SOIL MANAGEMENT AND REMOVAL PLAN
MANDELA GATEWAY REDEVELOPMENT SITE
SEVENTH STREET AND MANDELA PARKWAY
Oakland, California

Alameda Health Care Services Agency
Alameda, California

24 March 2003
Project No. 3433.04

Treadwell&Rollo
Environmental and Geotechnical Consultants

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24 March 2003
Project No. 3433.04

Mr. Barney Chan
Alameda Health Care Services Agency
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

Subject: Soil Management and Removal Plan
Mandela Gateway Redevelopment Site
Seventh Street and Mandela Parkway
Oakland, California

Dear Mr. Chan:

Enclosed is our *Soil Management and Removal Plan* (SMRP) for the proposed construction activities at the Mandela Gateway Redevelopment Site in Oakland, California. As qualified persons, we judge the soil management measures identified, if completed, will mitigate significant environmental or health and safety risks likely to be caused by potentially hazardous materials in or on the property in question.

We appreciate the opportunity to work with you on this project. If you have any questions, please call.

Sincerely yours,
TREADWELL & ROLLO, INC.

Grover Buhr, R.G.
Senior Geologist

for Philip G. Smith, R.E.A. II, C.P.G.S.
Principal

34330410.OAK

Attachment

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1.0 INTRODUCTION

This Soil Management and Removal Plan and removal (SMRP) presents the measures recommended by Treadwell & Rollo to protect construction workers and future site users from risks associated with the presence of chemical compounds and metals in the soil at the Mandela Gateway Redevelopment Site property located at Seventh Street and Mandela Parkway in Oakland, California (Figure 1). The SMRP was prepared by Treadwell & Rollo for Mandela Gateway Associates. Although this site is not under an administrative order by local or state environmental regulatory agencies, copies of the previous environmental investigation reports have been submitted to the Alameda County Health Care Services Agency (ACHCSA) for review and comment. The ACHCSA will also review and approve this SMRP.

The site consists of two areas: the block bordered by Seventh Street, Center Street, Eighth Street and Mandela Parkway ("West Block"), and the partial block bordered by Seventh Street, Mandela Parkway and Eighth Street ("East Block"), as shown on Figures 1 and 2. The site is currently a combination of vacant and commercial properties and parking lots located in a mixed commercial and residential area in west Oakland. We understand Mandela Gateway Associates plans to redevelop the site with multi-story at-grade structures that will include parking garages, retail space, and affordable residential units.

2.0 BACKGROUND

The site encompasses an area of approximately 5.2 acres and is relatively flat. The West Block is currently vacant and was previously occupied by the Westwood Gardens apartment complex, which has been demolished (Figure 2). The former apartment complex consisted of four 3-story, multi-unit residential buildings, a central partially-paved plaza area, a driveway/parking area, a paved basketball court and landscaped areas. The East Block is currently occupied in the

western part by J&A Truck Repair (J&A). Current plans call for J&A to vacate the property on April 1, 2003. The remainder of the site was formerly occupied by a CalTrans Park and Ride parking lot (CalTrans lot), which has been demolished, and a portion of a parking lot owned by Armored Transport Systems, Inc. (AT Systems). A portion of the Cypress Freeway previously ran above the site, but was removed after the Loma Prieta earthquake. The J&A lot consists of a main service building and several sheds, with concrete or asphalt pavement covering the remainder of the lot.

The site is in an area of Oakland that historically has been residential, commercial and light industrial. Adjacent property uses are residential to the north, residential and commercial to the west, commercial to the east, and parking, automotive repair and a BART station to the south.

The subject property is at an elevation of approximately 11 to 16 feet above Mean Sea Level (NGVD, 1929). The ground surface at the site vicinity is relatively flat. Previous investigations in the site vicinity indicate groundwater flows to the southwest, toward the Oakland Inner Harbor.

Sampling and analysis of soil in the West Block indicated lead and pesticides are present in the shallow soils. These chemicals were found in some soil samples at concentrations that exceed calculated remedial target levels for future residential receptors, based on a site-specific risk assessment that is documented in the Treadwell & Rollo report titled *Human Health Risk Assessment, Mandela Gateway Redevelopment Site, Seventh Street and Mandela Parkway, Oakland, California* (HHRA), 24 March 2003 (Treadwell & Rollo, 2003b). In addition, some chemical concentrations detected in soils in some areas of the West Block indicate that if such soils were to be excavated, they would need to be managed as a California hazardous waste.

In the East Block, lead was detected at concentrations that exceed calculated remedial target levels for future residential receptors in shallow soils in the J&A lot and in the parking lots. Total Petroleum Hydrocarbons, quantified as motor oil (TPH-mo), were detected in several locations at concentrations greater than the Risk-Based Screening Level (RBSL) developed by

the Regional Water Quality Control Board, San Francisco Bay Region (RWQCB). As in the West Block, concentrations detected in some areas suggest that some soils will need to be managed as a hazardous waste if excavated. Soil and groundwater sampling and analytical results are presented in the 2 August 2002 Treadwell & Rollo report titled *Phase I and II Environmental Site Assessment, Mandela Gateway Redevelopment Site, Seventh Street and Mandela Parkway, Oakland, California* (Treadwell & Rollo, 2002), and the 10 March 2003 Treadwell & Rollo letter report to Mr. Barney Chan of the ACHCSA titled *Data Summary, Mandela Gateway Redevelopment Site, Seventh and Mandela Parkway, Oakland, California* (Treadwell & Rollo, 2003a).

3.0 PROJECT DESCRIPTION

Plans are to redevelop the site for mixed commercial and affordable residential use. The general plan of the development is shown in Figure 3. A lot-line adjustment has been used to alter the property line in the East Block relative to the AT Systems site. There will be a total 69 and 113 residential units in the West and East Blocks, respectively. The development is divided into two separate phases. Phase 1, the main development, will include the entire East Block property and the southern 70 percent of the West Block (excluding Parcel A) and will start construction in Spring 2003. Phase 2, the northern part of the West Block ("Parcel A" on Figure 3) will be single-family townhouses, and will be constructed in Fall 2003.

The townhouses in Parcel A on the West Block will be split level, 2-1/2-story, wood-framed buildings founded on post-tensioned concrete slabs-on-grade. These units will be individually sold as single-family townhome residences. Grading plans for this phase are not currently available, and therefore, specific grading requirements are unknown. We expect finished grade to be at or close to the grade along Eighth Street. At a minimum, we expect the soil subgrade beneath the slabs will be scarified in-place to a depth of 8 to 12 inches, moisture-conditioned, and recompacted prior to foundation construction.

The main development on the West Block (excluding Parcel A) will consist of an L-shaped building that will occupy the south and east portion of the block, an at-grade asphalt-paved parking lot accessed from Center Street, and a private street. The L-shaped building will consist of what is commonly referred to as a "podium" structure. The ground floor of the podium structure will consist of a concrete slab-on-grade floor and reinforced cast-in-place concrete or concrete masonry unit (CMU) walls. The first floor ceiling will consist of a post-tensioned concrete podium slab that will be used to support wood-framed residences above. The east half of the podium will be used as a parking garage, except for an occupied retail space that will be constructed on Seventh Street. The west portion of the podium building includes a drugstore retail use with a separate loading dock that is accessed from Center Street. Several 2- to 3-story wood-framed apartment buildings and a children's play area will be constructed above both portions of the podium.

The West Block podium building will be supported on spread footings with a concrete slab-on-grade floor. To provide adequate bearing support, the existing soil will be overexcavated to a depth of two feet below the proposed bottom-of-footing elevation; the lower foot of soil will be scarified and recompacted in-place. The overexcavation (to the top of the scarified soil) will extend about 3.5 feet below ground surface (bgs) (as it currently exists) under the proposed parking garage and small retail space, and about 5.25 feet bgs under the proposed drug store. Recompacted soils will consist of either previously-excavated on-site soils that are determined to be re-usable (based on the results of hazardous waste characteristic testing) or imported clean fill.

The soil subgrade in the parking lot will be raised 1 to 2 feet. Prior to placing fill, the existing soil subgrade will be scarified to a depth of 6 to 8 inches, moisture-conditioned, and recompacted.

Development on the East Block will include multiple building types. The largest building will be constructed in the southeast corner of the block and will consist of a podium structure with 2 to 3 levels of wood-framed residences above. The ground floor for this building will generally be used for parking, although portions of the first floor fronting on Seventh Street will be used as

occupied retail and administrative spaces. The foundation system for the podium structure will be similar to the podium structure on the West Block. The soil beneath the footings will be overexcavated to a depth of two feet beneath the proposed bottom-of-footing elevations, with the lower eight inches scarified and recompacted in-place. The total depth of excavation will be approximately 3.25 feet below the proposed parking garage and administration offices and five feet beneath the retail space on Seventh Street. Recompacted soils will consist of either previously-excavated on-site soils that are determined to be re-usable (based on the results of hazardous waste characteristic testing) or imported clean fill.

A town square with open space and children play areas will be constructed adjacent to the podium structure in the East Block. The southern portion of the town square will match the existing site grade, and the northern portion of the square will rise up to four feet from existing site grade. The town square will be surrounded by 2- to 3-story, wood-framed, townhouse-style, residential buildings. An asphalt-paved private street and several townhouses will be constructed north of the podium structure and town square. The soil subgrade for these buildings will be raised 1 to 2.5 feet above existing site grades. Along Eighth Street, three 2-story, wood-framed residential buildings will also be constructed. The pad elevation for these buildings will be near existing site grades. Where the new townhouses and/or private drive are constructed, the soil subgrade will be scarified to a depth of 8 to 12 inches, moisture-conditioned, and recompacted in place. Scarification, moisture conditioning, and recompaction will also be required prior to fill placement.

Other proposed improvements on the sites include recreation areas, community rooms, pedestrian walkways, and landscaped areas. Prior to construction, an existing, 7.5 to 9.5 foot deep sanitary sewer line will be abandoned and relocated along the proposed east (adjusted) property line. The former sanitary sewer line, which extends beneath the proposed footprint of the east block podium and townhouses, will be filled with concrete grout and abandoned in-place.

4.0 SITE HISTORY

Based on the previous Treadwell & Rollo Phase I and Phase II ESA, past site uses included residential and commercial activities (Treadwell & Rollo, 2002). Before the 1940's, the site was primarily residential, with minor light industrial use (e.g., pre-1900's planing mill and machine shop along Center Street in the West Block). In the 1940's, the West Block of the site was occupied by U.S. Marine Corps military housing, while the East Block was predominantly private residences with a few retail stores, a restaurant, an automobile garage and a pipe-valve and fitting business. By the late 1950's, the East Block had been vacated and was being used as a highway construction yard for the Nimitz Freeway, which was constructed over a portion of the East Block. In the 1970's, the Westwood Gardens apartment complex was constructed in the West Block. The East Block remained a highway construction yard until the late 1970's, when it's western portion began to house a series of truck repair businesses. In 1989, the Cypress Freeway, covering a portion of the East Block, was destroyed in the Loma Prieta earthquake. In the 1990's, the portion of the East Block formerly covered by the Freeway was converted into a CalTrans parking lot. The West Block remained the Westwood Gardens apartment complex and was occupied until 2002. The East Block currently contains an operating truck repair business. The CalTrans parking lot has been demolished.

5.0 SOIL MANAGEMENT CRITERIA

The purpose of this SMRP is to provide procedures for soil management to be approved by the ACHCSA and implemented by the site owner and contractor. As described in detail below, soil management procedures will be conducted whenever soil is disturbed or exposed, such as during demolition of existing foundations and excavation of existing subsurface structures, excavation and construction during and following development. Soil with residual chemicals will either be removed to risk-based levels in several areas of the site, including landscaped areas and the front and backyards of the residential units, or capped by building slabs or pavement in certain areas of the east block, precluding direct contact with subsurface soils.

5.1 Risk-Based Remedial Target Levels

Site-specific, carcinogenic-based and noncancer-hazard-based soil remedial target levels were developed based on the results of the HHRA (Treadwell & Rollo, 2003b). Potentially exposed populations (receptors) used in the HHRA included construction workers, residents, and commercial/industrial workers. Exposure pathways included inhalation, ingestion, and direct contact. The HHRA indicated that pesticides in soil in the West Block (including Parcel A) and lead in both the West and East Blocks were the primary contributors to risk for the residential receptors evaluated. Remedial target levels were developed by identifying the primary risk drivers for soil based on the following criteria:

- If the total theoretical chemical excess cancer risk for a future resident exceeded "one in a million" (1E-06), then target remedial levels for chemicals with individual estimated excess cancer risks greater than "five in ten million" (5E-07) were developed.
- If the total theoretical chemical noncancer hazard index for a future resident exceeded 1.0, then target concentrations for chemicals with individual hazard quotients greater than 0.2 were developed.

Cancer risk-based and noncancer hazard index-based target concentrations were developed for each identified chemical of potential concern by calculating the ratio of the exposure point concentration to the calculated chemical-specific estimated excess cancer risk or hazard quotient for soil used in the HHRA. The ratios were then multiplied by the target risk level of 1E-06 for cancer risk-based target concentrations and by a value of 1.0 for hazard index-based target concentrations to yields target levels for individual chemicals. In order to account for cumulative excess cancer risks and noncancer hazards, the target levels (based on single chemical target risk/noncancer hazard) were divided by the number of target levels developed to yield target levels resulting in a total excess cancer risk of 1E-06 or a total noncancer hazard of 1.0. For example, at the West Block, target levels were developed for aldrin and dieldrin separately based on each chemical causing an excess cancer risk of 1E-06. In order to reach a total cancer risk of 1E-06, the target levels for aldrin and dieldrin were divided by two.

Table 1 presents risk levels for pesticides detected in soil meeting the above-criteria for the following:

- West Block – Excess Cancer Risk-Based Levels;
- Parcel A of the West Block – Excess Cancer Risk-Based Levels (based on inclusion of ingestion of homegrown produce exposure due to the contemplated development of back yards for the residential units in Parcel A);
- Parcel A of the West Block – Hazard Index Levels (based on inclusion of ingestion of homegrown produce exposure).

Site-specific residential target levels for lead were developed in the HHRA. Soil concentrations greater than 347 milligrams per kilogram (mg/kg) may represent a potential significant risk to residential receptors, assuming no ingestion of homegrown produce (applicable to those areas of the West Block and East Block that will not include at-grade residential units with backyard areas). If ingestion of homegrown produce is assumed (applicable to Parcel A of the West Block and in those areas of the East Block that will include at-grade residential units with backyard areas), soil concentrations greater than 261 mg/kg may represent a potential significant risk to residential receptors.

Total Petroleum Hydrocarbons (TPH) were detected in soil samples in both the West Block and East Block. TPH were not addressed in the HHRA because TPH actually represents complex mixtures of individual chemicals. Therefore, concentrations of detected TPH were compared with "Risk-Based Screening Levels" (RBSLs) developed by the Regional Water Quality Control Board, San Francisco Bay Region (RWQCB). The RWQCB developed the RBSLs to conservatively indicate contaminant concentrations below which no mitigative action will generally need to taken to address risk to public health or the environment, or to meet other regulatory standards. The RBSLs used below apply to residential land-use scenarios for surface soils (soil shallower than approximately ten feet) in areas where shallow groundwater is not considered a potential source of drinking water (as in this case).

5.2 Evaluation of Excavated On-Site Soils

Due to the presence of residual levels of pesticides and lead in soils in localized areas of the site, soils to be excavated either for geotechnical purposes as part of the planned redevelopment or to satisfy target remedial levels will need to be sampled and analyzed for hazardous waste characterization purposes according to the procedures presented below. Excavated soils that are determined to be hazardous waste or that otherwise contain lead at levels exceeding 350 mg/kg or parts per million (ppm) shall be managed as hazardous waste and disposed off-site at an appropriately-licensed disposal facility. In-place geotechnical conditioning of soil, such as by scarification, moisture treatment, and/or compaction in place shall not be subject to these sampling and testing requirements.

The hazardous waste criteria include the Total Threshold Limit Concentration (TTLC), Soluble Threshold Limit Concentration (STLC) and the Federal Regulatory Level (RL), as set forth in Title 22 of the California Code of Regulations (CCR). The TTLC specifies in mg/kg the total amount of a substance in soil that will require the soil to be disposed as a California hazardous waste. The STLC specifies in milligrams per liter (mg/l) the concentration of the soluble fraction of a substance in soil, as determined by the California Waste Extraction Test (WET), that will require the soil to be disposed as a California hazardous waste. The RL specifies in mg/l the concentration of the soluble fraction of a substance in soil, as determined by the Toxicity Characteristic Leaching Procedure (TCLP), that characterize the soil to be disposed as a Federal, or Resource Conservation and Recovery Act (RCRA), hazardous waste.

Based on the chemical data collected at the site and the results of the HHRA, the chemicals of concern at the site include pesticides and lead. TTLCs for pesticides detected at the site include:

aldrin	1.4 mg/kg	dieldrin	8.0 mg/kg
endrin	0.2 mg/kg	alpha-BHC (lindane)	4.0 mg/kg
4,4-DDT; 4,4-DDE; 4,4-DDD			1.0 mg/kg

STLCs for pesticides at the site include:

aldrin	0.14 mg/l	dieldrin	0.8 mg/l
endrin	0.02 mg/l	alpha-BHC (lindane)	0.4 mg/l
4,4-DDT; 4,4-DDE; 4,4-DDD			0.1 mg/l.

The RLs for pesticides found at the site are 0.02 mg/l for endrin and 0.4 mg/l for alpha-BHC (lindane). include: endrin – 0.02 mg/l, lindane (alpha-BHC) – 0.4 mg/l. RLs have not been promulgated for the other pesticides found.

For lead, the TTLC is 1,000 mg/kg, the STLC is 5.0 mg/l, and the RL is 5.0 mg/l.

In addition, Section 25157.8 of the California Health and Safety Code requires that waste containing certain metals (copper, lead, nickel) above specified levels must be disposed in Class I hazardous waste disposal facilities, even if the waste does not meet the criteria for hazardous waste. Certain Class II landfills have obtained variances to this rule, such that they can accept lead exceeding 350 mg/kg if the results of solubility testing indicate that the soil does not qualify as a hazardous waste (i.e., soluble lead less than 5 mg/l).

6.0 SUBSURFACE INVESTIGATION AND RESULTS

Since January 2002, several investigators, including Treadwell & Rollo, have performed a series of environmental investigations to evaluate shallow subsurface soil conditions and possible impacts to groundwater. The sample locations for these investigations are shown in Figure 4.

In the West Block, a total of 30 soil borings have been advanced to sample soil and groundwater. The borings extended to depths ranging from 5 to 16 feet bgs. A total of 80 soil samples and two groundwater samples were collected and analyzed from these borings. Soil samples were tested for the 17 California Assessment Metals (CAM 17), as well as soluble lead, petroleum hydrocarbons, and organochlorine pesticides. Not all of the samples were analyzed for each of these parameters. Groundwater samples were analyzed for the RCRA 8 metals, Total Petroleum

Hydrocarbons, the fuel components benzene, toluene, ethyl benzene, and xylenes (BTEX compounds), and other volatile organic compounds (VOCs).

In the East Block, a total of 30 soil borings have been advanced to sample soil and groundwater. The borings extended to depths ranging from 5 feet to 12 feet bgs. Soil samples were also collected to depths of 1.5 feet bgs from three trenches excavated for an independent archaeological investigation. A total of 91 soil samples and nine groundwater samples were collected and analyzed from the 30 borings and three trenches on the East Block. Soil samples were tested for the CAM 17 metals (including soluble lead), petroleum hydrocarbons, and organochlorine pesticides. Not all of the samples were analyzed for each of these parameters. Groundwater samples were analyzed for the LUFT 5 metals, total petroleum hydrocarbons, BTEX compounds, and other VOCs.

Chemical data collected during the first half of 2002 are presented and evaluated in the PSI investigation report (PSI, 2002), and the Treadwell & Rollo Phase I and Phase II ESA (Treadwell & Rollo, 2002). A complete presentation of chemical data collected during these and subsequent subsurface investigations can be found in the Treadwell & Rollo letter dated 10 March 2003 titled *Data Summary, Mandela Gateway Redevelopment Site, Seventh Street and Mandela Parkway, Oakland, California* (Treadwell & Rollo, 2003a). The following discussion is a summary of the soil and groundwater investigations.

6.1 Subsurface Conditions

The site is generally underlain by about 2 to 6 feet of fill, except in the eastern part of the CalTrans lot, where the fill may be up to eight feet thick. The fill generally consists of loose to medium dense sand with silt and silty sand and varying amounts of debris, including bricks, shells, and metal. On the East Block, the fill may contain debris from the former Cypress Freeway and Kirkham Street, including abandoned utilities, concrete foundations, and other debris.

The fill is underlain by native sand (referred to as Merritt Sand) with varying amounts of silt and clay to the maximum depth of the test borings (16 feet). The sand contains clayey fines (particles passing the No. 200 sieve) and is lightly cemented below the water table.

Groundwater was measured in the borings at depths ranging from about 8 to 12 feet bgs, which corresponds to elevations of about +3.5 to –3 feet (City of Oakland datum). These do not represent stabilized groundwater measurements and therefore could not be used to estimate groundwater flow direction. Based on data from a nearby site located at 800 Center Street, groundwater flows toward the southwest (Treadwell & Rollo, 2002).

6.2 Soil Results and Discussion

This section summarizes the chemicals of potential concern to the planned redevelopment of the site for the West and East Blocks.

6.2.1 West Block

Organochlorine pesticides were tested in 32 samples collected in the West Block (including Parcel A). Eight pesticides were detected: aldrin, dieldrin, endrin, endrin ketone, 4,4-DDD, 4,4-DDT, 4,4-DDE, and alpha-BHC (a species of lindane). Of the 32 samples tested, pesticides were detected in 23 soil samples. The pesticides were typically detected in the upper foot of soil; however, pesticides were detected in two samples at 2.5 feet bgs.

- In Parcel A, 11 of the 18 soil samples tested contained pesticides at concentrations greater than the Parcel A remedial target levels defined in Section 5.1. For two of the pesticides, aldrin and dieldrin, the Parcel A remedial target levels are below standard laboratory analysis detection limits, meaning that the detection of these chemicals in soils in Parcel A will exceed the remedial target levels.
- In the rest of the West Block, 17 samples were tested for pesticides. In this part of the site, the remedial target levels are higher, because the levels were calculated excluding ingestion of homegrown produce (there are no back yards planned for the residential

units in this area). Of the 17 samples tested, 7 exceeded the remedial target level for aldrin and 12 exceeded the remedial target level for dieldrin.

Total lead (defined as the total of soluble and insoluble forms) was found in most (78 of 80) soil samples collected and analyzed in the West Block. Typically, the higher concentrations of lead were detected in the upper two feet (i.e., 0 to 2.0 feet bgs) of soil. Total lead concentrations ranged from 1.6 mg/kg to 320 mg/kg, with one sample at 1,400 mg/kg detected in the southwest corner of the West Block.

No samples collected from the Parcel A portion of the West Block contained lead at a concentration greater than the Parcel A remedial target level of 261 mg/kg. In the remaining part of the West Block, only one sample (B-11-0.5 at 1,400 mg/kg) exceeded the West Block remedial target level for lead of 347 mg/kg (the higher remedial target level for lead is used because there are no back yards planned for the residential units in this area). This sample is also the only sample in which lead exceeded the California hazardous waste criterion for total lead (TTLC) of 1,000 mg/kg, or **the California HSC Section 25157.8 disposal restriction concentration of 350 mg/kg**.

Soluble lead was tested in 13 soil samples. Five of the samples tested exceeded the California hazardous waste criterion for soluble lead (STLC) of 5.0 mg/l. Four of these samples were encountered at less than two feet bgs. For comparison purposes, the total lead concentrations ranged from 81 to 320 mg/kg in the samples where soluble lead exceeded the STLC. Three samples were tested using the TCLP, to compare with the Federal hazardous waste criterion for soluble lead. All three samples were below the RL.

Minor concentrations of petroleum hydrocarbons were detected in 11 samples collected in the West Block. The detected hydrocarbons were quantified as either diesel-range (TPH-d) or motor oil-range (TPH-mo) hydrocarbons. The concentrations ranged from 1.3 mg/kg to 170 mg/kg, well below the residential RBSLs for these contaminants of 100 and 500 mg/kg, respectively.

Figure 5 presents the locations of soil samples in the West Block overlain on the planned development. Separate views are provided for samples collected in the depth intervals of 0.0 to 1.0 foot bgs, 1.0 to 2.0 feet bgs, 2.0 to 3.0 feet bgs, and samples collected deeper than 3.0 feet bgs. The figure identifies those samples where lead or pesticides exceed the human health risk-based remedial target levels (for both Parcel A, where ingestion of homegrown produce may occur in the future, and for the rest of the West Block). In addition, samples where concentrations of lead exceed the hazardous waste criteria for lead are marked.

6.2.2 East Block

Similar to the West Block, total lead was found in most (86 of 91) soil samples collected and analyzed from the East Block. Typically, the higher concentrations were detected in the upper two feet of soil (i.e., 0.0 to 2.0 feet bgs). Total lead concentrations ranged from 1.5 mg/kg to 2,280 mg/kg.

Of the samples tested, only three samples contained lead at concentrations greater than the risk-based remedial target level of 261 mg/kg in those areas of East Block that will include at-grade residential units with backyard areas. All three of these samples were collected in the upper two feet of soil. For the remainder of the East Block (that will not include at-grade residential units with back yards), eight samples contained lead at concentrations greater than the risk-based remedial target level of 347 mg/kg. Four of these samples were collected in the upper two feet of soil, and four were collected from depths between 2.0 and 3.0 feet bgs.

Two samples contained total lead at concentrations greater than the TTLC. Soluble lead was tested in 19 samples, of which nine exceeded the STLC. For comparison purposes, these samples contained total lead concentrations ranging from 81 to 485 mg/kg. Five samples were tested using the TCLP, to compare with the Federal hazardous waste criterion for soluble lead. All five samples were below the Federal RL.

Total Petroleum Hydrocarbons (TPH) quantified as gasoline (TPH-g), diesel (TPH-d), and motor oil (TPH-mo) were tested in 46 soil samples in the East Block. TPH-g were detected in four samples at concentrations ranging from 0.0125 to 0.479 mg/kg. TPH-d were detected in 32 samples at concentrations ranging from 1.1 mg/kg to 280 mg/kg. TPH-mo were detected in 15 samples at concentrations ranging from 19 mg/kg to 3,200 mg/kg. In four of these samples, TPH-mo was detected at concentrations greater than 500 mg/kg, the RBSL for TPH-mo in residential-use soil.

Figure 6 presents the locations of soil samples in the East Block, differentiating between samples collected in the depth intervals of 0.0 to 1.0 foot bgs, 1.0 to 2.0 feet bgs, 2.0 to 3.0 feet bgs, and samples collected deeper than 3.0 feet bgs. The figure identifies those samples where lead exceeds the human health risk-based remedial target level of 261 mg/kg in those areas of East Block that will include at-grade residential units with backyard areas, and 347 mg/kg in the remainder of the East Block that will not include at-grade residential units with back yards. In addition, in-situ soil samples where concentrations of lead exceeded the hazardous waste characteristic criteria for lead are marked.

6.3 Groundwater Results and Discussion

Groundwater samples were collected in the West Block in the northwest and southeast corners (B-10 and B-12, respectively). In B-10, the VOCs toluene and xylenes were detected at 1.8 ug/l and 1.6 ug/l, respectively. These concentrations are well below the RBSLs for these chemicals. Zinc was detected in B-10 at 26 ug/l, which is below the risk-based level for human toxicity value used for developing the RBSLs, which is 5,000 ug/l. No TPH-g, TPH-d, TPH-mo, or VOCs other than toluene and xylenes were detected in B-10. In the groundwater sample from B-12, zinc was detected at 16 ug/l, below the threshold concentration cited above. No TPH-g, TPH-d, TPH-mo, VOCs or metals other than zinc were detected in this sample.

Groundwater samples were collected from Borings B-5 and B-7 in the East Block. Samples were analyzed for LUFT 5 metals, TPH-g, TPH-d, TPH-mo and VOCs. Cadmium, chromium,

lead, TPH-g and TPH-mo were not detected. Nickel was detected in both samples, at 11 and 16 ug/l, which is below the nickel risk-based level for human toxicity value used for developing the RBSLs (100 ug/l). Zinc was detected at 23 ug/l and 27 ug/l. If the shallow groundwater was a potential drinking water source, an RBSL value based on human toxicity could be used, which would be 5,000 ug/l, more than two orders of magnitude greater than the concentrations found at the site. TPH-d were detected in groundwater samples collected from B-5 and B-7 at concentrations of 180 ug/l and 94 ug/l, respectively, which are below the RBSL of 640 ug/l. The VOC 1,2-dichloroethane (1,2-DCA) was detected in B-5 at a concentration of 2.1 ug/l, well below the RBSL of 500 ug/l. No other VOCs were detected.

7.0 SOIL MANAGEMENT PROCEDURES

The results of our environmental investigation and previous investigations by others indicate that shallow soils at the site contain residual levels of pesticides, lead and TPH in soils that will require such soils to be managed appropriately during construction and subsequent development of the site for residential and commercial use. In the West Block, shallow soils containing pesticides at concentrations exceeding risk-based remedial target levels, particularly in Parcel A, will need to be managed appropriately to mitigate potential adverse health risks associated with such impacted soils. In the East Block, shallow soils in certain locations containing lead at concentrations exceeding the remedial target levels, particularly in the central and southwestern part of the block, will also need to be managed appropriately to mitigate potential adverse health risks associated with such impacted soils. In addition, TPH-mo was found in several locations in the East Block at concentrations exceeding the residential RBSLs. The presence of these residual chemicals requires planning and implementing special soil management procedures to mitigate potential health and safety concerns as part of the site development activities. The risk to workers during construction of the development is addressed by health and safety procedures described below in Section 7.5.

In addition to the above, due to the presence of residual levels of pesticides and lead in soils in localized areas of the site, soils to be excavated either for geotechnical purposes as part of the planned redevelopment or to satisfy target remedial levels will need to be sampled and analyzed for hazardous waste characterization purposes according to the procedures presented below. Excavated soils that are determined to be hazardous waste or that otherwise contain lead at levels exceeding 350 ppm (hereinafter collectively referred to as the "excavated soil regulatory criteria") shall be managed as hazardous waste and disposed off-site at an appropriately-licensed disposal facility.

Figure 7 conceptually shows the planned soil excavation during construction of Mandela Gateway project. In the West Block, three divisions are indicated: 1) Parcel A, where at-grade development requires no excavation (except for utility excavations), but chemical exceedances of risk-based remedial target levels need to be addressed because of the future residential use at-grade; 2) the at-grade parking lot, where soil will not be excavated and additional fill will be added under the future asphalt cap; and 3) the building area, where, for geotechnical reasons, the soil will be excavated to the depths shown on the figure, and either reused as backfill or disposed off site, depending on whether the excavated soils contain levels of pesticides or lead in excess of the applicable excavated soil regulatory criteria.

In the East Block, the site is divided into two components, see Figure 7: 1) the northern half, where at-grade development will require no excavation (including also the future residential building along Mandela Parkway near Seventh Street), except for utility excavations; and 2) the southern half, including the "Town Square", the podium parking area and the buildings along Seventh Street. For geotechnical reasons, the soil in the podium parking area and under the buildings along Seventh Street will be excavated to the depths shown on the figure, and either reused as backfill or disposed off site, depending on whether the excavated soils contain levels of pesticides or lead in excess of the applicable excavated soil regulatory criteria.

The soil management procedures that will be used to address these issues are defined below for the different areas.

7.1 West Block

In the West Block, soil management procedures will be performed based on the future use and construction activities in Parcel A, where the proposed development will consist of residential at-grade town homes, and in the remainder of the block, where the proposed development will preclude any direct contact with residual chemicals in soils.

7.1.1 Parcel A

Parcel A will be developed as for-sale single-family homes. The planned redevelopment will be townhomes built at-grade on post-tensioned slab foundations. Assuming the current grade is maintained, the upper 8-to-12 inches of soil would be scarified and recompacted. However, as shown in Figure 5, residual pesticide concentrations exceed the remedial target levels in nine locations in the depth intervals from the surface to two feet bgs. The three samples shown in the depth interval from 1.0 to 2.0 feet bgs represent samples that were collected from 1.0 to 1.5 feet bgs. Therefore, soil will be excavated and removed to a depth of 1.5 feet bgs across Parcel A. In addition, one deeper sample, collected between 2.0 and 3.0 feet bgs (WB-1-2.5), exceeded pesticide remedial target levels (Figure 5). Soil in the area of this sample will be removed to a depth of three feet bgs. Excavation will be performed in the private street for utilities, with excavated soil profiled to evaluate reuse as backfill or off-site disposal, depending on whether the excavated soils contain levels of chemicals in excess of the applicable excavated soil regulatory criteria. The procedures to be implemented will include the following.

- Parcel A Area: To remove the pesticides above remedial target levels, existing soils will be excavated to a depth of 1.5 feet and stockpiled. Stockpiles must be placed on plastic tarpaulins and also covered with tarpaulins when not in active use (i.e., being added to or removed). The stockpiles will be profiled for off-site disposal by sampling at a frequency of one four-point composite sample for no more than 500 cubic yards (cy) of soil. Profiling samples will be analyzed for pesticides, total lead and soluble lead. Any soil to be disposed off-site must be taken to an appropriately-licensed disposal facility. If the area must be built up to construction grade, fill soil must not contain detectable

pesticides, or lead above the remedial target level of 261 mg/kg. Such soils may consist of either excavated soils obtained from the southern part of the West Block that do not contain levels of chemicals in excess of the applicable excavated soil regulatory criteria or remedial target level, or clean soils imported from off-site.

- Boring WB-1 Area: Soil within a radius of three feet of Boring WB-1 (Figure 4) must be excavated to a depth of three feet bgs (i.e., 1.5 feet below the general excavation), stockpiled, and profiled for off-site disposal. Confirmation samples will be collected at four locations in the sidewalls of the excavation at depths of 0.5 foot bgs (i.e., two feet below original grade), and one location in the base of the excavation. These samples will be analyzed for organochlorine pesticides. If pesticides are detected above the remedial target levels, additional soil will be excavated in the sidewalls or excavation base (as indicated), and the area will be re-sampled to confirm removal of pesticides. This will be repeated until pesticides are not detected at concentrations above the remedial target levels. The stockpiled soil will be combined with the soil from the general Parcel A excavation for hazardous waste profiling and off-site disposal.

- Utility Trenches: Soil excavated from trenches for utility installation must be stockpiled pending hazardous waste profiling and disposition. Soil from less than two feet bgs will be stockpiled separately from deeper excavated soil. Stockpiles will be placed on plastic tarpaulins and will also be covered with tarpaulins when not in active use (i.e., being added to or removed). The stockpiles of soil from less than two feet bgs will be profiled by sampling at a frequency of one four-point composite sample for every 500 cubic yards (cy) of soil. Profiling samples will be analyzed for total lead and soluble lead. Soil that exceeds the applicable excavated soil regulatory criteria or the remedial target levels will be disposed off-site at an appropriate disposal facility. Soil that does not exceed these criteria will be reused for backfilling the utility excavation. Soil from more than two feet bgs may be used to backfill the utility excavations without additional testing.

7.1.2 West Block Area (Excluding Parcel A)

The remainder of the West Block (excluding Parcel A) will be developed as part of the main Mandela Gateway project. This area is divided into the at-grade parking lot area and the building area.

- At-grade parking lot: The parking lot will be constructed slightly above current grade, with the sub-grade elevation raised about 1 foot on the west, 2 feet in the center, 1.5 feet on the east. With the exception of two locations at the planned landscaped strip on the north, neither pesticides nor lead exceed remedial target levels. Therefore, with the exception of this landscaped area, the soil in the parking lot area will be scarified and recompacted for sub-grade without additional sampling.

  Pesticides exceed the remedial target levels only in borings WB-3 and WB-10, at the location of the planned planting strip on the north edge of the parking lot. Soils in this area will be excavated to a depth of 1.5 feet for a length of approximately 60 feet (10 feet beyond the boring locations to the west and east) along the planned landscaped area (approximately eight feet wide). Two confirmation samples will be collected in the base of the excavation, and the excavation deepened if pesticide concentrations are detected above the remedial target levels. The excavated soil will be stored separately from the excavated soil from the building area for hazardous waste profiling and disposal off-site.

- Building area: Because the structure's foundation includes spread footings, for geotechnical purposes, the soils in the building footprint will require excavation, backfilling and recompaction to depths ranging from 1.25 to 5.25 feet bgs. The 8 to 12 inches of soil in the base of the excavation will be scarified and recompacted. Lead was found to exceed the remedial target level of 347 mg/kg and hazardous waste criteria in Boring B-11. Pesticides exceeded the remedial target levels in WB-5 and B-12 (which is adjacent to a landscaped area at the southeast corner of the building). These areas are within the excavation area and so will be addressed by profiling of excavated soil. The landscaped areas on the east side of the building will be within the sloped area for the excavation and this soil will be excavated as well.

Because the residual chemicals in soils are primarily limited to the upper two feet of soils in the proposed building area, all soils to be excavated for building construction must be excavated and segregated as follows: soil from 0.0 to 1.0 foot bgs will be excavated and stockpiled, followed by soil from 1.0 to 2.0 feet bgs, which will be excavated and stockpiled separately. All stockpiles will be placed in the parking lot area or in Parcel A on plastic tarpaulins and also covered with tarpaulins when not in active use (i.e., being added to or removed). The stockpiles will be profiled by sampling at a frequency of one four-point composite sample for every 500 cubic yards (cy) of soil. Profiling samples will be analyzed for total lead and soluble lead. Soil that exceeds the applicable excavated soil regulatory criteria or the remedial target levels will be disposed off site at an appropriate disposal facility. Soil that does not exceed these criteria may be reused for backfilling the excavation.

Based on the data collected, and as discussed in Section 6.2.1, we do not expect lead concentrations to exceed the applicable excavated soil regulatory criteria or remedial target levels in soils excavated from greater than 2.0 feet bgs. Accordingly, such soils may be stockpiled and reused as backfill for the excavation without additional testing.

7.2 East Block

The East Block is subdivided into the southern and northern areas. The northern area, which exhibits lower levels of residual chemicals in shallow soils than in the southern area, will be developed with ground-level residential units, roadways, walkways and landscaped areas. The southern half will be developed with ground-level retail and parking in the area of the former CalTrans parking lot and with outside, ground-level community use in the area of J&A Trucking.

7.2.1 Northern Half

This area will be developed with at-grade residential units, pavement and landscaped areas. The buildings will be built on post-tensioned slabs at-grade. For the purposes of soil management, the three-story residential building on Mandela Parkway near the corner of Seventh Street is

included in this area (Figure 7). The civil engineering plan indicates no change in pad elevation along Eighth Street and up to 2.5 foot of added fill for the buildings along Mandela Parkway. Required grading work in this area entails scarifying and recompacting the uppermost 8 to 12 inches of soil. Three utility trenches will be excavated to depths up to seven feet bgs in the private roadway.

The risk-based remedial target level for lead of 261 mg/kg is exceeded only in four samples (T-5E-1.5, T-5W-1.5, B-2 and B-7), which will be encapsulated underneath added fill and building slabs or pavement by the planned development. One soil sample, EB-1-1.0 in the northwestern corner of this area, contained Total Petroleum Hydrocarbons as motor oil (TPH-mo) at a concentration greater than the RBSL of 500 mg/kg. An additional investigation of the J&A Trucking facility is planned after closure of that site to assess the extent of lead and TPH-mo in soils. If TPH-mo is detected in soils at levels exceeding the RBSL, then such soils will be addressed in a manner similar to the soils at EB-1-1.0, described below. Based on the development plan and the existing chemical data, the following soil management procedures will be followed:

- With the two exceptions described below this bulleted item, soils in the Northern Half that will be scarified and recompacted will require no additional chemical testing or special handling procedures and will be left in place. This is due to the general absence of contaminants exceeding target remedial levels.
- Soils within a radius of approximately three feet of Boring EB-1 will be excavated to a depth of two feet bgs, stockpiled, and profiled. Field observations of staining will be used to adjust the limits of the excavation. Confirmation samples will be collected at four locations in the sidewalls of the excavation at depths of 0.5 foot bgs and in the base of excavation. These samples will be analyzed for TPH-mo. If TPH-mo is detected above the RBSL, additional soils will be excavated in the sidewalls or excavation base (as indicated), and the area will be re-sampled to confirm removal of TPH-mo. This process will be repeated until TPH-mo is detected at less than the RBSL. The stockpiled soil will

be analyzed for TPH-mo, total lead, and soluble lead. The soil will be disposed off-site at an appropriately licensed disposal facility, based on the testing results.

- Soil excavated from trenches for utility installation will be stockpiled for profiling and disposition. Soil from less than two feet bgs will be stockpiled separately from deeper excavated soil. Stockpiles will be placed on plastic tarpaulins and will also be covered with tarpaulins when not in active use (i.e., being added to or removed). The stockpiles of soils from less than two feet bgs will be profiled by sampling at a frequency of one four-point composite sample for every 500 cubic yards (cy) of soil. Profiling samples will be analyzed for total lead and soluble lead. Soil that exceeds the applicable excavated soil regulatory criteria or the remedial target values will be disposed off site at an appropriate disposal facility. Soils that do not exceed these criteria may be reused for backfilling the utility excavation. Soil from greater than two feet bgs may be used to backfill the utility excavations without additional testing.

7.2.2 Southern Half

The southern half of the East Block is divided into the Town Square area on the west and the Building area on the east. The Town Square area will be developed as a central mixed landscape and walkway area surrounded by pavement. As shown in Figure 7, the existing grade in the southwest part of the Town Square area will be unchanged, while up to two feet of soil will be removed from the southeast area and up to four feet of fill will be added to the northern part. The Building area will consist of a podium structure requiring excavation and recompaction of soil for geotechnical purposes. Additional characterization will be conducted in each area as part of the soil management procedures described below.

- Town Square The Town Square area includes a large part of the existing J&A facility, which has not been fully characterized. Current chemical data in this area indicates TPH-mo at concentrations greater than the RBSL, and lead at concentrations exceeding both the applicable excavated soil regulatory criteria and the risk-based remedial target level. The J&A lot is occupied until April 1, 2003, and will need additional soil sampling after

J&A vacates and the buildings are demolished (approximately April 11, 2003). To complete the evaluation of the J&A area, two soil borings will be advanced through the former service building slab; samples will be collected at 1, 3, and 5 feet. In addition, surface soil samples will be collected at the locations of the storage shed and Quonset hut after their removal. Samples will be analyzed for TPH-mo, total lead and soluble lead.

If analytical results from this supplemental and the prior sampling indicate exceedances of the RBSL for TPH-mo, the remedial target level for lead, or hazardous waste criterion for lead, soil in the proposed landscaped area must be excavated to the impacted depth indicated by the sampling results for three feet on either side of the sampling location, and properly disposed. Confirmation samples will be collected in the base and sidewalls of the excavation, and analyzed for the appropriate chemicals. Additional excavation will be performed, if necessary, based on the results of the confirmation sampling.

Excavated soil will be disposed off site at an appropriately licensed disposal facility, based on the analytical results. In addition, the soil excavated to two feet bgs in the southeast part of the Town Square will be stockpiled and tested for TPH-mo, total lead and soluble lead. This soil will be disposed off-site, if the results of these samples exceed the applicable RBSL, excavated soil regulatory criteria, or remedial target level.

- Building area: Because this structure will be developed on spread footings, for geotechnical purposes, the soils in the building footprint will require excavation, backfilling and recompaction to depths ranging from 3.25 to 4.75 feet bgs, as shown in Figure 7. The 8 to 12 inches of soil in the base of the excavation will be scarified and recompacted.

As shown in Figure 6, lead was detected in some soil samples within and bordering the planned excavation at concentrations that exceed both the applicable excavated soil regulatory criteria and remedial target level to depths of three feet bgs. Because the planned excavation will be sloped on the west, north, and east sides, soils at the perimeter

will be excavated and managed similar to soils within the footprint of the excavation. Soils will be excavated and segregated separately as follows: soil from 0.0 to 1.0 foot bgs will be excavated and stockpiled, followed by soil from 1.0 to 2.0 feet bgs, then soil from 2.0 to 3.0 feet bgs, and soil from deeper than 3.0 feet bgs. Soil excavated from each depth zone will be excavated and stockpiled separately. All stockpiles will be placed on plastic tarpaulins and also covered with tarpaulins when not in active use (i.e., being added to or removed). The stockpiles with soil from 0 to 3.0 feet bgs will be profiled for hazardous waste characteristics. Because no soils sampled at depths greater than 3.0 feet bgs exceeded the applicable excavated soil regulatory criteria or remedial target level, soils excavated from depths greater than 3.0 feet bgs may be used to backfill the excavation without additional testing. Soils excavated from depths less than 3.0 feet bgs will be profiled by sampling at a frequency of one four-point composite sample for every 500 cubic yards (cy) of soil. Profiling samples will be analyzed for total lead and soluble lead. Soil that exceeds the applicable excavated soil regulatory criteria or the remedial target level will be disposed off site at an appropriate disposal facility. Soil that does not exceed these criteria may be reused for backfilling the excavation.

7.3 General Soil Management Procedures

The planned construction activities will disturb a portion of the underlying fill during demolition, excavation, and grading activities. Soil movement during construction will include excavation, grading, stockpiling, loading, and backfilling. The original and final locations of soils excavated and reused on site will be documented. This documentation, including all analytical test results, will be kept on record by the contractor and site owner, and be part of the maintenance records for future site use.

During construction activities, general soil management procedures will be used to prevent significant exposure to site workers and the public. The procedures are designed to control exposure by dermal contact, ingestion and inhalation of dust particles. Procedures to control exposure by dermal contact and ingestion will be specified in a site-specific health and safety

plan (see Section 7.5). Soil management procedures will be observed by a third party separate from the contractor for documentation that procedures are accurately followed.

7.3.1 Dust Control

To control exposure by dust inhalation, dust control measures must be implemented to reduce exposure both on and off site. These measures are typically performed by the excavation contractor and may include moisture-conditioning the soil, using dust suppressants or by covering the exposed soil with plastic sheeting. These dust control measures will be performed throughout demolition, excavation and grading. The standard of monitoring will be to prevent visibly entrained dust.

7.3.2 Soil Sampling and Analysis

During construction, soils will be sampled in-situ and from stockpiles for characterization and soil profiling purposes. To ensure appropriate collection of soil samples, sample collection, handling and transportation will be performed in accordance with the Standard Operating Procedures in Appendix A.

Samples will be analyzed by a State of California Certified analytical laboratory. Analytical testing methods will follow SW-846, *Test Methods for Evaluating Solid Waste*, (USEPA, 2003). Laboratory quality assurance/quality control procedures will be documented and retained with project records.

7.3.3 Soil Profiling and Disposal

Soils to be disposed off site will be profiled based on available data from samples already collected, on WET and TCLP testing of archived samples, future stockpile composite samples, and additional samples from beneath existing buildings scheduled for demolition. Soil classified as California hazardous waste will be transported either out of state to an appropriate licensed facility or to a Class I disposal facility in California. Soil requiring off-site disposal for

construction reasons, which is profiled as non-hazardous will be transported and disposed at a licensed Class II disposal facility. All soil for off site disposal will be transported under appropriate manifest or bill-of-lading protocol. All manifests must be retained as part of the SMRP documentation procedures.

7.4 Groundwater Management

Groundwater is not expected to be generated during site construction. However, if it is, the groundwater will either be disposed of in the sanitary or stormwater sewer system under permit with the appropriate regulatory agency or recycled at a licensed and permitted facility.

7.5 Health and Safety Issues

There may be the potential for chemically-impacted soils to affect construction workers at the site. The routes of potential pesticide or lead exposure could be through three pathways: 1) dermal (skin) contact with the soil, 2) inhalation of dusts and/or vapors, and 3) ingestion of the soil. The routes of potential exposure to trace levels of volatile organic compounds (VOCs) in groundwater could be through two pathways: 1) short-term dermal contact with standing water in excavations, and 2) short-term inhalation of vapors from standing water in excavations.

The most likely potential for human exposure to the contaminants will be during soil excavation and grading operations. Because on-site materials may contain lead and other chemicals in excess of Proposition 65 guidelines, it is recommended that proper health and safety procedures, as well as warning requirements, be implemented during construction. The potential health risk to on-site construction workers and the public will be minimized by developing a comprehensive health and safety plan (HSP), prepared by a certified industrial hygienist who represents the site contractors. The site contractor will be responsible for establishing and maintaining proper health and safety procedures to minimize worker and public exposure to site contaminants during construction.

The HSP will describe the health and safety training requirements, specific personal hygiene, and monitoring equipment that will be used during construction to protect and verify the health and safety of the construction workers and the general public from exposure to constituents in the soil.

A site health and safety officer (HSO) should be on site at all times during excavation activities to ensure that all health and safety measures are maintained. The HSO will have authority to direct and stop (if necessary) all construction activities in order to ensure compliance with the HSP. The health and safety protocols used to minimize exposure to contaminants by construction workers during construction activities must be followed until all impacted soil is either removed or capped in accordance with this SMRP.

7.6 Site Capping and Deed Restriction

Where soils are to be left in place containing residual levels of pesticides or lead at concentrations above the risk-based remedial target levels or TPH-mo above the RBSL, capping of such soils and the imposition of deed restrictions will be needed to ensure appropriate future use of the property. In the West Block, all chemicals above the risk-based remedial target levels will be removed in Parcel A. Thus, no cap or deed restriction will be implemented for the Parcel A site. In the remaining part of the West Block (excluding Parcel A), lead concentrations have exceeded the remedial target level in only one sample (B-11-0.5), within an area that will be excavated. Samples exceeding the remedial target levels for pesticides in the areas of the parking lot and the drug store will also be excavated, as described above. Therefore, no cap or deed restriction is recommended for the rest of the West Block.

In the East Block, some soils containing lead exceeding the remedial target levels and TPH-mo exceeding the RBSL may be left in place. In such locations, the risk of direct contact with these underlying soils by future site users will be mitigated by capping these localized areas with buildings or pavement. As a result, a deed restriction will be recorded against the East Block

parcel[1]. Such restriction may include a restriction on conducting excavations in capped areas. In addition, a site maintenance plan will need to be prepared to provide for the long-term maintenance of the building slabs and pavement in such areas.

7.7 Documentation of SMRP Implementation

The owner will to provide a third-party report certifying that soil management activities followed the procedures outlined in this SMRP. This report will present a chronology of the relevant construction events, a summary of analytical data, and a description of all mitigation activities taken during construction. It will also include a statement that indicates the activities have been performed in accordance with this SMRP.

7.8 Maintenance Requirements

The objective of these maintenance requirements is to ensure that any capping of soils in the East Block by means of either building slabs or pavement will remain effective during the site's use and occupancy period. The property owner and operator will maintain this SMRP, maintenance work plans, and maintenance records in a readily accessible on-site location and shall be responsible for informing any employee or contractor who will perform below-grade construction of the environmental conditions, soil management concerns, and health and safety requirements stipulated in this SMRP.

These measures will also be enforced during any post-development construction activities such as utility line repair, building expansion, and other activities that may disturb the underlying chemically-impacted soils. To maintain the integrity of the overlying cap materials and to protect future site workers who may disturb such cap materials, the following procedures will be adhered to by the property owner and/or operator of the site:

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[1] Although a deed restriction would apply to the entire East Block, soil in landscaped areas will not contain residual chemicals above remedial target levels.

- Require the preparation of a specific work plan that includes a description of the proposed construction activities, soil management and removal plan, and health and safety plan.
- Direct any contractor or employee who disturbs the encapsulating layer (i.e., building slabs or pavement) and is engaged in any excavation or earth movement at the property to comply with the appropriate local, State, and Federal regulations.
- Direct any contractor or employee engaged in any activities that involve penetrating the encapsulating layer to repair the disturbed area to its original capped condition as soon as is practical.
- Control dust by wetting and protect exposed or excavated soil from stormwater run-on and run-off during the period of excavation, soil movement, or exposure.
- Determine by appropriate testing whether any excess material removed from the site is a hazardous waste pursuant to State or Federal hazardous waste criteria. This material must be managed in accordance with all appropriate regulations.
- Prepare a report that describes the maintenance activities related to the encapsulating layer or excavation of soil.

REFERENCES

Professional Service Industries (PSI), 2002, *Draft Hazardous Waste Preliminary Site Investigation Workplan To Number 04-44680K-GL Contract Number 43A0078, 7th & Mandela, Park & Ride Lot, Oakland, California*, 19 February 2002

Treadwell & Rollo, 2003b, *Human Health Risk Assessment, Mandela Gateway Redevelopment Site, Seventh Street and Mandela Parkway, Oakland, California*, 24 March 2003

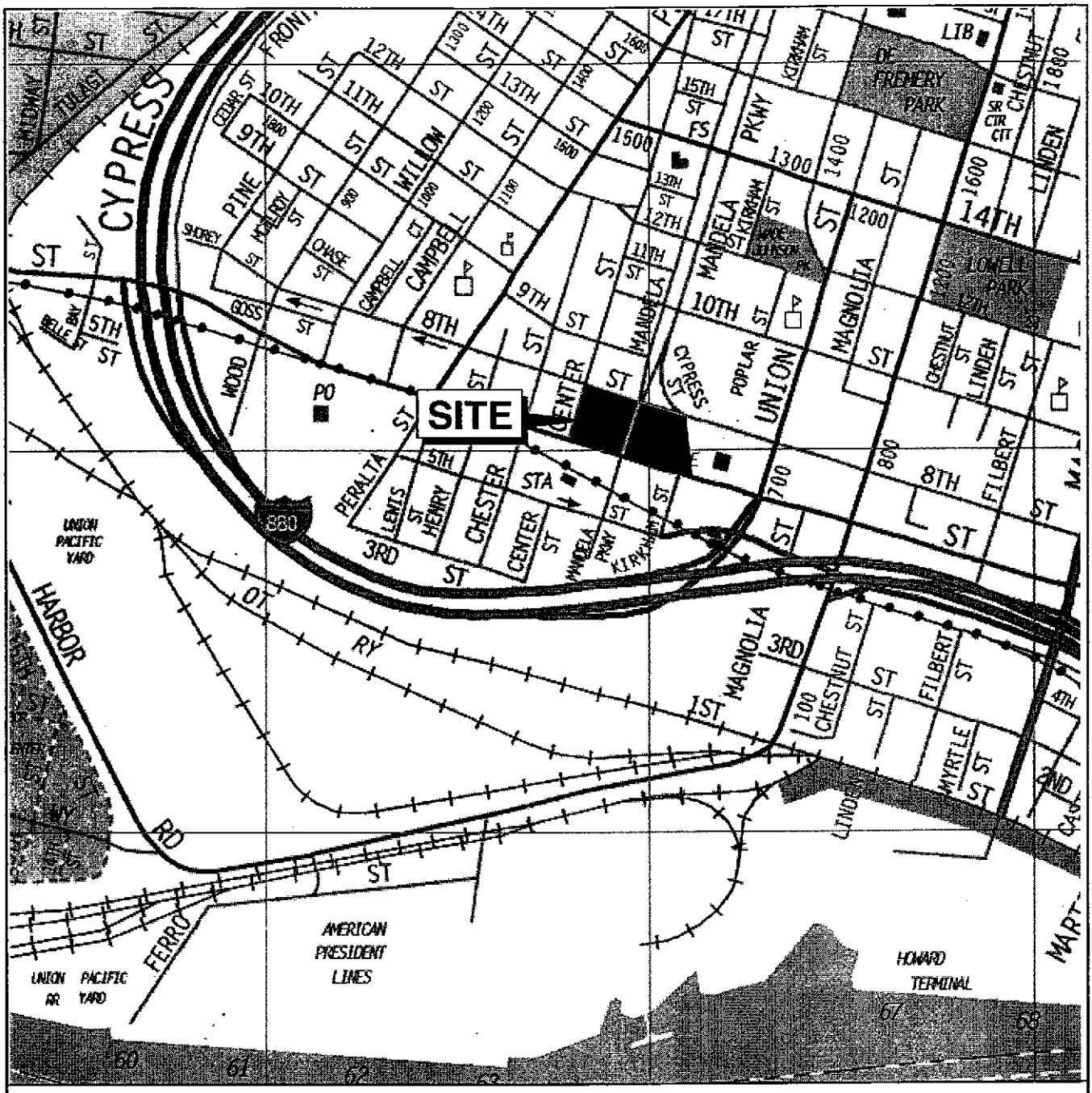
Treadwell & Rollo, 2003a, *Data Summary, Mandela Gateway Redevelopment Site, Seventh Street and Mandela Parkway, Oakland, California* (Readable & Rollo, 2003a) letter report dated 10 March 2003

Treadwell & Rollo, 2002, titled *Phase I and II Environmental Site Assessment, Mandela Gateway Redevelopment Site, Seventh Street and Mandela Parkway, Oakland, California*, 2 August 2002.

TABLE 1. RISK-BASED TARGET LEVELS
Mandela Gateway Redevelopment Site
Oakland, California

Soil Chemicals	West Block Target Soil Level at INDIVIDUAL 1E-06 Excess Cancer Risk (mg/kg)	West Block Target Soil Level at TOTAL 1E-06 Excess Cancer Risk (mg/kg)		West Block of Parcel A Target Soil Level at INDIVIDUAL 1E-06 Excess Cancer Risk (mg/kg)	West Block of Parcel A Target Soil Level at TOTAL 1E-06 Excess Cancer Risk (mg/kg)		West Block Parcel A Target Soil Level at INDIVIDUAL Noncancer Hazard Equal to 1	West Block Parcel A Target Soil Level at TOTAL Noncancer Hazard Equal to 1
Aldrin	0.031	0.010		0.0002	0.00004		0.013	0.006
Alpha-BHC (Lindane)	NA	NA		NA	NA		NA	NA
DDD	NA	NA		NA	NA		NA	NA
DDE	NA	NA		0.019	0.005		NA	NA
DDT	1.5	0.5		0.019	0.005		NA	NA
Dieldrin	0.033	0.011		0.0004	0.0001		0.010	0.005
Endrin	NA	NA		NA	NA		NA	NA
Endrin Ketone	NA	NA		NA	NA		NA	NA

*Lead Target Level, assuming no ingestion of homegrown produce = 347 mg/kg
*Lead Target Level, assuming ingestion of homegrown produce = 261 mg/kg
NA = Not Applicable
* = Lead target levels are site-specific values from HHRA
mg/kg = milligrams per kilogram



Base map: The Thomas Guide
Alameda County
1999

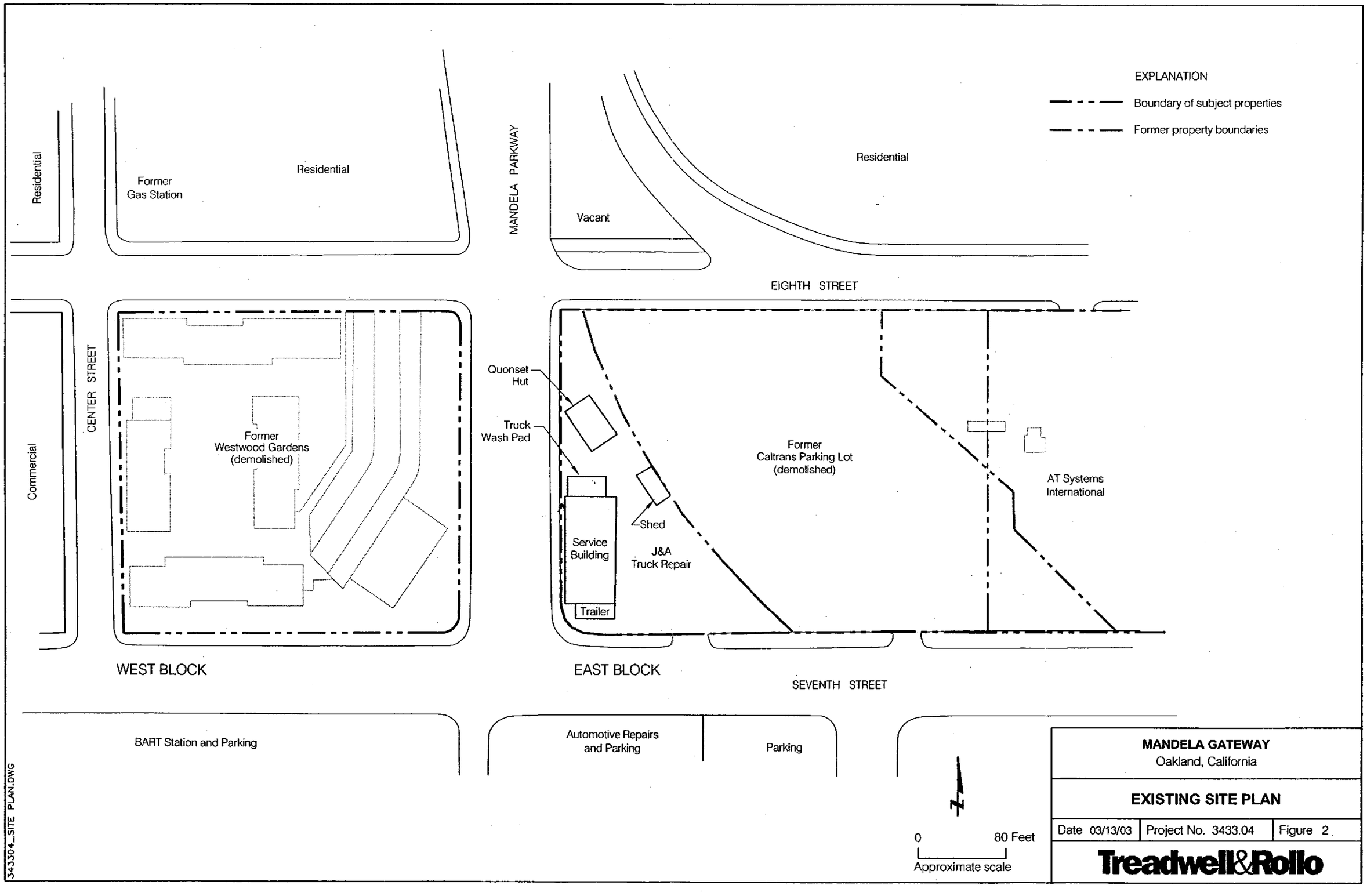
No scale

MANDELA GATEWAY
Oakland, California

SITE LOCATION MAP

Treadwell&Rollo

Date 03/12/03	Project No. 3433.04	Figure 1

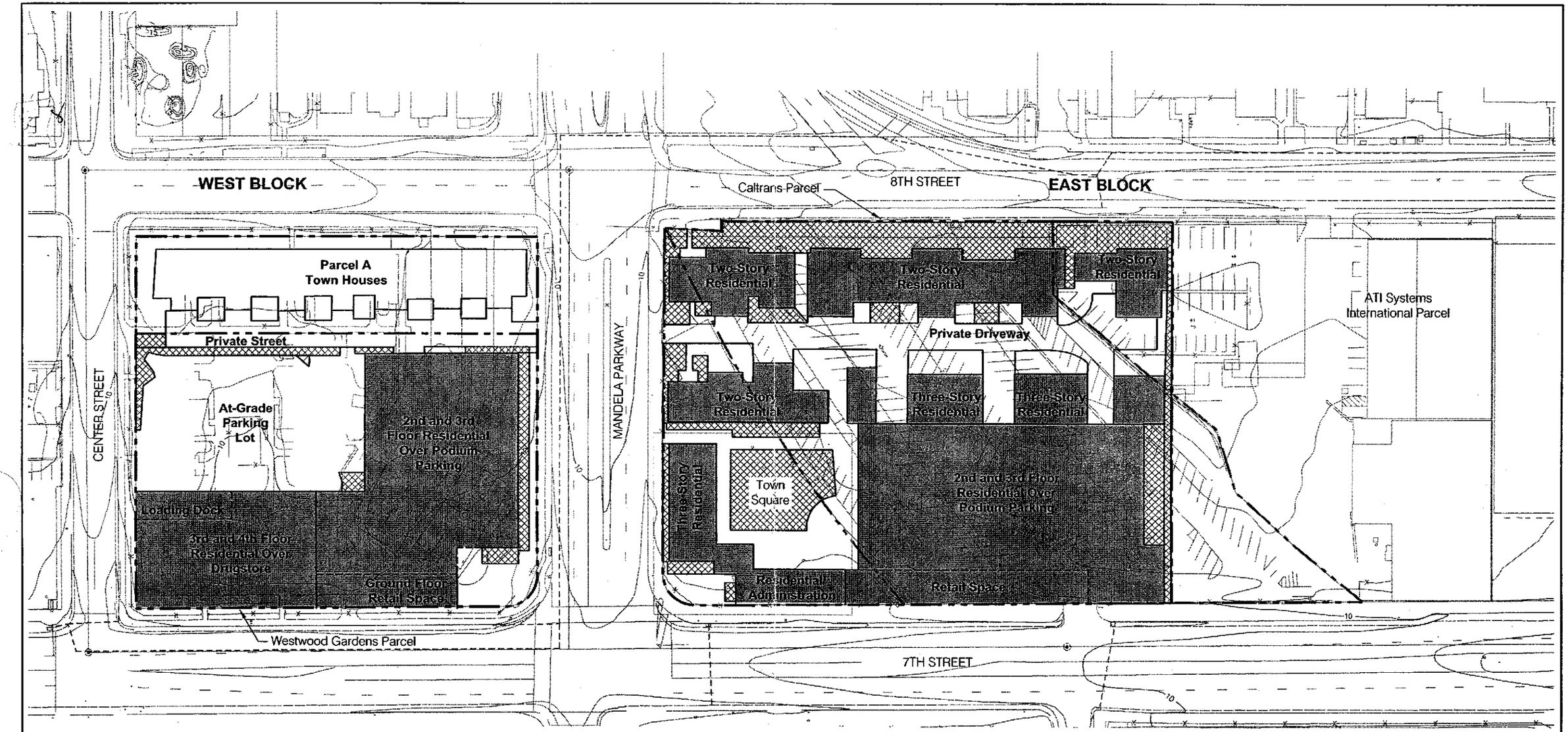


MANDELA GATEWAY
Oakland, California

EXISTING SITE PLAN

Date 03/13/03	Project No. 3433.04	Figure 2

Treadwell&Rollo



EXPLANATION

- Existing property line
- Former property lines
- Proposed building
- Landscaped Areas or Mixed Landscape and Walkways

0 80 Feet

Approximate scale

Reference: 1. DK Associates, "Topographic Survey - Mandela Gateway", May 30, 2002.
2. Site plan prepared by Michael Willis Architects, dated 11 July 2002.

343304_PROPOSED DEVELOPMENT.DGW

MANDELA GATEWAY
Oakland, California

PLANNED DEVELOPMENT

Date 03/13/03	Project No. 3433.04	Figure 3

Treadwell&Rollo

EXPLANATION

- Boundary of subject properties
- Former property boundaries
- B-1 — Approximate location of borings by Treadwell & Rollo, Inc., 4 May 2002 and 13 August 2002
- EB-1 — Approximate location of borings by Treadwell & Rollo, Inc., 18 and 19 February 2003
- T-4 — Approximate location of trench samples
- Previous boring by PSI, 8 January 2002

Residential

Former Gas Station

Residential

MANDELA PARKWAY

Vacant

Residential

EIGHTH STREET

CENTER STREET

Commercial

B-15 B-16 WB-9 B-10 B-17 WB-1 B-19 B-13 B-18 B-20 WB-3 WB-2 WB-10 WB-12 B-21 WB-11 WB-18 WB-8 WB-4 WB-14 WB-17 WB-13 B-22 WB-15 WB-5 WB-16 B-12 B-11 WB-6 WB-7

WEST BLOCK

EB-1 T-8W T-8E PB-16 EB-7 EB-8 PB-20 B-2 B-4 Quonset Hut Truck Wash Pad B-9 EB-3 EB-2 T-5W T-5E B-1 PB-17 PB-15 AT Systems International B-7 B-8 Former Caltrans Parking EB-9 PB-19 EB-4 Shed EB-11 J&A Truck Repair Service Building B-6 B-3 EB-10 B-25 T-4W T-4E B-23 B-24 PB-18 EB-6 B-14 Trailer B-5 EB-5 PB-14

EAST BLOCK

SEVENTH STREET

BART Station and Parking

Automotive Repairs and Parking

Parking

N

0 80 Feet

Approximate scale

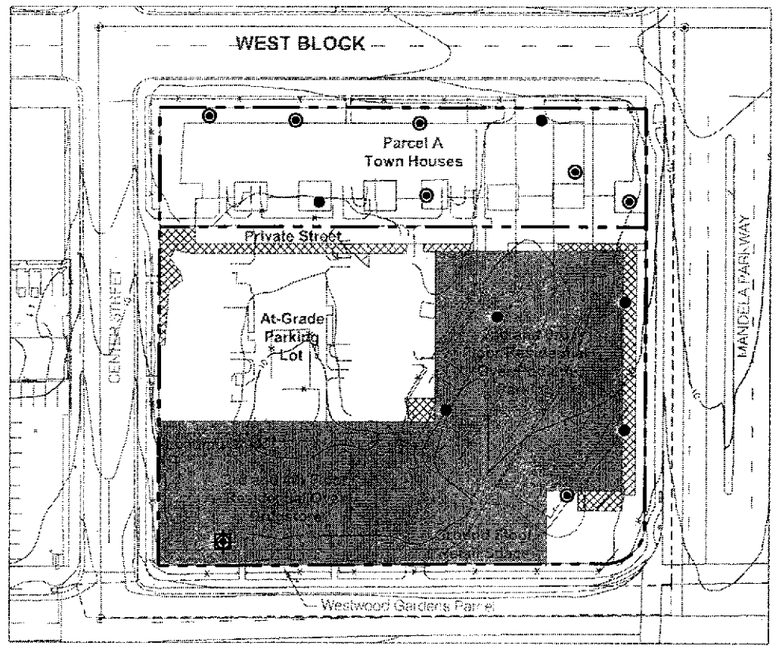
343304_SAMP LOCAITON.DWG

MANDELA GATEWAY
Oakland, California

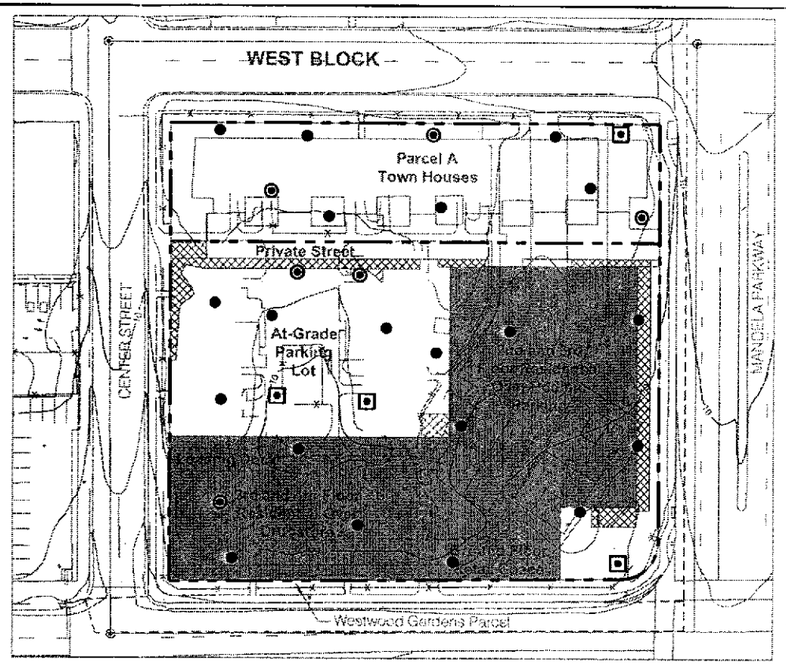
SAMPLE LOCATIONS

Date 03/13/03	Project No. 3433.04	Figure 4

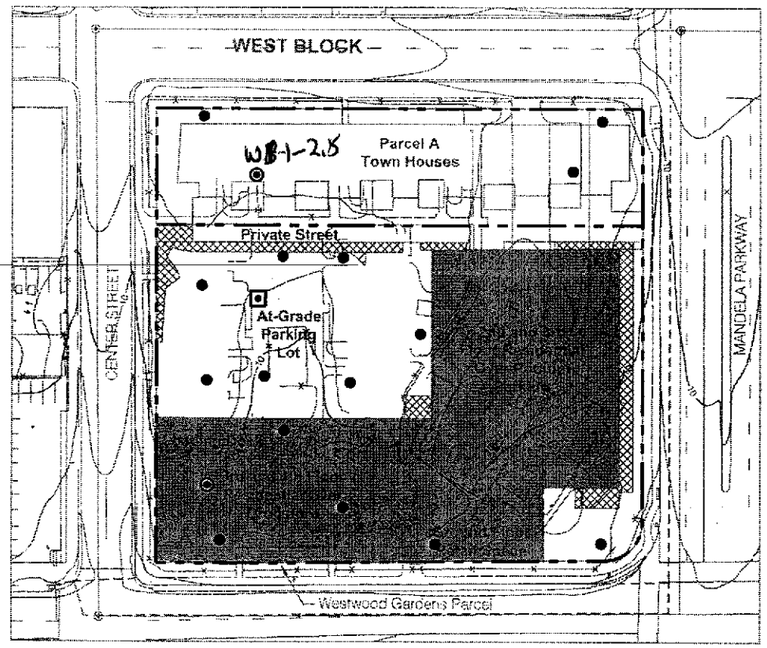
Treadwell&Rollo



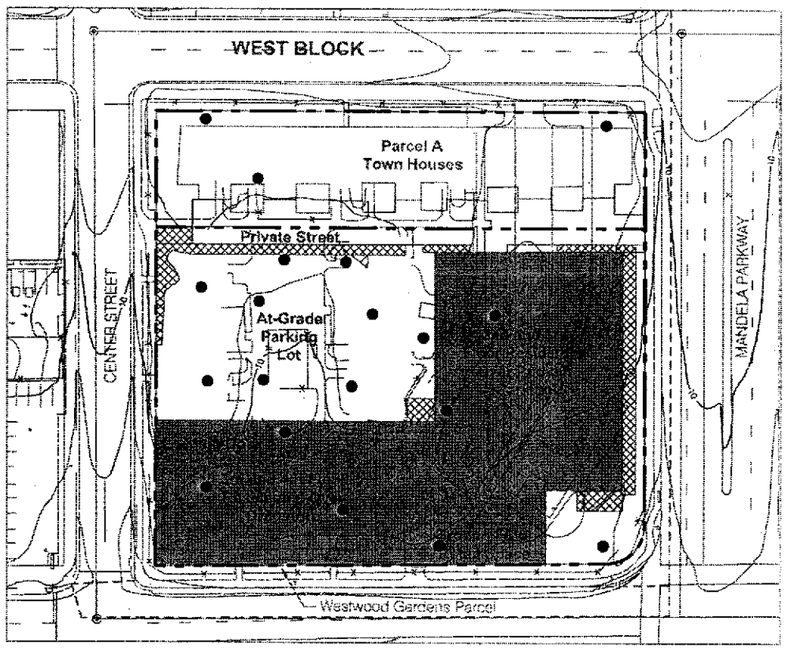
0.0 To 1.0 Feet Bgs



1.0 To 2.0 Feet Bgs



2.0 To 3.0 Feet Bgs



Greater Than 3.0 Feet Bgs

EXPLANATION

- Existing property line
- Former property line
- Proposed building
- Landscaped Areas or Mixed Landscape and Walkways
- Approximate location of soil samples
- Exceeds hazardous waste criteria for lead
- Exceeds remedial target value of 347 mg/kg for total lead
- Exceeds remedial target levels for pesticides (specific to Parcel A or general site)

N

0 100 Feet

Approximate scale

Reference: 1. DK Associates, "Topographic Survey - Mandela Gateway", May 30, 2002.
2. Site plan prepared by Michael Willis Architects, dated 11 July 2002.

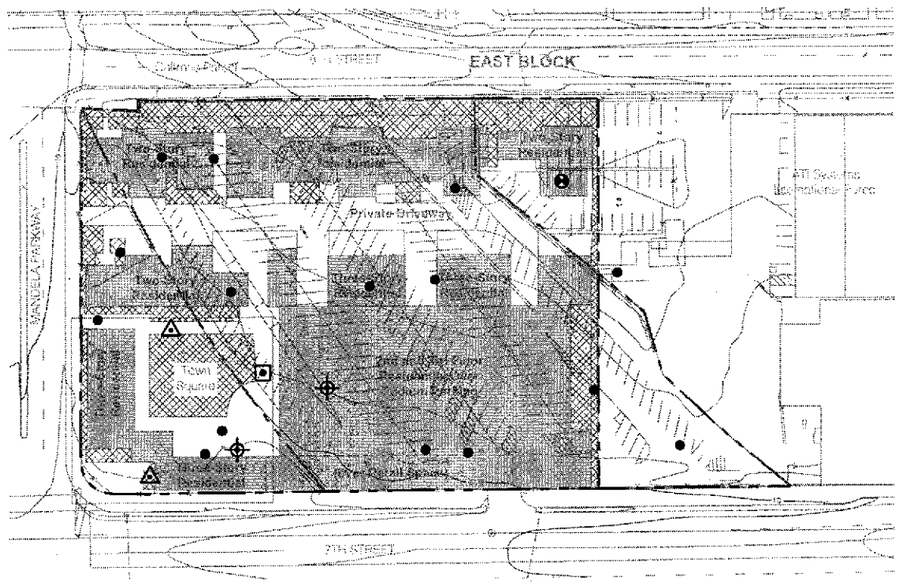
343304_CONTAMINATED_WEST.DGW

MANDELA GATEWAY
Oakland, California

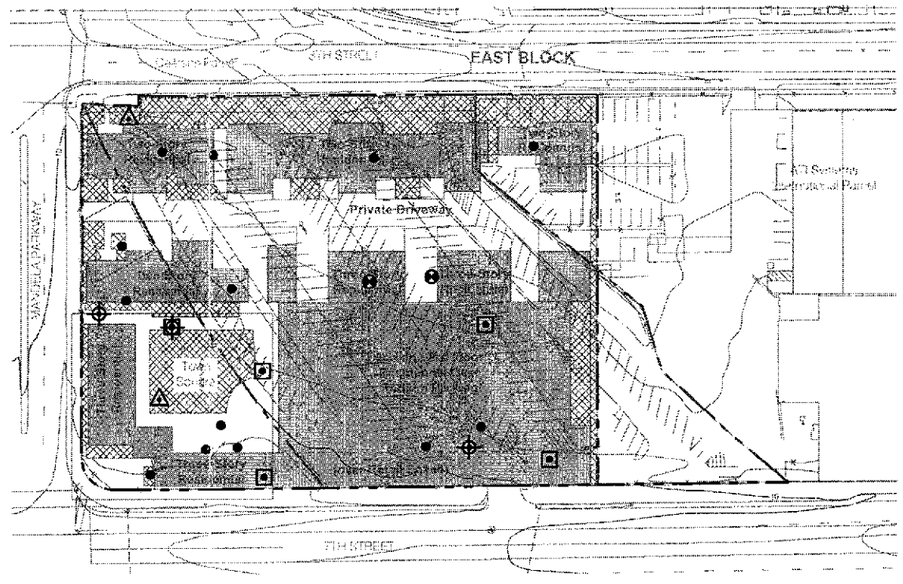
CONTAMINANT OCCURRENCE WEST BLOCK

Date 03/17/03	Project No. 3433.04	Figure 5

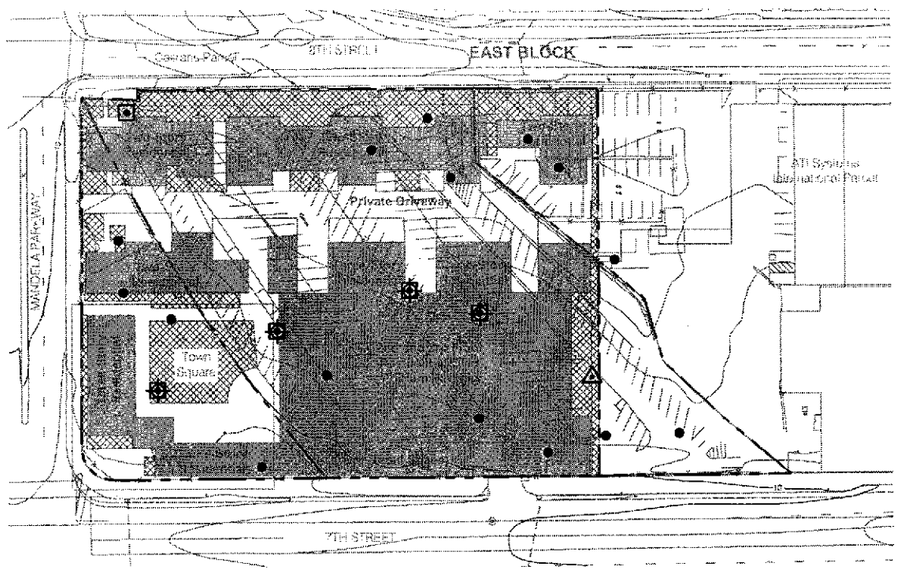
Treadwell&Rollo



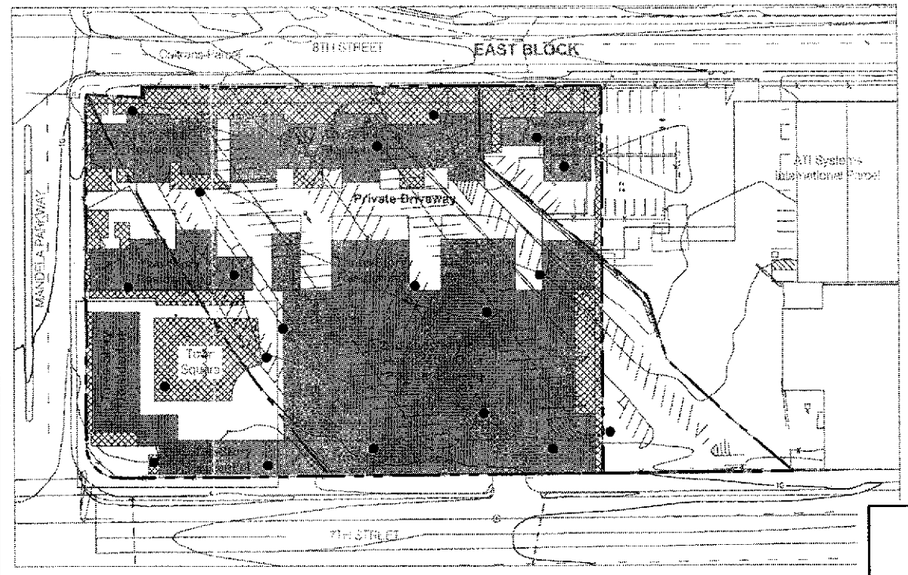
0.0 To 1.0 Feet Bgs



1.0 To 2.0 Feet Bgs



2.0 To 3.0 Feet Bgs



Greater Than 3.0 Feet Bgs

EXPLANATION

- Existing property line
- Former property line
- Proposed building
- Landscaped Areas or Mixed Landscape and Walkways
- Approximate location of soil samples
- Exceeds hazardous waste criteria for lead
- Exceeds remedial target value of 347 mg/kg for total lead
- Exceeds remedial target value of 261 mg/kg for total lead
- Exceeds residential RBSL of 500 mg/kg for TPH-mo
- Exceeds remedial target value of 347 mg/kg for total lead and hazardous waste criteria for lead

0 120 Feet

Approximate scale

Reference: 1. DK Associates, "Topographic Survey - Mandela Gateway", May 30, 2002.
2. Site plan prepared by Michael Willis Architects, dated 11 July 2002.

MANDELA GATEWAY
Oakland, California

CONTAMINANT OCCURRENCE EAST BLOCK

Date 03/21/03	Project No. 3433.04	Figure 6

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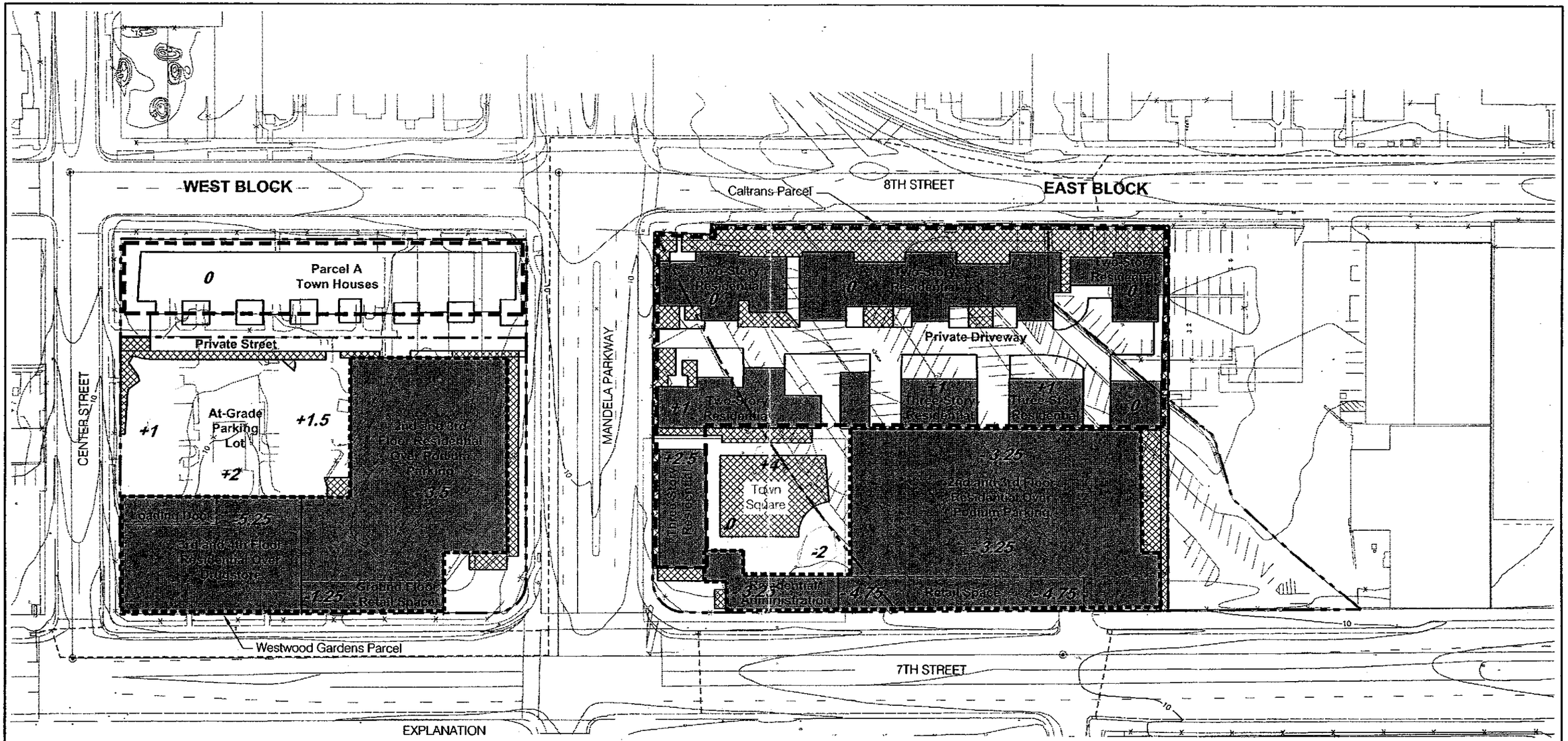
343304_CONTAMINANT_EAST BLOCK.DGW



EXPLANATION

- Existing property line
- Former property lines
- Proposed building
- Landscaped Areas or Mixed Landscape and Walkways
- 1.75 — Areas of over excavation and redeposition; Depth of over excavation
- +1 — Area of PT slabs at grade; Thickness of needed fill

Reference: 1. DK Associates, "Topographic Survey - Mandela Gateway", May 30, 2002.
2. Site plan prepared by Michael Willis Architects, dated 11 July 2002.

0 80 Feet
Approximate scale

MANDELA GATEWAY
Oakland, California

AREAS OF SOIL EXCAVATION

Date 03/17/03	Project No. 3433.04	Figure 7

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3433304_PLANNED DEVELOPMENT.DGW

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APPENDIX A

Treadwell & Rollo Standard Operating Procedures for Soil Sampling

Treadwell&Rollo

STANDARD OPERATING PROCEDURE FOR SURFACE SOIL SAMPLING

PURPOSE

This Standard Operating Procedure (SOP) delineates protocols to be used when collecting surface soil samples. Surface soil samples are generally collected from the 0- to 2-foot depth interval, though this interval may be altered to accommodate state or EPA Region-specific requirements.

FIELD SUPPLIES

- Surface soil sampling equipment and usual application
  - trowels and scoops for surface soil samples
  - shovel – surface soil and at depth samples
  - hand augers and slide hammers for discrete depth samples
- Sample containers and labels
- Field logbook or field investigation daily report forms
- Chain-of-custody forms
- Personal protective equipment, specifically gloves
- Air monitoring equipment, as required

PROCEDURE

- Appropriate project-specific safety procedures will be followed . At a minimum, level D safety protection will be worn. Additional safety measures will be implemented if warranted by site considerations. These procedures are specified in the site-specific Health and Safety Plan.
- Locate the sampling point or area in accordance with the project work plan and/or the sampling and analysis plan.
- Remove all surface materials that are not to be included in the sample(s), including asphalt.

- Choose the appropriate sampling equipment as dictated by conditions or as indicated in the project sampling plan.

- Samples are collected using laboratory-supplied or field-decontaminated equipment as specified in the project work plan. Sample material is contained in new containers with Teflon-lined lids or in stainless steel liners that are sealed with Teflon and plastic end caps. If composite samples are desired, the VOC samples are collected prior to mixing sample material, to prevent potential volatilization of constituents which may be present.

- Obtain the necessary volume of soil for the parameter(s) to be analyzed. With the exception of volatile organic constituents, the soil sample should be well mixed.

- Fill and cap the appropriate sample container(s), and complete sample labels and Chain-of-Custody forms.

- Place samples on ice in a cooler. Sample jars should not be submerged in melted ice water, so that all small bottles should be placed in sealable plastic bags, and the ice cooler drained frequently.

- Make notes and sketches of soil sample locations, as necessary, in a field notebook.

- Follow appropriate Chain-of-Custody Procedures.

- If the number of samples required is greater than the amount of equipment on-site, field cleaning of equipment will be performed.

PRECAUTIONS

Gloves should be changed frequently to prevent potential cross-contamination of samples. Gloves will be changed prior to collection of each sