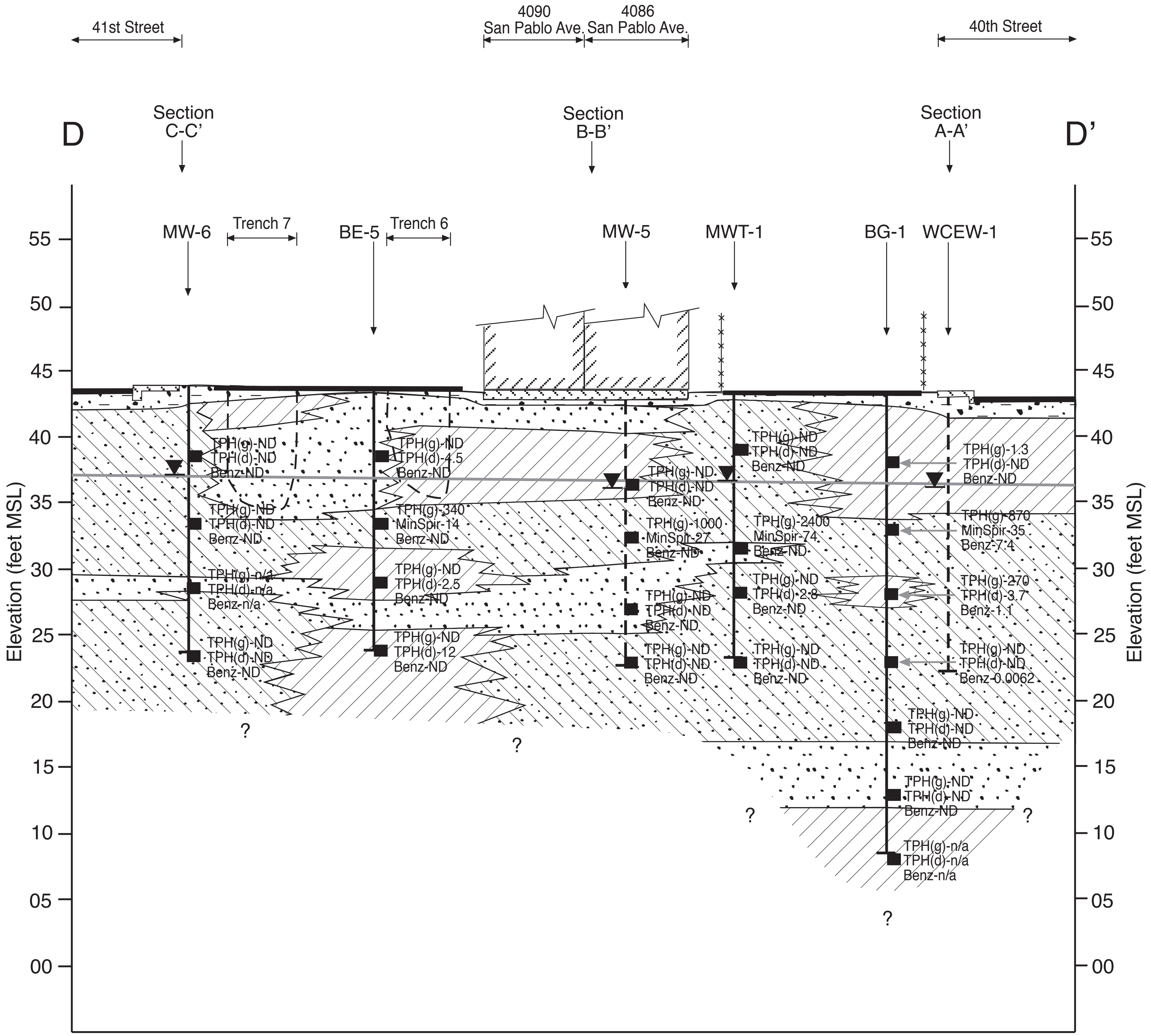


HYDROSTRATIGRAPHIC SECTION C-C'
Oak Walk Redevelopment Site
Emeryville, California

FIG 12

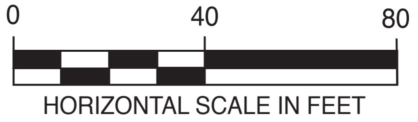
The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 02/12/05



EXPLANATION

▨	Clays and Silty Clays
▧	Sandy Clay and Clays with some Silt, Sand or Gravel
⁘	Silts, Clayey Gravel and Sands
⁘	Gravel
⁘	Gravelly Fill
▼	Water Table (11/08/04)
Gasoline-340 MineralSpirits/TPH(d)-27 Benzene-ND	Soil Sample Analysis Results (mg/kg)



HYDROSTRATIGRAPHIC SECTION D-D'

Oak Walk Redevelopment Site

Emeryville, California

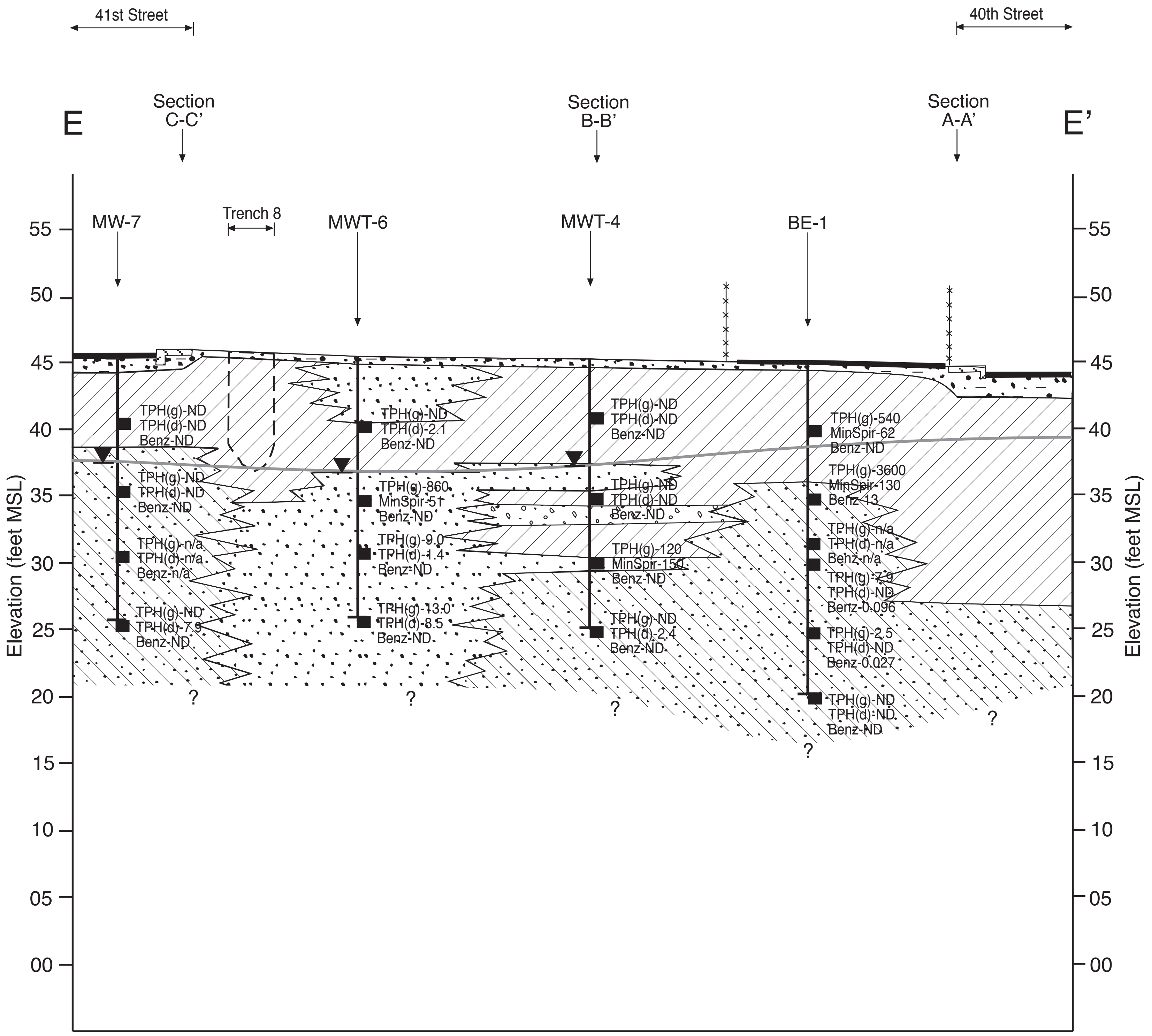
FIG 13

The San Joaquin Company Inc.

Project Number: 0004.083

Drawn by: GNM

Date: 02/12/05



EXPLANATION

▨ Clays and Silty Clays

▨ Sandy Clay and Clays with some Silt, Sand or Gravel

▨ Silts, Clayey Gravel and Sands

▨ Gravel

▨ Gravelly Fill

▼ Water Table (11/08/04)

Gasoline-340
MineralSpirits/TPH(d)-27
Benzene-ND
Soil Sample Analysis Results (mg/kg)

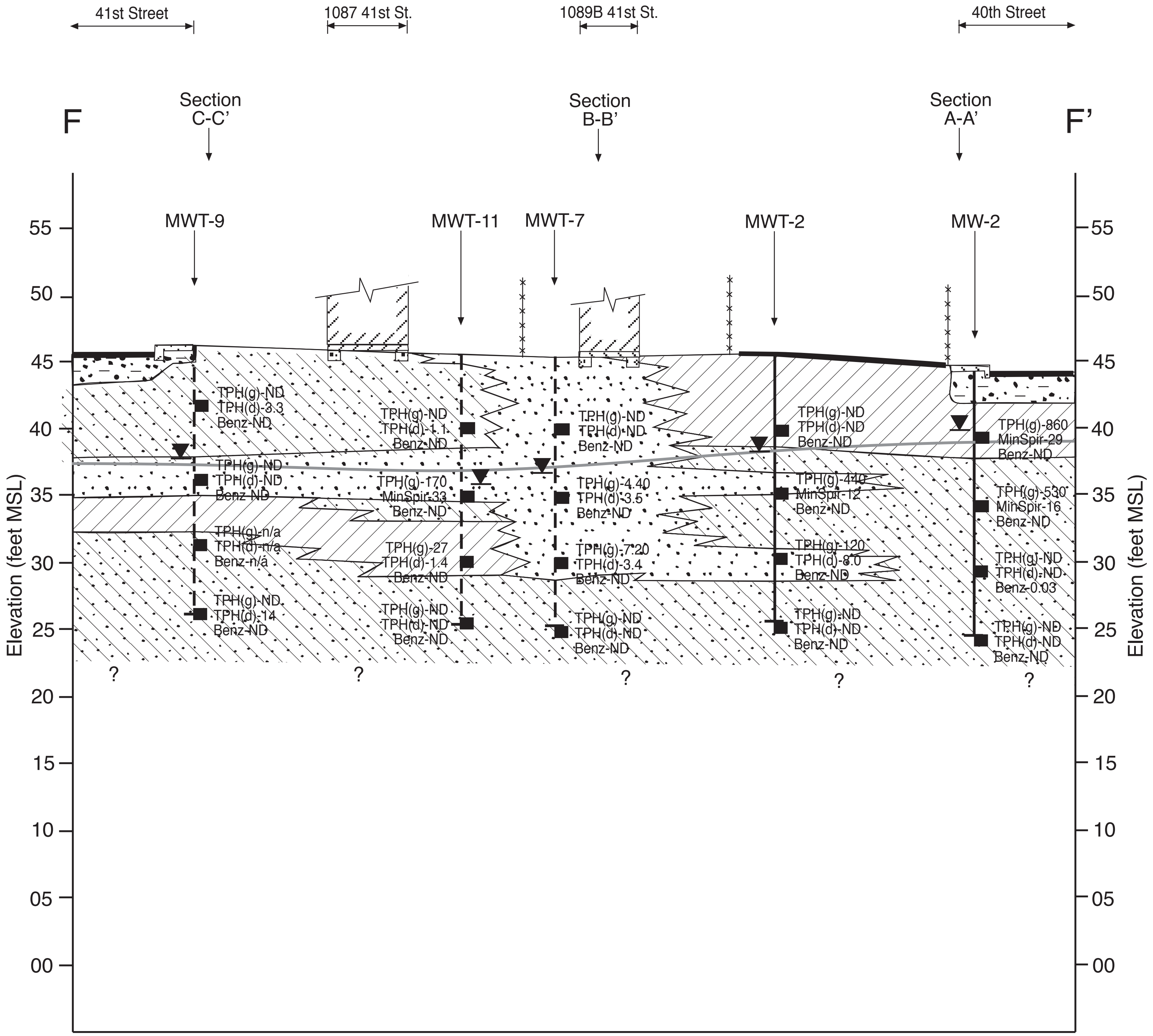
0 40 80
HORIZONTAL SCALE IN FEET

HYDROSTRATIGRAPHIC SECTION E-E'
Oak Walk Redevelopment Site
Emeryville, California

FIG 14

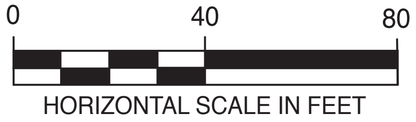
The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 02/12/05



EXPLANATION

- ▨ Clays and Silty Clays
- ▨ Sandy Clay and Clays with some Silt, Sand or Gravel
- ▨ Silts, Clayey Gravel and Sands
- ▨ Gravel
- ▨ Gravelly Fill
- ▼ Water Table (11/08/04)
- Gasoline-340 / MineralSpirits/TPH(d)-27 / Benzene-ND ■ Soil Sample Analysis Results (mg/kg)



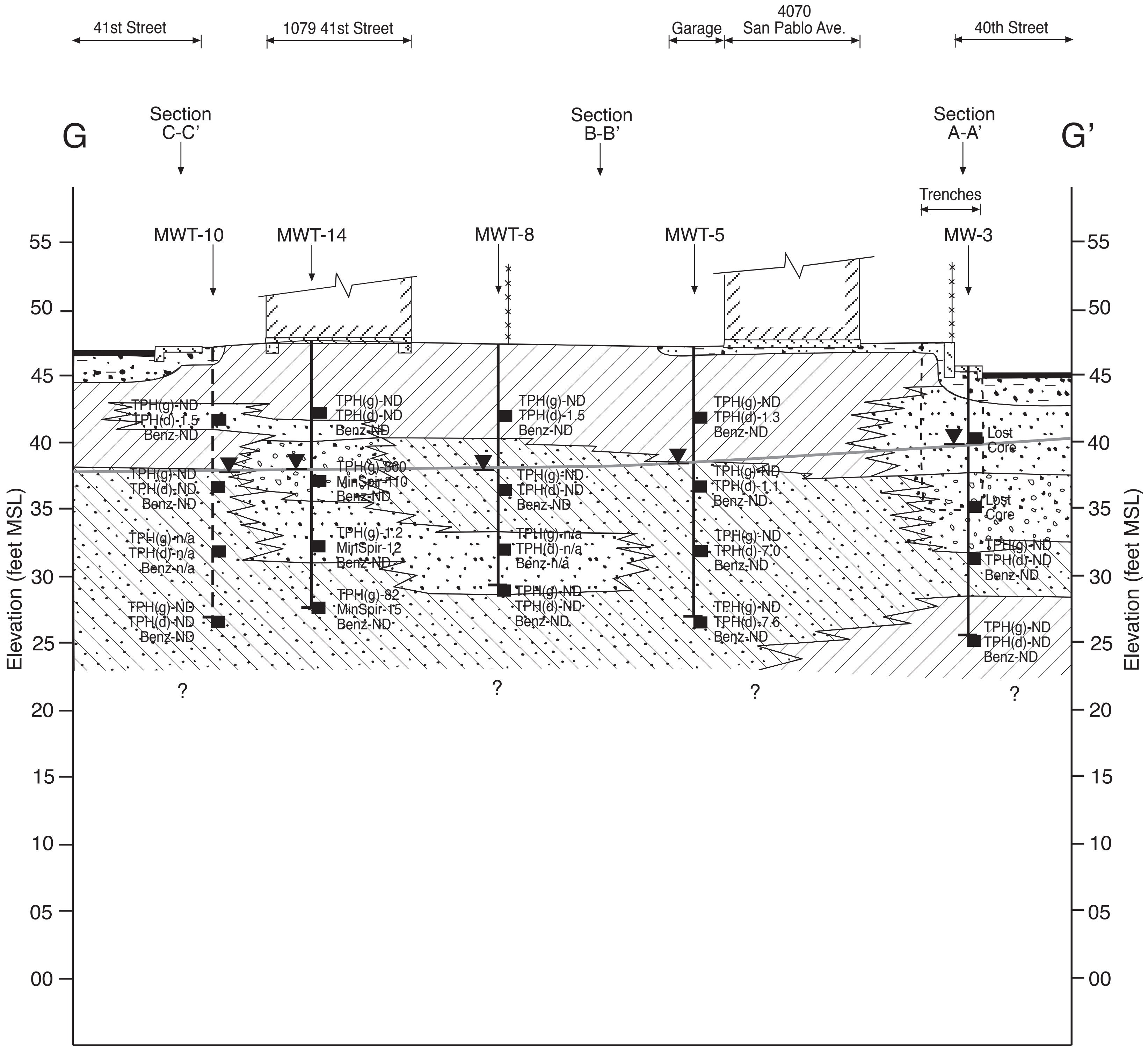
HYDROSTRATIGRAPHIC SECTION F-F'

Oak Walk Redevelopment Site
Emeryville, California

FIG 15

The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 02/12/05



EXPLANATION

▨ Clays and Silty Clays

▨ Sandy Clay and Clays with some Silt, Sand or Gravel

▨ Silts, Clayey Gravel and Sands

▨ Gravel

▨ Gravelly Fill

▼ Water Table (11/08/04)

Gasoline-340
MineralSpirits/TPH(d)-27
Benzene-ND

■ Soil Sample Analysis Results (mg/kg)

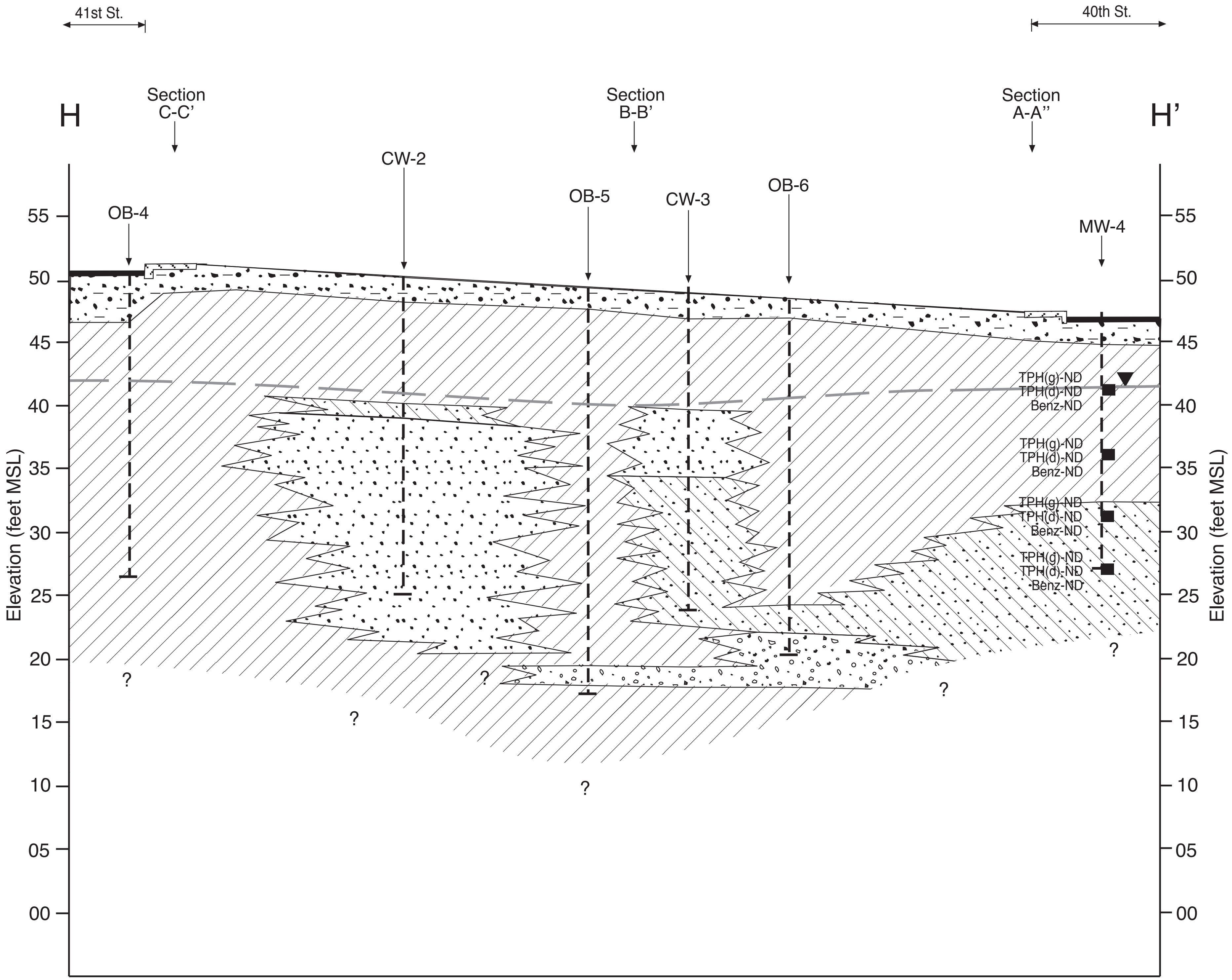
0 40 80
HORIZONTAL SCALE IN FEET

HYDROSTRATIGRAPHIC SECTION G-G'
Oak Walk Redevelopment Site
Emeryville, California

FIG 16

The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 02/12/05



EXPLANATION

▨ Clays and Silty Clays	⁘ Gravel
▧ Sandy Clay and Clays with some Silt, Sand or Gravel	⁘ Gravelly Fill
⁘ Silts, Clayey Gravel and Sands	▼ Water Table (11/08/04)
	Gasoline-340 MineralSpirits/TPH(d)-27 Benzene-ND Soil Sample Analysis Results (mg/kg)

0 40 80

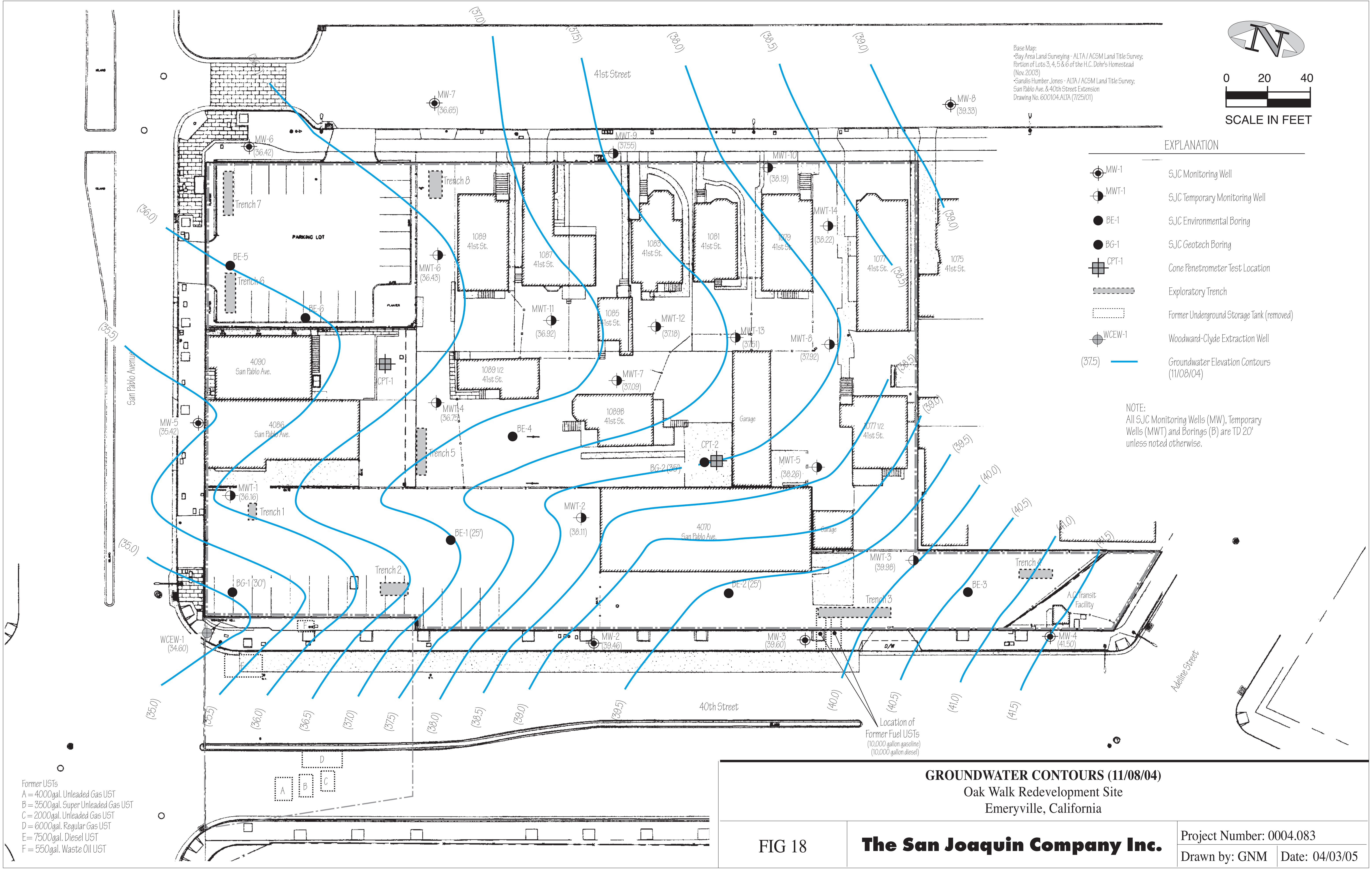
HORIZONTAL SCALE IN FEET

HYDROSTRATIGRAPHIC SECTION H-H'
Oak Walk Redevelopment Site
Emeryville, California

FIG 17

The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 02/12/05



Base Map:
•Bay Area Land Surveying - ALTA / ACSM Land Title Survey; Portion of Lots 3, 4, 5 & 6 of the H.C. Dohr's Homestead (Nov. 2003)
•Sandis Humber Jones - ALTA / ACSM Land Title Survey; San Pablo Ave. & 40th Street Extension Drawing No. 600104.ALTA (7/25/01)

EXPLANATION

MW-1	SJC Monitoring Well
MWT-1	SJC Temporary Monitoring Well
● BE-1	SJC Environmental Boring
● BG-1	SJC Geotech Boring
CPT-1	Cone Penetrometer Test Location
	Exploratory Trench
	Former Underground Storage Tank (removed)
WCEW-1	Woodward-Clyde Extraction Well
(37.5)	Groundwater Elevation Contours (11/08/04)

NOTE:
All SJC Monitoring Wells (MW), Temporary Wells (MWT) and Borings (B) are TD 20' unless noted otherwise.

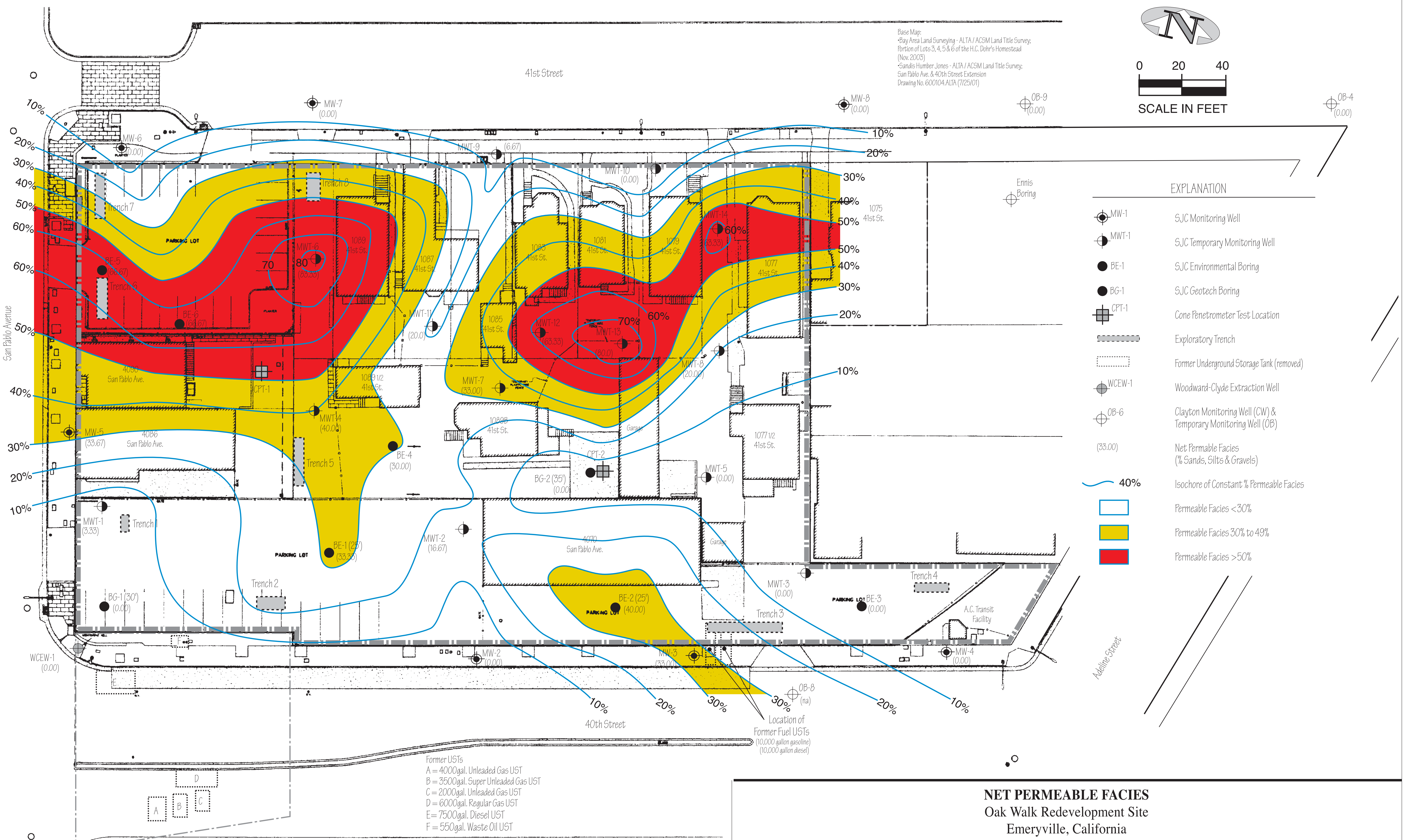
Former USTs
A = 4000gal. Unleaded Gas UST
B = 3500gal. Super Unleaded Gas UST
C = 2000gal. Unleaded Gas UST
D = 6000gal. Regular Gas UST
E= 7500gal. Diesel UST
F = 550gal. Waste Oil UST

GROUNDWATER CONTOURS (11/08/04)
Oak Walk Redevelopment Site
Emeryville, California

FIG 18

The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 04/03/05

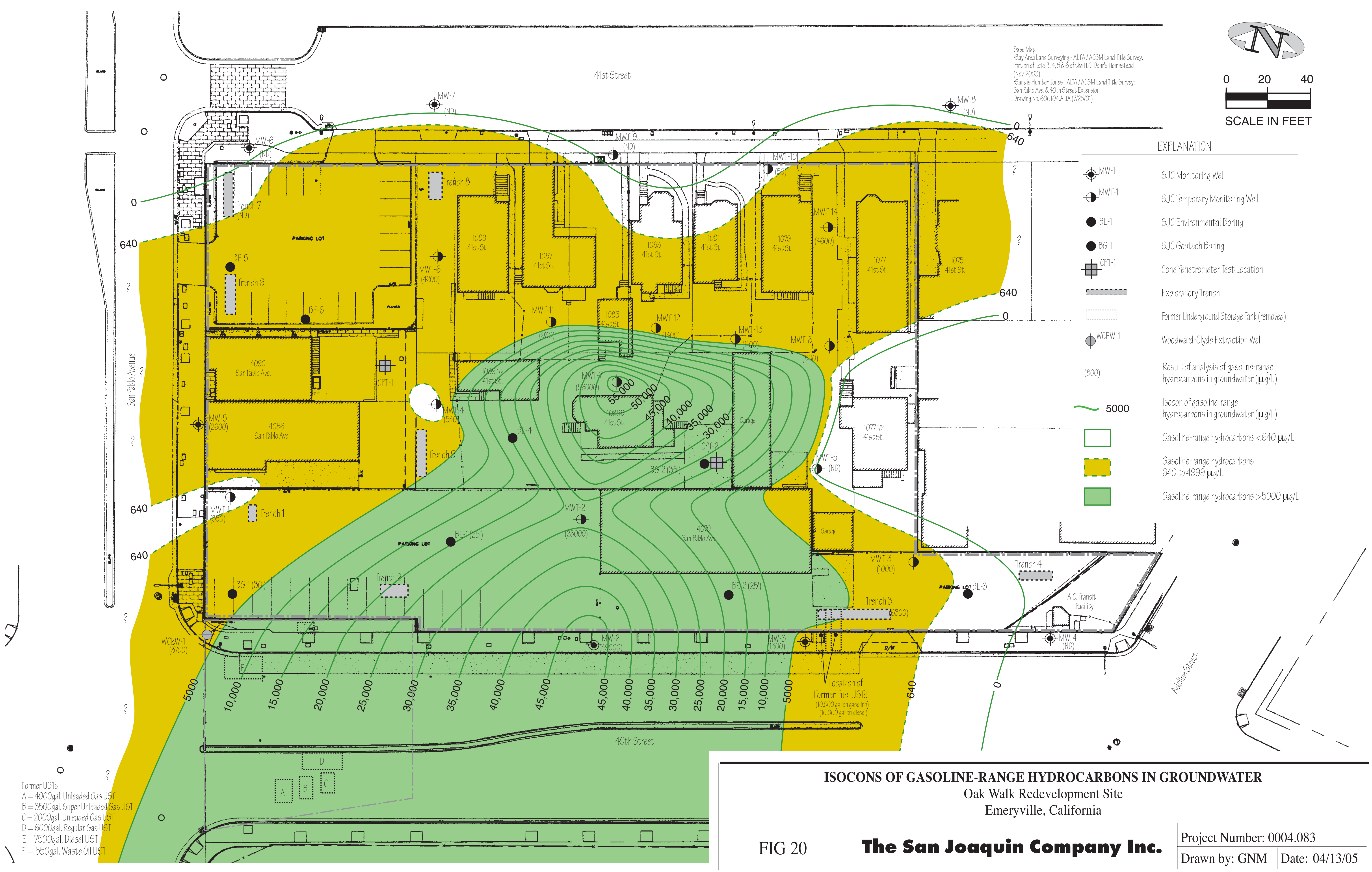


NET PERMEABLE FACIES
Oak Walk Redevelopment Site
Emeryville, California

FIG 19

The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 04/10/05



Base Map:
•Bay Area Land Surveying - ALTA / ACSM Land Title Survey;
Portion of Lots 3, 4, 5 & 6 of the H.C. Dohr's Homestead
(Nov. 2003)
•Sandis Humber Jones - ALTA / ACSM Land Title Survey;
San Pablo Ave. & 40th Street Extension
Drawing No. 600104.ALTA (7/25/01)

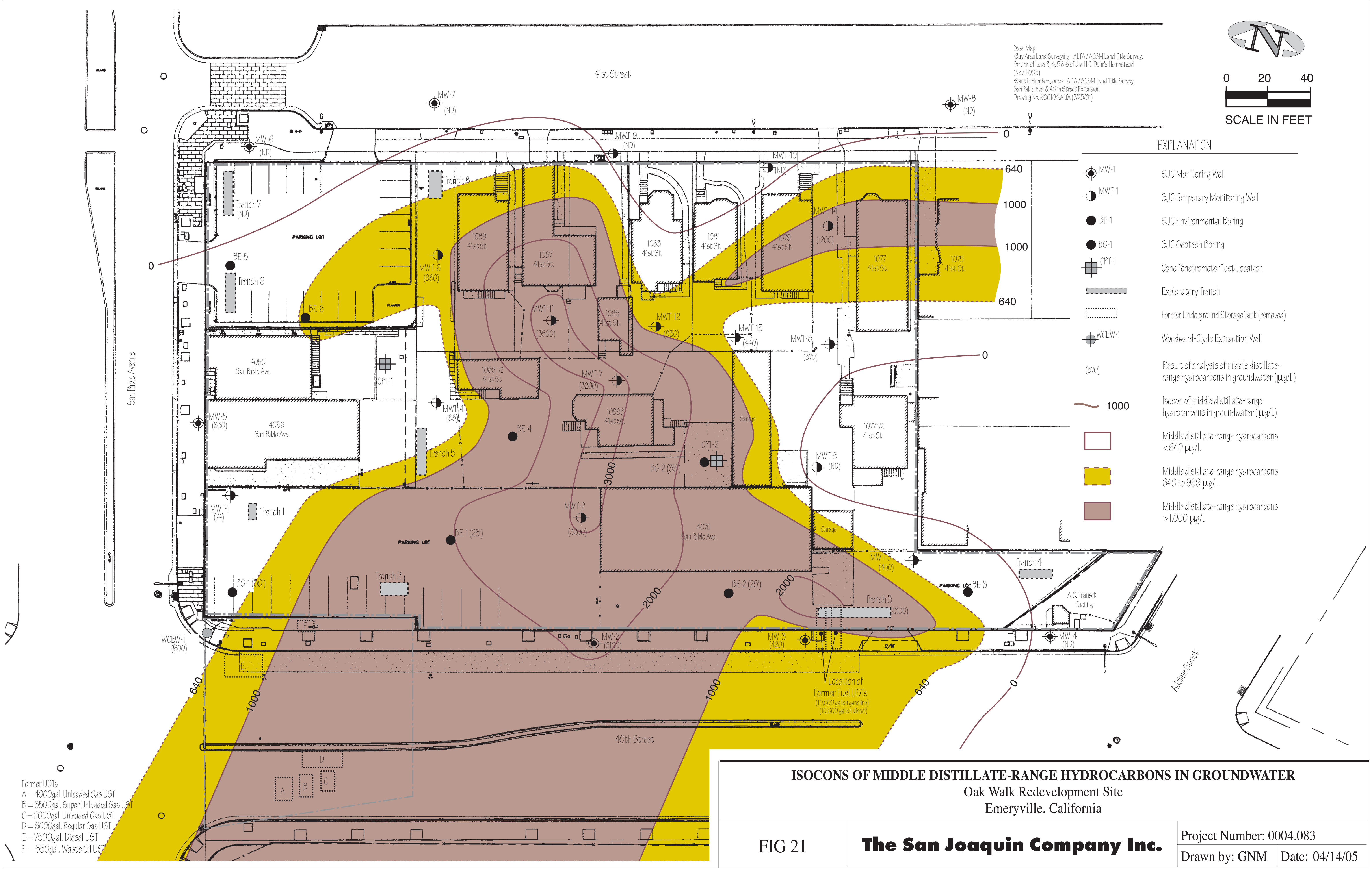
Former USTs
A = 4000gal. Unleaded Gas UST
B = 3500gal. Super Unleaded Gas UST
C = 2000gal. Unleaded Gas UST
D = 6000gal. Regular Gas UST
E = 7500gal. Diesel UST
F = 550gal. Waste Oil UST

ISOCONS OF GASOLINE-RANGE HYDROCARBONS IN GROUNDWATER
Oak Walk Redevelopment Site
Emeryville, California

FIG 20

The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 04/13/05



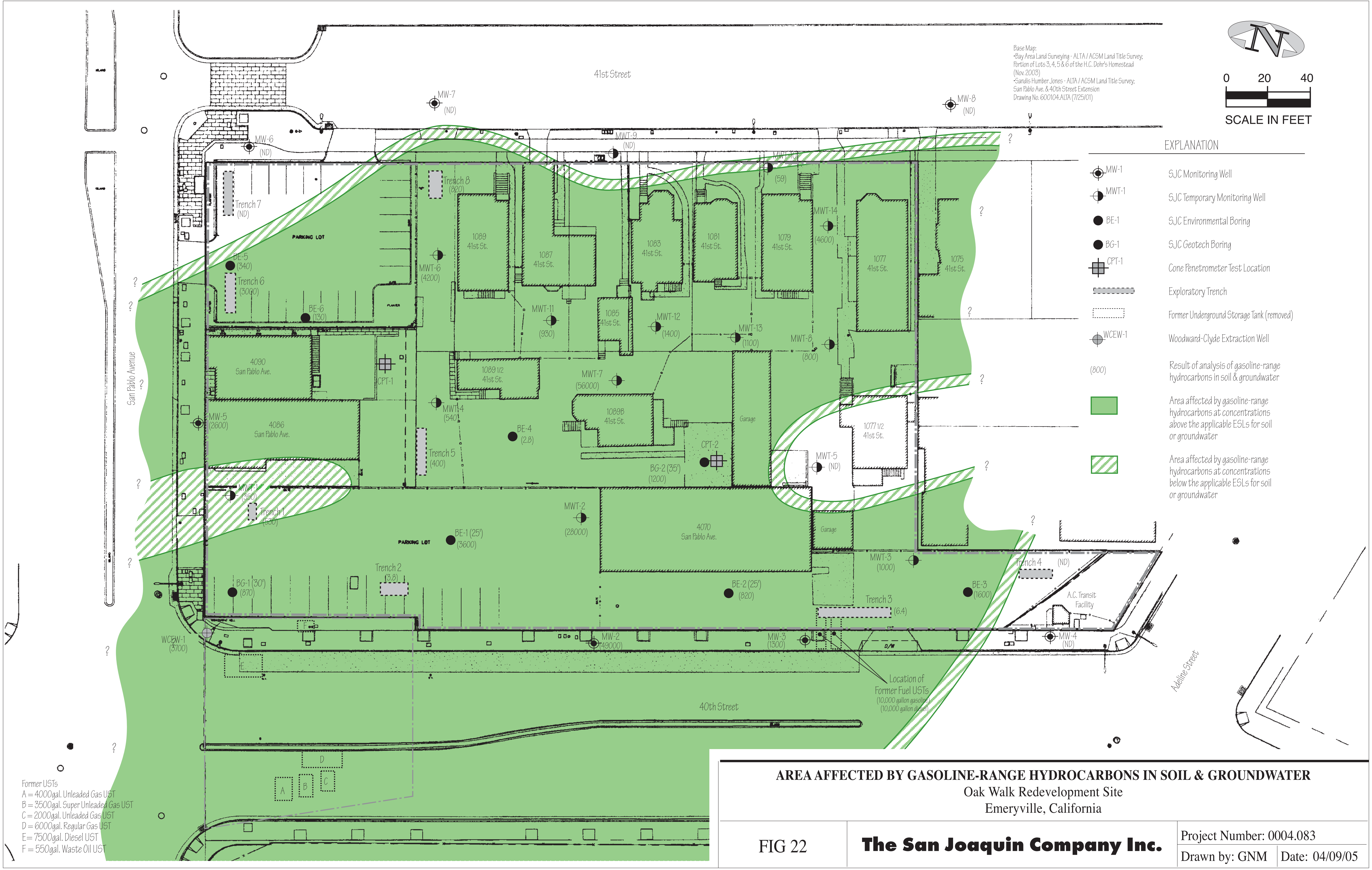
ISOCONS OF MIDDLE DISTILLATE-RANGE HYDROCARBONS IN GROUNDWATER

Oak Walk Redevelopment Site
Emeryville, California

FIG 21

The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 04/14/05

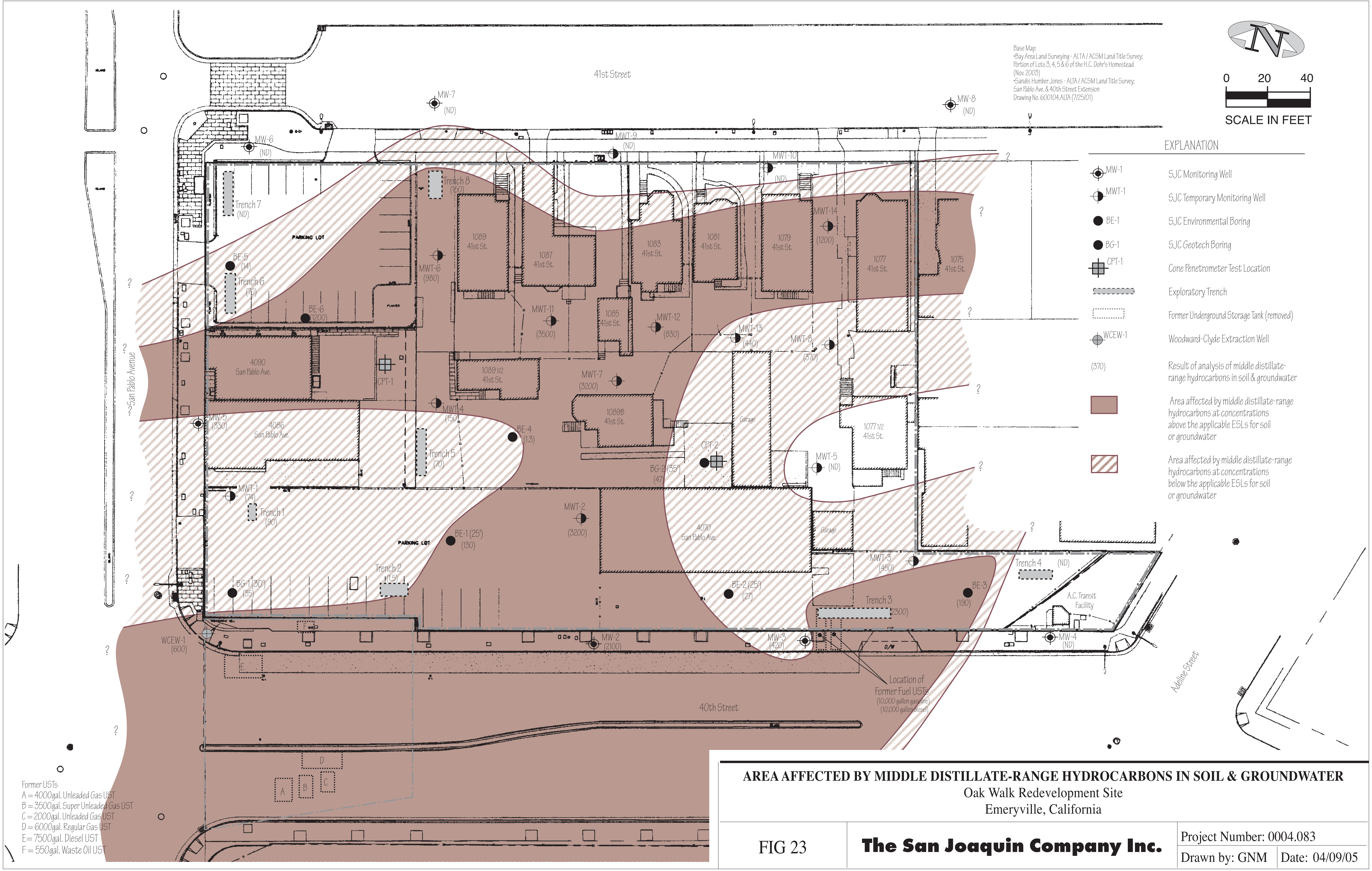


AREA AFFECTED BY GASOLINE-RANGE HYDROCARBONS IN SOIL & GROUNDWATER
Oak Walk Redevelopment Site
Emeryville, California

FIG 22

The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 04/09/05



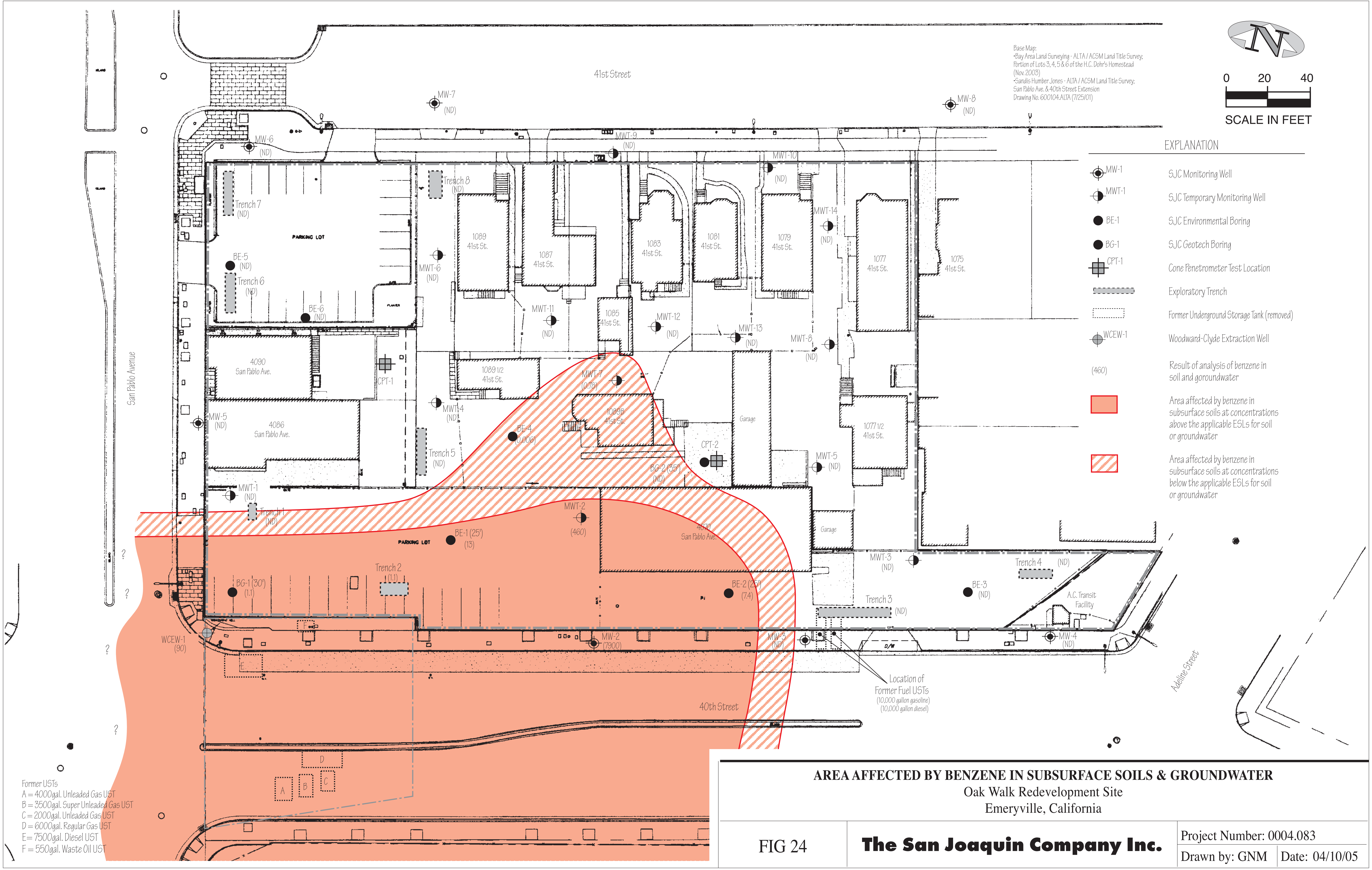
AREA AFFECTED BY MIDDLE DISTILLATE-RANGE HYDROCARBONS IN SOIL & GROUNDWATER

Oak Walk Redevelopment Site
Emeryville, California

FIG 23

The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 04/09/05



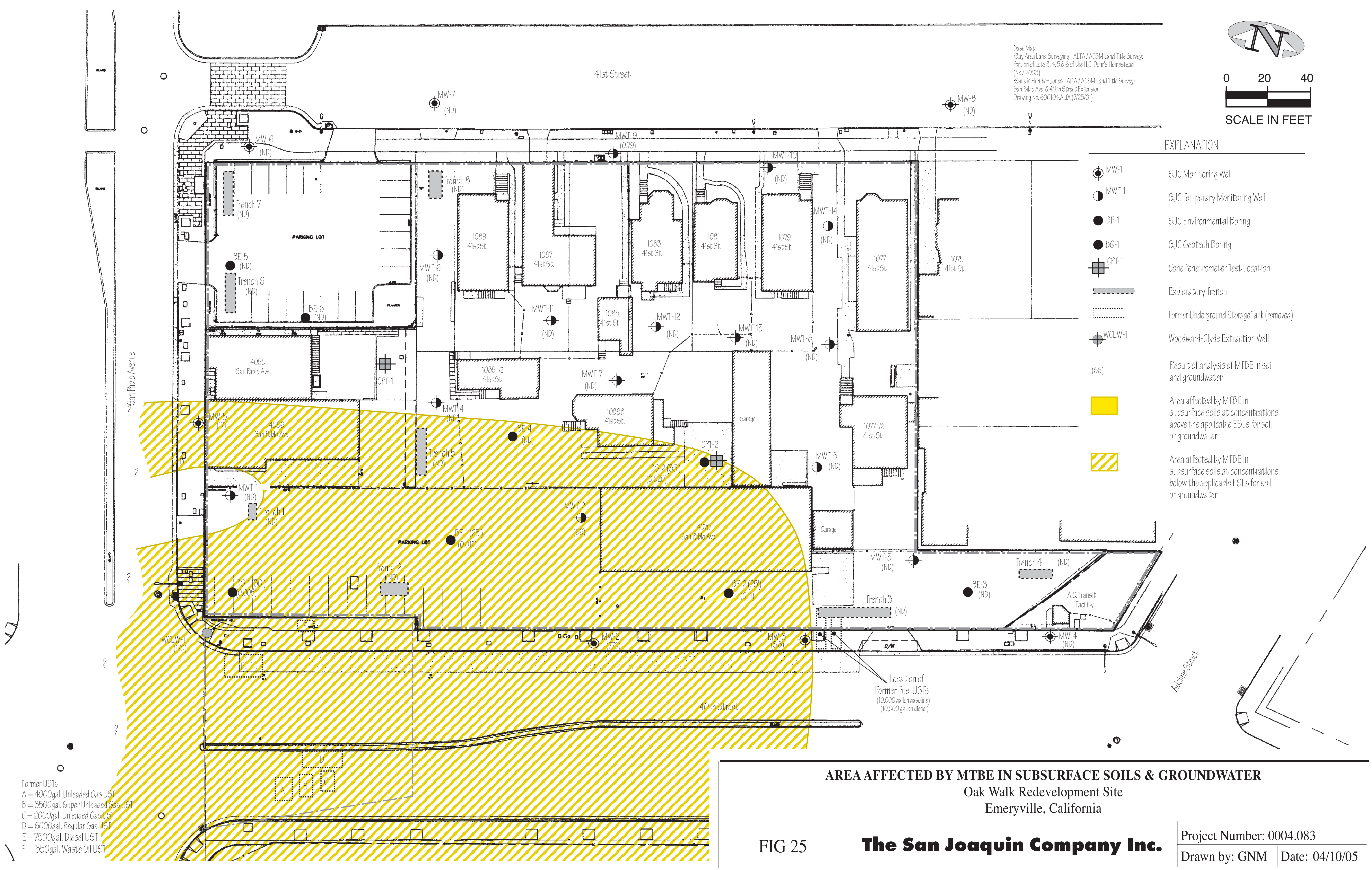
AREA AFFECTED BY BENZENE IN SUBSURFACE SOILS & GROUNDWATER

Oak Walk Redevelopment Site
Emeryville, California

FIG 24

The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 04/10/05



Base Map:
•Bay Area Land Surveying - ALTA / ACSM Land Title Survey; Portion of Lots 3, 4, 5 & 6 of the H.C. Dohr's Homestead (Nov. 2003)
•Sandis Humber Jones - ALTA / ACSM Land Title Survey; San Pablo Ave. & 40th Street Extension Drawing No. 600104.ALTA (7/25/01)

Former USTs
A = 4000gal. Unleaded Gas UST
B = 3500gal. Super Unleaded Gas UST
C = 2000gal. Unleaded Gas UST
D = 6000gal. Regular Gas UST
E = 7500gal. Diesel UST
F = 550gal. Waste Oil UST

AREA AFFECTED BY MTBE IN SUBSURFACE SOILS & GROUNDWATER
Oak Walk Redevelopment Site
Emeryville, California

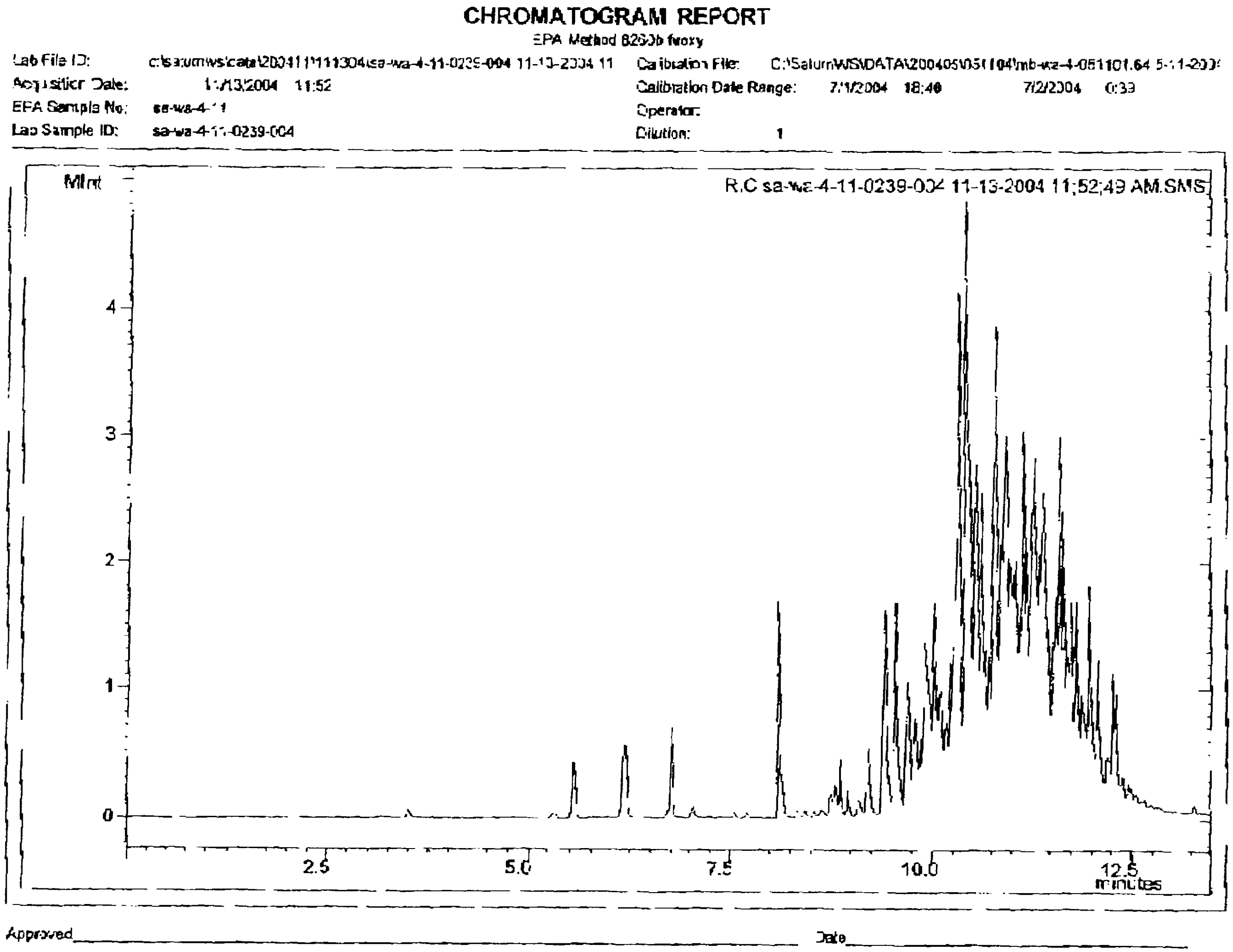
FIG 25

The San Joaquin Company Inc.

Project Number: 0004.083
Drawn by: GNM
Date: 04/10/05

Plate 1 Areal Photograph No. AV-8401-3-4-74, flown on 4/19/03: Note: The Oak Walk Redevelopment Site is outlined.

Plate 2 Areal Photograph No. Gy-30-74, flown in 1930: Note: The area of the Oak Walk Redevelopment Site is outlined.



CHROMATOGRAM REPORT

EPA Method 8260b fuoxy

Lab File ID: c:\saturnws\data\200411\111304\sa-wa-4-11-0239-004 11-13-2004 11

Acquisition Date: 11/13/2004 11:52

EPA Sample No: sa-wa-4-11

Lab Sample ID: sa-wa-4-11-0239-004

Calibration File: C:\SaturnWS\DATA\200405\051104\mb-wa-4-051101.64 5-11-200

Calibration Date Range: 7/1/2004 18:40 7/2/2004 0:33

Operator:

Dilution: 1

Approved____________________ Date____________________

Plate 3: Gasoline-Range Chromatogram from Groundwater Sample MWT-14

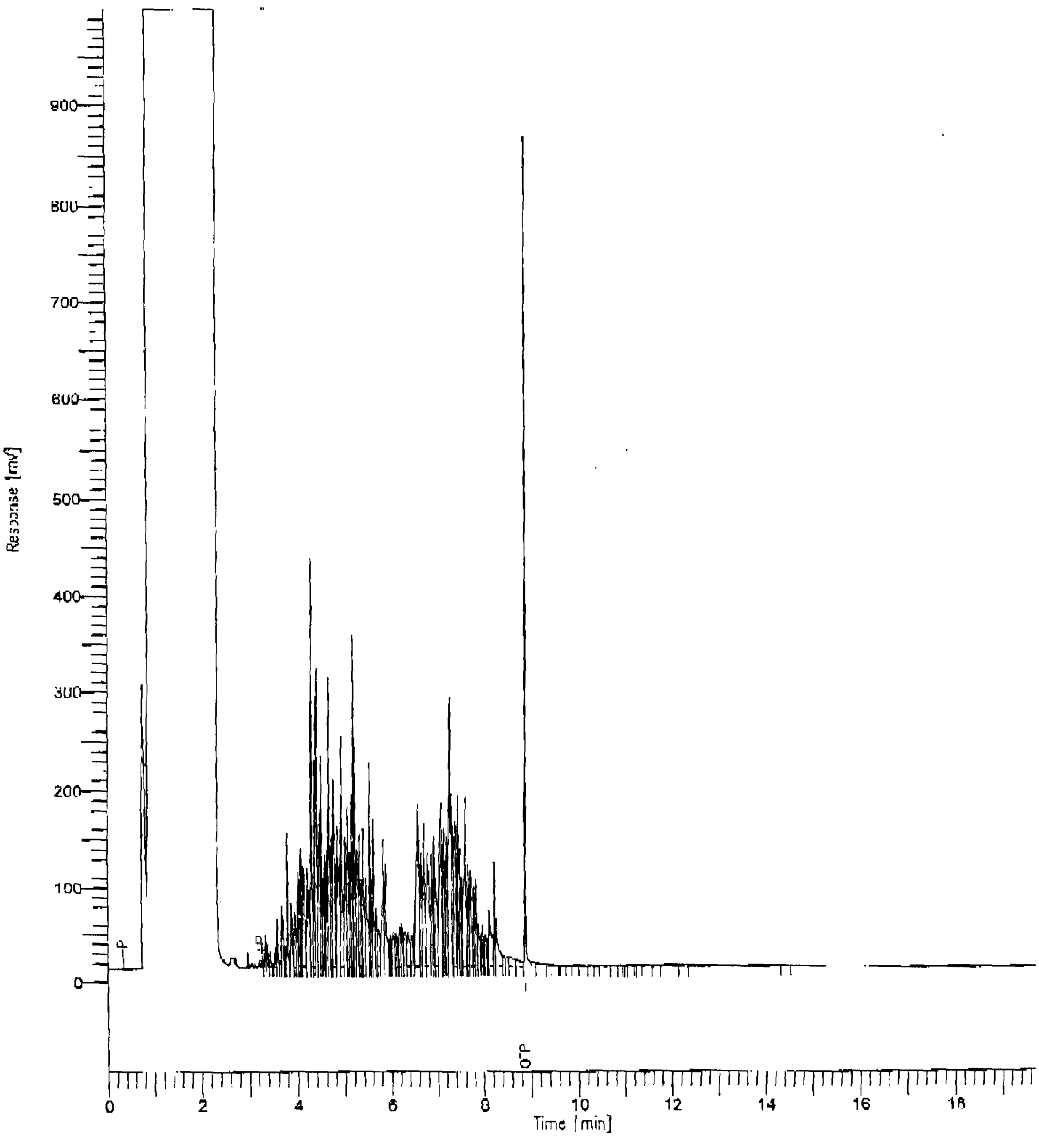
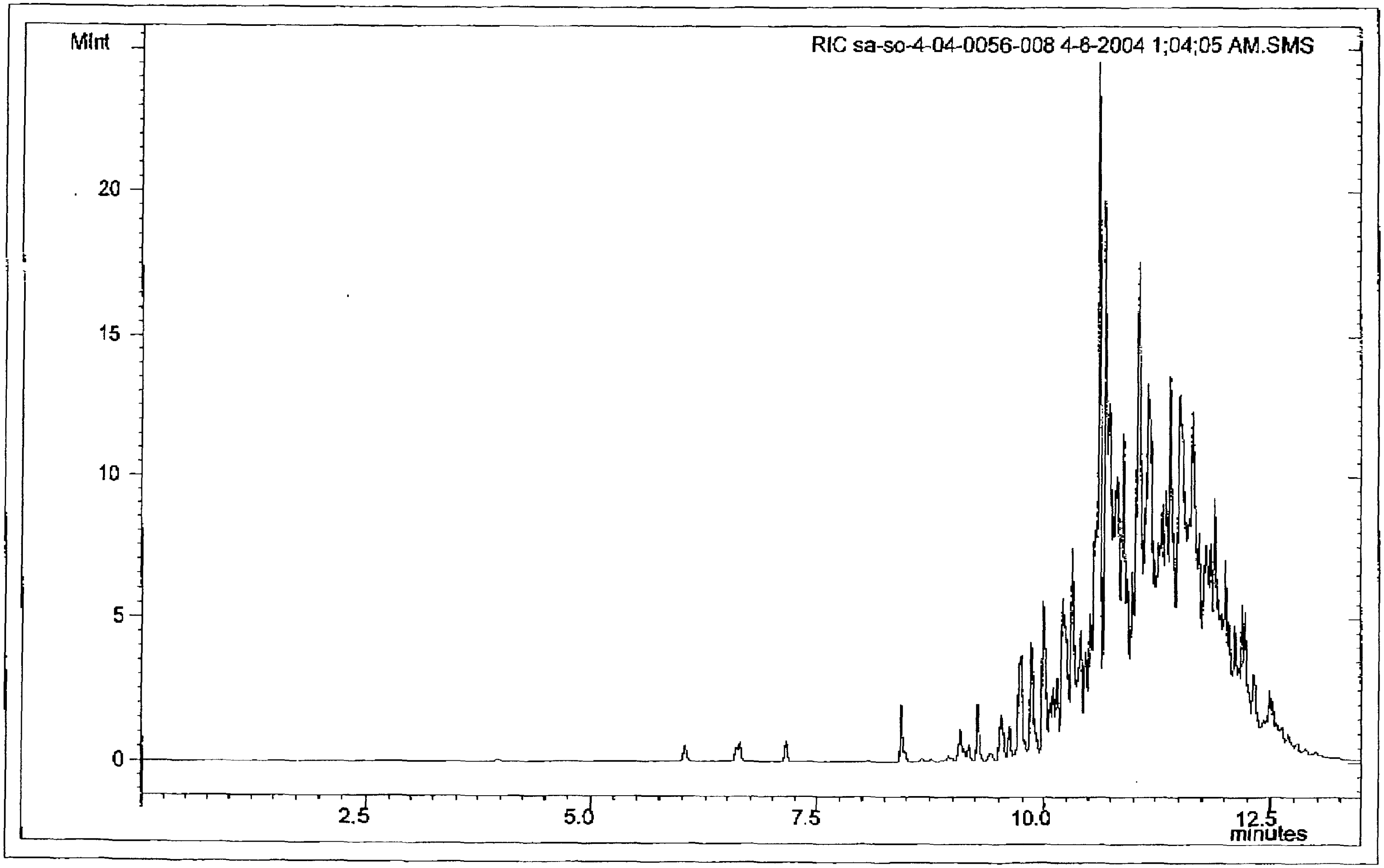


Plate 4: TEPH Chromatogram from Groundwater Sample MWT-14

CHROMATOGRAM REPORT

EPA Method 8260B 03/12/04 3900 E

Lab File ID:	c:\varianws\data\200404\040504\sa-so-4-04-0056-008 4-6-2004 1;04;	Calibration File:	C:\VarianWS\data\200401\012804\100ng surr 1-28-2004 2;45;58 Pl
Acquisition Date:	4/6/2004 1:04	Calibration Date Range:	1/28/200 14:45 3/12/2004 12:27
EPA Sample No:	sa-so-4-04	Operator:	tl-sf
Lab Sample ID:	sa-so-4-04-0056-008	Dilution:	1



Approved______________________________ Date______________________

Plate 5: Gasoline-Range Chromatogram from Soil Sample MWT-6-10.5

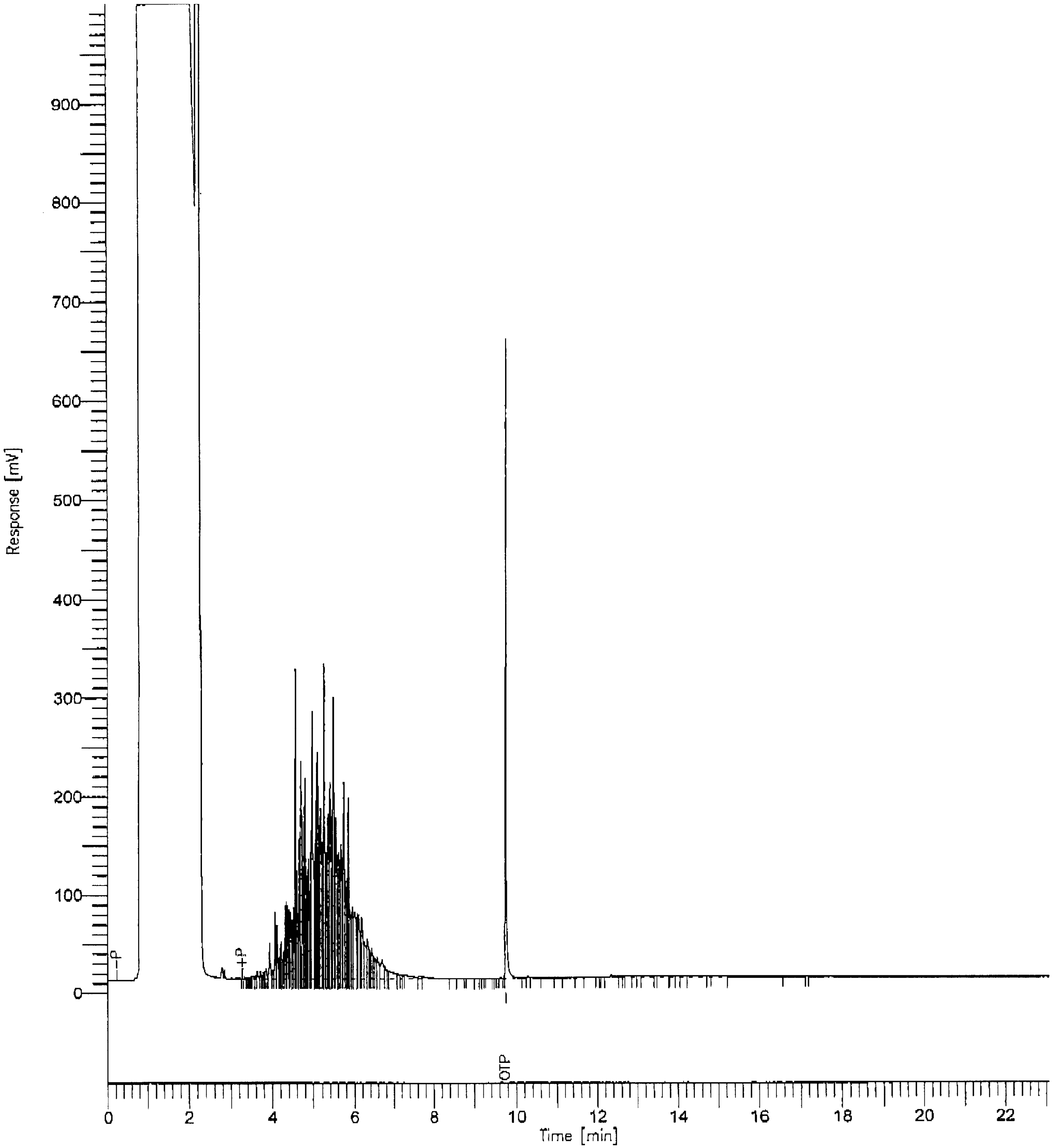
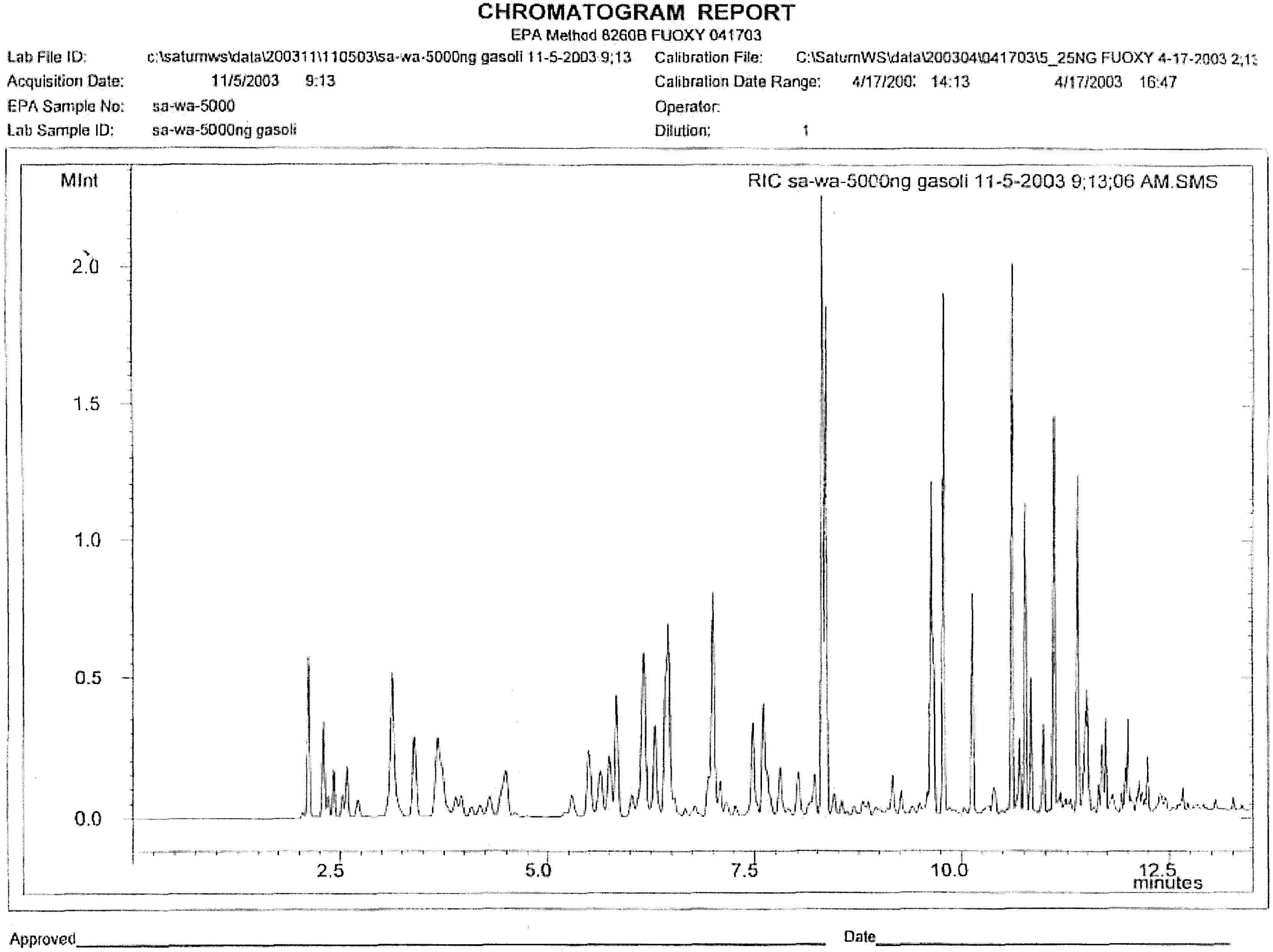


Plate 6: TEPH Chromatogram from Soil Sample MWT-6-10.5



CHROMATOGRAM REPORT

EPA Method 8260B FUOXY 041703

Lab File ID: c:\saturnws\data\200311\110503\sa-wa-5000ng gasoli 11-5-2003 9;13

Acquisition Date: 11/5/2003 9:13

EPA Sample No: sa-wa-5000

Lab Sample ID: sa-wa-5000ng gasoli

Calibration File: C:\SaturnWS\data\200304\041703\5_25NG FUOXY 4-17-2003 2;1

Calibration Date Range: 4/17/200: 14:13 4/17/2003 16:47

Operator:

Dilution: 1

Approved________________ Date________________

Plate 7: Laboratory Standard Chromatogram for Gasoline Fuel

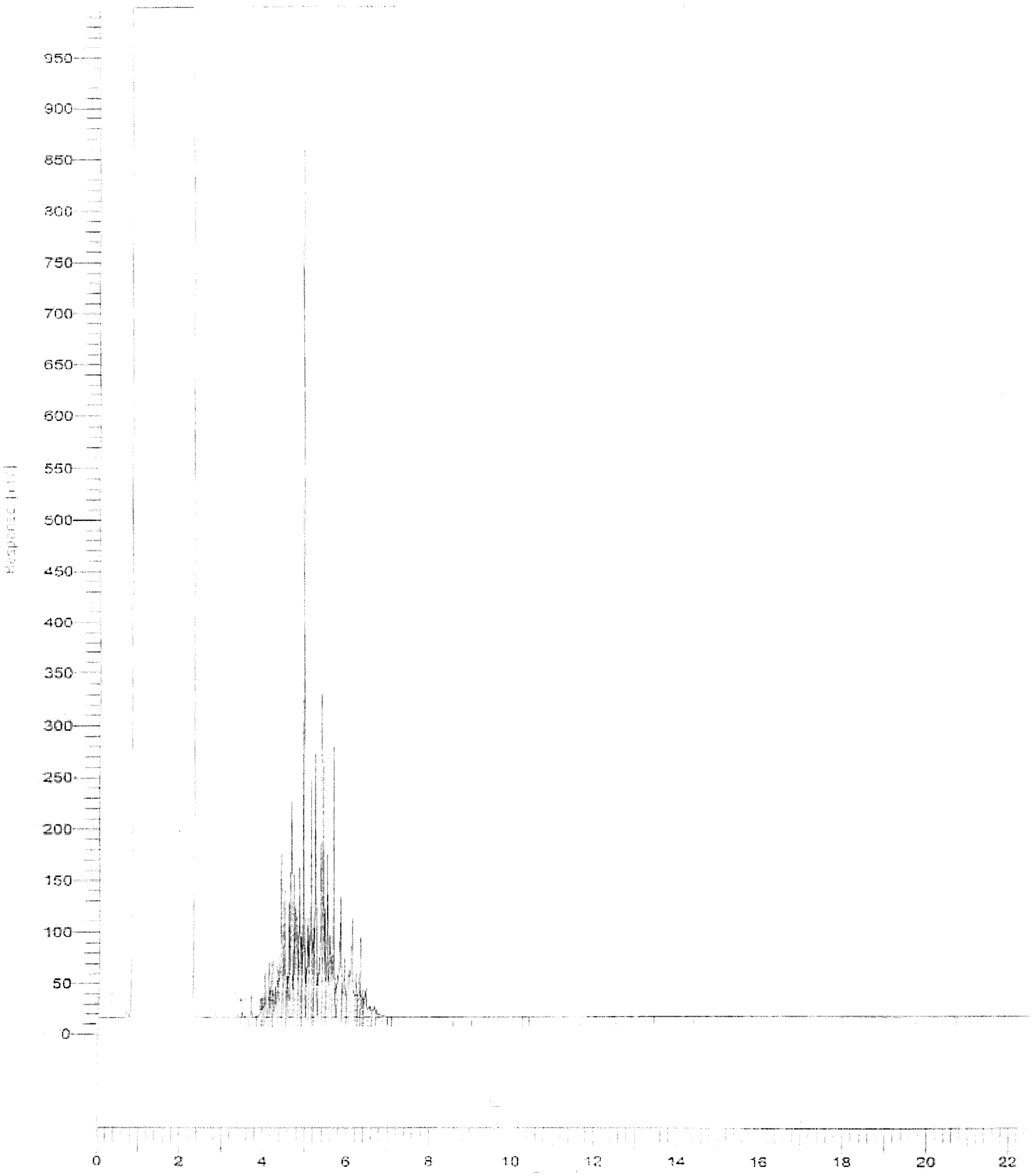


Plate 8: Laboratory Standard Chromatogram for Mineral Spiritsl

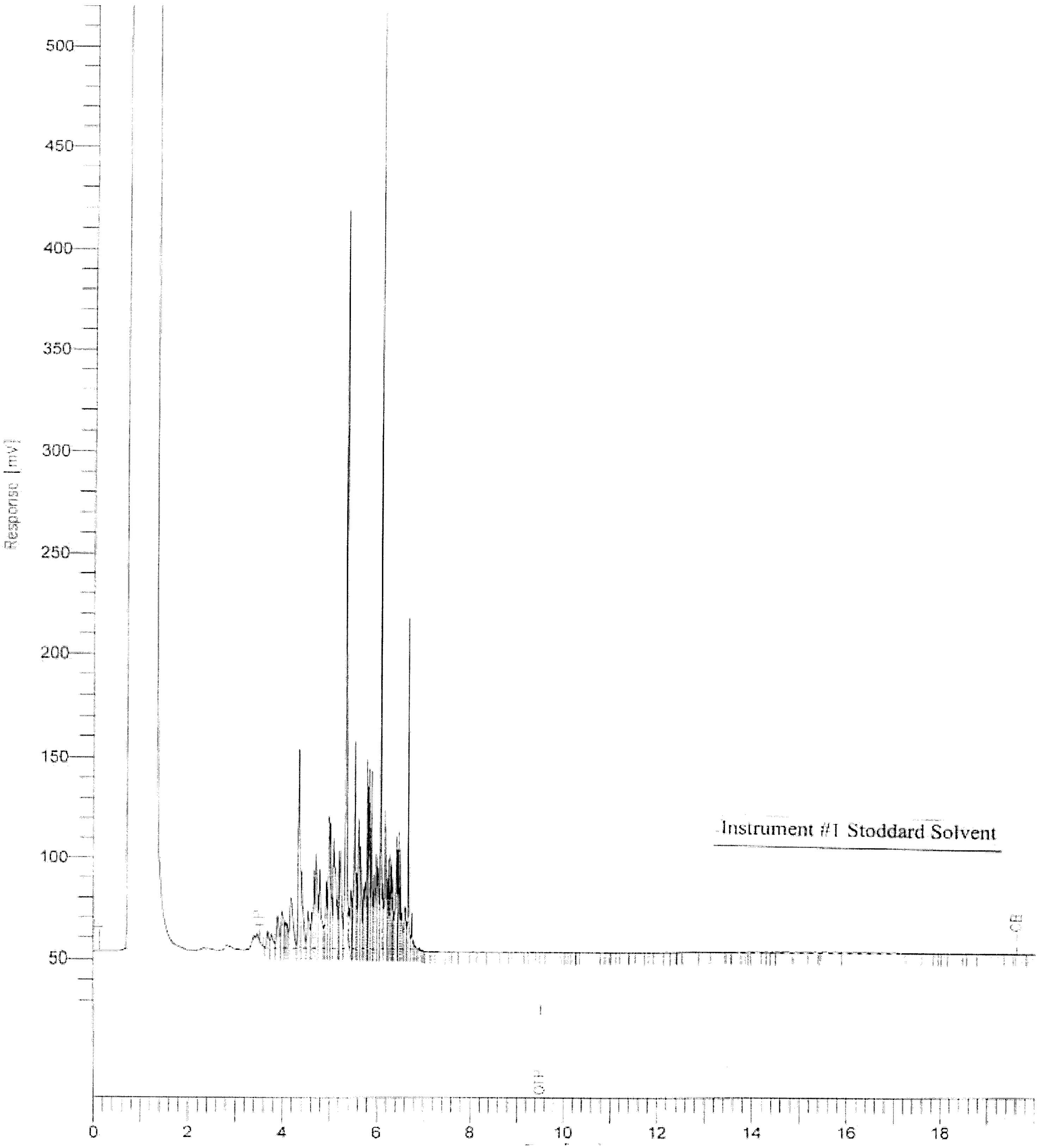


Plate 9: Laboratory Standard Chromatogram for Stoddard Solvent

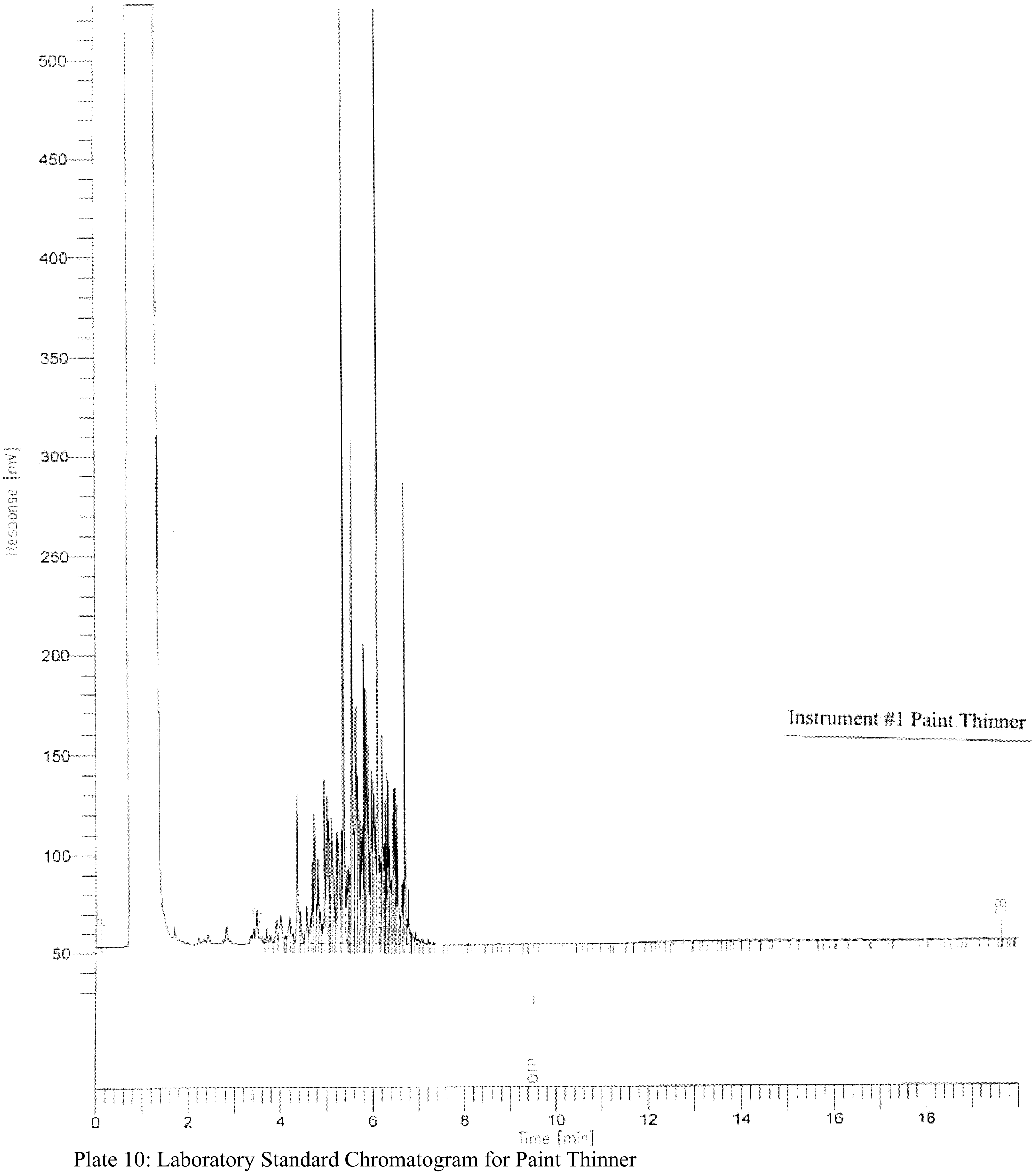


Plate 10: Laboratory Standard Chromatogram for Paint Thinner

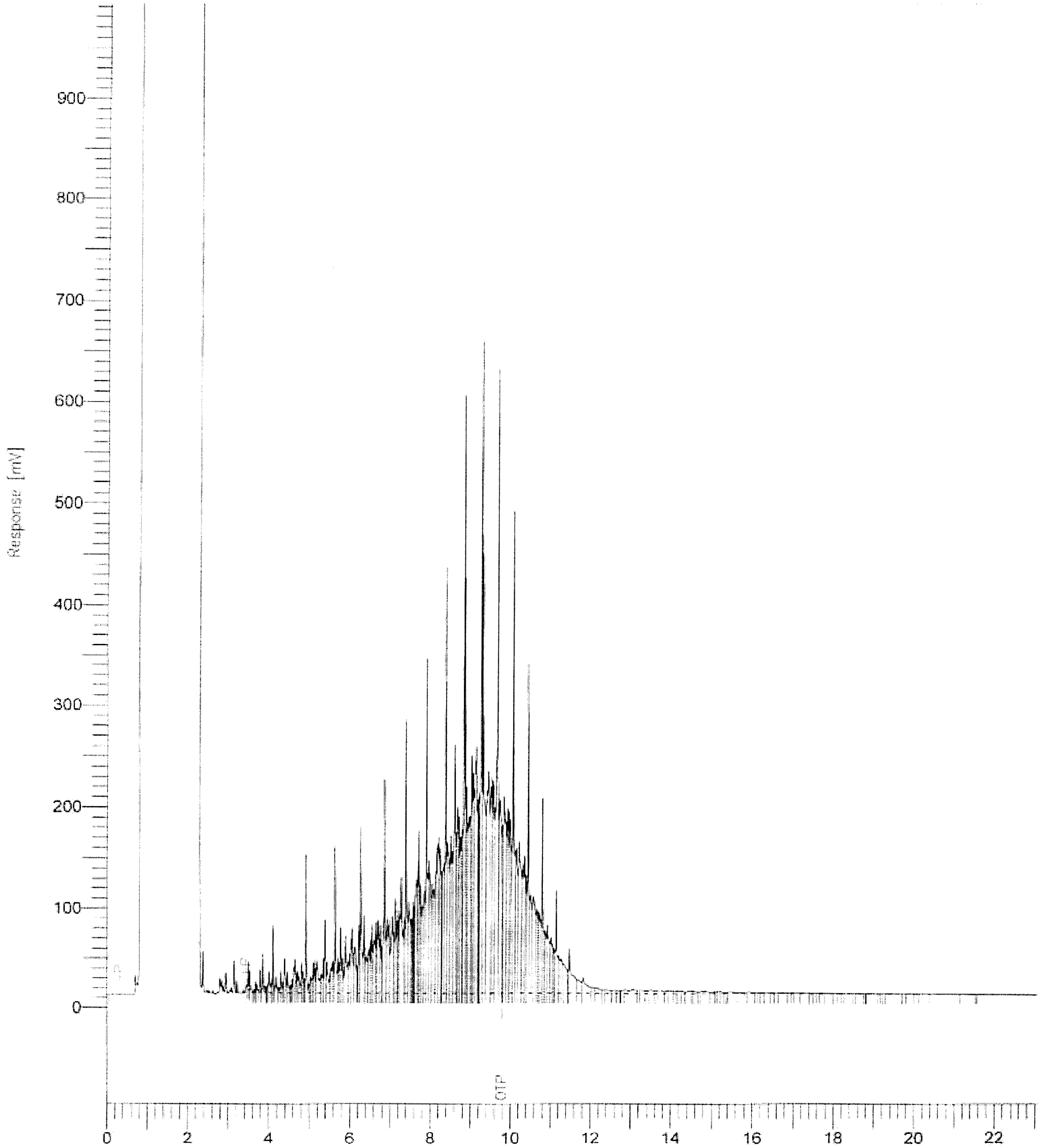


Plate11: Laboratory Standard Chromatogram for Diesel Fuel

APPENDIX I

SANBORN® FIRE INSURANCE MAPS

EDR™ Environmental
Data Resources Inc

"Linking Technology with Tradition"®

Sanborn® Map Report

Ship To: Dai Watkins
The San Joaquin Company
1120 Hollywood Avenue
Oakland, CA 94602

Order Date: 9/23/2004 **Completion Date:** 9/24/2004
Inquiry #: 1274549.1s
P.O. #: NA
Site Name: Bay Rock Oak Walk
Address: 4070 San Pablo Avenue
City/State: Emeryville, CA 94608
Cross Streets:

Customer Project: 0004.081
2013847SHA 510-336-9118

Based on client-supplied information, fire insurance maps for the following years were identified

1903 - 1 Map
1911 - 1 Map
1951 - 1 Map
1952 - 1 Map
1967 - 1 Map
1969 - 1 Map

Limited Permission to Photocopy Total Maps: 6

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Sanborn Map Abbreviations

"Linking technology with tradition"®

Abbreviation	Meaning
A	Automobile (usually designates the location of a garage)
A in B	Automobile located in basement
A S	Automatic sprinkler
Abv	Above
ACS	Automatic chemical sprinkler
AFA	Automatic fire alarm
Agr	Agricultural
Appts	Apparatus
Apts	Apartments
Asb Cl	Asbestos clad
Att'd	Attended
Aud'it'm	Auditorium
Auto Ho	Automobile house, or garage
B	Basement, boiler or occasionally brick
B& S	Boots and shoes
BPOE	Benevolent & Protective Order of Elks
B Sm	Blacksmith
B'ld'g	Building
B'lr.	Boiler
B's't	Basement
Bak'y	Bakery
Balc	Balcony
Bap	Baptist
Bbl	Barrel
Bbls	Barrels
BE	Brick enclosed elevator
Bill'ds	Billiards
Bl Sm	Blacksmith
Blk Sm	Blacksmith
Bst	Basement
C B	Cement brick or concrete block construction
C Br	Concrete brick or cement block construction
Cap'cy	Capacity
Carptr	Carpenter
CBET	Concrete enclosed elevator with traps
Chem	Chemical
Chinaw	Chinaware or porcelain
Chine	Chinese
Cl	Clad
Clo	Clothing
Co	Company
Comp	Composition construction (i.e. stucco) or compressor
Conc	Concrete
Conf'y	Confectionary (candy store)
Confec'y	Confectionary (candy store)
Constr'n	Construction
Corp'n	Corporation
D	Dwelling
DH	Double (fire) hydrant
DG	Dry goods
Drs	Doctor's office
Dwg	Dwelling
E	Open elevator
E Fl	Each Floor
El	Electric
Elec	Electrician
Eng	Engine
Ent	Entertainment
Episc'l	Episcopal
ESC	Elevator with self-closing traps
ET	Elevator with traps
Exch	Telephone exchange
Expr	Express (as used to designate a delivery service)
F	Flat (as used to designate a delivery service)
FA	Fire alarm
FE	Fire escape
F Pump	Fire pump
Fill'g Sta	Filling station, or gas station
Fl	Floor
Fr Attic	Frame constructed attic
Frat	Fraternity
Fur	Furnishings
Furn'g	Furnishings
Furne	Furniture
GAR	Grand Army of the Republic
GT	Gasoline tank
Gal	Gallery
Gall	Gallery
Gall'y	Gallery
Gen'l	General (as used to designate a general store)
Gents	Gentlemen's
Greas'g	Greasing
Gro	Grocery or groceries

Abbreviation	Meaning
HPFS	High pressure fire service
H'dw	Hardware
Hack	Hackney or delivery service
Hardw	Hardware
Ho	Hotel or house (as used to designate a warehouse)
Htr	Heater
Hyd	Hydrant
ICRR	Illinois Central Railroad
Imp	Implements
Ins	Insurance
Insts	Instruments
Ir Cl	Iron clad
K of C	Knights of Columbus
Lab	Laboratory
Lodg'g	Lodging
Luth	Lutheran
Luth'n	Lutheran
ME	Methodist Episcopal
Mach'y	Machinery
Mak'r	Maker
Manf'y	Manufactory or factory
Mdse	Merchandise
Mfy	Manufactory or factory
Mill'y	Millinery
Mkg	Making
Mo	Motor
NS	Not sprinklered
OU	Open under
Off	Office
PO	Post office
Paint'g	Painting
Pat Med	Patent medicines
Plumb'g	Plumbing
Print'g	Printing
QH	Quadruple (fire) hydrant
RC	Roman Catholic
R'f	Roof
R'm	Room
Rep	Repair
Rep'g	Repairing
Repos'ry	Repository
Restr't	Restaurant
Rf	Roof
Rm	Room
S	Store
SA	Spark arrestor
S Vac	Store portion of building is vacant
Sal	Saloon
Sky'ts	Skylights
Sm	Smith, as in gunsmith or blacksmith
Sm Ho	Smokehouse
Sp'k'l'rs	Sprinklers
St'ge	Storage
St'y	Story
Sta	Station
Stat'y	Stationery
TH	Triple (fire) hydrant
Tel	Telephone
Tenem'ts	Tenements
TESC	Tile enclosed elevator with self-closing traps
Tinw	Tinware
Trimm'g	Trimming
U	Upright
Up	Upright
VP	Vertical pipe
Vac	Vacant
Ven'd	Veneered
Ven'r'd	Veneered
W	Ware, as in warehouse or wareroom
WC	Water closet or toilet
WG	Wire glass skylights
W Ho	Warehouse
WPA	Works Progress Administration
W'ks	Works
Whol	Wholesale
Wkg	Working
Woodwkg	Woodworking

Environmental Data Resources, Inc.

Your one-stop shop for environmental risk management data.

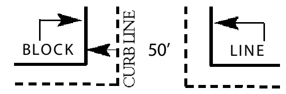
phone: 800.352.0050 • fax: 800.231.6802 • web: www.edrnet.com

Sanborn Map Legend

"Linking technology with tradition"®

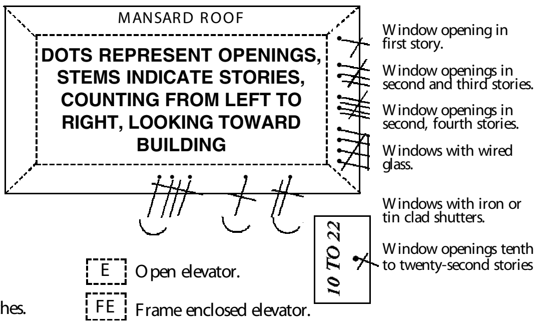
TILE 1st BRICK 1st PYROBAR 1st	Fire proof construction (OR FIRE RESISTIVE CONST'N)
ADOBE	Adobe building
HEIGHT OF BUILDING IN FEET FROM GROUND TO ROOF LINE 57'	Stone building
(C.BR.)	Concrete, lime cinder or cement brick
(C.B.)	Hollow concrete or cement block const'n
(CONC.)	Concrete or reinforced concrete const'n
(TILE)	Tile building
NUMBER OF STORIES 4	Brick building with frame cornice
TWO STORIES AND BSMT COMPOSITION ROOF 2B ●	Brick building with stone front
SHINGLE ROOF X	Brick building with frame side (DIVIDED BY FRAME PARTITION)
(VEND)	Brick veneered building
BRICK 1ST	Brick and frame building
FRAME, BRICK LINED	Frame building, brick lined
F = FLAT S = STORE	Frame building, metal clad
D = DWELLING	Frame building
A in B =AUTO. IN BSMT	Iron building
LOFT	Tenant building occupied by various manufacturing or occupancies
(ASB.CL.)	Frame building covered with asbestos
NON COMBUSTIBLE ROOF COVERING OF METAL, SLATE, TILE OR ASBESTOS SHINGLES ○	Brick building with brick or metal cornice
SKYLIGHT LIGHTING TOP STORY ONLY	Fire wall 6 inches above roof
3. SKYLIGHT LIGHTING THREE STORIES	Fire wall 12 inches above roof
	Fire wall 18 inches above roof
W.G. WIRED GLASS SKYLIGHT	Fire wall 36 inches above roof
FIRE WALL 48 INCHES ABV. RF. 48	
8 12 16 16 4	Figures 8,12,16 indicate thickness of wall in inches
8 12 16 16 20 6	Wall without opening and size in inches
2345 AL L	Wall with openings on floors as designated
	Opening with single iron or tin clad door
	Opening with double iron or tin clad doors
	Opening with standard fire doors
	Openings with wired glass doors
W.T.	WATER TANK
BRICK 1ST	Drive or passage way
	Stable
A.	Auto. (House or private garage)
(C.B.) (C.B. & BR.)	Solid brick with interior walls of C.B. or C.B. and brick mixed

C.B. & BR. CONST'N ∞	Mixed construction of C.B. and brick with one wall of solid brick.
C.B. & BR. CONST'N (BR. FACED)	Mixed construction of C.B. and brick with one wall faced with 4" brick.
C.B. & BR. CONST'N	Mixed construction of C.B. and brick throughout.
6" W.PIPE	Water pipes and size in inches.
6" W.PIPE (PRIVATE)	Water pipes of private supply
2 D o 416 56	House numbers shown nearest to buildings are official or actually up on buildings. Old house numbers shown furthest from buildings.
FP-1962 (conc.) A-I-a	A fire-resistive building built in 1962 with concrete walls and reinforced concrete frame, floors and roof.
FPX-1962 (METAL PANELS) E-2-b NONCOMB CEIL'S	A fire-resistive building built in 1962 with metal panel walls, indirectly protected steel frame, concrete floors and roof on metal lath, noncombustible ceilings.
NC-1962 (C.B.) H-2-d	A noncombustible building built in 1962 with concrete block walls; unprotected steel columns and beams; concrete floors on metal lath and steel deck roof.



Width of street (BETWEEN BLOCK LINES, NOT CURB LINES.)

24	Reference to adjoining page.
+	Fire engine house, as shown on key map.
◉	Fire pump.
(36)	Under page number refers to corresponding page of previous edition.



E	Open elevator.
FE	Frame enclosed elevator.
ET	Frame enclosed elevator with traps.
ESC	Frame enclosed elevator with self closing traps.
CBET	Concrete block enclosed elevator with traps.
TESC	Tile enclosed elevator with self closing traps.
BE	Brick enclosed elevator with wired glass door.
5	Block number.
○	V.P. Vertical pipe or stand pipe.
AFA	Automatic fire alarm.
IEP	Independent electric plant.
AS	Automatic sprinklers.
ACS	Automtc. chemical sprinklers.
AS 1ST ONLY	Automatic sprinklers in part of building only. (NOTE UNDER SYMBOL INDICATES PROTECTED PORTION OF BUILDING)
NS	Not sprinklered.
F.E.	Outside vertical pipe on fire escape.
FA	Fire alarm box.
●	Single hydrant.
D.H. ●	Double hydrant.
T.H. ●	Triple hydrant.
Q.H. ● H.P.F.S.	Quadruple hydrant of the "High Pressure Fire Service."
FA H.P.F.S.	Fire alarm box of the "High Pressure Fire Service"
20"W.Pipe (H.P.F.S.)	Water pipes of the "High Pressure Fire Service"
+ +12" + +	Water pipes and hydrants of the "High Pressure Fire Service" as shown on key map.

IR. CH. ○	Iron chimney
IR. CH.S.A. ○	Iron chimney (WITH SPARK ARRESTOR)
▣	Brck. chmny.
(15)	Ground elevation
U.P.B.	Vertical steam boiler
G.T. ○	Gasoline tank
(O.U.)	Open under
	Siamese fire dept. connection
	Single fire dept. connection

CODING OF STRUCTURAL UNITS FOR FIREPROOF AND NON-COMBUSTIBLE BUILDINGS

FRAMING

CODE	STRUCTURAL UNIT
A.	Reinforced Concrete Frame.
B.	Reinforced Concrete Joists, Columns, Beams, Trusses, Arches, Masonry Piers.
C.	Protected Steel Frame.
D.	Individually Protected Steel Joists, Columns, Beams, Trusses, Arches.
E.	Indirectly Protected Steel Frame.
F.	Indirectly Protected Steel Joists, Columns, Beams, Trusses, Arches.
G.	Unprotected Steel Frame.
H.	Unprotected Steel Joists, Columns, Beams, Trusses, Arches.
O.	Masonry Bearing Walls.

FLOORS

CODE	STRUCTURAL UNIT
1.	Reinforced Concrete. Reinforced Concrete with Masonry Units. Pre-cast Concrete or Gypsum Slabs or Planks.
2.	Concrete on Metal Lath, Incombustible Form Boards, Paper-backed Wire Fabric, Steel Deck, and Cellular, Ribbed or Corrugated Steel Units.
3.	Open Steel Deck or Grating.

ROOF

CODE	STRUCTURAL UNIT
a.	Reinforced Concrete. Reinforced Concrete with Masonry Units. Reinforced Gypsum Concrete. Pre-cast Concrete or Gypsum Slabs or Planks.
b.	Concrete or Gypsum on Metal Lath, Incombustible Form Boards, Paper-backed Wire Fabric, Steel Deck, and Cellular, Ribbed or Corrugated Steel Units.
c.	Incombustible Composition Boards with or without Insulation. Masonry or Metal Tiles.
d.	Steel Deck, Corrugated Metal or Asbestos Protected Metal with or without Insulation.

The coding for framing, floor and roof structural units as shown above is used in describing the construction of fire-resistive buildings. In addition, reports for fire-resistive buildings will show the date built and wall construction when other than brick.

FP buildings have masonry floors and roof; concrete and/or directly or indirectly protected steel framing; and clay brick, stone or poured concrete walls.

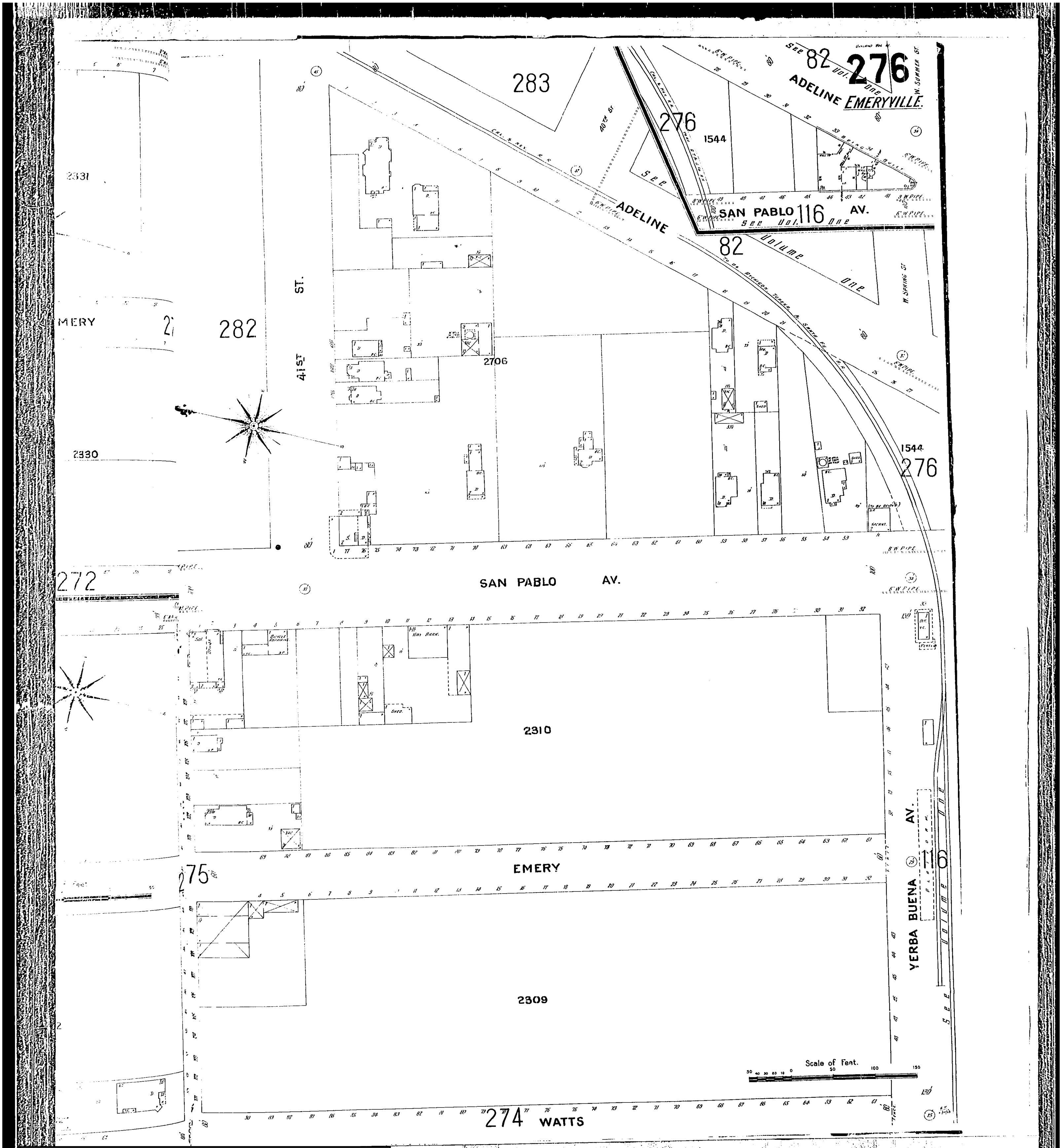
FPX buildings are FP buildings with inferior walls such as concrete block, cement brick, metal or glass panels, etc.

NC buildings have unprotected steel framing and fire-resistive but non-masonry floors and roof.

LAND USE CODE APPLICABLE TO CHANGES DIAGRAMMED AFTER 5/69

R	RESIDENTIAL	M	MANUFACTURING
RT	RESIDENTIAL-TRANSIENT	P	PUBLIC OR INSTITUTIONAL
C	COMMERCIAL	U	UTILITY
W	WAREHOUSE	T	TRANSPORTATION

NUMERICAL PREFIX INDICATES THE NUMBER OF ESTABLISHMENTS IN EACH CATEGORY



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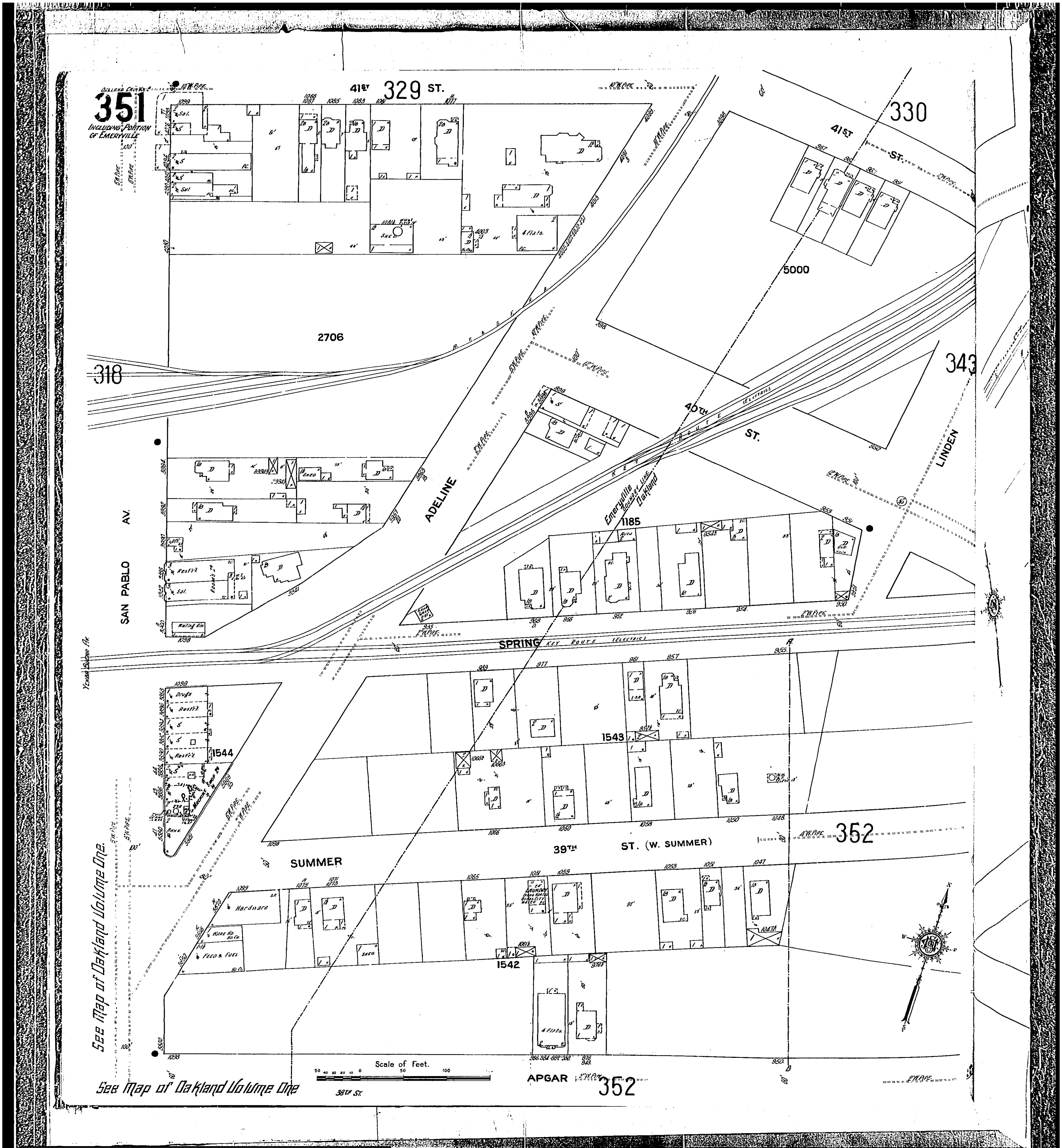
Year EDR Research Associate



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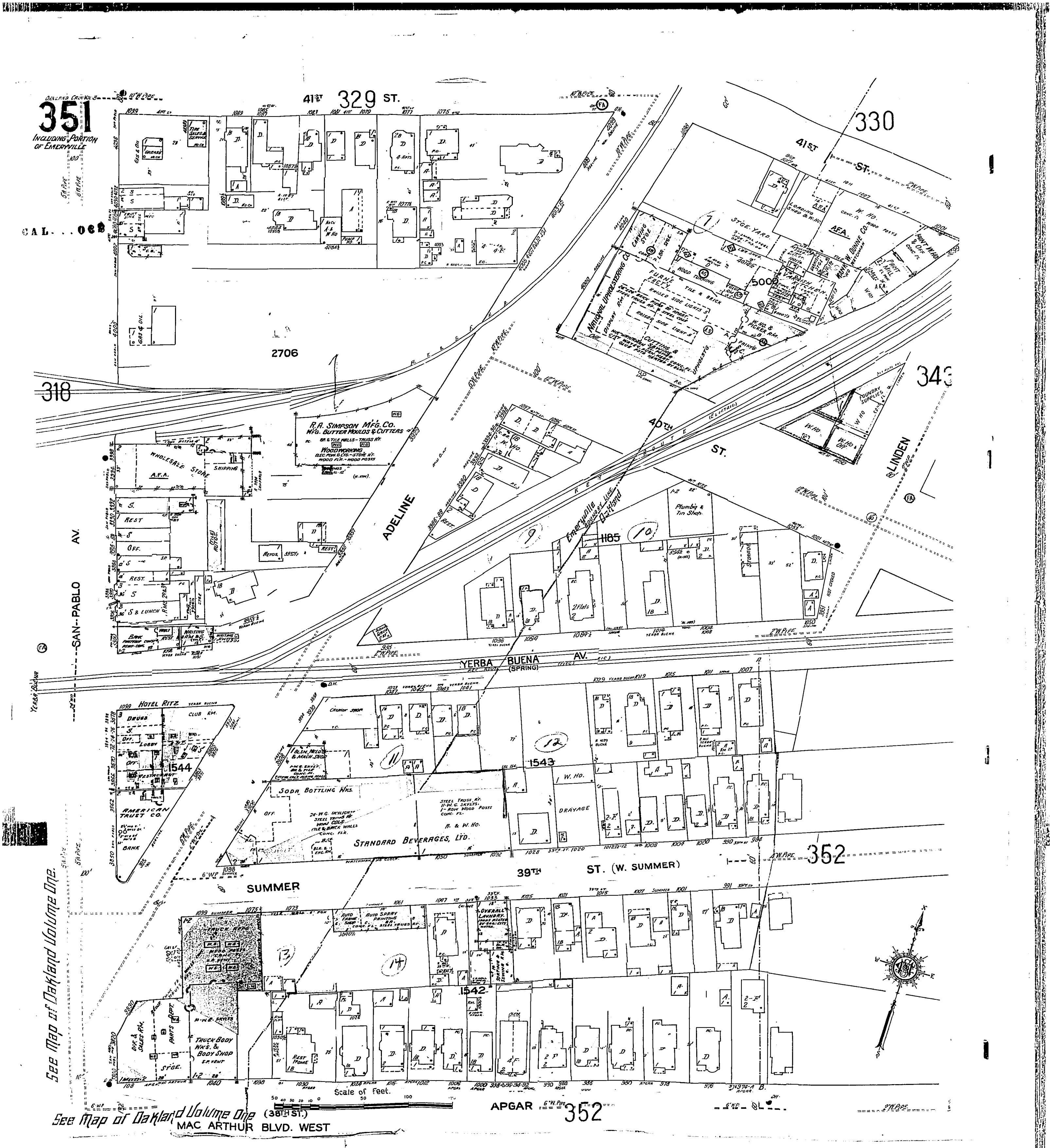

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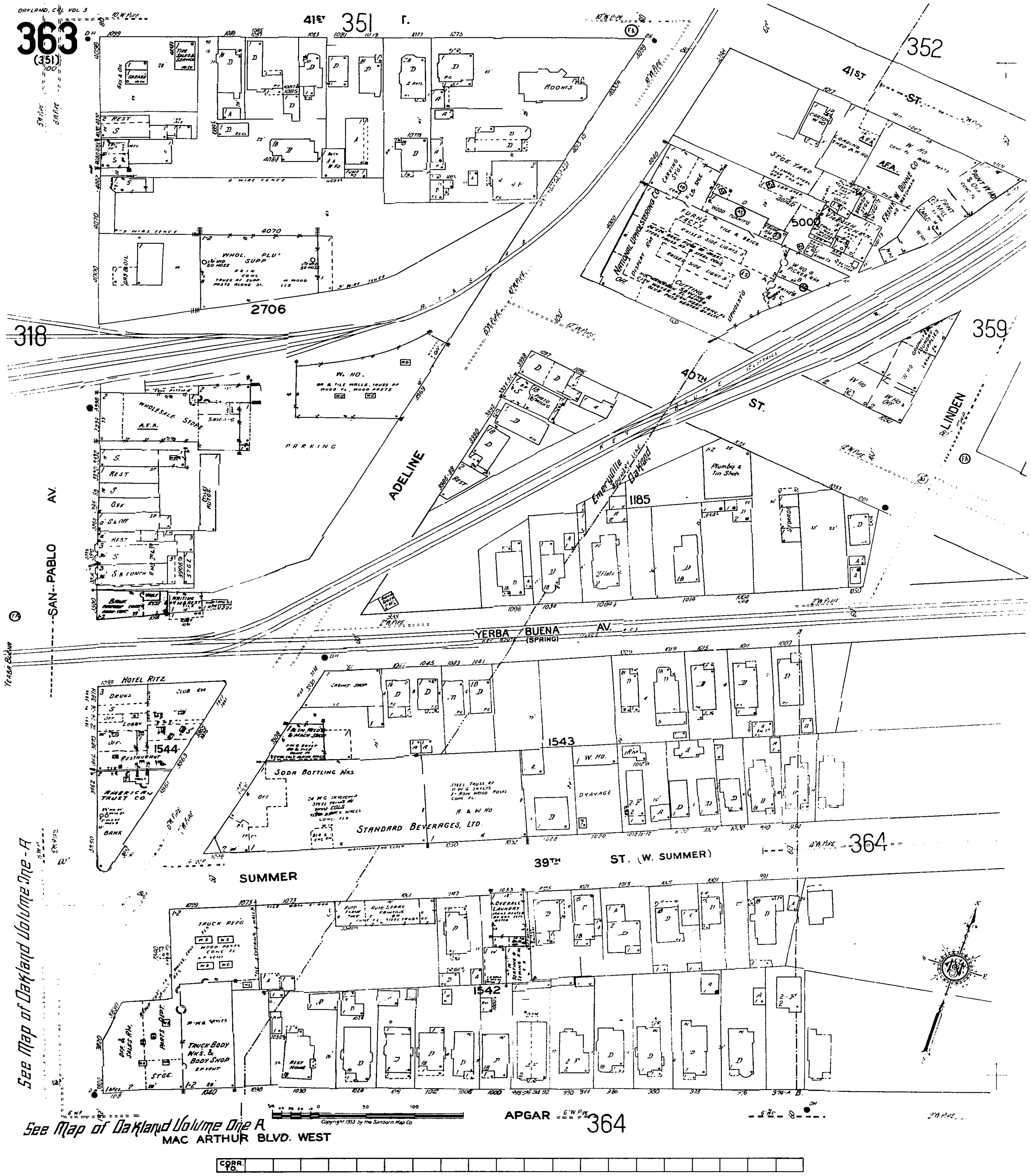

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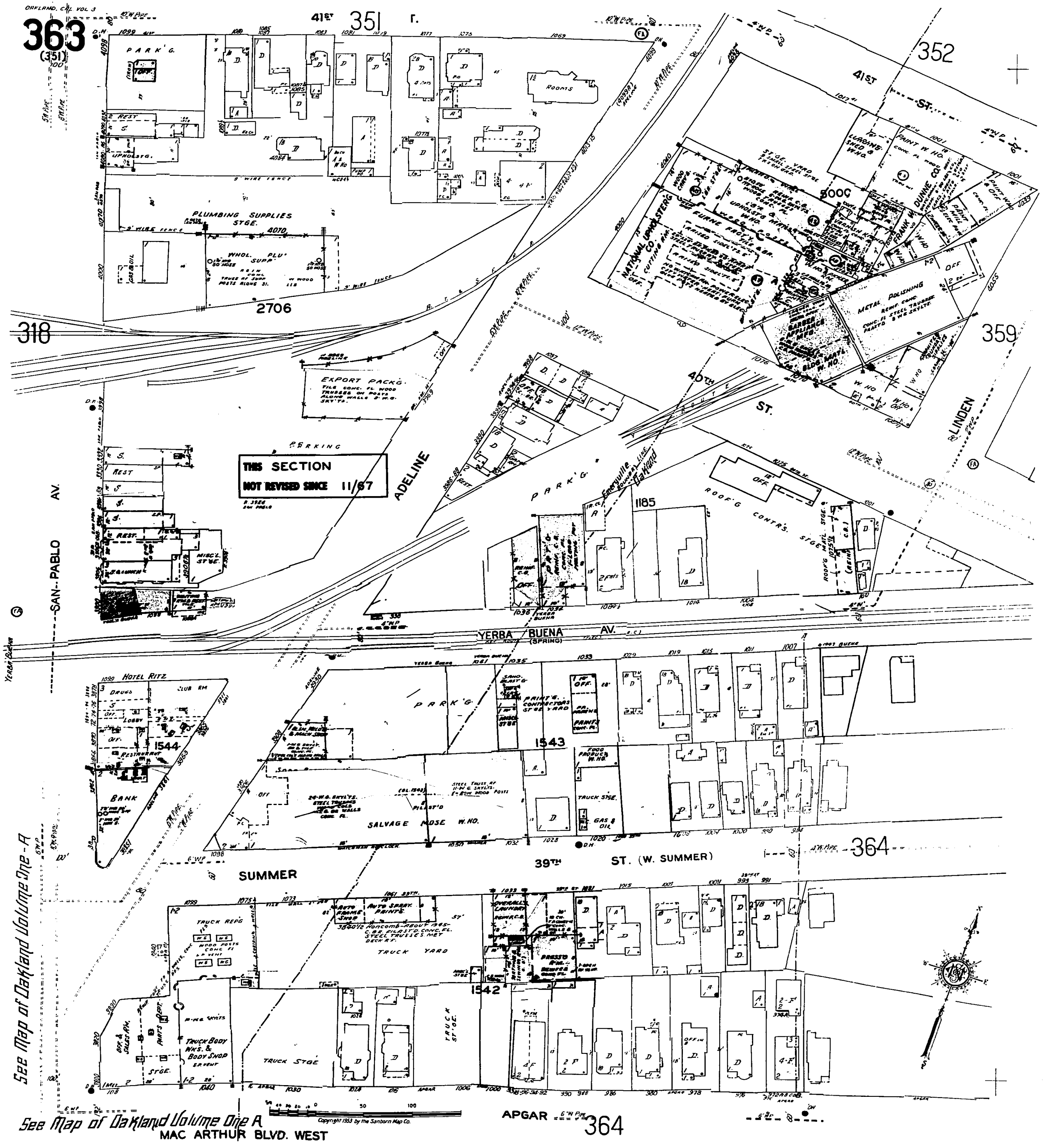

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APPENDIX II

TRENCH, BORING AND WELL LOGS

The San Joaquin Company Inc.

Trench Log

Surface Elevation: 43.3 - 43.2 ft.

Trench Length at Surface: 13.0 ft.

Trench Width at Surface: 4.0 ft.

Maximum Depth of Trench: 8.5 ft.

Depth to First Water: n/a ft.

Depth to Water on: Not measured ft.

NOTES:
1. Uniform Soil Classifications are from field observations only. No geotechnical engineering laboratory tests were performed.

2. All Elevations are in feet MSL.

3. Ground surface elevations adjusted to conform to common datum reference as site borings (April 2005).

Trench ID: **Trench 1**

Project: Oak Walk Project

Project No.: 0004.081

Owner: Bay Rock Residential LLC

Location: San Pablo Avenue, Emeryville, California

Date Excavated: 12/03/03

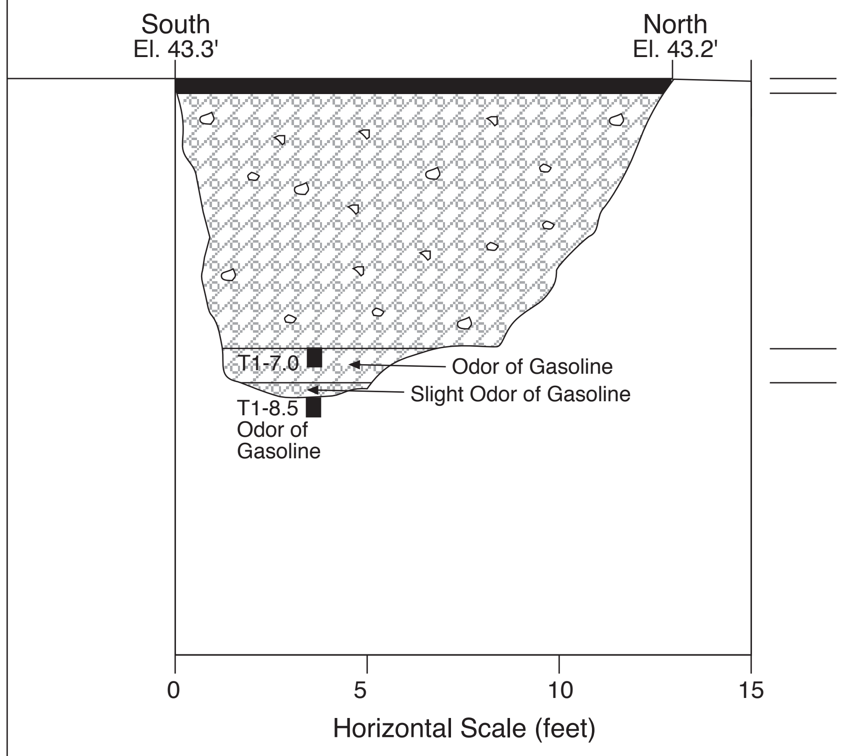
Excavation By: Dietz Irrigation

Logged By: D J Watkins

Equipment Operator: H B Dietz

Equipment Used: Case Excavator

Depth (Feet)	Sample	Trench Log / Description
0		Bituminous Macadam 4 in.
2		
4		(SC) - Brown / black, Silty CLAY with bricks and other debris (FILL)
6		
8	soil soil	(SC) - Grey / green with brown stiff Silty CLAY (SC) - Brown, medium soft Silty CLAY
10		
12		
14		
16		
18		
20		
22		
24		
26		
28		
30		



Exploratory Trench 1
Average trench width 4 feet, Trench Length 13 feet

The San Joaquin Company Inc.

Trench Log

Surface Elevation: 44.6 - 45.1 ft.

Trench Length at Surface: 12.5 ft.

Trench Width at Surface: 4.0 ft.

Maximum Depth of Trench: 8.5 ft.

Depth to First Water: n/a ft.

Depth to Water on: Not measured ft.

NOTES:
1. Uniform Soil Classifications are from field observations only. No geotechnical engineering laboratory tests were performed.

2. All Elevations are in feet MSL.

3. Ground surface elevations adjusted to conform to common datum reference as site borings (April 2005).

Trench ID: **Trench 2**

Project: Oak Walk Project

Project No.: 0004.081

Owner: Bay Rock Residential LLC

Location: San Pablo Avenue, Emeryville, California

Date Excavated: 12/03/03

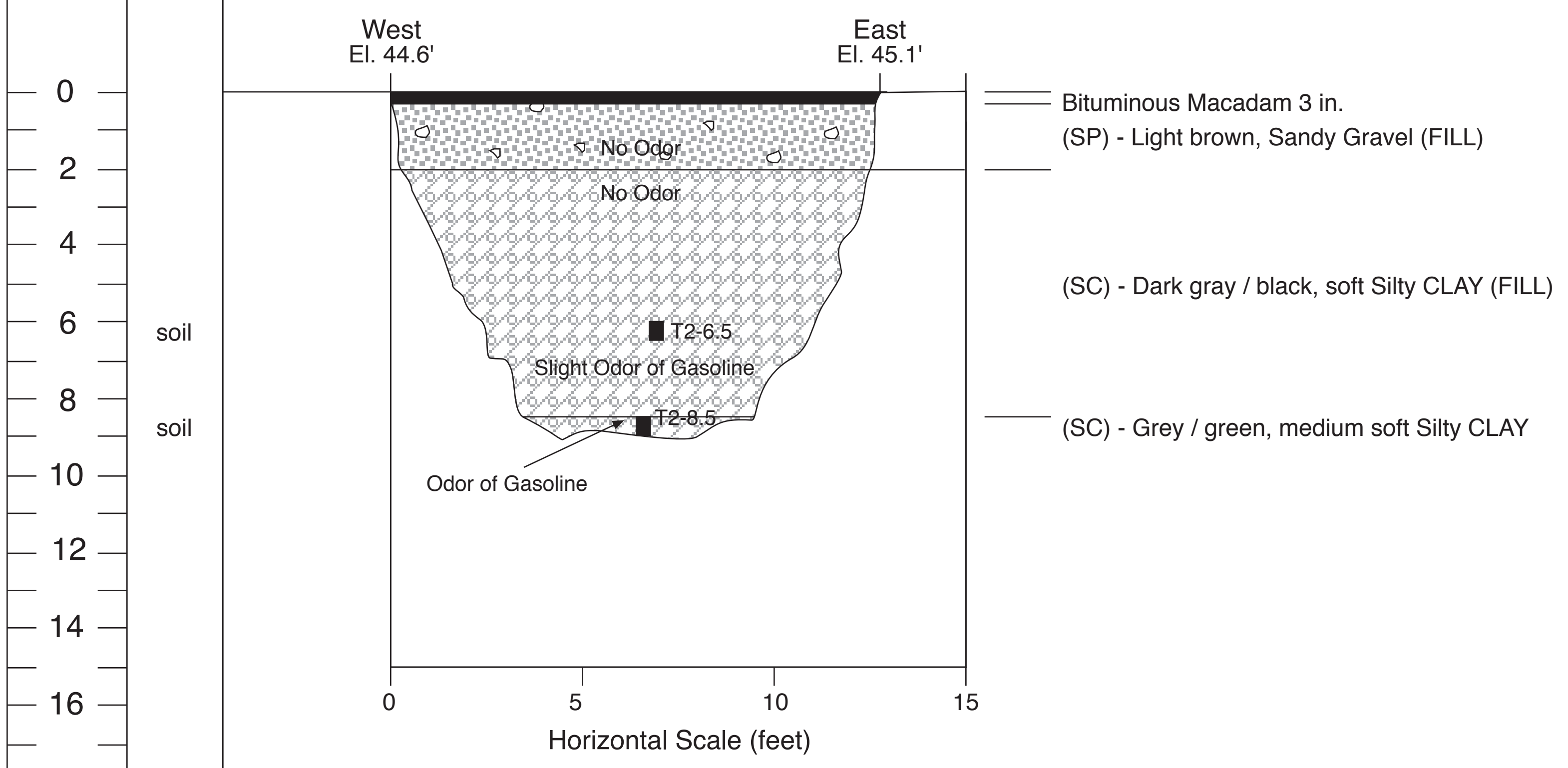
Excavation By: Dietz Irrigation

Logged By: D J Watkins

Equipment Operator: H B Dietz

Equipment Used: Case Excavator

Depth (Feet)	Sample	Trench Log / Description
6	soil	
8	soil	



Exploratory Trench 2
Average trench width 4 feet, Trench Length 12.5 feet

The San Joaquin Company Inc.

Trench Log

Surface Elevation: 47.2 - 47.7 ft.

Trench Length at Surface: 31.0 ft.

Trench Width at Surface: 4.0 ft.

Maximum Depth of Trench: 9.5 ft.

Depth to First Water: 9.0 ft.

Depth to Water on: Not measured ft.

NOTES:
1. Uniform Soil Classifications are from field observations only. No geotechnical engineering laboratory tests were performed.

2. All Elevations are in feet MSL.

3. Ground surface elevations adjusted to conform to common datum reference as site borings (April 2005).

Trench ID: **Trench 3**

Project: Oak Walk Project

Project No.: 0004.081

Owner: Bay Rock Residential LLC

Location: San Pablo Avenue, Emeryville, California

Date Excavated: 12/03/03

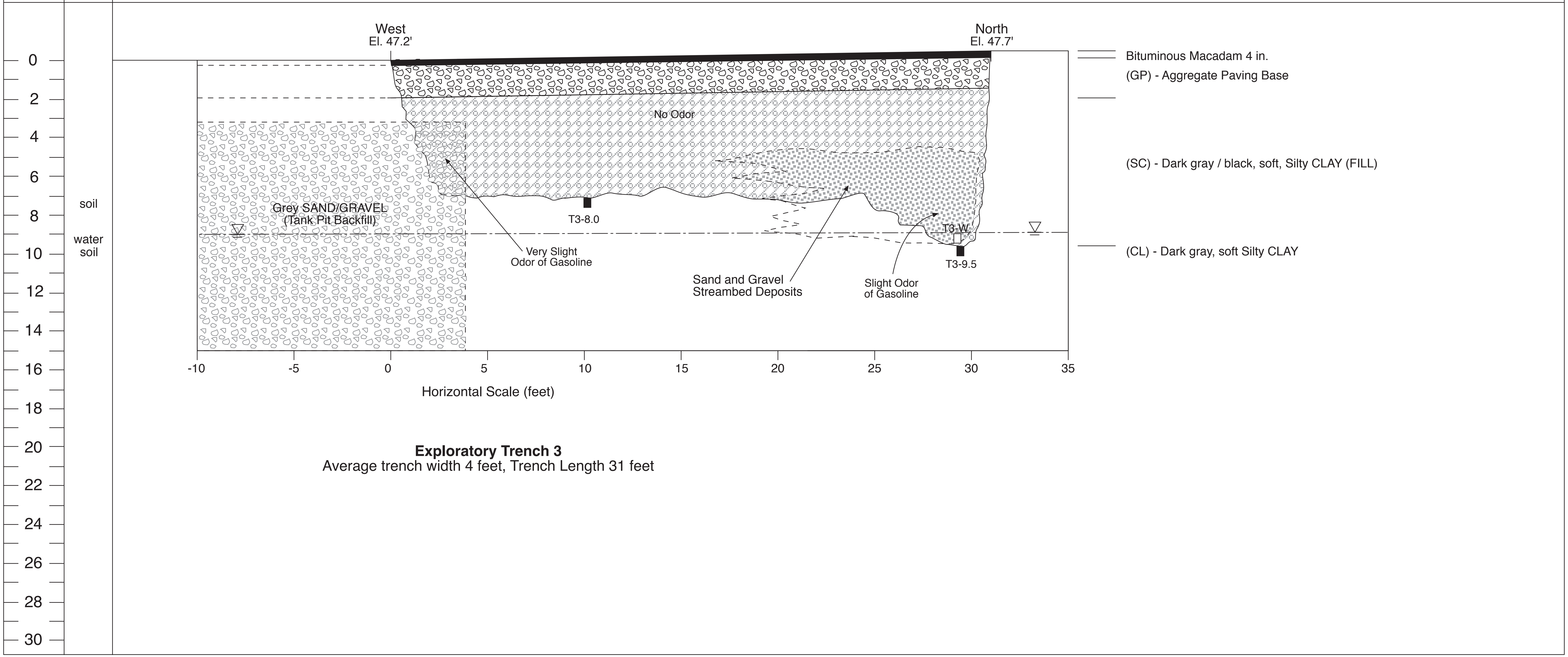
Excavation By: Dietz Irrigation

Logged By: D J Watkins

Equipment Operator: H B Dietz

Equipment Used: Case Excavator

Depth (Feet)	Sample	Trench Log / Description



Exploratory Trench 3
Average trench width 4 feet, Trench Length 31 feet

The San Joaquin Company Inc.

Trench Log

Surface Elevation: 48.0 - 48.13 ft.

Trench Length at Surface: 14.0 ft.

Trench Width at Surface: 4.0 ft.

Maximum Depth of Trench: 10.5 ft.

Depth to First Water: n/a ft.

Depth to Water on: Not measured ft.

NOTES:
1. Uniform Soil Classifications are from field observations only. No geotechnical engineering laboratory tests were performed.

2. All Elevations are in feet MSL.

3. Ground surface elevations adjusted to conform to common datum reference as site borings (April 2005).

Trench ID: **Trench 4**

Project: Oak Walk Project

Project No.: 0004.081

Owner: Bay Rock Residential LLC

Location: San Pablo Avenue, Emeryville, California

Date Excavated: 12/03/03

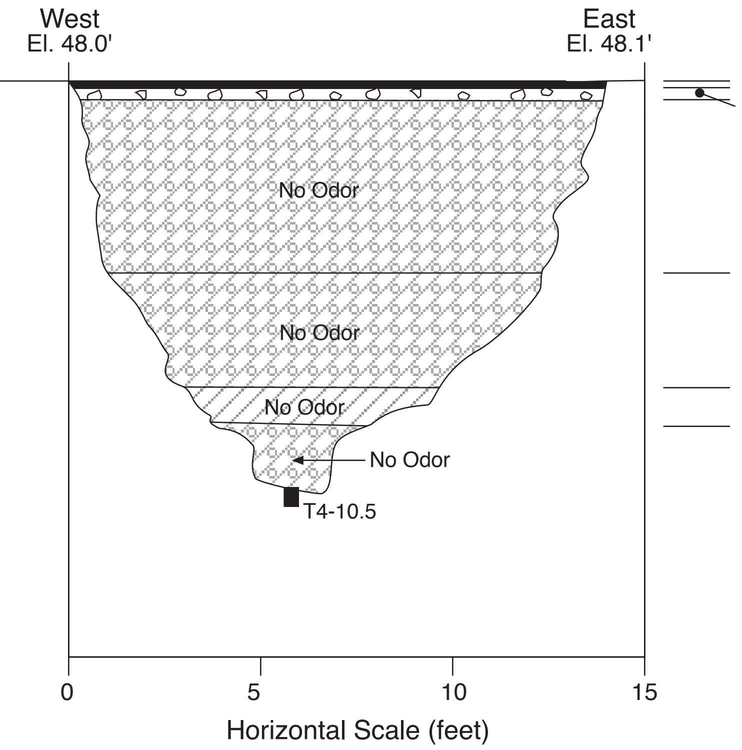
Excavation By: Dietz Irrigation

Logged By: D J Watkins

Equipment Operator: H B Dietz

Equipment Used: Case Excavator

Depth (Feet)	Sample	Trench Log / Description
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30	soil	



Bituminous Macadam, 2 in.
(GP) - Aggregate paving base, 4in.

(SC) - Dark gray / black, soft Silty CLAY with some glass (FILL)

(SC) - Light brown, medium stiff Silty CLAY

(CL) - Gray / green, moderately stiff CLAY

(SC) - Light brown, medium stiff Silty CLAY

Exploratory Trench 4
Average trench width 4 feet, Trench Length 14.0 feet

The San Joaquin Company Inc.

Trench Log

Trench ID: **Trench 5**

Project: Oak Walk Project

Project No.: 0004.081

Owner: Bay Rock Residential LLC

Location: San Pablo Avenue, Emeryville, California

Date Excavated: 12/02/03

Excavation By: Dietz Irrigation

Logged By: D J Watkins

Equipment Operator: H B Dietz

Equipment Used: Case Excavator

Surface Elevation: 45.1 - 45.2 ft.

Trench Length at Surface: 21.0 ft.

Trench Width at Surface: 4.0 ft.

Maximum Depth of Trench: 8.5 ft.

Depth to First Water: n/a ft.

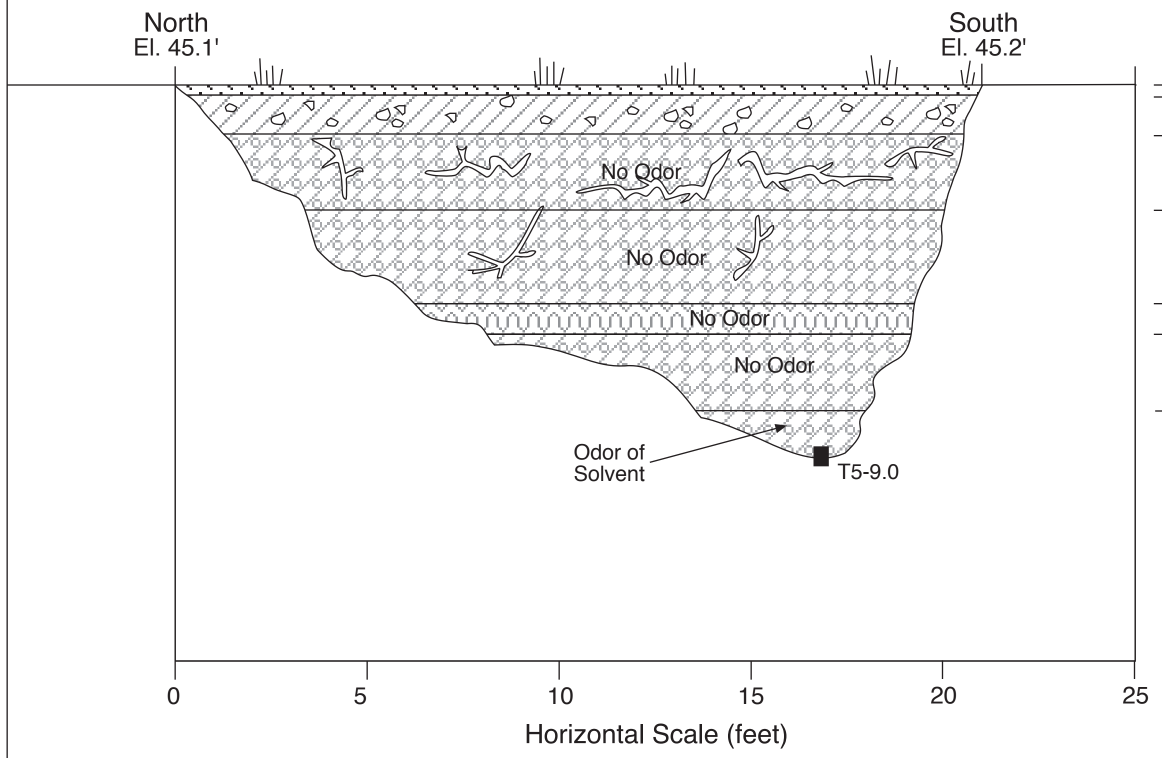
Depth to Water on: Not measured ft.

NOTES:
1. Uniform Soil Classifications are from field observations only. No geotechnical engineering laboratory tests were performed.

2. All Elevations are in feet MSL.

3. Ground surface elevations adjusted to conform to common datum reference as site borings (April 2005).

Depth (Feet)	Sample	Trench Log / Description
0		
2		
4		
6		
8		
10	soil	
12		
14		
16		
18		
20		
22		
24		
26		
28		
30		



Topsoil under grass, 3 in.
Random FILL

(SC) - Brown, soft Silty CLAY with heavy tree roots

(SC) - Brown, soft Silty CLAY with tree roots

(Pt) - Vegetative Matter with dryrot fungus in Silty CLAY

(SC) - Brown, medium stiff Silty CLAY

(SC) - Grey/ green, medium stiff Silty CLAY

Exploratory Trench 5
Average trench width 4 feet, Trench Length 21.0 feet

The San Joaquin Company Inc.

Trench Log

Surface Elevation: 44.1 - 43.6 ft.

Trench Length at Surface: 17.25 ft.

Trench Width at Surface: 4.0 ft.

Maximum Depth of Trench: 8.5 ft.

Depth to First Water: n/a ft.

Depth to Water on: Not measured ft.

NOTES:
1. Uniform Soil Classifications are from field observations only. No geotechnical engineering laboratory tests were performed.

2. All Elevations are in feet MSL.

3. Ground surface elevations adjusted to conform to common datum reference as site borings (April 2005).

Trench ID: **Trench 6**

Project: Oak Walk Project

Project No.: 0004.081

Owner: Bay Rock Residential LLC

Location: San Pablo Avenue, Emeryville, California

Date Excavated: 12/02/03

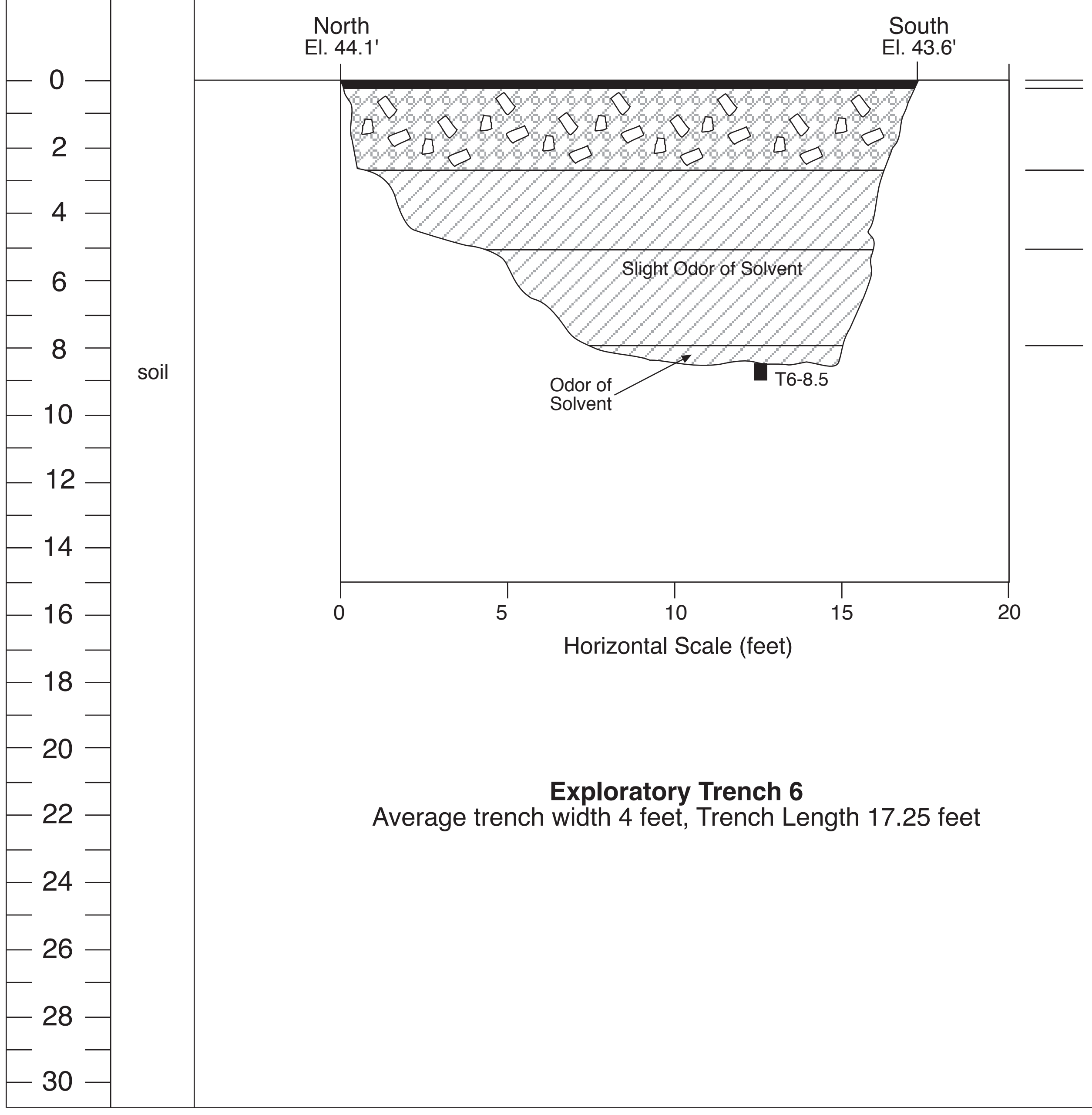
Excavation By: Dietz Irrigation

Logged By: D J Watkins

Equipment Operator: H B Dietz

Equipment Used: Case Excavator

Depth (Feet)	Sample	Trench Log / Description



Bituminous macadam, 2in.

(SC) - Silty CLAY with bricks (Random FILL)

(CL) - Dark grey / black, medium soft Silty CLAY (FILL)

(CL) - Light brown, medium firm Silty CLAY

(CL) - Grey/ green, medium soft Silty CLAY with some Gravel

Exploratory Trench 6
Average trench width 4 feet, Trench Length 17.25 feet

The San Joaquin Company Inc.

Trench Log

Surface Elevation: 43.9 - 43.8 ft.

Trench Length at Surface: 21.5 ft.

Trench Width at Surface: 4.0 ft.

Maximum Depth of Trench: 9.5 ft.

Depth to First Water: 8.0 ft.

Depth to Water on: Not measured ft.

NOTES:
1. Uniform Soil Classifications are from field observations only. No geotechnical engineering laboratory tests were performed.

2. All Elevations are in feet MSL.

3. Ground surface elevations adjusted to conform to common datum reference as site borings (April 2005).

Trench ID: **Trench 7**

Project: Oak Walk Project

Project No.: 0004.081

Owner: Bay Rock Residential LLC

Location: San Pablo Avenue, Emeryville, California

Date Excavated: 12/02/03

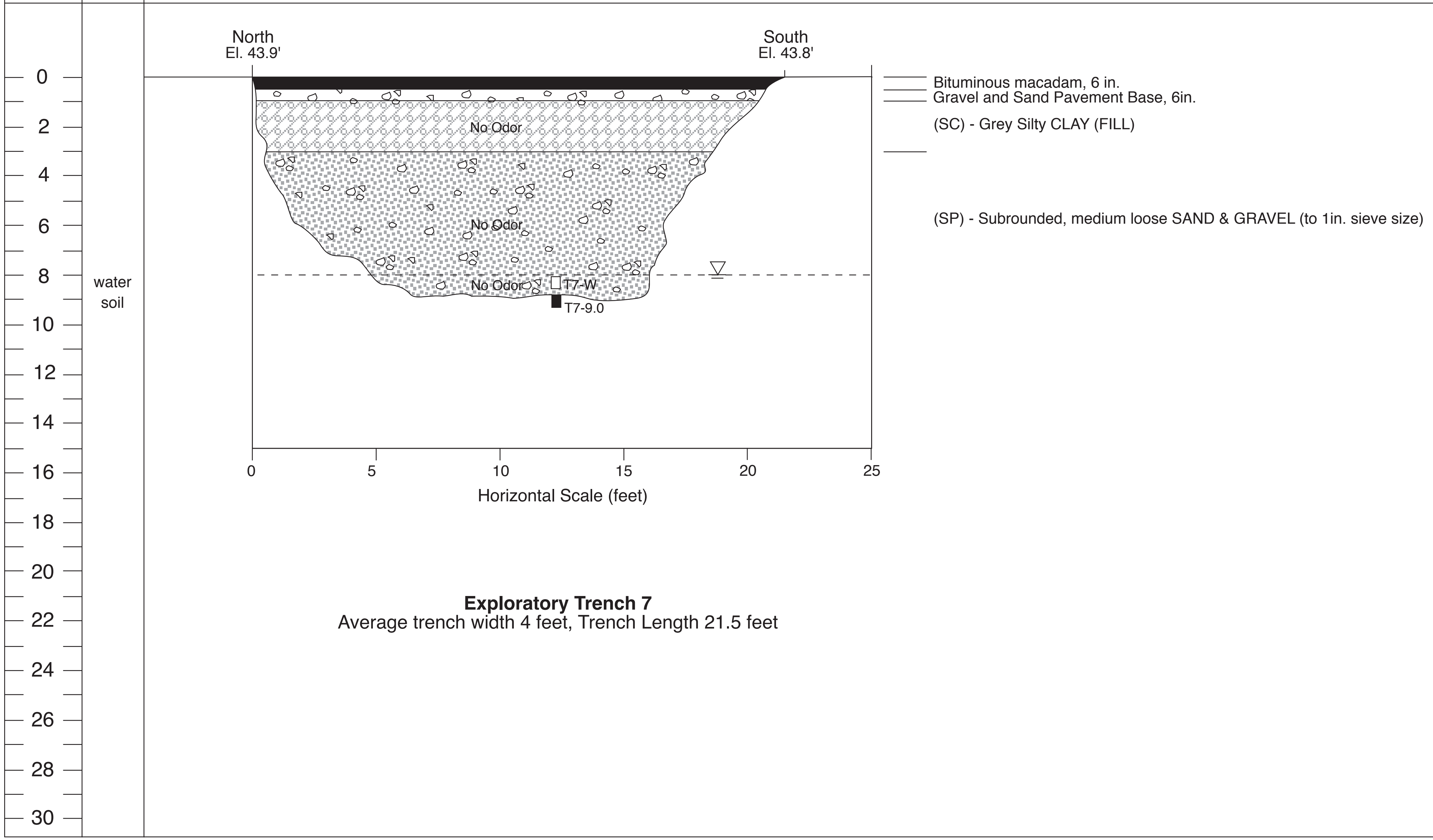
Excavation By: Dietz Irrigation

Logged By: D J Watkins

Equipment Operator: H B Dietz

Equipment Used: Case Excavator

Depth (Feet)	Sample	Trench Log / Description



Exploratory Trench 7
Average trench width 4 feet, Trench Length 21.5 feet

The San Joaquin Company Inc.

Trench Log

Surface Elevation: 45.2 - 45.4 ft.

Trench Length at Surface: 13.5 ft.

Trench Width at Surface: 4.0 ft.

Maximum Depth of Trench: 9.0 ft.

Depth to First Water: n/a ft.

Depth to Water on: Not measured ft.

NOTES:
1. Uniform Soil Classifications are from field observations only. No geotechnical engineering laboratory tests were performed.

2. All Elevations are in feet MSL.

3. Ground surface elevations adjusted to conform to common datum reference as site borings (April 2005).

Trench ID: **Trench 8**

Project: Oak Walk Project

Project No.: 0004.081

Owner: Bay Rock Residential LLC

Location: San Pablo Avenue, Emeryville, California

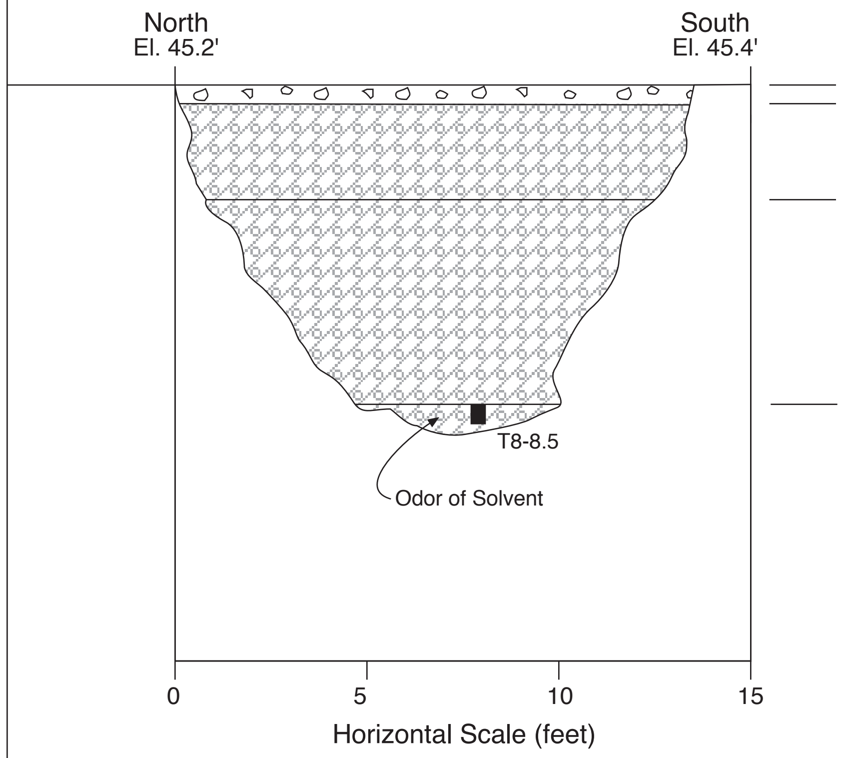
Date Excavated: 12/02/03

Excavation By: Dietz Irrigation

Logged By: D J Watkins

Equipment Operator: H B Dietz

Equipment Used: Case Excavator



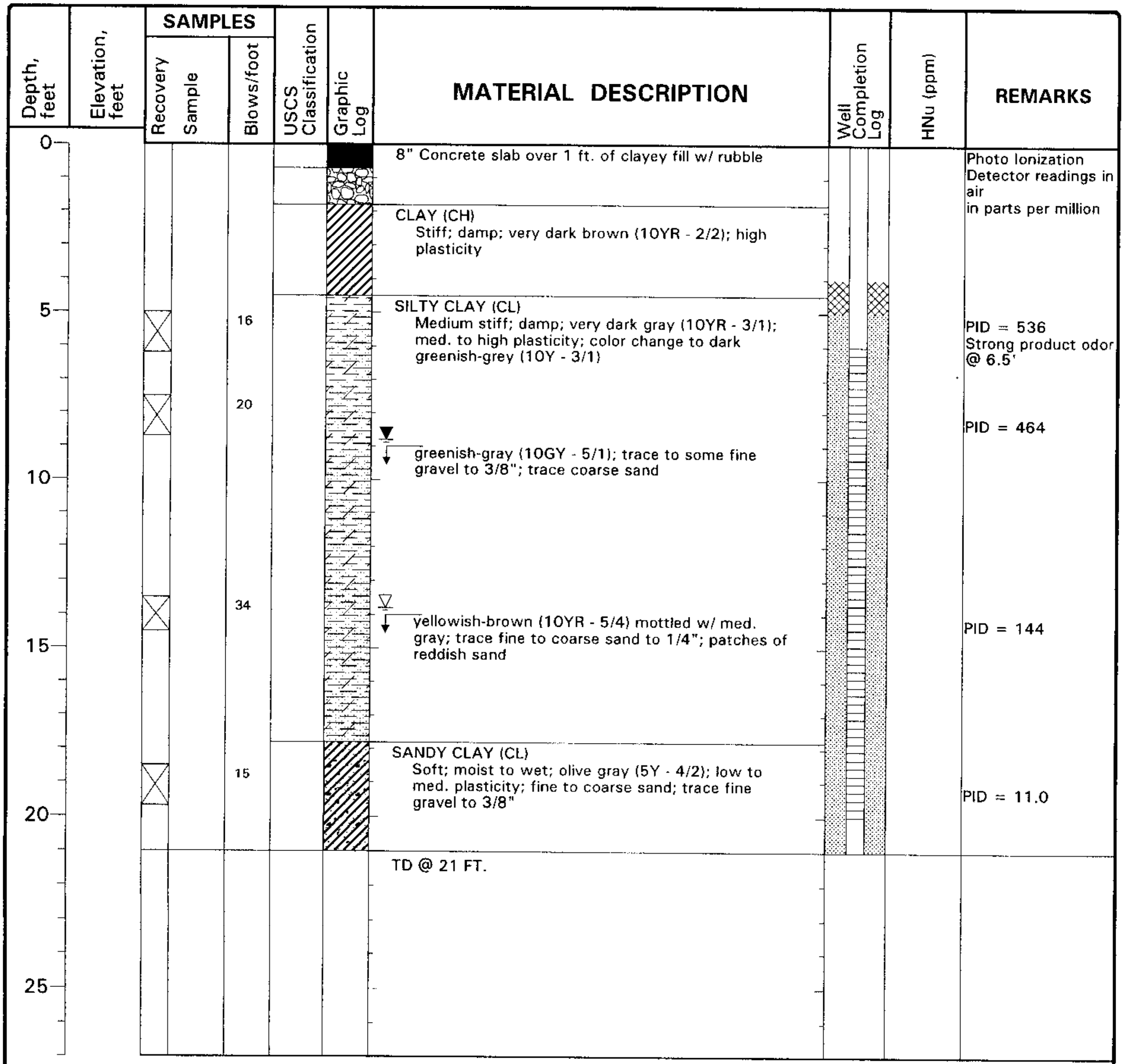
Depth (Feet)	Sample	Trench Log / Description
0		(GP) - Aggregate paving base, 4in.
2		(SC) - Dark gray / black, soft Silty CLAY (FILL)
4		
6		(SC) - Light brown, soft to slightly firm Silty CLAY
8	soil	(SC) - Gray / green, moderately firm Silty CLAY
10		
12		
14		
16		
18		
20		
22		
24		
26		
28		
30		

Exploratory Trench 8
Average trench width 4 feet, Trench Length 13.5 feet

Project: 40th Street UST, Emeryville, CA
Project Number: 94114NA
Location: Northeast corner of San Pablo Ave. and 40th St.

Log of Well
EW-1

Date(s) Drilled	3/24/97	Total Depth Drilled (feet)	21.0
Top of Casing Elevation (feet)		Groundwater Level (feet)	First ∇ 13.8; Completion ▼ 8.8; 12 Hours ∇
Logged by	W. Dittman	Checked by	
Diameter of Hole (inches)	10	Diameter of Well (inches)	4
Number of Samples	Disturbed: ; Undisturbed: 4		
Drilling Company	Gregg Drilling	Drilling Method	Hollow Stem Auger
Drill Rig Type	Mobile B61		
Sampler Type	2" cal mod	Drill Bit Size	10"
Type of Well Casing	4" PVC Sch. 40		
Screen Perforation	0.020" Slotted 6-20ft	Type of Sand Pack	#3 Lonestar Sand 5-21ft
Type of Seals	Neat Cement 1 to 4 ft.; Bentonite Pellets 4 to 5 ft.		
Comments			



Blows/foot	MATERIAL DESCRIPTION	REMARKS
	8" Concrete slab over 1 ft. of clayey fill w/ rubble	Photo Ionization Detector readings in air in parts per million
	CLAY (CH) Stiff; damp; very dark brown (10YR - 2/2); high plasticity	
16	SILTY CLAY (CL) Medium stiff; damp; very dark gray (10YR - 3/1); med. to high plasticity; color change to dark greenish-grey (10Y - 3/1)	PID = 536 Strong product odor @ 6.5'
20		PID = 464
	▼ greenish-gray (10GY - 5/1); trace to some fine gravel to 3/8"; trace coarse sand	
34	∇ yellowish-brown (10YR - 5/4) mottled w/ med. gray; trace fine to coarse sand to 1/4"; patches of reddish sand	PID = 144
15	SANDY CLAY (CL) Soft; moist to wet; olive gray (5Y - 4/2); low to med. plasticity; fine to coarse sand; trace fine gravel to 3/8"	PID = 11.0
	TD @ 21 FT.	

The San Joaquin Company Inc.

Monitoring Well Log

WELL No.: MW-2

Project: Oak Walk

Project No.: 0004.083

Owner: Bay Rock Residential LLC

Location: Emeryville, California

Top of Casing Elevation: 44.40 ft.

Surface Elevation: 44.70 ft.

Depth to Water: 5.98 ft.

Date Installed: 04/07/04

Total depth of Boring: 20 ft.

Boring Diameter: 8 in.

Well Casing Diameter: 2 in.

Total depth of Well: 20 ft.

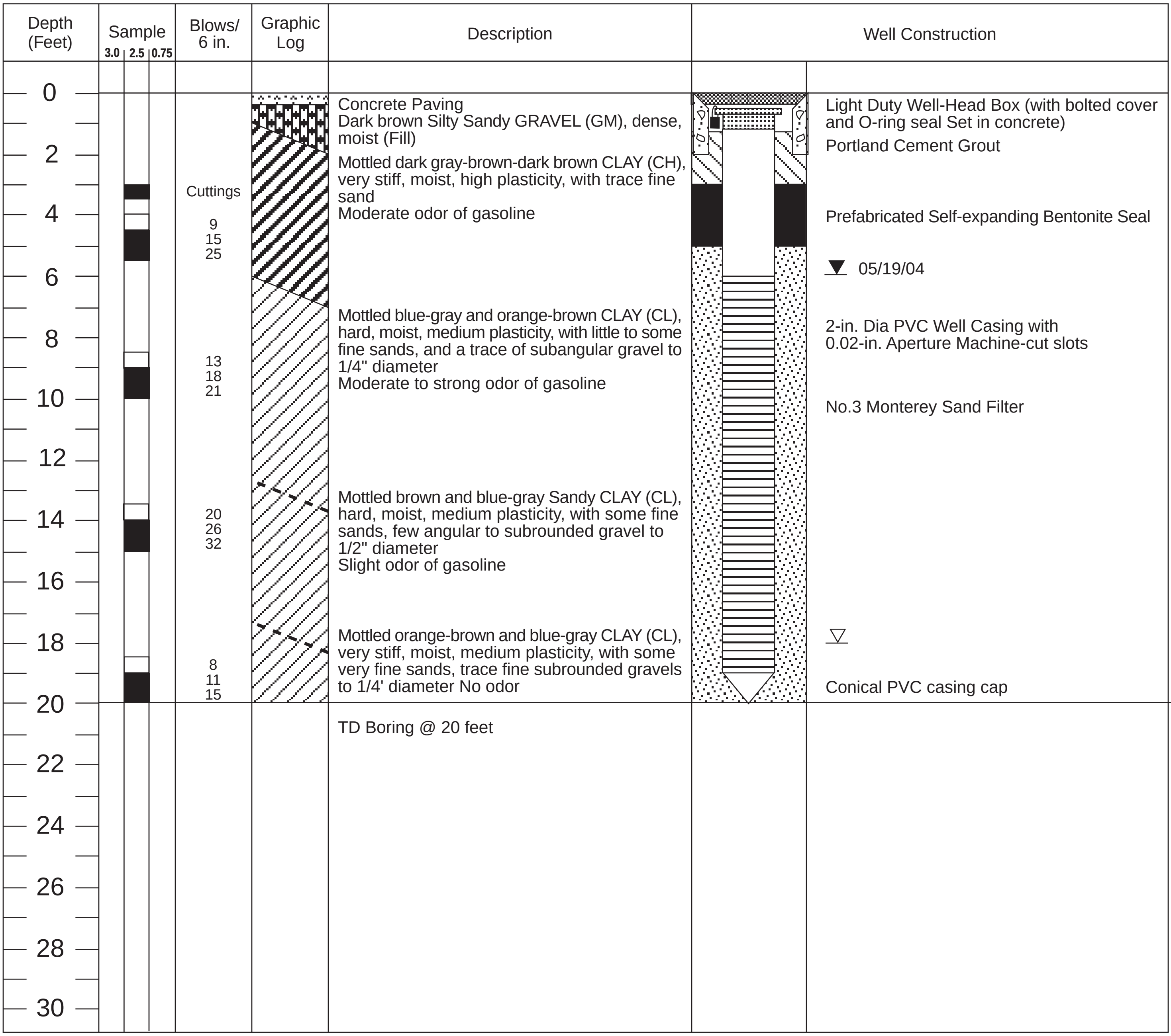
Casing Material: PVC

Drilling Company: Gregg Drilling & Testing

Drilling Method: Hollow Stem Auger

Driller: Don Kiersnas

Logged By: Dennis Alexander



Blows/ 6 in.	Description	Well Construction
	Concrete Paving Dark brown Silty Sandy GRAVEL (GM), dense, moist (Fill)	Light Duty Well-Head Box (with bolted cover and O-ring seal Set in concrete) Portland Cement Grout
Cuttings 9 15 25	Mottled dark gray-brown-dark brown CLAY (CH), very stiff, moist, high plasticity, with trace fine sand Moderate odor of gasoline	Prefabricated Self-expanding Bentonite Seal ▼ 05/19/04
13 18 21	Mottled blue-gray and orange-brown CLAY (CL), hard, moist, medium plasticity, with little to some fine sands, and a trace of subangular gravel to 1/4" diameter Moderate to strong odor of gasoline	2-in. Dia PVC Well Casing with 0.02-in. Aperture Machine-cut slots No.3 Monterey Sand Filter
20 26 32	Mottled brown and blue-gray Sandy CLAY (CL), hard, moist, medium plasticity, with some fine sands, few angular to subrounded gravel to 1/2" diameter Slight odor of gasoline	
8 11 15	Mottled orange-brown and blue-gray CLAY (CL), very stiff, moist, medium plasticity, with some very fine sands, trace fine subrounded gravels to 1/4' diameter No odor	▽ Conical PVC casing cap
	TD Boring @ 20 feet	

The San Joaquin Company Inc.

Monitoring Well Log

WELL No.: **MW-3**

Project: Oak Walk

Project No.: 0004.083

Owner: Bay Rock Residential LLC

Location: Emeryville, California

Top of Casing Elevation: 45.49 ft.

Surface Elevation: 45.9 ft.

Depth to Water: 5.66 ft.

Date Installed: 04/07/04

Total depth of Boring: 20 ft.

Boring Diameter: 8 in.

Well Casing Diameter: 2 in.

Total depth of Well: 20 ft.

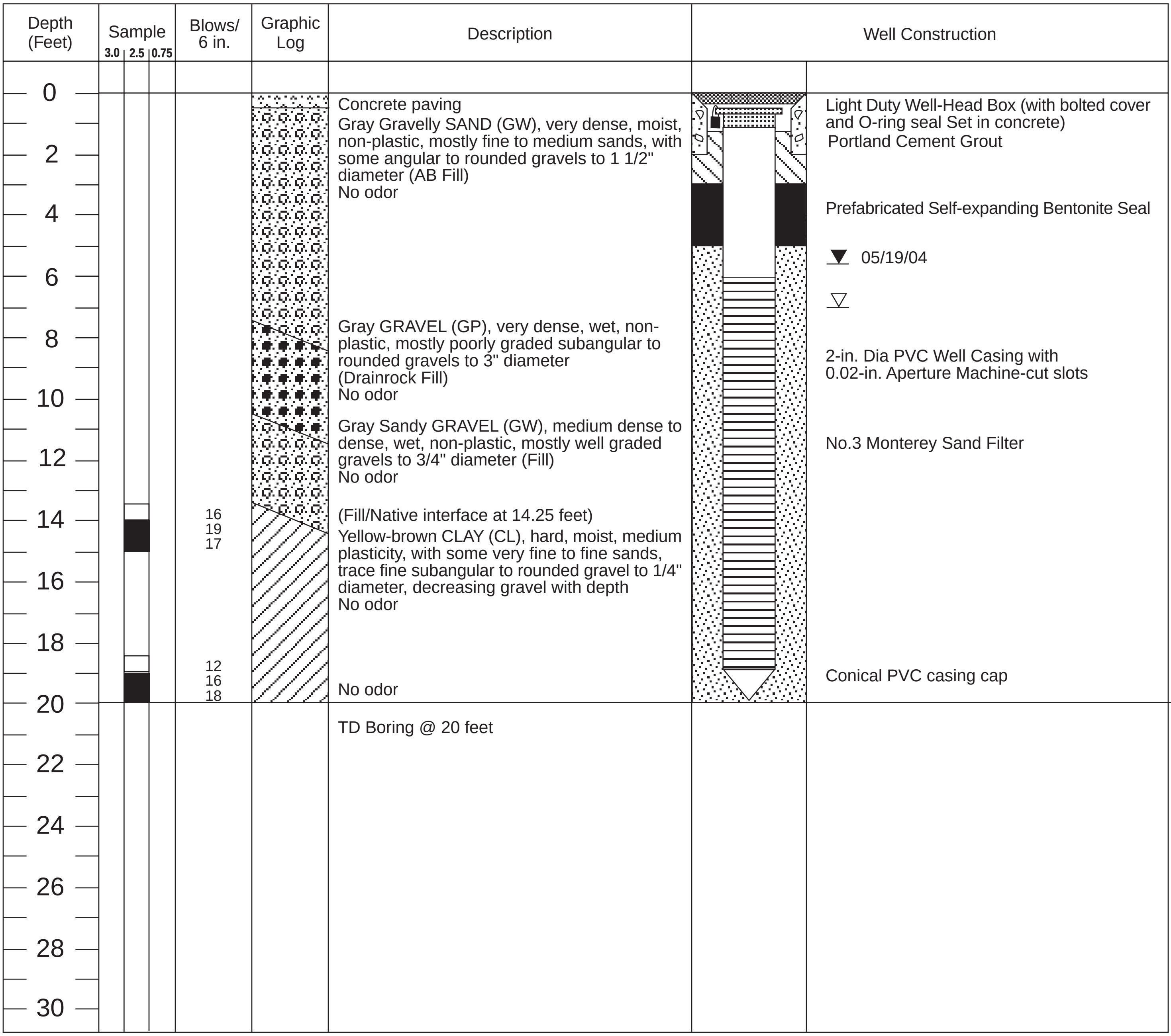
Casing Material: PVC

Drilling Company: Gregg Drilling & Testing

Drilling Method: Hollow Stem Auger

Driller: Don Kiersnas

Logged By: Dennis Alexander



Depth (Feet)	Blows/ 6 in.	Description	Well Construction
0		Concrete paving	Light Duty Well-Head Box (with bolted cover and O-ring seal Set in concrete)
		Gray Gravelly SAND (GW), very dense, moist, non-plastic, mostly fine to medium sands, with some angular to rounded gravels to 1 1/2" diameter (AB Fill) No odor	Portland Cement Grout
2			
4			Prefabricated Self-expanding Bentonite Seal
6			▼ 05/19/04 ▽
8		Gray GRAVEL (GP), very dense, wet, non-plastic, mostly poorly graded subangular to rounded gravels to 3" diameter (Drainrock Fill) No odor	2-in. Dia PVC Well Casing with 0.02-in. Aperture Machine-cut slots
10		Gray Sandy GRAVEL (GW), medium dense to dense, wet, non-plastic, mostly well graded gravels to 3/4" diameter (Fill) No odor	No.3 Monterey Sand Filter
12			
14	16 19 17	(Fill/Native interface at 14.25 feet) Yellow-brown CLAY (CL), hard, moist, medium plasticity, with some very fine to fine sands, trace fine subangular to rounded gravel to 1/4" diameter, decreasing gravel with depth No odor	
16			
18	12 16 18	No odor	Conical PVC casing cap
20		TD Boring @ 20 feet	
22			
24			
26			
28			
30			

The San Joaquin Company Inc.

Monitoring Well Log

WELL No.: **MW-4**

Project: Oak Walk

Project No.: 0004.083

Owner: Bay Rock Residential LLC

Location: Emeryville, California

Top of Casing Elevation: 47.31 ft.

Surface Elevation: 47.5 ft.

Depth to Water: 6.19 ft.

Date Installed: 04/30/04

Total depth of Boring: 20 ft.

Boring Diameter: 8 in.

Well Casing Diameter: 2.0 in.

Total depth of Well: 20 ft.

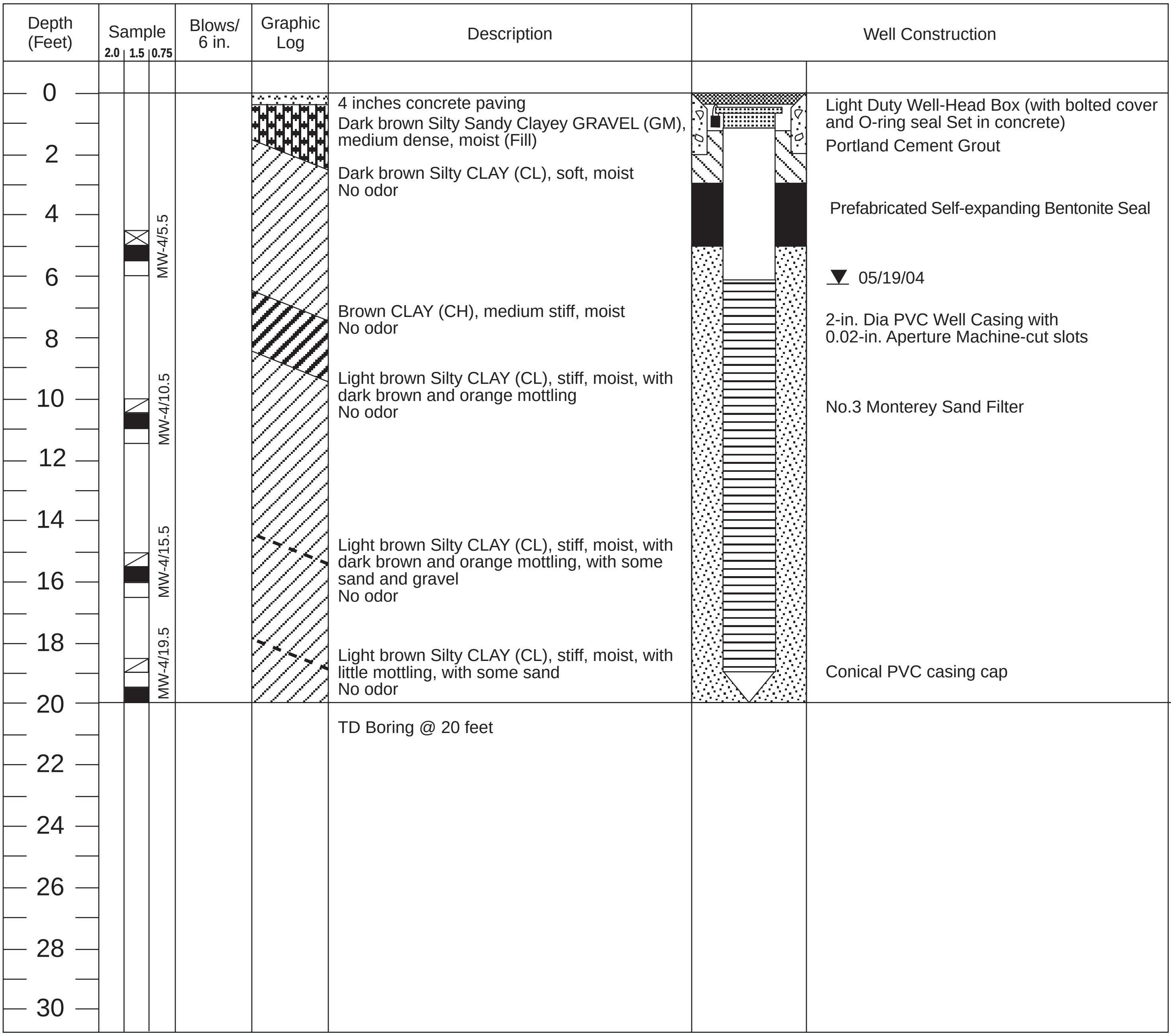
Casing Material: PVC

Drilling Company: Gregg Drilling & Testing

Drilling Method: Hollow Stem Auger

Driller: Bobby Deason

Logged By: Steve Flexser



4 inches concrete paving

Dark brown Silty Sandy Clayey GRAVEL (GM), medium dense, moist (Fill)

Dark brown Silty CLAY (CL), soft, moist
No odor

Brown CLAY (CH), medium stiff, moist
No odor

Light brown Silty CLAY (CL), stiff, moist, with dark brown and orange mottling
No odor

Light brown Silty CLAY (CL), stiff, moist, with dark brown and orange mottling, with some sand and gravel
No odor

Light brown Silty CLAY (CL), stiff, moist, with little mottling, with some sand
No odor

TD Boring @ 20 feet

Light Duty Well-Head Box (with bolted cover and O-ring seal Set in concrete)

Portland Cement Grout

Prefabricated Self-expanding Bentonite Seal

2-in. Dia PVC Well Casing with 0.02-in. Aperture Machine-cut slots

No.3 Monterey Sand Filter

Conical PVC casing cap

The San Joaquin Company Inc.

Monitoring Well Log

WELL No.: MW-5

Project: Oak Walk

Project No.: 0004.083

Owner: Bay Rock Residential LLC

Location: Emeryville, California

Top of Casing Elevation: 42.51 ft.

Surface Elevation: 42.9 ft.

Depth to Water: 7.39 ft.

Date Installed: 04/30/04

Total depth of Boring: 20 ft.

Boring Diameter: 8 in.

Well Casing Diameter: 2.0 in.

Total depth of Well: 20 ft.

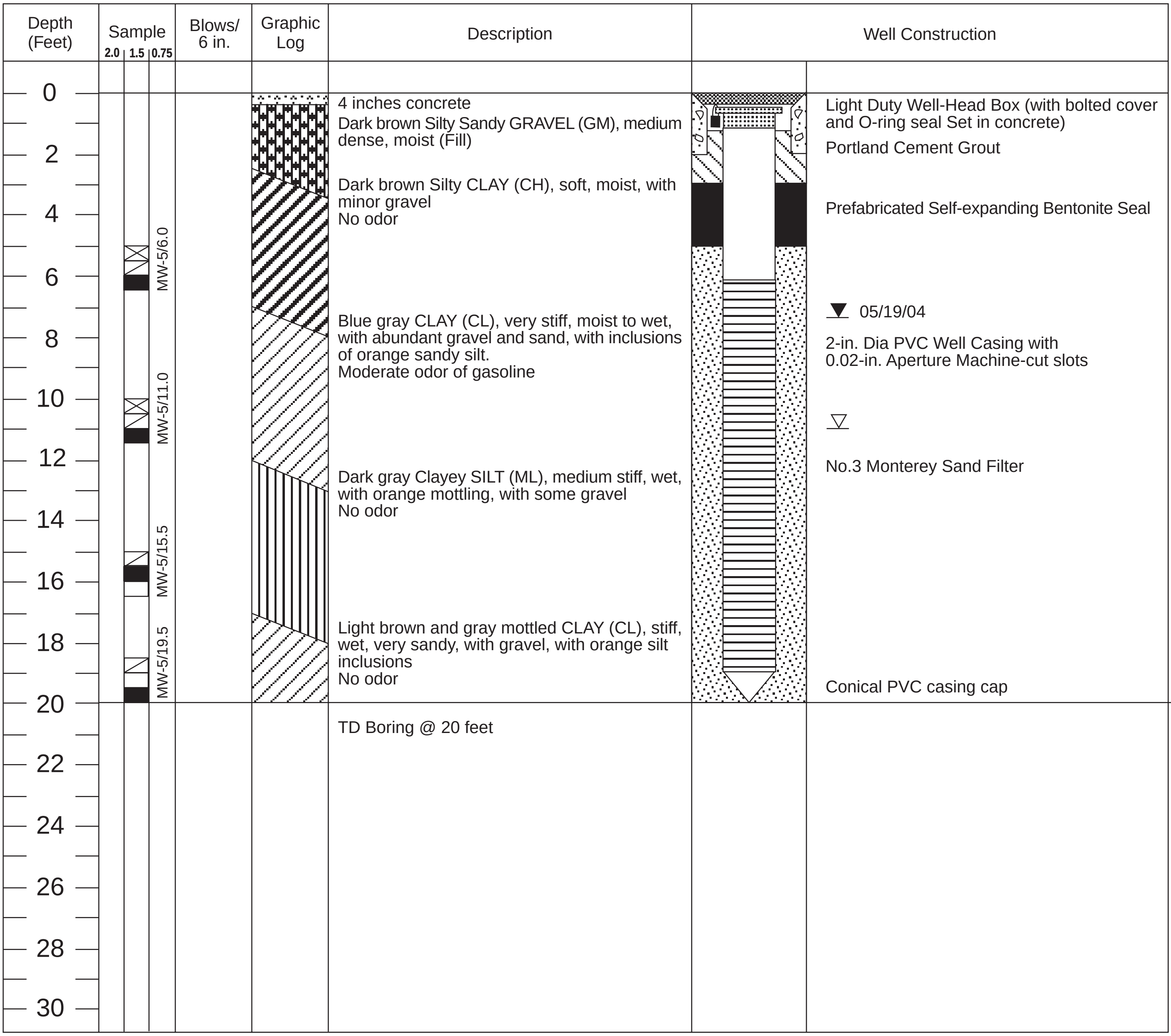
Casing Material: PVC

Drilling Company: Gregg Drilling & Testing

Drilling Method: Hollow Stem Auger

Driller: Bobby Deason

Logged By: Steve Flexser



Description

4 inches concrete

Dark brown Silty Sandy GRAVEL (GM), medium dense, moist (Fill)

Dark brown Silty CLAY (CH), soft, moist, with minor gravel
No odor

Blue gray CLAY (CL), very stiff, moist to wet, with abundant gravel and sand, with inclusions of orange sandy silt.
Moderate odor of gasoline

Dark gray Clayey SILT (ML), medium stiff, wet, with orange mottling, with some gravel
No odor

Light brown and gray mottled CLAY (CL), stiff, wet, very sandy, with gravel, with orange silt inclusions
No odor

TD Boring @ 20 feet

Well Construction

Light Duty Well-Head Box (with bolted cover and O-ring seal Set in concrete)

Portland Cement Grout

Prefabricated Self-expanding Bentonite Seal

▼ 05/19/04

2-in. Dia PVC Well Casing with 0.02-in. Aperture Machine-cut slots

▽

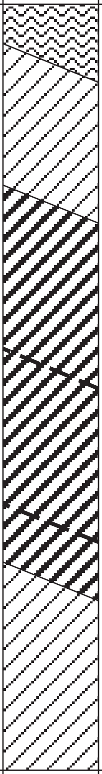
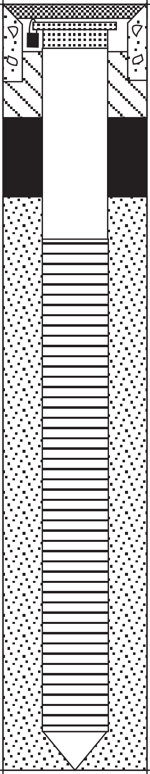
No.3 Monterey Sand Filter

Conical PVC casing cap

The San Joaquin Company Inc.

Monitoring Well Log

WELL No.: **MW-6**
Project: Oak Walk
Project No.: 0004.083
Owner: Bay Rock Residential LLC
Location: Emeryville, California
Top of Casing Elevation: 43.35 ft.
Surface Elevation: 43.9 ft.
Depth to Water: 7.16 ft.
Date Installed: 04/07/04
Total depth of Boring: 20 ft.
Boring Diameter: 8 in.
Well Casing Diameter: 2 in.
Total depth of Well: 20 ft.
Casing Material: PVC
Drilling Company: Gregg Drilling & Testing
Drilling Method: Hollow Stem Auger
Driller: Don Kiersnas
Logged By: Dennis Alexander

Depth (Feet)	Sample			Blows/ 6 in.	Graphic Log	Description	Well Construction	
	3.0	2.5	0.75					
0						Garden Soil (Fill)		Light Duty Well-Head Box (with bolted cover and O-ring seal Set in concrete)
2						Mottled Gray-brown and orange-brown Sandy CLAY (CL), very stiff, moist, medium plasticity, with some fine sands, little medium to coarse sands, few subangular to rounded gravels to 3/4" diameter No odor		Portland Cement Grout
4	■	ES		10 11 14				Prefabricated Self-expanding Bentonite Seal
6		■		5 5 6		Gray-brown CLAY (CH), stiff, moist, high plasticity, trace to some fine sands No odor		▼ 05/19/04
8								2-in. Dia PVC Well Casing with 0.02-in. Aperture Machine-cut slots
10	■	ES		16 20 27		Light olive brown CLAY (CH), hard, moist, high plasticity, some fine sands, few medium to coarse sands little angular to subrounded gravels to 1/2" diameter No odor		No.3 Monterey Sand Filter
12								
14	■	ES		16 22 27		Mottled orange-brown and light Gray-dark brown CLAY (CH), hard, moist, high plasticity, with some very fine to fine sands, and gravelly sand lens at 15 feet No odor		
16						Mottled orange-brown and light Gray CLAY (CL), very stiff, moist, medium plasticity, with some fine sands, medium to coarse sands, and subrounded to rounded fine gravels to 1/4" diameter No odor		
18	■	ES		12 15 18				Conical PVC casing cap
20						TD Boring @ 20 feet		
22								
24								
26								
28								
30								

The San Joaquin Company Inc.

Monitoring Well Log

WELL No.: **MW-7**

Project: Oak Walk

Project No.: 0004.083

Owner: Bay Rock Residential LLC

Location: Emeryville, California

Top of Casing Elevation: 44.75 ft.

Surface Elevation: 45.2 ft.

Depth to Water: 8.40 ft.

Date Installed: 04/06/04

Total depth of Boring: 20 ft.

Boring Diameter: 8 in.

Well Casing Diameter: 2 in.

Total depth of Well: 20 ft.

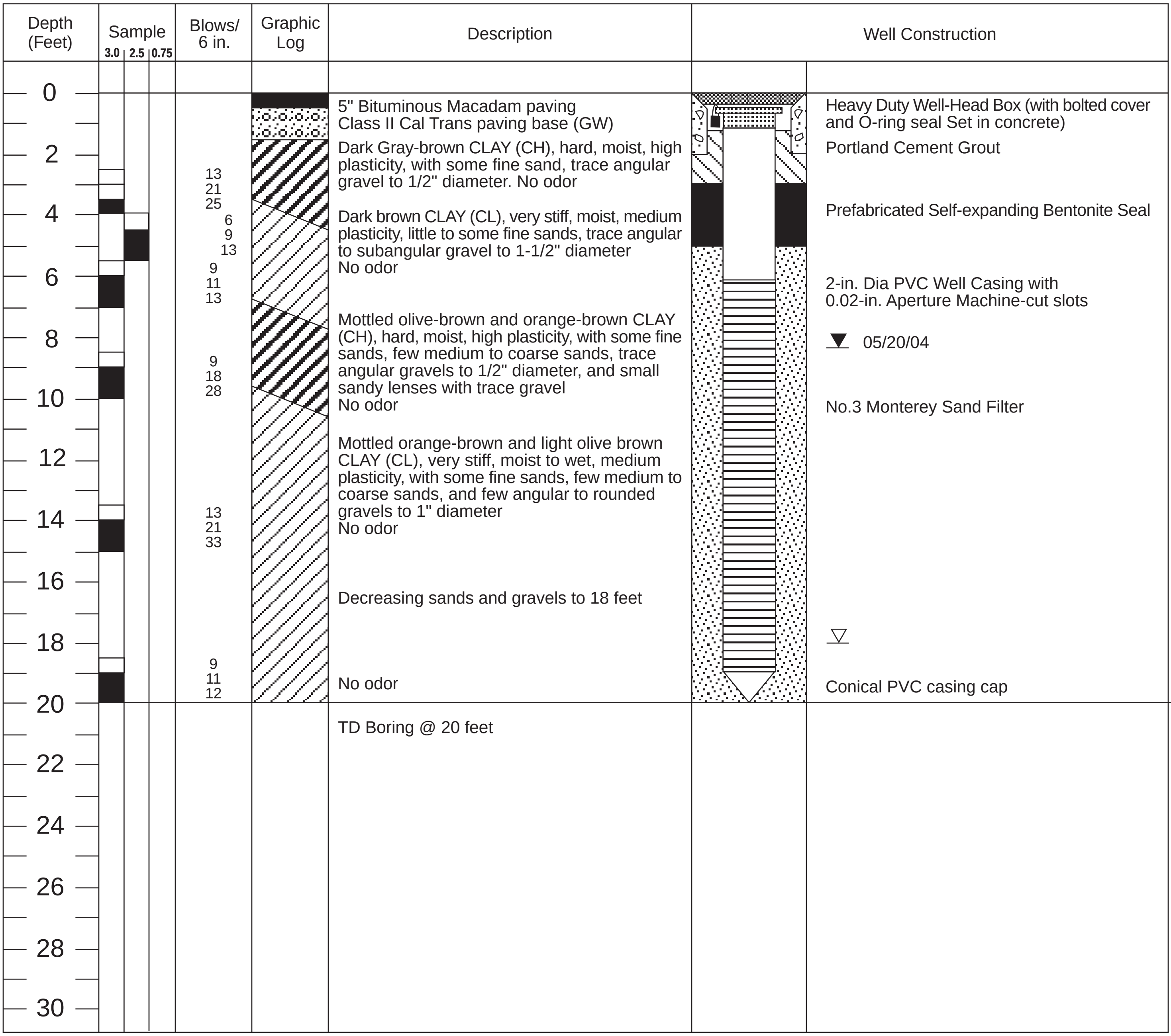
Casing Material: PVC

Drilling Company: Gregg Drilling & Testing

Drilling Method: Hollow Stem Auger

Driller: Don Kiersnas

Logged By: Dennis Alexander



Depth (Feet)	Sample 3.0 | 2.5 | 0.75	Blows/ 6 in.	Graphic Log	Description	Well Construction
0				5" Bituminous Macadam paving Class II Cal Trans paving base (GW)	Heavy Duty Well-Head Box (with bolted cover and O-ring seal Set in concrete)
2		13 21 25		Dark Gray-brown CLAY (CH), hard, moist, high plasticity, with some fine sand, trace angular gravel to 1/2" diameter. No odor	Portland Cement Grout
4		6 9 13		Dark brown CLAY (CL), very stiff, moist, medium plasticity, little to some fine sands, trace angular to subangular gravel to 1-1/2" diameter No odor	Prefabricated Self-expanding Bentonite Seal
6		9 11 13			2-in. Dia PVC Well Casing with 0.02-in. Aperture Machine-cut slots
8		9 18 28		Mottled olive-brown and orange-brown CLAY (CH), hard, moist, high plasticity, with some fine sands, few medium to coarse sands, trace angular gravels to 1/2" diameter, and small sandy lenses with trace gravel No odor	▼ 05/20/04
10					No.3 Monterey Sand Filter
12				Mottled orange-brown and light olive brown CLAY (CL), very stiff, moist to wet, medium plasticity, with some fine sands, few medium to coarse sands, and few angular to rounded gravels to 1" diameter No odor	
14		13 21 33			
16				Decreasing sands and gravels to 18 feet	
18		9 11 12		No odor	▽ Conical PVC casing cap
20				TD Boring @ 20 feet	
22					
24					
26					
28					
30					

The San Joaquin Company Inc.

Monitoring Well Log

WELL No.: **MW-8**

Project: Oak Walk

Project No.: 0004.083

Owner: Bay Rock Residential LLC

Location: Emeryville, California

Top of Casing Elevation: 48.38 ft.

Surface Elevation: 48.5 ft.

Depth to Water: 9.65 ft.

Date Installed: 04/07/04

Total depth of Boring: 20 ft.

Boring Diameter: 8 in.

Well Casing Diameter: 2 in.

Total depth of Well: 20 ft.

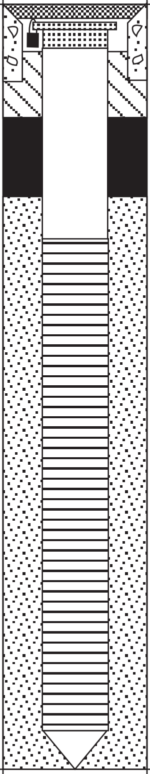
Casing Material: PVC

Drilling Company: Gregg Drilling & Testing

Drilling Method: Hollow Stem Auger

Driller: Don Kiersnas

Logged By: Dennis Alexander

Depth (Feet)	Sample 3.0 | 2.5 | 0.75	Blows/ 6 in.	Graphic Log	Description	Well Construction
0				5" Bituminous Macadam 12" Class II CalTrans Paving base (GW)	 Heavy Duty Well-Head Box (with bolted cover and O-ring seal Set in concrete)
2		15 21 24		Dark Gray and dark brown CLAY (CH), very stiff, moist, high plasticity, with some fine sand and medium to coarse sands. No odor	Portland Cement Grout
4		4 5 6		Mottled brown and Gray CLAY (CH), stiff, moist, high plasticity, few to minor fine sands. No odor	Prefabricated Self-expanding Bentonite Seal
6		8 11 15		Mottled Gray and brown CLAY (CL), very stiff, moist, medium plasticity, with some fine sands and trace medium sands. No odor	
8		19 24 36		Mottled light brown and orange-brown CLAY (CH), very stiff, moist, high plasticity, with some very fine to fine sands, few medium to coarse sands, some angular to subrounded gravels to 1/2" diameter No odor	2-in. Dia PVC Well Casing with 0.02-in. Aperture Machine-cut slots ▼ 05/19/04
10					No.3 Monterey Sand Filter
12					
14		13 17 26		Decreasing coarse sands and gravels with depth No odor	
16					
18		14 18 21		Mottled brown, light brown and orange-brown Clayey SAND (SC), dense, moist, low plasticity, fine to medium sands, with minor coarse sands, some angular to rounded gravels to 3/4" diameter. No odor	▽ Conical PVC casing cap
20				TD Boring @ 20 feet	
22					
24					
26					
28					
30					

The San Joaquin Company Inc. Monitoring Well Log

WELL No.: **MWT-1**

Project: Oak Walk

Project No.: 0004.082

Owner: Bay Rock Residential LLC

Location: Emeryville, California

Top of Casing Elevation: 42.98 ft.

Surface Elevation: 43.32 ft.

Depth to Water: 8.43 ft.

Date Installed: 04/02/04

Total depth of Boring: 20 ft.

Boring Diameter: 2 in.

Well Casing Diameter: 0.75 in.

Total depth of Well: 20 ft.

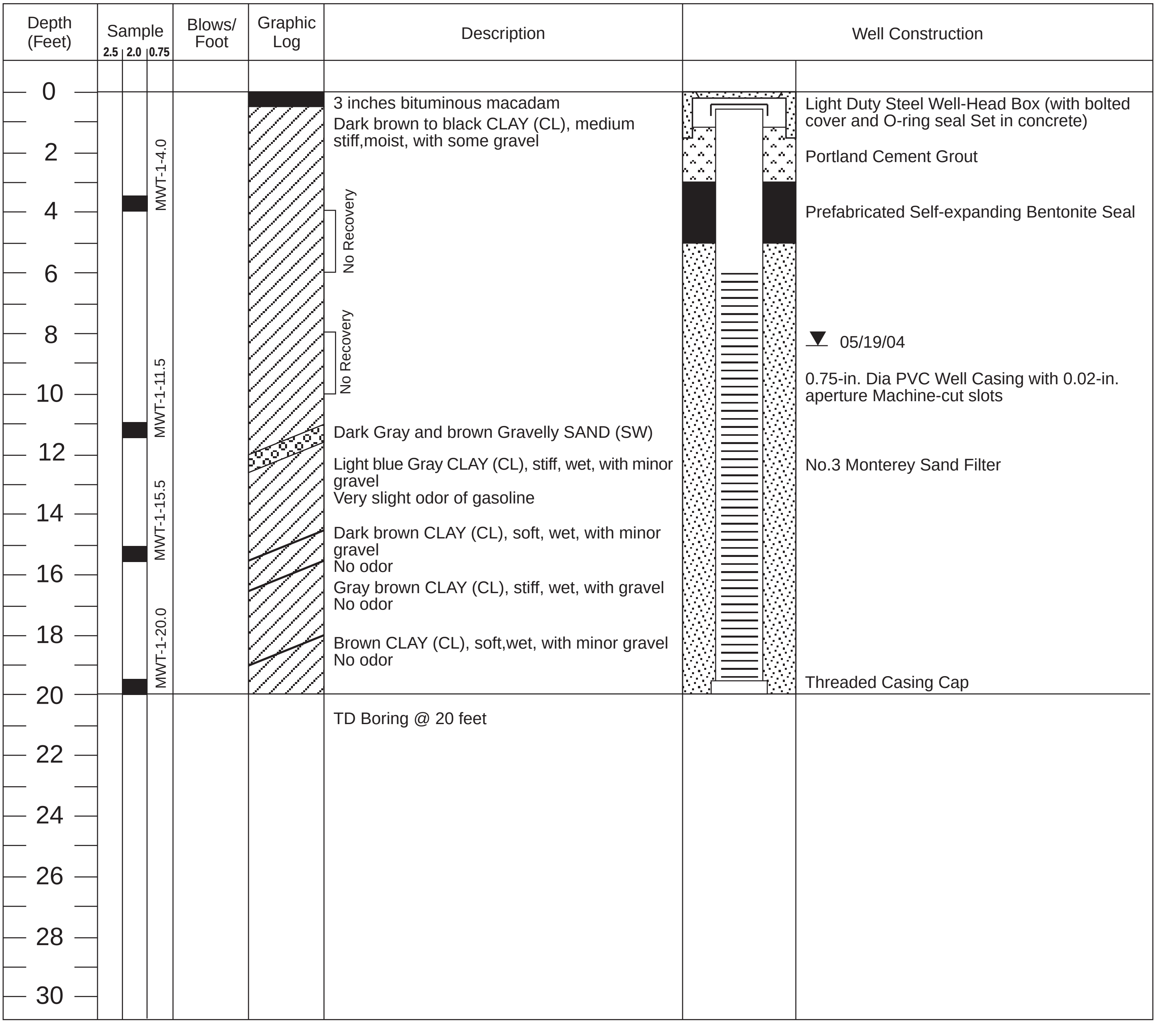
Casing Material: PVC

Drilling Company: Gregg Drilling & Testing

Drilling Method: Push Probe

Driller: Paul Rogers

Logged By: Steve Flexser



3 inches bituminous macadam

Dark brown to black CLAY (CL), medium stiff,moist, with some gravel

Dark Gray and brown Gravelly SAND (SW)

Light blue Gray CLAY (CL), stiff, wet, with minor gravel
Very slight odor of gasoline

Dark brown CLAY (CL), soft, wet, with minor gravel
No odor

Gray brown CLAY (CL), stiff, wet, with gravel
No odor

Brown CLAY (CL), soft,wet, with minor gravel
No odor

TD Boring @ 20 feet

Light Duty Steel Well-Head Box (with bolted cover and O-ring seal Set in concrete)

Portland Cement Grout

Prefabricated Self-expanding Bentonite Seal

▼ 05/19/04

0.75-in. Dia PVC Well Casing with 0.02-in. aperture Machine-cut slots

No.3 Monterey Sand Filter

Threaded Casing Cap

The San Joaquin Company Inc.

Monitoring Well Log

WELL No.: **MWT-2**

Project: Oak Walk

Project No.: 0004.082

Owner: Bay Rock Residential LLC

Location: Emeryville, California

Top of Casing Elevation: 45.28 ft.

Surface Elevation: 45.70 ft.

Depth to Water: 7.69 ft.

Date Installed: 04/02/04

Total depth of Boring: 20 ft.

Boring Diameter: 2 in.

Well Casing Diameter: 0.75 in.

Total depth of Well: 20 ft.

Casing Material: PVC

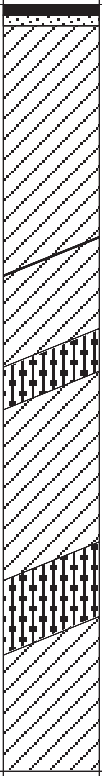
Drilling Company: Gregg Drilling & Testing

Drilling Method: Push Probe

Driller: Paul Rogers

Logged By: Steve Flexser

Depth (Feet)	Sample 2.5 | 2.0 | 0.75	Blows/ Foot	Graphic Log	Description	Well Construction



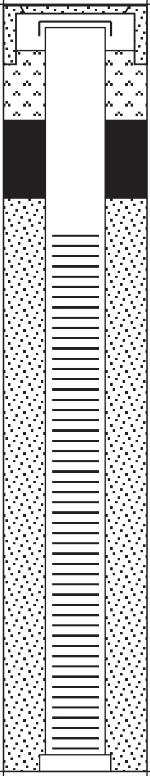
2 inches bituminous macadam
2 inches loose sand
Black CLAY (CL), medium stiff, moist
No odor

Stiffening
No odor

Gray CLAY (CL), medium stiff, with some gravel
Slight odor of gasoline
Increasing gravel with depth, strong odor of gasoline
Gray Silty SAND (SM), medium dense, moist, with black clayey inclusions, gravel
Little or no odor
Light blue-Gray CLAY (CL), stiff, moist, with some fine gravel
Slight odor
Increasing odor of gasoline with depth

Brown Silty SAND (SM), medium dense, moist, with inclusions of Gray Clay, yellow fine sand, gravel and shiny black grains or coatings.
Moderate odor of gasoline
Gray brown mottled CLAY (CL),stiff, moist, with sparse sand and gravel
Moderate odor of gasoline
No odor to very slight odor of gasoline

TD Boring @ 20 feet



Light Duty Steel Well-Head Box (with bolted cover and O-ring seal Set in concrete)

Portland Cement Grout

Prefabricated Self-expanding Bentonite Seal

▼ 05/19/04

0.75-in. Dia PVC Well Casing with 0.02-in. aperture Machine-cut slots

No.3 Monterey Sand Filter

Threaded Casing Cap

The San Joaquin Company Inc.

Monitoring Well Log

WELL No.: MWT-3

Project: Oak Walk

Project No.: 0004.082

Owner: Bay Rock Residential LLC

Location: Emeryville, California

Top of Casing Elevation: 47.64 ft.

Surface Elevation: 47.93 ft.

Depth to Water: 7.64 ft.

Date Installed: 04/02/04

Total depth of Boring: 20 ft.

Boring Diameter: 2 in.

Well Casing Diameter: 0.75 in.

Total depth of Well: 20 ft.

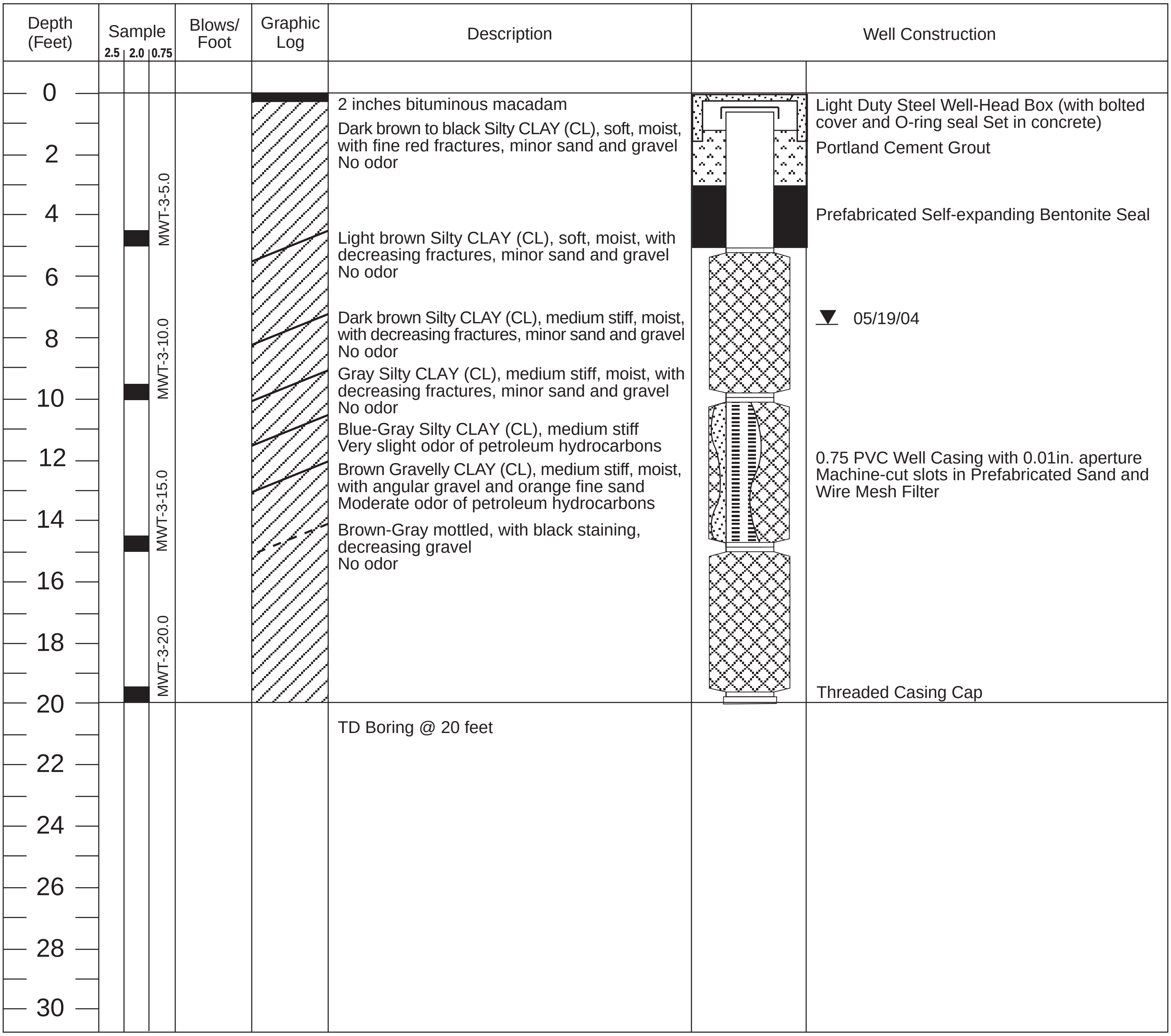
Casing Material: PVC

Drilling Company: Gregg Drilling & Testing

Drilling Method: Push Probe

Driller: Paul Rogers

Logged By: Steve Flexser



2 inches bituminous macadam

Dark brown to black Silty CLAY (CL), soft, moist, with fine red fractures, minor sand and gravel
No odor

Light brown Silty CLAY (CL), soft, moist, with decreasing fractures, minor sand and gravel
No odor

Dark brown Silty CLAY (CL), medium stiff, moist, with decreasing fractures, minor sand and gravel
No odor

Gray Silty CLAY (CL), medium stiff, moist, with decreasing fractures, minor sand and gravel
No odor

Blue-Gray Silty CLAY (CL), medium stiff
Very slight odor of petroleum hydrocarbons

Brown Gravelly CLAY (CL), medium stiff, moist, with angular gravel and orange fine sand
Moderate odor of petroleum hydrocarbons

Brown-Gray mottled, with black staining, decreasing gravel
No odor

TD Boring @ 20 feet

Light Duty Steel Well-Head Box (with bolted cover and O-ring seal Set in concrete)

Portland Cement Grout

Prefabricated Self-expanding Bentonite Seal

▼ 05/19/04

0.75 PVC Well Casing with 0.01in. aperture Machine-cut slots in Prefabricated Sand and Wire Mesh Filter

Threaded Casing Cap

The San Joaquin Company Inc.

Monitoring Well Log

WELL No.: **MWT-4**

Project: Oak Walk

Project No.: 0004.082

Owner: Bay Rock Residential LLC

Location: Emeryville, California

Top of Casing Elevation: 44.74 ft.

Surface Elevation: 45.15 ft.

Depth to Water: 8.43 ft.

Date Installed: 04/01/04

Total depth of Boring: 20 ft.

Boring Diameter: 2 in.

Well Casing Diameter: 0.75 in.

Total depth of Well: 20 ft.

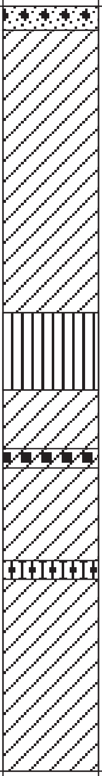
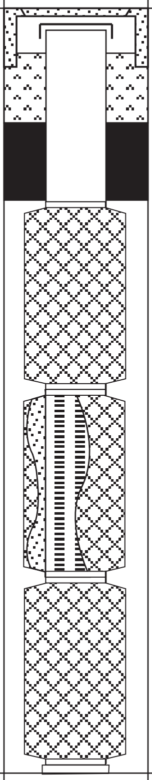
Casing Material: PVC

Drilling Company: Gregg Drilling & Testing

Drilling Method: Push Probe

Driller: Paul Rogers

Logged By: Steve Flexser

Depth (Feet)	Sample 2.5 | 2.0 | 0.75	Blows/ Foot	Graphic Log	Description	Well Construction
0				4 inches GRAVEL (GP) road base Dark brown to black CLAY (CL), medium stiff, moist, with fine white and red cracks, some gravel No odor	 Light Duty Steel Well-Head Box (with bolted cover and O-ring seal Set in concrete) Portland Cement Grout
2					
4	MWT-4-4.0				Prefabricated Self-expanding Bentonite Seal
6					
8				Dark brown SILT (ML), stiff, moist, with fine sand	▼ 05/19/04
10	MWT-4-10.0			Gray green Silty CLAY (CL), stiff, moist No odor	
12				Clayey GRAVEL (GC) Gray green Silty CLAY (CL), stiff, moist No odor	0.75 PVC Well Casing with 0.01in. aperture Machine-cut slots in Prefabricated Sand and Wire Mesh Filter
14				Slight solvent odor Gray Clayey SAND (SM)	
16	MWT-4-15.0			Gray and brown mottled CLAY (CL), stiff, moist, with orange sandy silty inclusions of gravel, and yellow sand Slight odor of petroleum hydrocarbons	
18				No odor	
20	MWT-4-20.0			TD Boring @ 20 feet	Threaded Casing Cap
22					
24					
26					
28					
30					

The San Joaquin Company Inc.

Monitoring Well Log

WELL No.: **MWT-5**

Project: Oak Walk

Project No.: 0004.082

Owner: Bay Rock Residential LLC

Location: Emeryville, California

Top of Casing Elevation: 47.10 ft.

Surface Elevation: 47.32 ft.

Depth to Water: 9.07 ft.

Date Installed: 04/02/04

Total depth of Boring: 20 ft.

Boring Diameter: 2 in.

Well Casing Diameter: 0.75 in.

Total depth of Well: 20 ft.

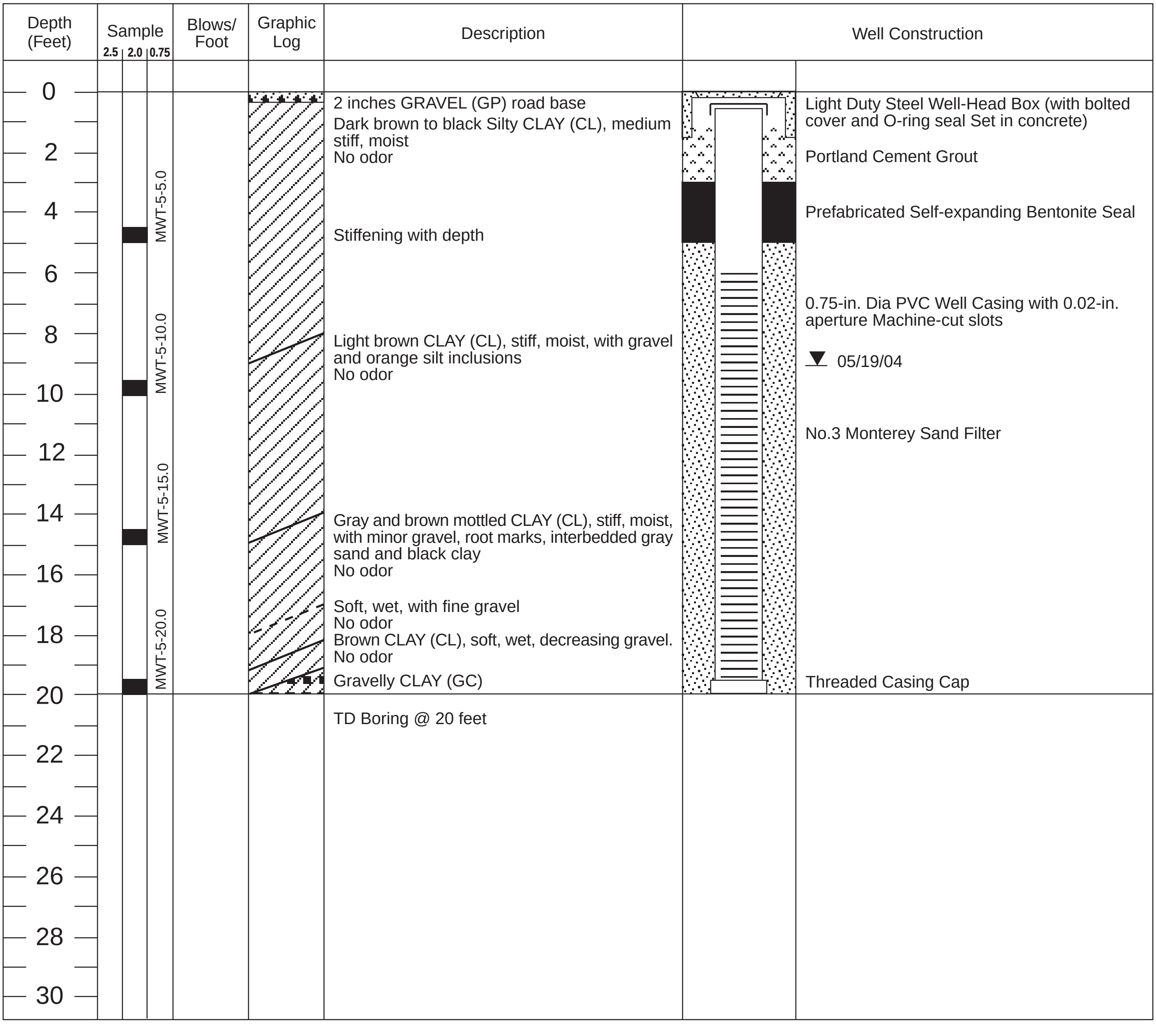
Casing Material: PVC

Drilling Company: Gregg Drilling & Testing

Drilling Method: Push Probe

Driller: Paul Rogers

Logged By: Steve Flexser



Description

2 inches GRAVEL (GP) road base

Dark brown to black Silty CLAY (CL), medium stiff, moist
No odor

Stiffening with depth

Light brown CLAY (CL), stiff, moist, with gravel and orange silt inclusions
No odor

Gray and brown mottled CLAY (CL), stiff, moist, with minor gravel, root marks, interbedded gray sand and black clay
No odor

Soft, wet, with fine gravel
No odor

Brown CLAY (CL), soft, wet, decreasing gravel.
No odor

Gravelly CLAY (GC)

TD Boring @ 20 feet

Well Construction

Light Duty Steel Well-Head Box (with bolted cover and O-ring seal Set in concrete)

Portland Cement Grout

Prefabricated Self-expanding Bentonite Seal

0.75-in. Dia PVC Well Casing with 0.02-in. aperture Machine-cut slots

▼ 05/19/04

No.3 Monterey Sand Filter

Threaded Casing Cap

The San Joaquin Company Inc.

Monitoring Well Log

WELL No.: **MWT-6**

Project: Oak Walk

Project No.: 0004.082

Owner: Bay Rock Residential LLC

Location: Emeryville, California

Top of Casing Elevation: 45.16 ft.

Surface Elevation: 45.41 ft.

Depth to Water: 9.05 ft.

Date Installed: 04/01/04

Total depth of Boring: 19.5 ft.

Boring Diameter: 2 in.

Well Casing Diameter: 0.75 in.

Total depth of Well: 19.5 ft.

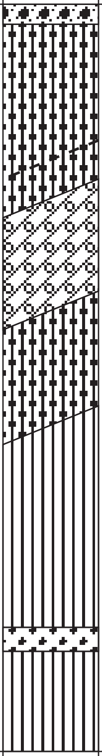
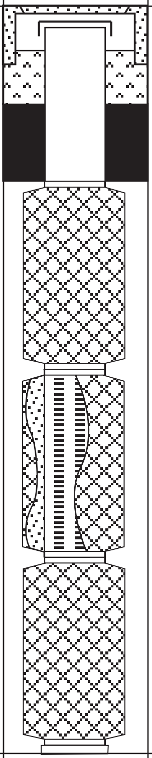
Casing Material: PVC

Drilling Company: Gregg Drilling & Testing

Drilling Method: Push Probe

Driller: Paul Rogers

Logged By: Steve Flexser

Depth (Feet)	Sample 2.5 | 2.0 | 0.75	Blows/ Foot	Graphic Log	Description	Well Construction	
0				4 inches Gravel (GP) road base Brown Silty SAND (SM), medium dense, moist, with fine gravel		Light Duty Steel Well-Head Box (with bolted cover and O-ring seal Set in concrete)
2						Portland Cement Grout
4	MWT-6-5.0			Black, increasing silt, moist. No odor		Prefabricated Self-expanding Bentonite Seal
6				Gray CLAY (CL), medium stiff, moist, with brown silty mottling, roots, minor gravel No odor		
8				Brown Silty SAND (SM), medium dense, moist, with Gray clayey mottling, with chert gravel		▼ 05/19/04
10	MWT-6-10.5					
12				Gray Clayey SILT (ML), medium stiff, moist, with gravel Slight odor of solvent		0.75 PVC Well Casing with 0.01in. aperture Machine-cut slots in Prefabricated Sand and Wire Mesh Filter
14	MWT-6-14.5			Increasing sand and moisture		
16				Light brown Fine SAND (SP), loose, wet, with some angular gravel		
18	MWT-6-19.5			Dark brown Gravelly Sandy SILT (ML), medium stiff, wet No odor		Threaded Casing Cap
20				Push probe refusal at 19.5 feet TD Boring @ 19.5 feet		
22						
24						
26						
28						
30						

Monitoring Well Log

WELL No.: MWT-7

Project: Oak Walk

Project No.: 0004.082

Owner: Bay Rock Residential LLC

Location: Emeryville, California

Top of Casing Elevation: 46.61 ft.

Surface Elevation: 45.43 ft.

Depth to Water: 9.90 ft.

Date Installed: 04/01/04

Total depth of Boring: 20 ft.

Boring Diameter: 2 in.

Well Casing Diameter: 0.75 in.

Total depth of Well: 20 ft.

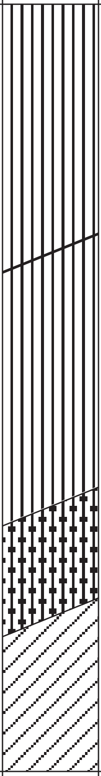
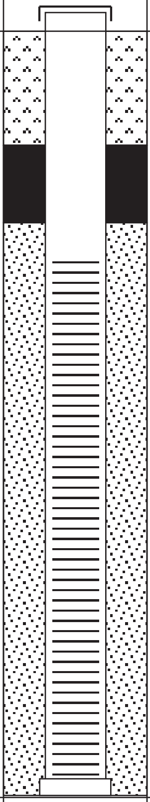
Casing Material: PVC

Drilling Company: Gregg Drilling & Testing

Drilling Method: Push Probe

Driller: Paul Rogers

Logged By: Steve Flexser

Depth (Feet)	Sample 2.5 | 2.0 | 0.75	Blows/ Foot	Graphic Log	Description	Well Construction	
0				Very dark brown Clayey SILT (ML), medium stiff, moist No odor		Casing protrudes above ground level. Grouted to surface
2						Portland Cement Grout
4						Prefabricated Self-expanding Bentonite Seal
5	MWT-7-5.0					
6				Brown and Gray SILT (ML), medium stiff, moist, inclusions of fine gravel and brown sand No odor		
8						0.75-in. Dia PVC Well Casing with 0.02-in. aperture Machine-cut slots
10	MWT-7-10.0					▼ 05/19/04
12						No.3 Monterey Sand Filter
14				Brown and Gray Silty Gravelly SAND (SM), medium dense, wet No odor		
15	MWT-7-15.0					
16						▽
17				Brown Gravelly CLAY (CL), stiff, wet No odor		
20	MWT-7-20.0					Threaded Casing Cap
20				TD Boring @ 20 feet		
22						
24				Note: Casing trucated by vandals. Elevation resurveyed on 11/10/04 Top of Casing El. 45.69 feet		
26						
28						
30						

The San Joaquin Company Inc.

Monitoring Well Log

WELL No.: MWT-8

Project: Oak Walk

Project No.: 0004.082

Owner: Bay Rock Residential LLC

Location: Emeryville, California

Top of Casing Elevation: 47.23 ft.

Surface Elevation: 47.43 ft.

Depth to Water: 9.65 ft.

Date Installed: 04/02/04

Total depth of Boring: 18 ft.

Boring Diameter: 2 in.

Well Casing Diameter: 0.75 in.

Total depth of Well: 18 ft.

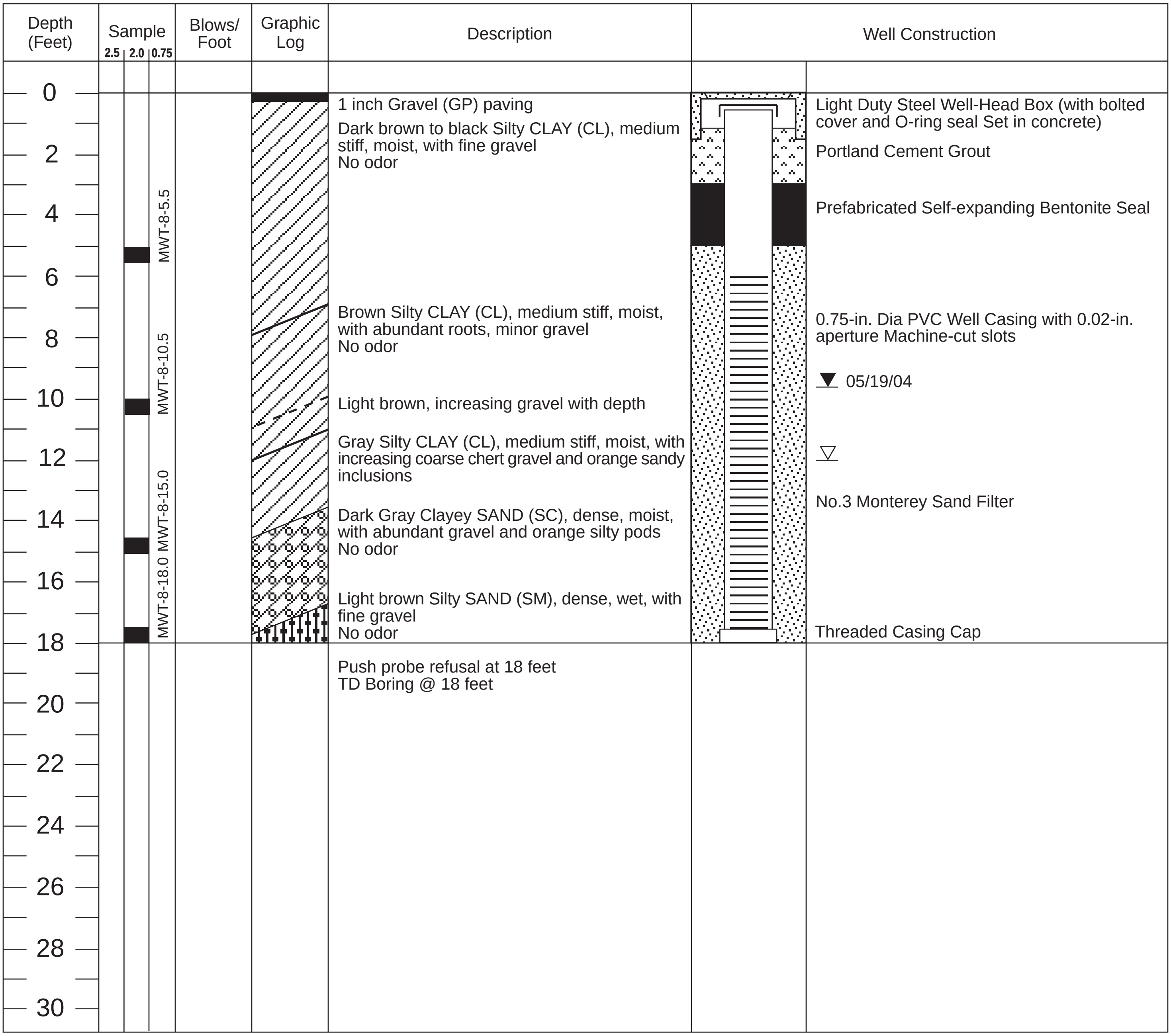
Casing Material: PVC

Drilling Company: Gregg Drilling & Testing

Drilling Method: Push Probe

Driller: Paul Rogers

Logged By: Steve Flexser



1 inch Gravel (GP) paving

Dark brown to black Silty CLAY (CL), medium stiff, moist, with fine gravel
No odor

Brown Silty CLAY (CL), medium stiff, moist, with abundant roots, minor gravel
No odor

Light brown, increasing gravel with depth

Gray Silty CLAY (CL), medium stiff, moist, with increasing coarse chert gravel and orange sandy inclusions

Dark Gray Clayey SAND (SC), dense, moist, with abundant gravel and orange silty pods
No odor

Light brown Silty SAND (SM), dense, wet, with fine gravel
No odor

Push probe refusal at 18 feet
TD Boring @ 18 feet

Light Duty Steel Well-Head Box (with bolted cover and O-ring seal Set in concrete)

Portland Cement Grout

Prefabricated Self-expanding Bentonite Seal

0.75-in. Dia PVC Well Casing with 0.02-in. aperture Machine-cut slots

▼ 05/19/04

▽

No.3 Monterey Sand Filter

Threaded Casing Cap

The San Joaquin Company Inc.

Monitoring Well Log

WELL No.: **MWT-9**

Project: Oak Walk

Project No.: 0004.082

Owner: Bay Rock Residential LLC

Location: Emeryville, California

Top of Casing Elevation: 45.78 ft.

Surface Elevation: 46.14 ft.

Depth to Water: 8.70 ft.

Date Installed: 04/01/04

Total depth of Boring: 20 ft.

Boring Diameter: 2 in.

Well Casing Diameter: 0.75 in.

Total depth of Well: 20 ft.

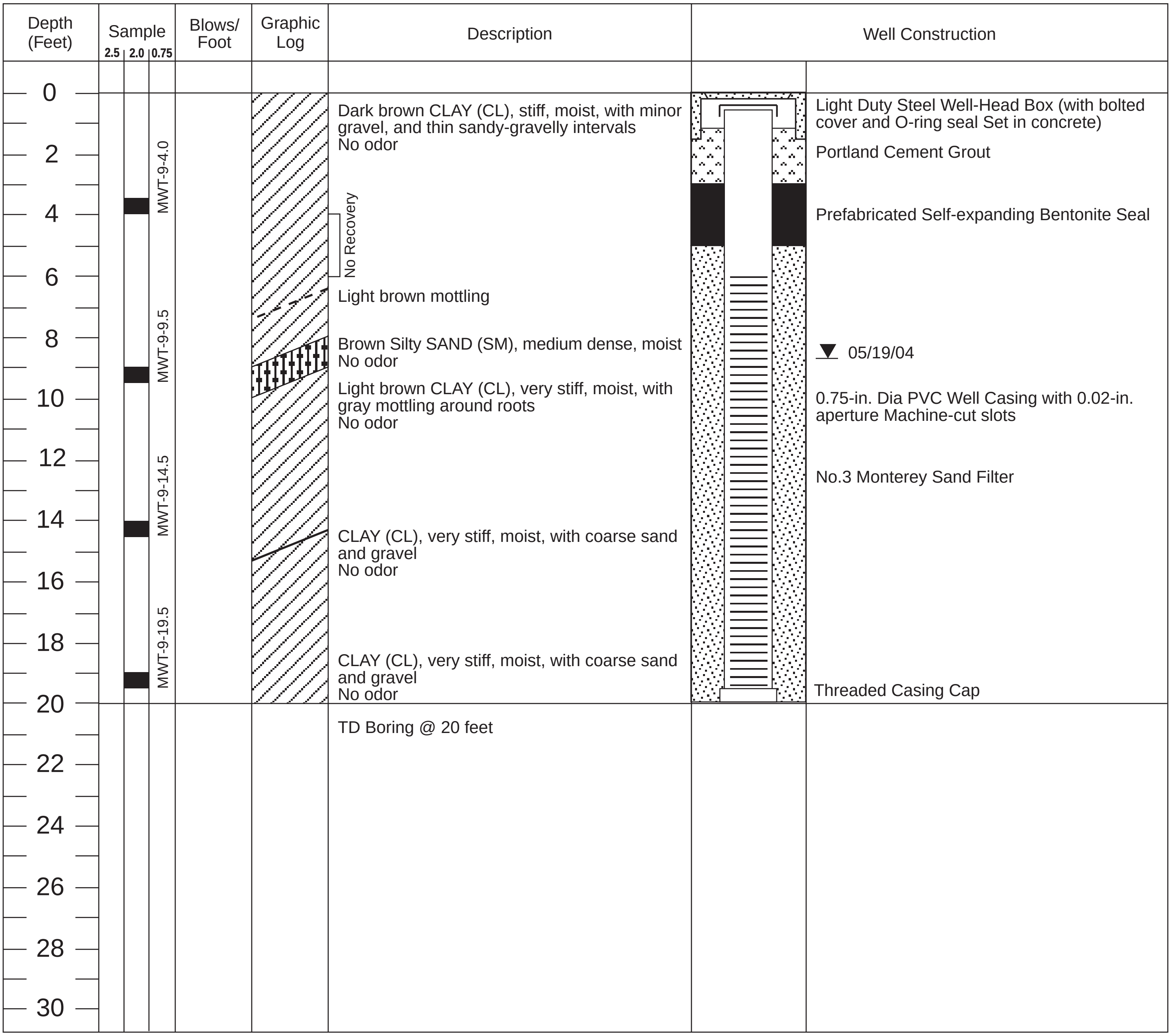
Casing Material: PVC

Drilling Company: Gregg Drilling & Testing

Drilling Method: Push Probe

Driller: Paul Rogers

Logged By: Steve Flexser



Dark brown CLAY (CL), stiff, moist, with minor gravel, and thin sandy-gravelly intervals
No odor

Light brown mottling

Brown Silty SAND (SM), medium dense, moist
No odor

Light brown CLAY (CL), very stiff, moist, with gray mottling around roots
No odor

CLAY (CL), very stiff, moist, with coarse sand and gravel
No odor

CLAY (CL), very stiff, moist, with coarse sand and gravel
No odor

TD Boring @ 20 feet

Light Duty Steel Well-Head Box (with bolted cover and O-ring seal Set in concrete)

Portland Cement Grout

Prefabricated Self-expanding Bentonite Seal

0.75-in. Dia PVC Well Casing with 0.02-in. aperture Machine-cut slots

No.3 Monterey Sand Filter

Threaded Casing Cap

The San Joaquin Company Inc.

Monitoring Well Log

WELL No.: **MWT-10**

Project: Oak Walk

Project No.: 0004.082

Owner: Bay Rock Residential LLC

Location: Emeryville, California

Top of Casing Elevation: 47.22 ft.

Surface Elevation: 47.38 ft.

Depth to Water: 9.53 ft.

Date Installed: 04/01/04

Total depth of Boring: 20 ft.

Boring Diameter: 2 in.

Well Casing Diameter: 0.75 in.

Total depth of Well: 20 ft.

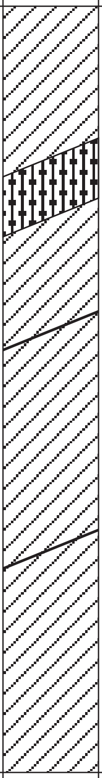
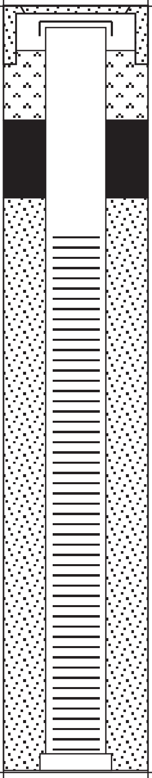
Casing Material: PVC

Drilling Company: Gregg Drilling & Testing

Drilling Method: Push Probe

Driller: Paul Rogers

Logged By: Steve Flexser

Depth (Feet)	Sample 2.5 | 2.0 | 0.75	Blows/ Foot	Graphic Log	Description	Well Construction
0				Dark brown CLAY (CL), stiff, moist, with minor gravel (fill) No odor	 Light Duty Steel Well-Head Box (with bolted cover and O-ring seal Set in concrete)
2					Portland Cement Grout
4	MWT-10-5.0			Dark brown Silty SAND (SM), medium dense, moist, with bottle glass (fill) No odor	Prefabricated Self-expanding Bentonite Seal
6				Brown CLAY (CL), very stiff, moist, with orange silty inclusions No odor	
8				Light brown CLAY (CL), very stiff, moist, abundant chert and black gravel No odor	0.75-in. Dia PVC Well Casing with 0.02-in. aperture Machine-cut slots
10	MWT-10-10.0			Decreasing gravel with depth	▼ 05/19/04 No.3 Monterey Sand Filter
12					
14	MWT-10-15.0			Dark brown CLAY (CL), very stiff, moist, with thin intervals of sandy gravelly clay No odor	
16				Color lightens with depth	
18					
20	MWT-10-20.0			TD Boring @ 20 feet	Threaded Casing Cap
22					
24					
26					
28					
30					

The San Joaquin Company Inc.

Monitoring Well Log

WELL No.: MWT-11

Project: Oak Walk

Project No.: 0004.082

Owner: Bay Rock Residential LLC

Location: Emeryville, California

Top of Casing Elevation: 46.63 ft.

Surface Elevation: 45.50 ft.

Depth to Water: 9.71 ft.

Date Installed: 11/05/04

Total depth of Boring: 20.0 ft.

Boring Diameter: 2 in.

Well Casing Diameter: 0.75 in.

Total depth of Well: 20.0 ft.

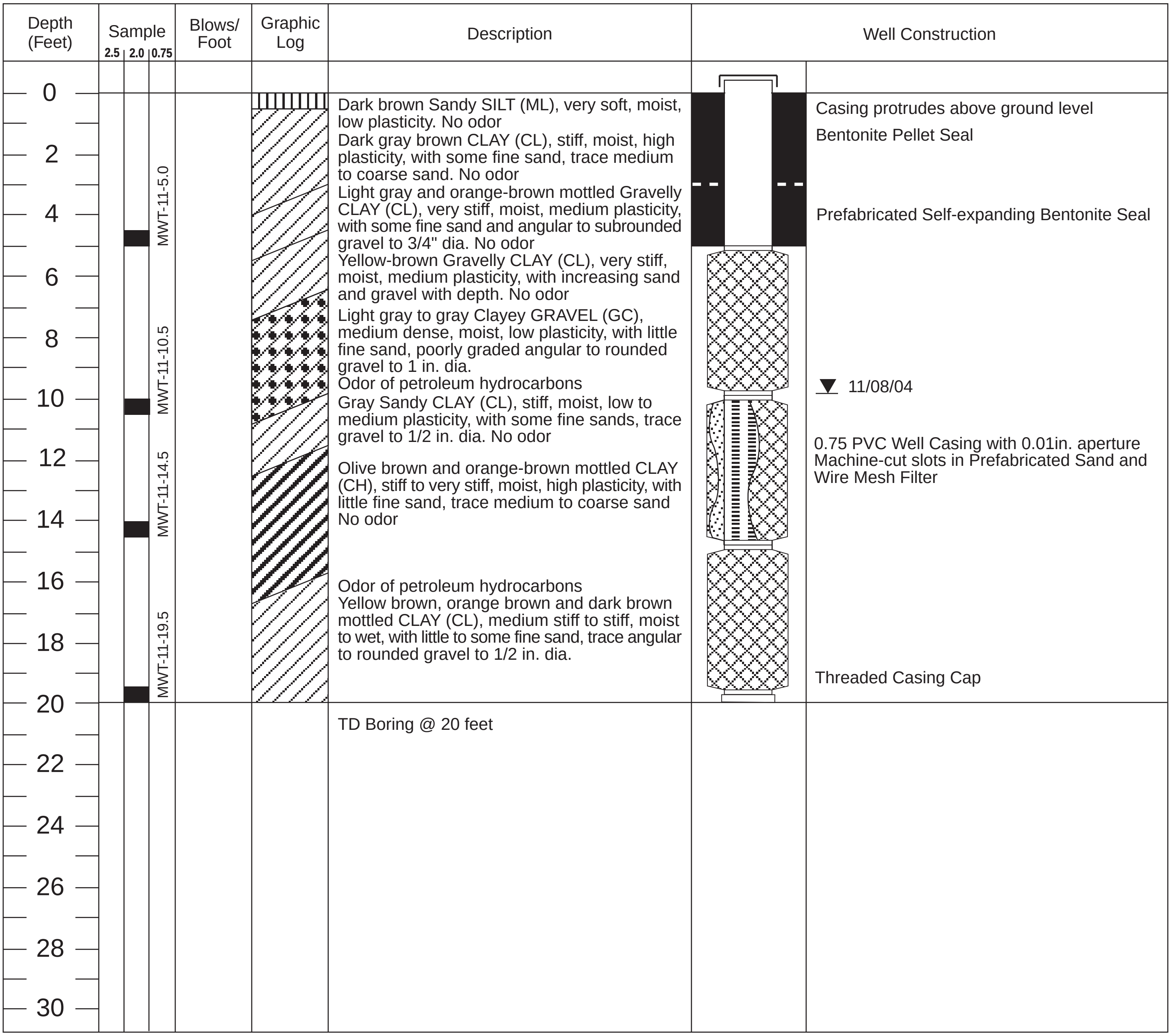
Casing Material: PVC

Drilling Company: Gregg Drilling & Testing

Drilling Method: Push Probe

Driller: Jeramy Ness

Logged By: Dennis Alexander



Dark brown Sandy SILT (ML), very soft, moist, low plasticity. No odor

Dark gray brown CLAY (CL), stiff, moist, high plasticity, with some fine sand, trace medium to coarse sand. No odor

Light gray and orange-brown mottled Gravelly CLAY (CL), very stiff, moist, medium plasticity, with some fine sand and angular to subrounded gravel to 3/4" dia. No odor

Yellow-brown Gravelly CLAY (CL), very stiff, moist, medium plasticity, with increasing sand and gravel with depth. No odor

Light gray to gray Clayey GRAVEL (GC), medium dense, moist, low plasticity, with little fine sand, poorly graded angular to rounded gravel to 1 in. dia.

Odor of petroleum hydrocarbons

Gray Sandy CLAY (CL), stiff, moist, low to medium plasticity, with some fine sands, trace gravel to 1/2 in. dia. No odor

Olive brown and orange-brown mottled CLAY (CH), stiff to very stiff, moist, high plasticity, with little fine sand, trace medium to coarse sand No odor

Odor of petroleum hydrocarbons

Yellow brown, orange brown and dark brown mottled CLAY (CL), medium stiff to stiff, moist to wet, with little to some fine sand, trace angular to rounded gravel to 1/2 in. dia.

TD Boring @ 20 feet

Casing protrudes above ground level

Bentonite Pellet Seal

Prefabricated Self-expanding Bentonite Seal

▼ 11/08/04

0.75 PVC Well Casing with 0.01in. aperture Machine-cut slots in Prefabricated Sand and Wire Mesh Filter

Threaded Casing Cap

The San Joaquin Company Inc.

Monitoring Well Log

WELL No.: **MWT-12**

Project: Oak Walk

Project No.: 0004.082

Owner: Bay Rock Residential LLC

Location: Emeryville, California

Top of Casing Elevation: 47.97 ft.

Surface Elevation: 46.10 ft.

Depth to Water: 10.79 ft.

Date Installed: 11/05/04

Total depth of Boring: 20 ft.

Boring Diameter: 2 in.

Well Casing Diameter: 0.75 in.

Total depth of Well: 20 ft.

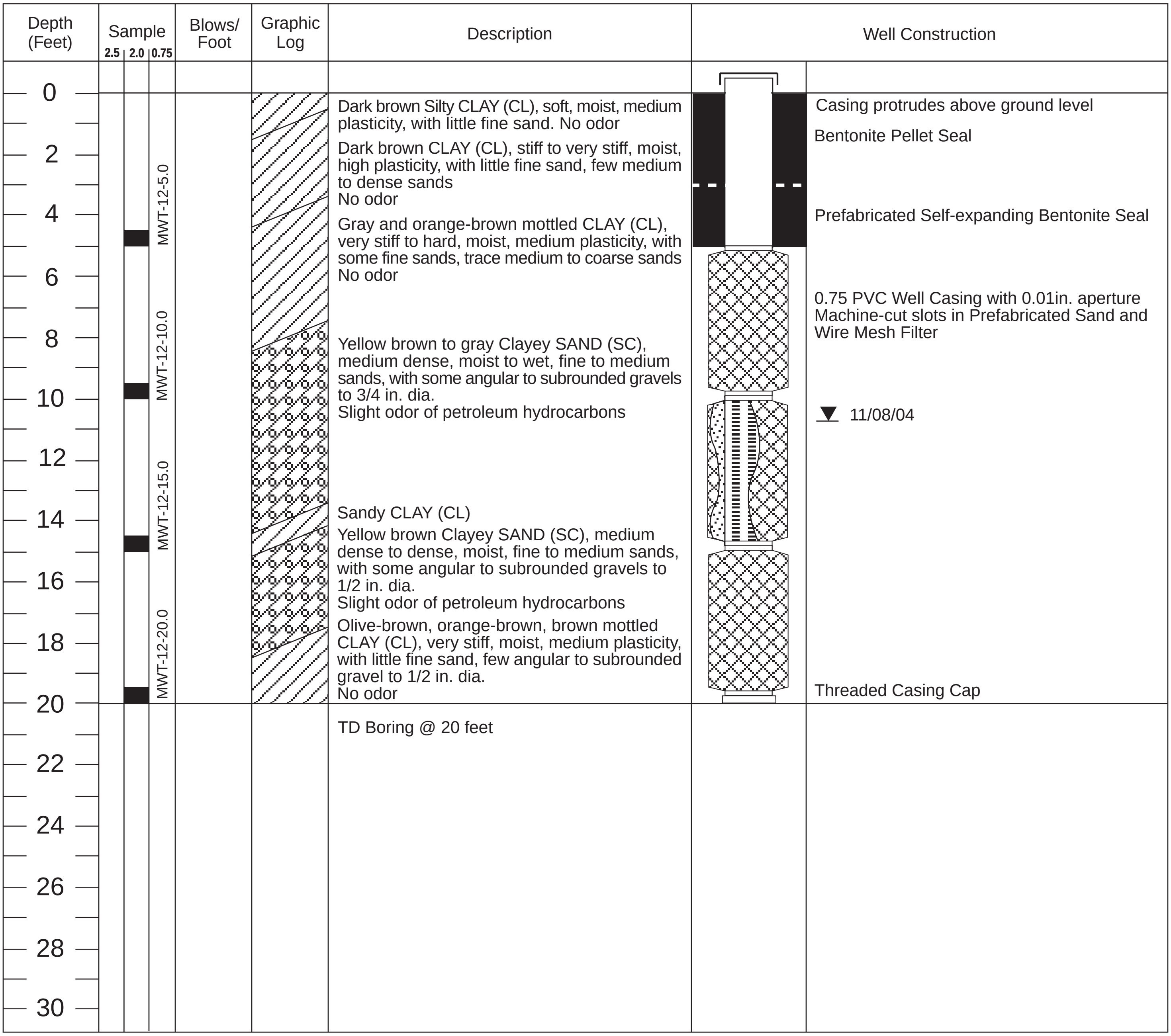
Casing Material: PVC

Drilling Company: Gregg Drilling & Testing

Drilling Method: Push Probe

Driller: Jeramy Ness

Logged By: Dennis Alexander



Dark brown Silty CLAY (CL), soft, moist, medium plasticity, with little fine sand. No odor

Dark brown CLAY (CL), stiff to very stiff, moist, high plasticity, with little fine sand, few medium to dense sands
No odor

Gray and orange-brown mottled CLAY (CL), very stiff to hard, moist, medium plasticity, with some fine sands, trace medium to coarse sands
No odor

Yellow brown to gray Clayey SAND (SC), medium dense, moist to wet, fine to medium sands, with some angular to subrounded gravels to 3/4 in. dia.
Slight odor of petroleum hydrocarbons

Sandy CLAY (CL)

Yellow brown Clayey SAND (SC), medium dense to dense, moist, fine to medium sands, with some angular to subrounded gravels to 1/2 in. dia.
Slight odor of petroleum hydrocarbons

Olive-brown, orange-brown, brown mottled CLAY (CL), very stiff, moist, medium plasticity, with little fine sand, few angular to subrounded gravel to 1/2 in. dia.
No odor

TD Boring @ 20 feet

Casing protrudes above ground level

Bentonite Pellet Seal

Prefabricated Self-expanding Bentonite Seal

0.75 PVC Well Casing with 0.01in. aperture Machine-cut slots in Prefabricated Sand and Wire Mesh Filter

▼ 11/08/04

Threaded Casing Cap

The San Joaquin Company Inc.

Monitoring Well Log

WELL No.: **MWT-13**

Project: Oak Walk

Project No.: 0004.082

Owner: Bay Rock Residential LLC

Location: Emeryville, California

Top of Casing Elevation: 48.16 ft.

Surface Elevation: 46.30 ft.

Depth to Water: 10.65 ft.

Date Installed: 11/05/04

Total depth of Boring: 20 ft.

Boring Diameter: 2 in.

Well Casing Diameter: 0.75 in.

Total depth of Well: 20 ft.

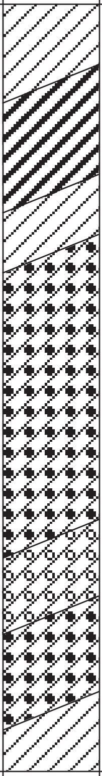
Casing Material: PVC

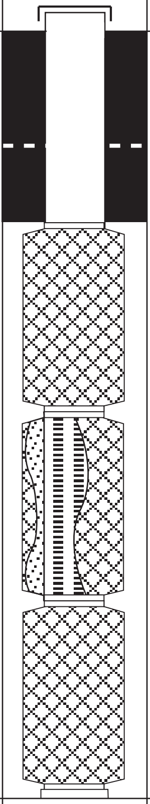
Drilling Company: Gregg Drilling & Testing

Drilling Method: Push Probe

Driller: Jeramy Ness

Logged By: Dennis Alexander





Depth (Feet)	Sample 2.5 | 2.0 | 0.75	Blows/ Foot	Graphic Log	Description	Well Construction
0				Dark brown Silty CLAY (CL), soft to medium soft, moist, medium plasticity, little fine sand No odor	Casing protrudes above ground level Bentonite Pellet Seal
2				Dark brown CLAY (CH), stiff to very stiff, moist, high plasticity, with few to little fine sand, decreasing plasticity with depth No odor	
4	MWT-13-5.0			Gray and orange-brown mottled CLAY (CL), very stiff, moist, medium plasticity, with little to some fine sands No odor	Prefabricated Self-expanding Bentonite Seal
6				Yellow-brown to gray Clayey GRAVEL (GC), medium dense to dense, moist, low plasticity, with some fine sand, poorly graded angular to subrounded gravel to 1 in. dia. Slight odor of petroleum hydrocarbons	0.75 PVC Well Casing with 0.01in. aperture Machine-cut slots in Prefabricated Sand and Wire Mesh Filter
8					
10	MWT-13-10.0				▼ 11/08/04
12					
14	MWT-13-15.0			Gray to yellow brown Clayey SAND (SC), medium dense, wet, fine sands No odor	
16				Yellow-brown Clayey GRAVEL (GC), medium dense, wet, with some fine sands, poorly graded angular gravels to 1 in. dia. No odor	
18				Olive-brown, orange-brown mottled CLAY (CL), stiff, moist, medium plasticity, with little fine sand, trace angular to subrounded gravel to 1/2 in. dia. No odor	
20	MWT-13-20.0			TD Boring @ 20 feet	Threaded Casing Cap
22					
24					
26					
28					
30					

The San Joaquin Company Inc.

Monitoring Well Log

WELL No.: **MWT-14**

Project: Oak Walk

Project No.: 0004.082

Owner: Bay Rock Residential LLC

Location: Emeryville, California

Top of Casing Elevation: 47.85 ft.

Surface Elevation: 47.80 ft.

Depth to Water: 9.63 ft.

Date Installed: 11/05/04

Total depth of Boring: 20.0 ft.

Boring Diameter: 2 in.

Well Casing Diameter: 0.75 in.

Total depth of Well: 20.0 ft.

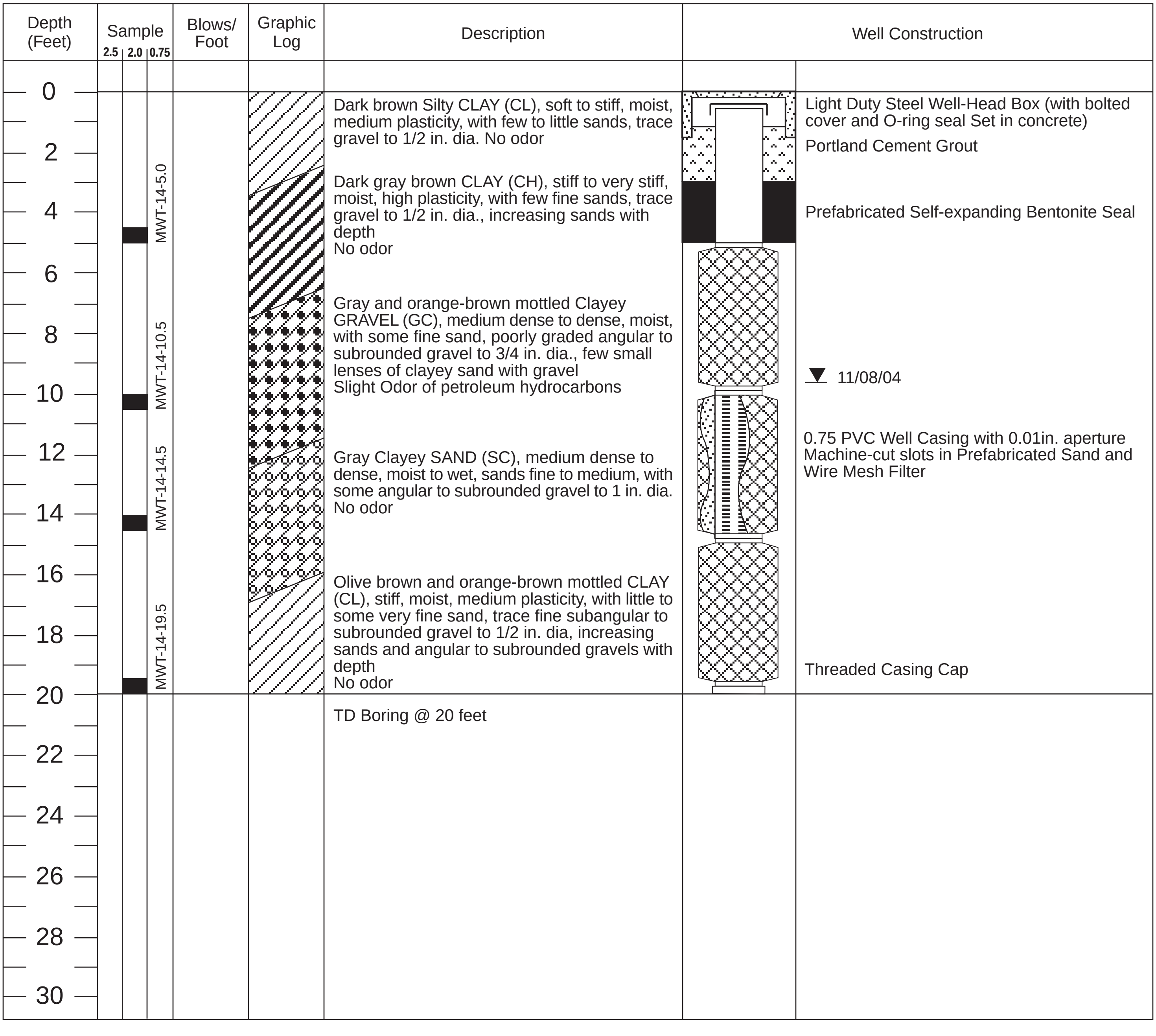
Casing Material: PVC

Drilling Company: Gregg Drilling & Testing

Drilling Method: Push Probe

Driller: Jeramy Ness

Logged By: Dennis Alexander



Depth (Feet)	Sample	Blows/ Foot	Graphic Log	Description	Well Construction
0				Dark brown Silty CLAY (CL), soft to stiff, moist, medium plasticity, with few to little sands, trace gravel to 1/2 in. dia. No odor	Light Duty Steel Well-Head Box (with bolted cover and O-ring seal Set in concrete) Portland Cement Grout
	MWT-14-5.0			Dark gray brown CLAY (CH), stiff to very stiff, moist, high plasticity, with few fine sands, trace gravel to 1/2 in. dia., increasing sands with depth No odor	Prefabricated Self-expanding Bentonite Seal
	MWT-14-10.5			Gray and orange-brown mottled Clayey GRAVEL (GC), medium dense to dense, moist, with some fine sand, poorly graded angular to subrounded gravel to 3/4 in. dia., few small lenses of clayey sand with gravel Slight Odor of petroleum hydrocarbons	▼ 11/08/04
	MWT-14-14.5			Gray Clayey SAND (SC), medium dense to dense, moist to wet, sands fine to medium, with some angular to subrounded gravel to 1 in. dia. No odor	0.75 PVC Well Casing with 0.01in. aperture Machine-cut slots in Prefabricated Sand and Wire Mesh Filter
	MWT-14-19.5			Olive brown and orange-brown mottled CLAY (CL), stiff, moist, medium plasticity, with little to some very fine sand, trace fine subangular to subrounded gravel to 1/2 in. dia, increasing sands and angular to subrounded gravels with depth No odor	Threaded Casing Cap
20				TD Boring @ 20 feet	

The San Joaquin Company, Inc.

Boring Log

BORING No.: **BG-1**

Project: Oak Walk

Project No.: 0004.083

Location: Emeryville, California

Date Drilled: 04/06/04

Surface Elevation: 43.3 ft.

Boring Diameter: 8 in.

Drilling Method: Hollow Stem Auger

Groundwater Depth: 18 ft.

Hammer Weight: 140 lbs.

Logged By: Dennis Alexander

Total depth of Boring: 35.0 ft.

Hammer Drop: 30 in.

Depth (Feet)	Sampler Outside Dia. (in.) 3.0	2.5	2.0	Blows/ 6 In.	Water Content (%)	Dry Density (PCF)	Other Lab Data	Graphic Log	Description
0									3 inches Bituminous macadam Dark brown Silty Sandy GRAVEL (GM), dense, moist (fill)
1									Dark Gray-brown CLAY (CH), very stiff, moist, high plasticity, with few very fine to fine sands No odor
2									
3	■			7 9 15	31.8	87.1			
4									
5		■		6 9 11					Mottled Gray and brown CLAY (CH), very stiff, moist, with trace medium to coarse sands, and fine sands No odor
6									
7									
8									
9	■			11 17 26	22.3	102.9	uc = 1.75ksf		Light Gray and brown CLAY (CH), very stiff, moist, hight plasticity, with few fine sands, some angular to subrounded medium to coarse sands and gravels to 3/4" diameter, trace shells Moderate gasoline odor
10									
11									
12									
13									
14	■			10 19 25	19.7	108.4	uc = 2.42ksf		Mottled yellow-brown and light blue Gray CLAY (CH), hard, moist, high plasticity, with vein of very fine to fine sands, trace of medium to coarse sands Slight gasoline odor
15									
16									Gray-brown Sandy CLAY (CL), very stiff, moist, medium plasticity, with some fine sands, trace medium to coarse sands No odor
17									
18									▽
19	■			10 13 16	23.8	101.7	<200 = 66.2% LL = 42% PI = 24%		
20									

The San Joaquin Company, Inc.

Boring Log

BORING No.: **BG-1**

Project: Oak Walk

Project No.: 0004.083

Location: Emeryville, California

Date Drilled: 04/06/04

Surface Elevation: 43.3 ft.

Boring Diameter: 8 in.

Drilling Method: Hollow Stem Auger

Groundwater Depth: 18 ft.

Hammer Weight: 140 lbs.

Logged By: Dennis Alexander

Total depth of Boring: 35.0 ft.

Hammer Drop: 30 in.

Depth (Feet)	Sampler Outside Dia. (in.)			Blows/ 6 In.	Water Content (%)	Dry Density (PCF)	Other Lab Data	Graphic Log	Description
	3.0	2.5	2.0						
20								▨	Gray-brown Sandy CLAY (CL), very stiff, moist, medium plasticity, with some fine sands, trace medium to coarse sand No odor
21								▨	
22								▨	
23	☐							▨	Increasing sands and gravels to 23.5 feet
24	■			17 27 36	20.6	106.0	uc = 4.05ksf	▨	Mottled yellow-brown and light Gray CLAY (CL), hard, moist, medium plasticity, with little to some fine sands, small lenses of angular to round gravels to 3/4" diameter No odor
25								▨	
26								▨	
27								▥	Yellow-brown Clayey SILT (ML), hard, moist, low to medium plasticity, with little to some very fine sands No odor
28	☐							▥	
29	■			17 24 36	23.1	104.4		○	Yellow-brown Gravelly SAND (SW), dense, wet, non-plastic, well graded, with some subangular to rounded gravels to 1" diameter No odor
30								○	
31								○	
32								▨	Yellow-brown CLAY (CL), very stiff, moist, medium plasticity, with little very fine to fine sands No odor
33	☐							▨	
34	■			11 13 15	29.6	94.5		▨	
35									
36									TD Boring at 35 feet
37									
38									
39									
40									

The San Joaquin Company, Inc.

Boring Log

BORING No.: **BG-2**

Project: Oak Walk

Project No.: 0004.083

Location: Emeryville, California

Date Drilled: 04/06/04

Surface Elevation: 46.5 ft.

Boring Diameter: 8 in.

Drilling Method: Hollow Stem Auger

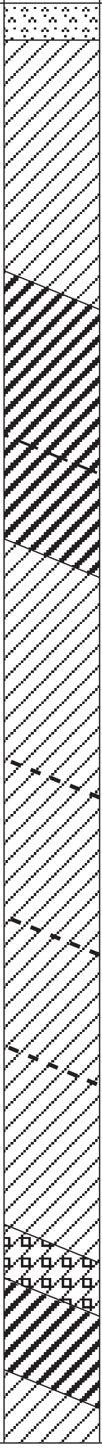
Groundwater Depth: 14.5 ft.

Hammer Weight: 140 lbs.

Logged By: Dennis Alexander

Total depth of Boring: 30.0 ft.

Hammer Drop: 30 in.

Depth (Feet)	Sampler Outside Dia. (in.) 3.0 | 2.5 | 2.0	Blows/ 6 In.	Water Content (%)	Dry Density (PCF)	Other Lab Data	Graphic Log	Description
0							6 inches concrete
1							Dark Gray brown Silty CLAY (CL), very stiff, moist, medium plasticity, with little fine sands, trace fine gravel to 1/2" diameter No odor
2							
3		4 10 16	25.4	97.5			
4							Dark brown CLAY (CH), very stiff, moist, high plasticity, with little fine sands, few medium to coarse sands, trace angular to subrounded gravels to 3/4" diameter No odor
5		8 11 12					
6		9 22 28	18.7 25.7	109.0 97.7	uc = 1.23ksf perm = 2.51 E-9cm/sec		Dark brown CLAY (CH), hard, moist, high plasticity, with little fine sands, few medium to coarse sands, trace angular to subrounded gravels to 3/4" diameter No odor
7							
8			21.0	96.5	Shelby 26" Consol.		Gray Lean Sandy CLAY (CL), very stiff, moist, medium plasticity, with some fine sands, little medium to coarse sands, few fine gravels to 1/2" diameter Gasoline odor
9							
10							
11		14 19 25					Mottled light gray and brown Sandy CLAY (CL), hard, moist, medium plasticity, with some fine sands, increasing subangular gravels to few up to 1" diameter Gasoline odor
12			20.7	99.4	Shelby 15" Consol.		
13							Mottled brown and gray Sandy CLAY (CL), hard, moist, medium plasticity, increasing sands with depth No odor
14							▽
15		14 15 21					Mottled brown and gray Sandy CLAY (CL), hard, moist, medium plasticity, with some fine sands, few medium to coarse sands, some fine angular to rounded gravels to 1/2" diameter No odor
16							
17							Yellow-brown with light gray streaks CLAYEY SAND (SC), medium dense, moist, medium plasticity, with little subangular to rounded gravels to 3/4" diameter No odor
18		7 8 9	24.1	101.2	<200 = 34.8% LL = 34% PI = 17%		Lens of (CH) at 18.5-19.5'
19							
20							

The San Joaquin Company, Inc.

Boring Log

BORING No.: **BG-2**

Project: Oak Walk

Project No.: 0004.083

Location: Emeryville, California

Date Drilled: 04/06/04

Surface Elevation: 46.5 ft.

Boring Diameter: 8 in.

Drilling Method: Hollow Stem Auger

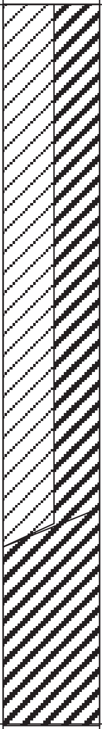
Groundwater Depth: 18 ft.

Hammer Weight: 140 lbs.

Logged By: Dennis Alexander

Total depth of Boring: 30.0 ft.

Hammer Drop: 30 in.

Depth (Feet)	Sampler Outside Dia. (in.)			Blows/ Foot	Water Content (%)	Dry Density (PCF)	Other Lab Data	Graphic Log	Description
	3.0	2.5	2.0						
20									Interbedded lenses of yellow-brown CLAY (CH) and CLAY (CL), hard, moist, medium to high plasticity, with few to some fine sands, trace medium to coarse sand, trace to few angular to subrounded gravel up to 1/2" diameter No odor
21		■		8 13 17					
22									
23									
24	■			17 20 33	26.3	98.3			
25									
26									
27									
28									Yellow-brown CLAY (CH), hard, moist, high plasticity, with few very fine to fine sands No odor
29	■			10 17 26	24.4	100.7			
30									TD Boring at 30 feet
31									
32									
33									
34									
35									
36									
37									
38									
39									
40									

The San Joaquin Company, Inc.

Boring Log

BORING No.: BE-1

Project: Oak Walk

Project No.: 0004.082

Location: Emeryville, California

Date Drilled: 04/02/04

Surface Elevation: 44.9 ft.

Boring Diameter: 2 in.

Drilling Method: Push Probe

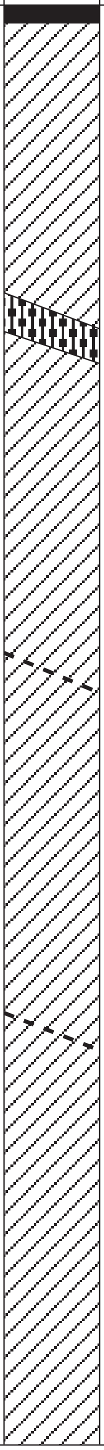
Groundwater Depth: n.a. ft.

Hammer Weight: n.a. lbs.

Logged By: Steve Flexser

Total depth of Boring: 25.0 ft.

Hammer Drop: n.a. in.



Depth (Feet)	Sampler Outside Dia. (in.) 3.0 2.5 2.0	Blows/ Foot	Water Content (%)	Dry Density (PCF)	Other Lab Data	Graphic Log	Description
0							3 inches bituminous macadam Black CLAY (CL), medium stiff, moist, with little gravel No odor
1							
2							
3							
4							Dark Gray-brown Silty SAND (SM), loose, dry No odor
5	BE-1-5.0						Black CLAY (CL), medium stiff, moist, with little gravel very slight odor of fuel hydrocarbons
6							
7							
8							Strong odor of fuel hydrocarbons
9							Black CLAY (CL), medium stiff, moist, with interbedded layers of Gray-green fine sand, gravel and weathered chert No odor
10	BE-1-10.0						
11							
12							
13							
14							Gray and light brown Gravelly CLAY (CL), very stiff, moist, with coarse gravel and inclusions of red sand Very slight fuel odor
15	BE-1-15.0						
16							
17							
18							
19	BE-1-20.0						
20							

The San Joaquin Company, Inc. Boring Log

BORING No.: **BE-1**

Project: Oak Walk

Project No.: 0004.083

Location: Emeryville, California

Date Drilled: 04/02/04

Surface Elevation: 44.9 ft.

Boring Diameter: 2 in.

Drilling Method: Push Probe

Groundwater Depth: n.a. ft.

Hammer Weight: n.a. lbs.

Logged By: Steve Flexser

Total depth of Boring: 25.0 ft.

Hammer Drop: n.a. in.

Depth (Feet)	Sampler Outside Dia. (in.) 3.0	2.5	2.0	Blows/ Foot	Water Content (%)	Dry Density (PCF)	Other Lab Data	Graphic Log	Description
20								▨	Gray and light brown Gravelly CLAY (CL), very stiff, moist, with coarse gravel and inclusions of red sand. With increasing gravel and sand with depth No odor
21								▨	
22								▨	
23								▨	
24		BE-1-25.0	■					▨	No odor
25									TD Boring at 25 feet
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									
36									
37									
38									
39									
40									

The San Joaquin Company, Inc.

Boring Log

BORING No.: **BE-2**

Project: Oak Walk

Project No.: 0004.082

Location: Emeryville, California

Date Drilled: 04/02/04

Surface Elevation: 46.6 ft.

Boring Diameter: 2 in.

Drilling Method: Push Probe

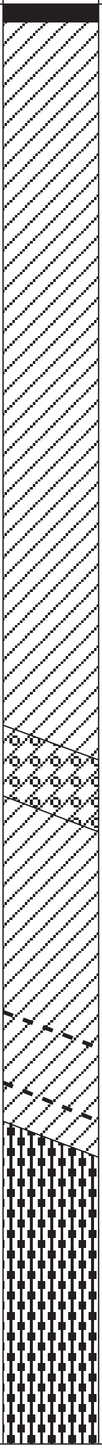
Groundwater Depth: n.a. ft.

Hammer Weight: n.a. lbs.

Logged By: Steve Flexser

Total depth of Boring: 25.0 ft.

Hammer Drop: n.a. in.

Depth (Feet)	Sampler Outside Dia. (in.) 3.0 | 2.5 | 2.0	Blows/ Foot	Water Content (%)	Dry Density (PCF)	Other Lab Data	Graphic Log	Description
0							3 inches bituminous macadam Black CLAY (CL), medium stiff, moist, with thin interbedded layers of coarse brown Sand and fine Gravel Very slight odor of fuel hydrocarbons
1							
2							
3							
4							Moderate odor of fuel hydrocarbons
5	BE-2-5.0						
6							
7							
8							
9							
10	BE-2-10.0						Gray and orange Clayey SAND (SC), loose, wet
11							Gray and light brown CLAY (CL), soft, wet, with fine subrounded gravel Moderate odor of fuel hydrocarbons
12							
13							
14							Gray-green CLAY (CL), medium stiff, wet, with interbedded layers of orange and black clay Slight odor of fuel hydrocarbons
15	BE-2-15.0						Gray-green CLAY (CL), stiff, wet, with abundant gravel Slight odor of fuel hydrocarbons
16							Silty SAND (SM), medium dense, wet, with interbedded layers of clay and multi-colored gravel Slight odor of fuel hydrocarbons
17							
18							
19							Moderate odor of fuel hydrocarbons
20	BE-2-20.0						

The San Joaquin Company, Inc.

Boring Log

BORING No.: **BE-2**

Project: Oak Walk

Project No.: 0004.083

Location: Emeryville, California

Date Drilled: 04/02/04

Surface Elevation: 46.6 ft.

Boring Diameter: 2 in.

Drilling Method: Push Probe

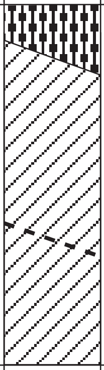
Groundwater Depth: n.a. ft.

Hammer Weight: n.a. lbs.

Logged By: Steve Flexser

Total depth of Boring: 25.0 ft.

Hammer Drop: n.a. in.

Depth (Feet)	Sampler Outside Dia. (in.) 3.0 | 2.5 | 2.0	Blows/ Foot	Water Content (%)	Dry Density (PCF)	Other Lab Data	Graphic Log	Description
20							
21							Light brown CLAY (CL), medium stiff, wet, with sandy inclusions Very slight odor of fuel hydrocarbons
22							
23							
24	BE-2-25.0 ■						Light brown CLAY (CL), soft, wet, with rounded gravel, minor sand, and some black vitreous inclusions No Odor
25							
26							TD Boring at 25 feet
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

The San Joaquin Company, Inc.

Boring Log

BORING No.: BE-3

Project: Oak Walk

Project No.: 0004.082

Location: Emeryville, California

Date Drilled: 04/02/04

Surface Elevation: 48.5 ft.

Boring Diameter: 2 in.

Drilling Method: Push Probe

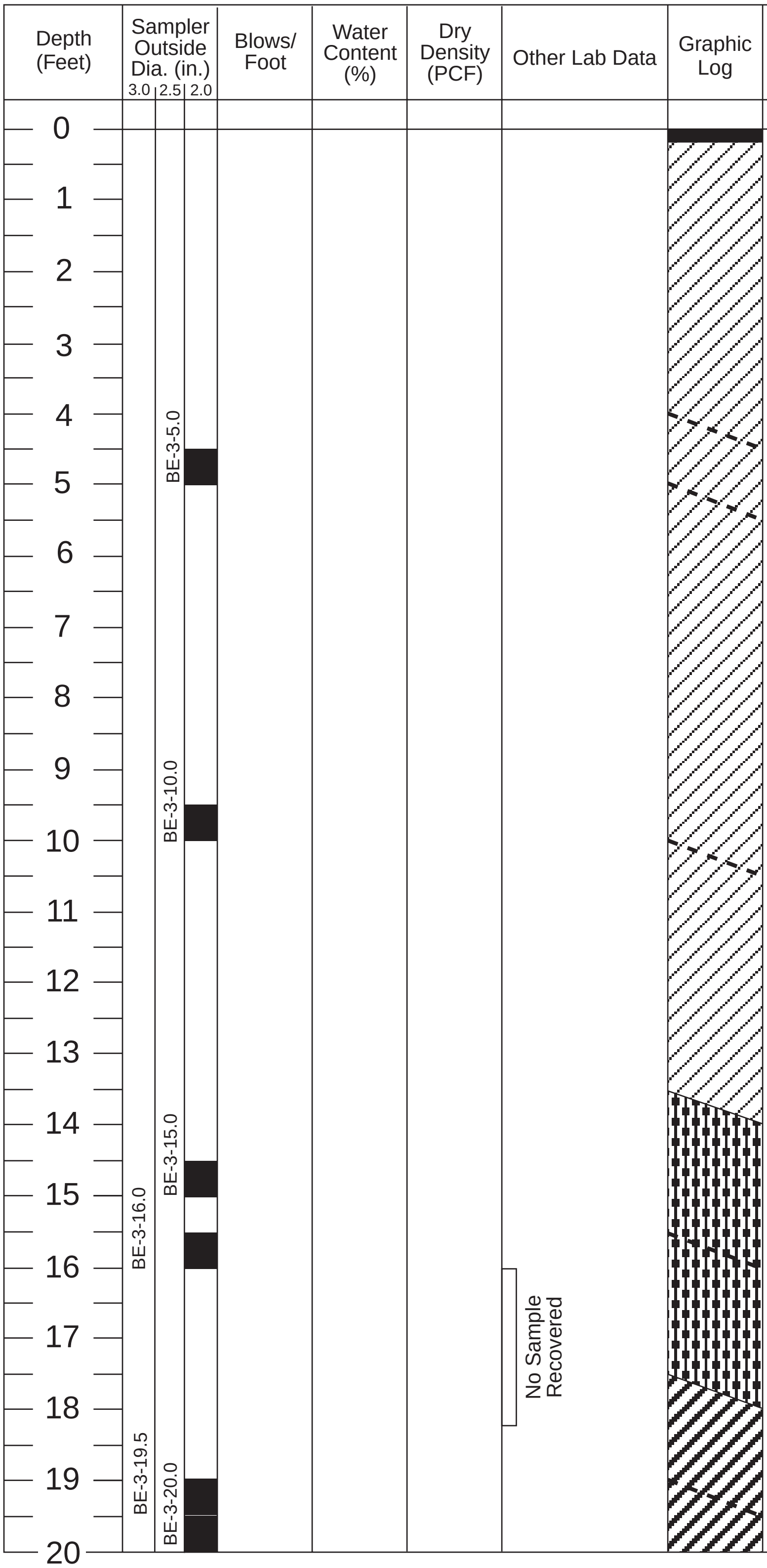
Groundwater Depth: n.a. ft.

Hammer Weight: n.a. lbs.

Logged By: Steve Flexser

Total depth of Boring: 20.0 ft.

Hammer Drop: n.a. in.



Description

2 inches bituminous macadam

Black CLAY (CL), medium stiff, moist, with few inclusions or root marks
No odor

Gray CLAY (CL), medium stiff, moist
No odor

Gray CLAY (CL), stiff, moist, increasing stiffness with depth
No odor

Very slight odor of fuel hydrocarbons

Gray and brown mottled CLAY (CL), stiff, moist
No odor

Moderate odor of fuel hydrocarbons

Slight odor of fuel hydrocarbons

Brown Silty SAND (SM), loose, wet, with some gravel
No odor

Brown Silty SAND (SM), loose, wet, increasing gravel with depth

Dark gray to black CLAY (CH), stiff, wet
Strong odor of fuel hydrocarbons

Gray CLAY (CH), stiff, wet, with coarse sand and gravel
Moderate odor of fuel hydrocarbons

TD Boring @ 20 feet

The San Joaquin Company, Inc.

Boring Log

BORING No.: **BE-4**

Project: Oak Walk

Project No.: 0004.082

Location: Emeryville, California

Date Drilled: 04/01/04

Surface Elevation: 44.6 ft.

Boring Diameter: 2 in.

Drilling Method: Push Probe

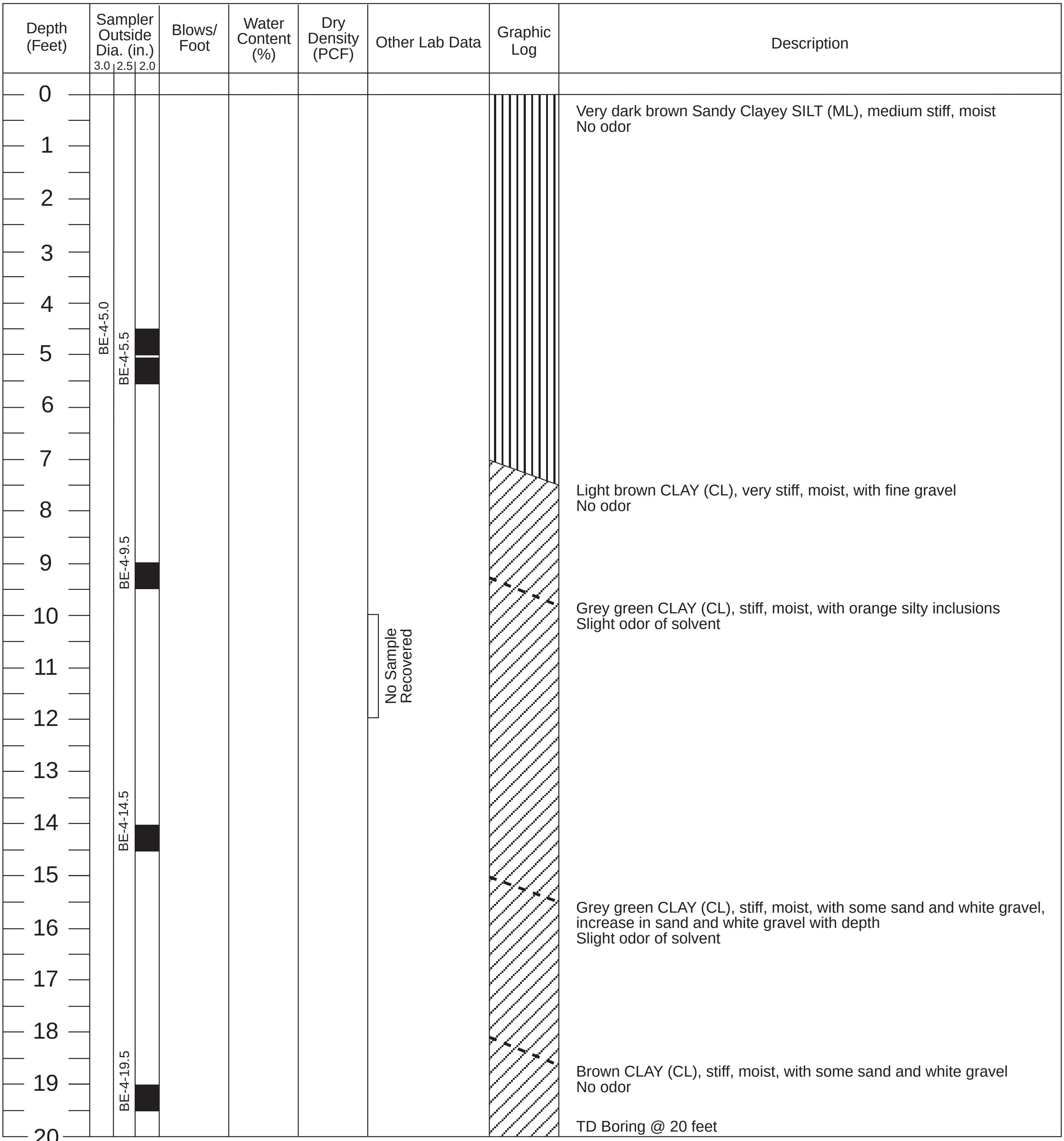
Groundwater Depth: n.a. ft.

Hammer Weight: n.a. lbs.

Logged By: Steve Flexser

Total depth of Boring: 20.0 ft.

Hammer Drop: n.a. in.



Very dark brown Sandy Clayey SILT (ML), medium stiff, moist
No odor

Light brown CLAY (CL), very stiff, moist, with fine gravel
No odor

Grey green CLAY (CL), stiff, moist, with orange silty inclusions
Slight odor of solvent

Grey green CLAY (CL), stiff, moist, with some sand and white gravel, increase in sand and white gravel with depth
Slight odor of solvent

Brown CLAY (CL), stiff, moist, with some sand and white gravel
No odor

TD Boring @ 20 feet

The San Joaquin Company, Inc.

Boring Log

BORING No.: **BE-5**

Project: Oak Walk

Project No.: 0004.082

Location: Emeryville, California

Date Drilled: 04/01/04

Surface Elevation: 43.8 ft.

Boring Diameter: 2 in.

Drilling Method: Push Probe

Groundwater Depth: 12 ft.

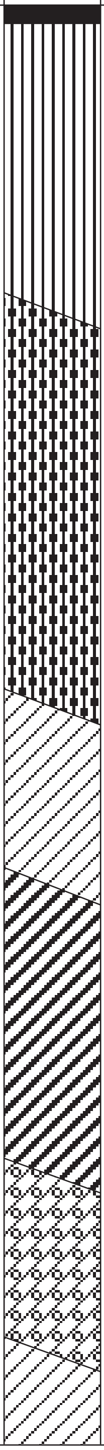
Hammer Weight: n.a. lbs.

Logged By: Steve Flexser

Total depth of Boring: 20.0 ft.

Hammer Drop: n.a. in.

Depth (Feet)	Sampler Outside Dia. (in.) 3.0 | 2.5 | 2.0	Blows/ Foot	Water Content (%)	Dry Density (PCF)	Other Lab Data	Graphic Log	Description
0							3 inches bituminous macadam Dark brown to black Clayey SILT (ML), medium stiff, moist, with red root markings No odor
1							
2							
3							
4							Brown Silty SAND (SM), medium dense, moist, with yellow and red sand inclusions No odor
5	BE-5-5.0						
6							
7							
8							
9							
10	BE-5-10.5						Gray CLAY (CL), medium stiff, moist, with thin sandy intervals and some gravel No odor
11							
12							▽
13							Light brown CLAY (CH), stiff, moist Slight odor of fuel hydrocarbons
14	BE-5-14.5						No odor
15							
16							
17							Brown Clayey SAND(SC), medium dense, wet, with gravel No odor
18							
19							Brown CLAY (CL) No odor
20	BE-5-20.0						TD Boring @ 20 feet



(p1 of 1)

The San Joaquin Company, Inc.

Boring Log

BORING No.: **BE-6**

Project: Oak Walk

Project No.: 0004.082

Location: Emeryville, California

Date Drilled: 04/01/04

Surface Elevation: 43.9 ft.

Boring Diameter: 2 in.

Drilling Method: Push Probe

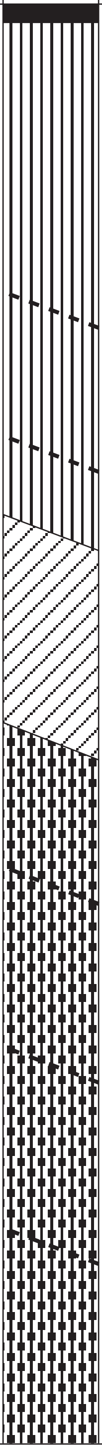
Groundwater Depth: 12 ft.

Hammer Weight: n.a. lbs.

Logged By: Steve Flexser

Total depth of Boring: 20.0 ft.

Hammer Drop: n.a. in.



Depth (Feet)	Sampler Outside Dia. (in.) 3.0 | 2.5 | 2.0	Blows/ Foot	Water Content (%)	Dry Density (PCF)	Other Lab Data	Graphic Log	Description
0							3 inches bituminous macadam
1							Dark brown to black Sandy SILT (ML), medium stiff, moist No odor
2							
3							
4	BE-6-4.0						
5							Dark brown to black Sandy SILT (ML), medium stiff, moist, with some sand, increasing sand with depth Very slight solvent odor
6							
7							Brown and gray mottled Sandy SILT (ML), medium stiff, moist, with orange root marks Very slight solvent odor
8							Black to dark brown CLAY (CL), stiff, moist Very slight solvent odor
9							
10	BE-6-10.0						
11							Brown Silty SAND (SM), medium dense, moist, with some angular weathered chert gravel, and roots Very slight solvent odor to no odor
12							▽
13							Black Silty SAND (SM), medium dense, moist, decreasing gravel with depth No odor
14							
15	BE-6-15.5						Gray Silty SAND (SM), medium dense, moist No odor
16							
17							
18							Gray and brown Silty SAND (SM), medium dense, moist No odor
19							
20	BE-6-20.0						

TD Boring @ 20 feet

Clayton
GROUP SERVICES

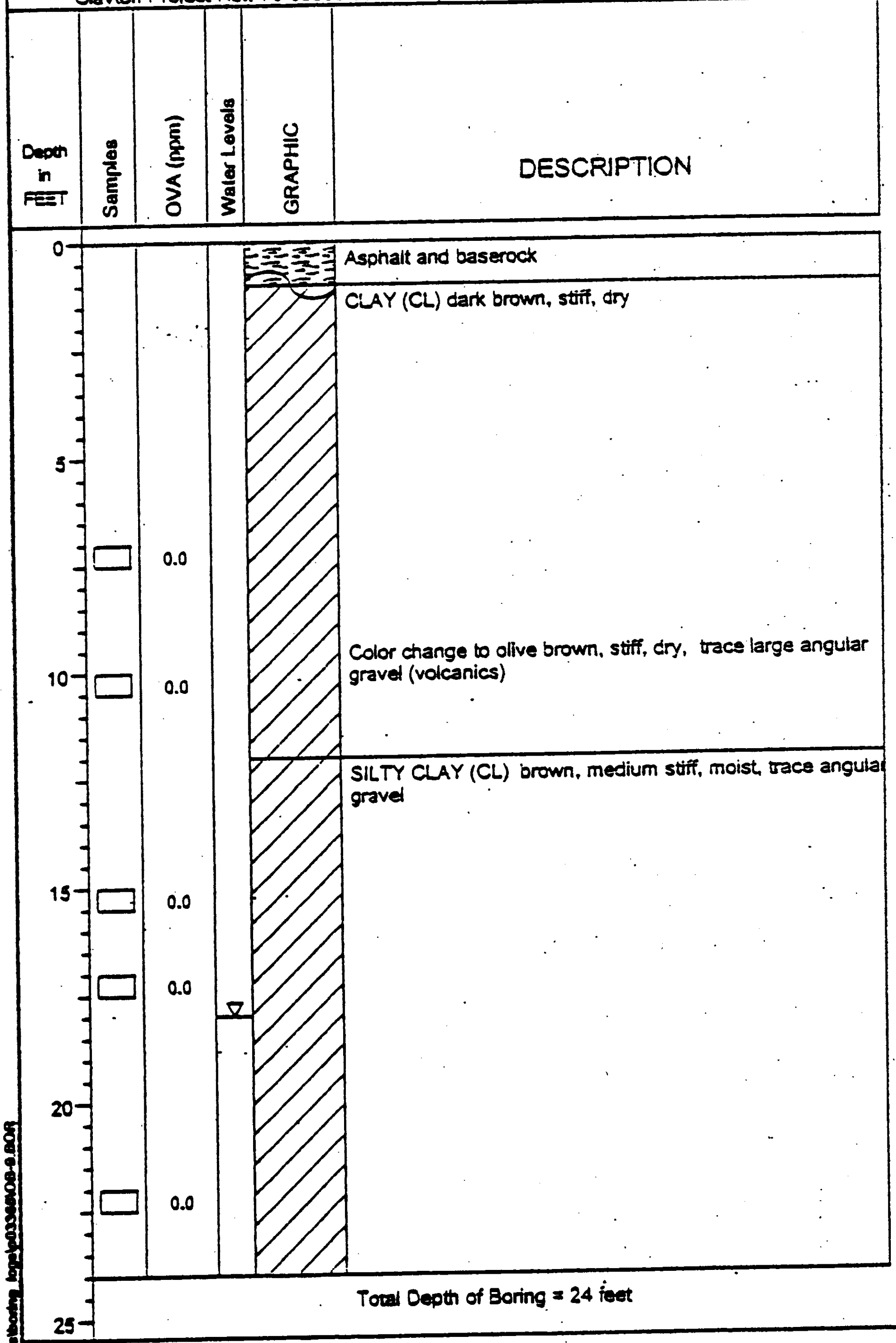
LOG OF BORING OB-9

(Page 1 of 1)

Green City Lofts LLC
Subsurface Investigation
1007 41st Street
Emeryville, California

Clayton Project No.: 70-03365.03

Date Started	: 06/27/03	Driller	: Gregg
Date Completed	: 06/27/03	Logged by	: Matt Reimer
Hole Diameter	: 2-inch		
Drilling Method	: Geoprobe		
Sampling Method	: Macrocore		



Asphalt and baserock

CLAY (CL) dark brown, stiff, dry

Color change to olive brown, stiff, dry, trace large angular gravel (volcanics)

SILTY CLAY (CL) brown, medium stiff, moist, trace angular gravel

Total Depth of Boring = 24 feet

Notes:
Borehole was initiated with hand auger to 4 feet bgs.
Static water level at 18 feet.
Grab groundwater sample taken at 11:20.
Borehole abandoned with neat cement grout.

Clayton
GROUP SERVICES

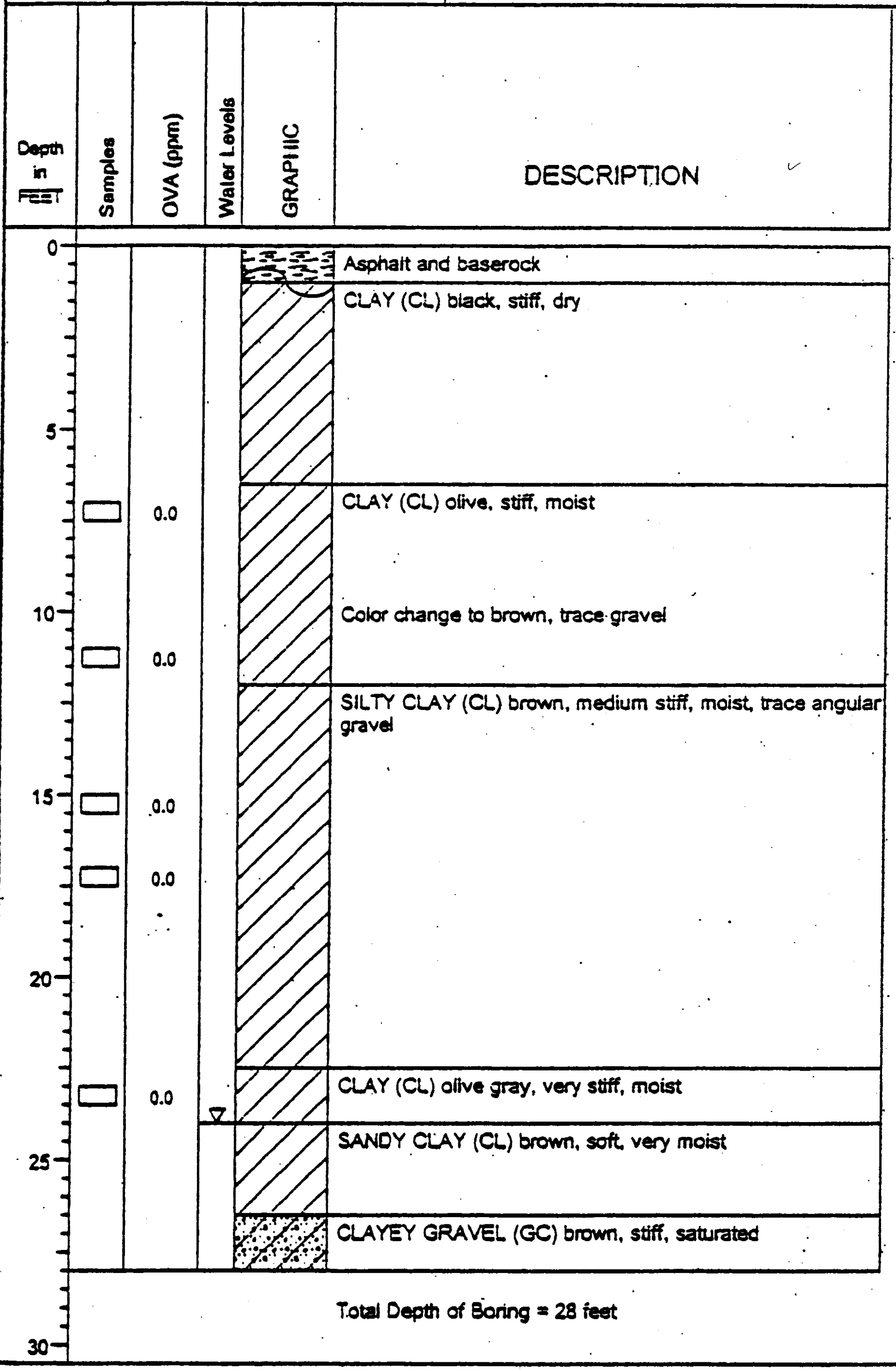
LOG OF BORING OB-6

(Page 1 of 1)

Green City Lofts LLC
Subsurface Investigation
1007 41st Street
Emeryville, California

Clayton Project No.: 70-03365.03

Date Started : 06/27/03
Date Completed : 06/27/03
Hole Diameter : 2-inch
Drilling Method : Geoprobe
Sampling Method : Macrocore
Driller : Gregg
Logged by : Matt Reimer



Asphalt and baserock

CLAY (CL) black, stiff, dry

CLAY (CL) olive, stiff, moist

Color change to brown, trace gravel

SILTY CLAY (CL) brown, medium stiff, moist, trace angular gravel

CLAY (CL) olive gray, very stiff, moist

SANDY CLAY (CL) brown, soft, very moist

CLAYEY GRAVEL (GC) brown, stiff, saturated

Total Depth of Boring = 28 feet

Notes:
Borehole was initiated with hand auger to 4 feet bgs.
Static water level at 24 feet. Grab groundwater sample taken at 15:40 p.m.
Borehole abandoned with neat cement grout.

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Clayton GROUP SERVICES

LOG OF BORING OB-5

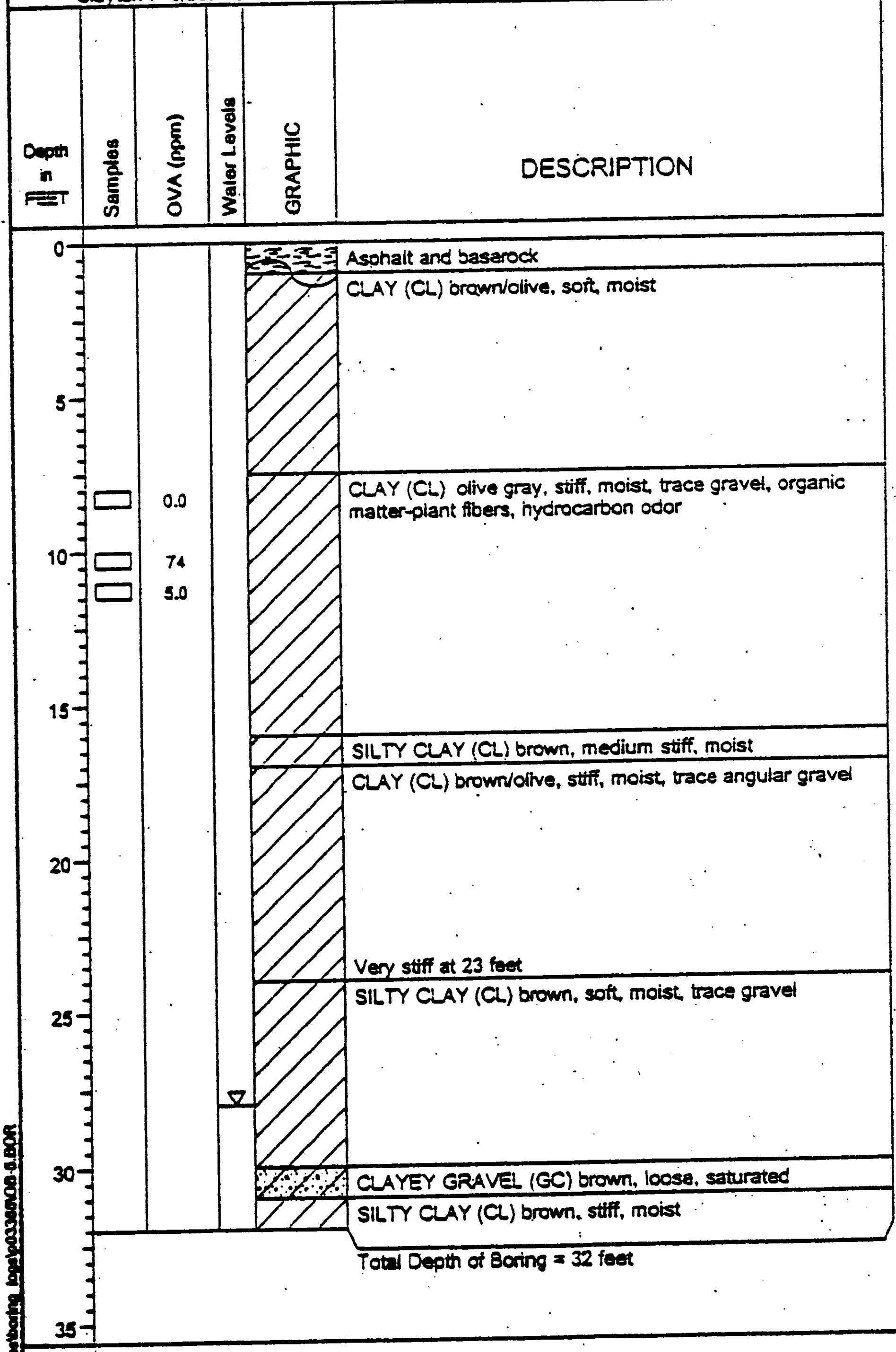
(Page 1 of 1)

Green City Lofts LLC
Subsurface Investigation
1007 41st Street
Emeryville, California

Clayton Project No.: 70-03365.03

Date Started : 06/27/03
Date Completed : 06/27/03
Hole Diameter : 2-inch
Drilling Method : Geoprobe
Sampling Method : Macrocore

Driller : Gregg
Logged by : Matt Reimer



Asphalt and baserock

CLAY (CL) brown/olive, soft, moist

CLAY (CL) olive gray, stiff, moist, trace gravel, organic matter-plant fibers, hydrocarbon odor

SILTY CLAY (CL) brown, medium stiff, moist

CLAY (CL) brown/olive, stiff, moist, trace angular gravel

Very stiff at 23 feet

SILTY CLAY (CL) brown, soft, moist, trace gravel

CLAYEY GRAVEL (GC) brown, loose, saturated

SILTY CLAY (CL) brown, stiff, moist

Total Depth of Boring = 32 feet

Notes:
Borehole was initiated with hand auger to 4 feet bgs.
Static water level at 28 feet. Grab groundwater sample taken at 15:10 p.m.
Borehole abandoned with neat cement grout.

Clayton
GROUP SERVICES

LOG OF BORING OB-4

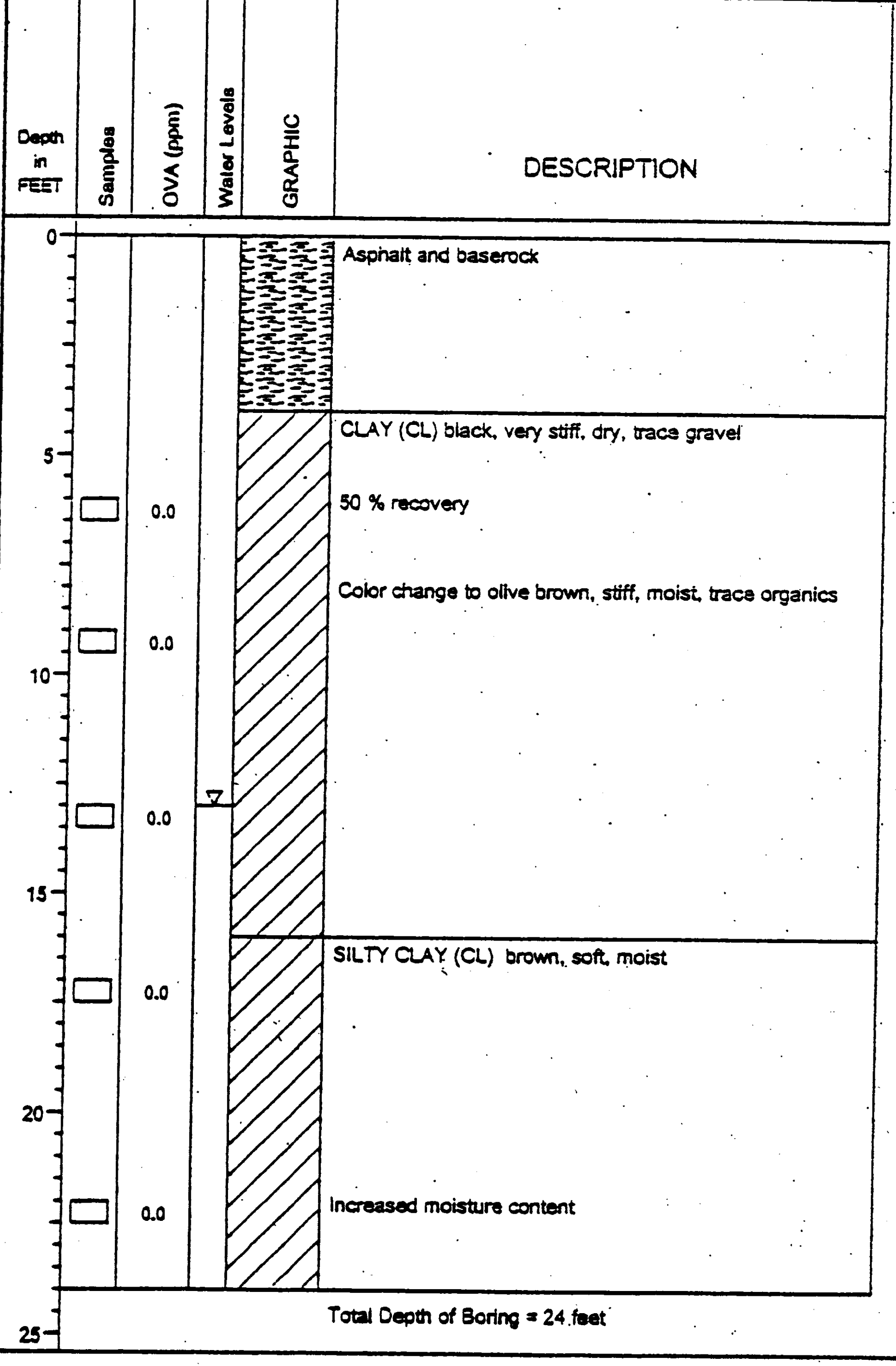
(Page 1 of 1)

Green City Lofts LLC
Subsurface Investigation
1007 41st Street
Emeryville, California

Clayton Project No.: 70-03365.03

Date Started : 06/27/03
Date Completed : 06/27/03
Hole Diameter : 2-inch
Drilling Method : Geoprobe
Sampling Method : Macrocore

Driller : Gregg
Logged by : Matt Reimer



Asphalt and baserock

CLAY (CL) black, very stiff, dry, trace gravel

50 % recovery

Color change to olive brown, stiff, moist, trace organics

SILTY CLAY (CL) brown, soft, moist

Increased moisture content

Total Depth of Boring = 24 feet

Notes:
Borehole was initiated with hand auger to 4 feet bgs.
Grab groundwater sample taken at 10:50.
Borehole abandoned with neat cement grout.

Clayton
GROUP SERVICES

LOG OF BORING OB-3

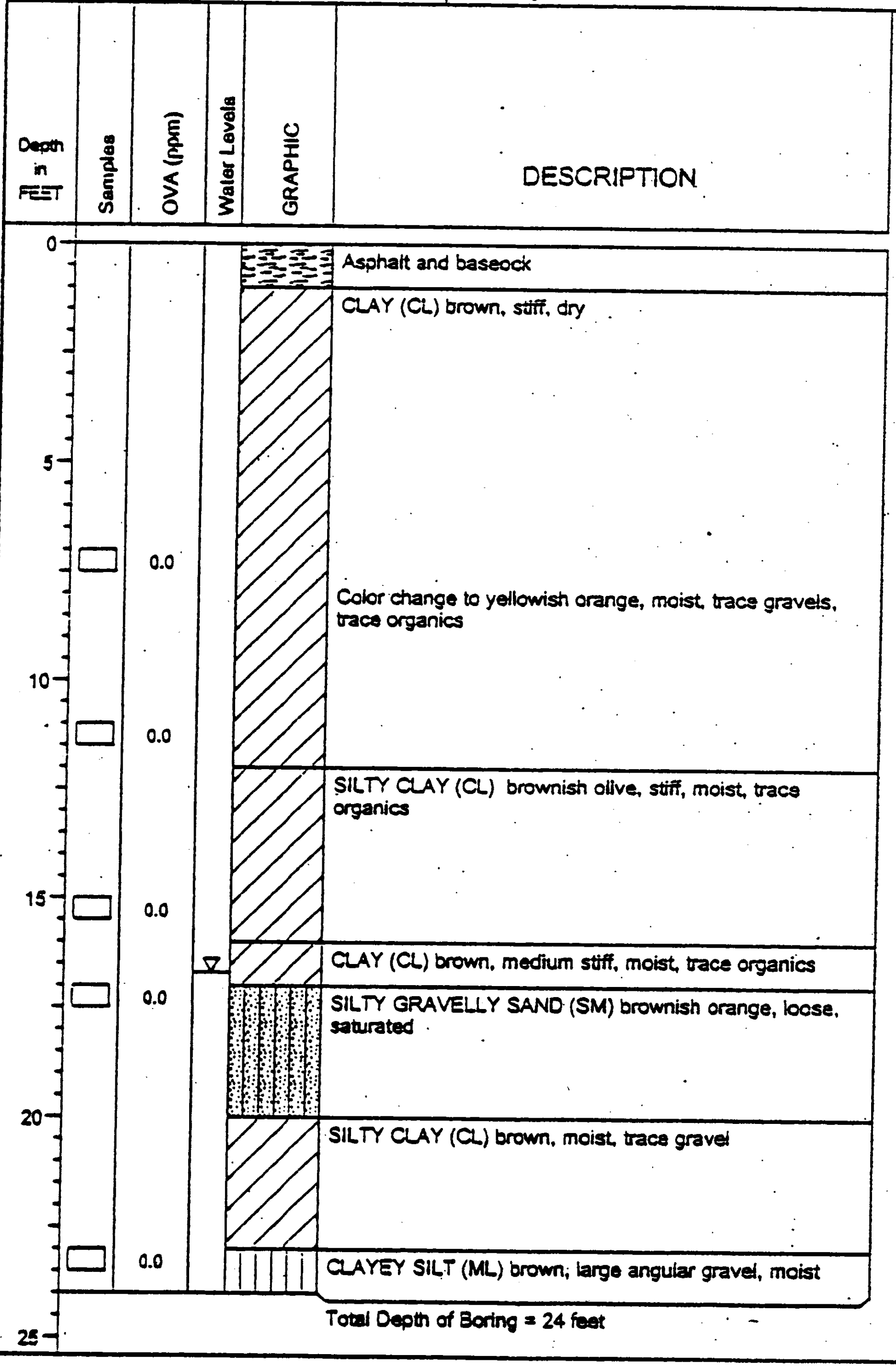
(Page 1 of 1)

Green City Lofts LLC
Subsurface Investigation
1007 41st Street
Emeryville, California

Clayton Project No.: 70-03365.03

Date Started : 06/27/03
Date Completed : 06/27/03
Hole Diameter : 2-inch
Drilling Method : Geoprobe
Sampling Method : Macrocore

Driller : Gregg
Logged by : Matt Reimer



Asphalt and baseock

CLAY (CL) brown, stiff, dry

Color change to yellowish orange, moist, trace gravels, trace organics

SILTY CLAY (CL) brownish olive, stiff, moist, trace organics

CLAY (CL) brown, medium stiff, moist, trace organics

SILTY GRAVELLY SAND (SM) brownish orange, loose, saturated

SILTY CLAY (CL) brown, moist, trace gravel

CLAYEY SILT (ML) brown, large angular gravel, moist

Total Depth of Boring = 24 feet

Notes:
Borehole was initiated with hand auger to 4 feet bgs.
Static water level at 16.7 feet. Grab groundwater sample taken at 8:50 a.m.
Borehole abandoned with neat cement grout.

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Clayton GROUP SERVICES

LOG OF BORING CW-2

(Page 1 of 1)

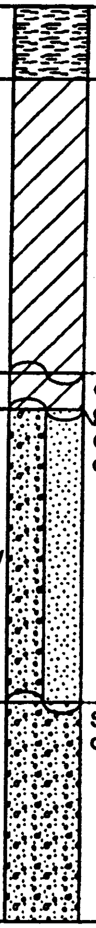
Former Dunne Paint Facility
1007 41st Street
Oakland, California

Clayton Project No.: 70-03365.05

Date Started	: 10/30/03	Driller	: Clear Heart Drilling
Date Completed	: 10/30/03	Logged by	: Mike Krzeminski
Hole Diameter	: 8-inch	Surveyor	: V. Chavez
Drilling Method	: Hollow Stem Auger	Top of Casing	: ft, msl
Sampling Method	: Cal Modified Split Spoon		

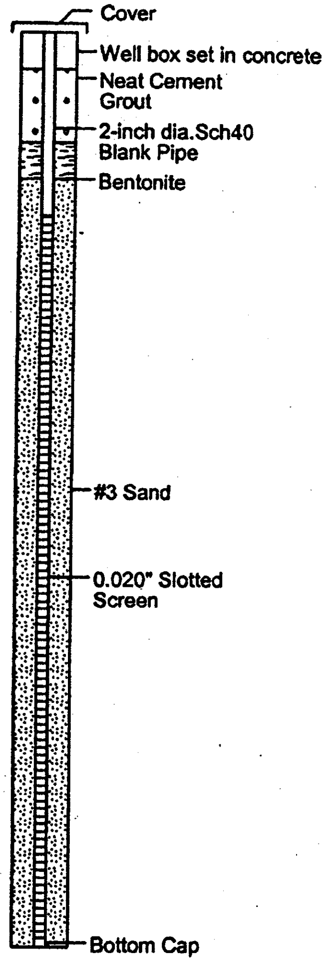
Depth in FEET	Samples	Blow Count	OVM (mg/kg)	USCS	DESCRIPTION
0					Asphalt and Baserock
					Silty Clay trace gravel (CL) (5,0,40,55), dark brown, very stiff, fine subangular gravel, dry, rootlets.
5	☒	7 10 15	0.3	CL	
	☒	6 9 13	0.3		
	☒	8 19 20	445		
10	☒	7 13 17	762	CL	Gravelly Clay trace sand (CL) (30,10,10,50), greenish gray, stiff, coarse gravel, moist, hydrocarbon odor present.
	☐	8 10 15			Gravelly Sand (GW/SW) (50,50,0,0), light brown, medium dense, coarse gravel, medium sands, saturated, no odor.
	☒	9 16 19	25.1		
15	☐	8 15 17	0.9	GW/SW	
					Sandy Gravel (GW) (60,40,0,0) light brown, medium dense, coarse gravel, medium sands, saturated.
20	☐	13 17 20	0.3	GW	
25					
30					

GRAPHIC



Total Depth of Boring = 25 feet

Well: CW-2
Elev.:



Notes:

Clayton
GROUP SERVICES

LOG OF BORING CW-3

(Page 1 of 1)

Former Dunne Paint Facility
1007 41st Street
Oakland, California

Clayton Project No.: 70-03365.05

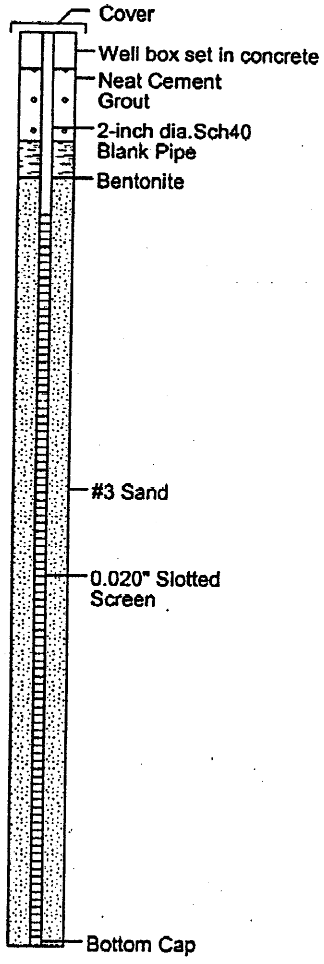
Date Started : 10/30/03
Date Completed : 10/30/03
Hole Diameter : 8-inch
Drilling Method : Hollow Stem Auger
Sampling Method : Cal Modified Split Spoon

Driller : Clear Heart Drilling
Logged by : Mike Krzeminski
Surveyor : V. Chavez
Top of Casing : ft, msl

Depth in FEET	Samples	Blow Count	OVM (mg/kg)	USCS	GRAPHIC	DESCRIPTION
0						Asphalt and Baserock
						Silty Clay (CL) (0,0,30,70), dark brown, stiff, dry, rootlets.
5	☒	11 18 22	0.3	CL		
10	☒	10 15 17	0.3	CL		Gravelly Clay with trace sand (CL) (30,10,0,60), light brown, medium stiff, fine angular gravel, moist.
15	☒	9 12 18	0.3	GW/SW		Silty Clay trace gravel (CL) (10,0,30,60), light brown, medium stiff, fine angular gravel, saturated.
20	☒	9 14 18	0.3			
25						
30						

Total Depth of Boring = 25 feet

Well: CW-3
Elev.:



Notes: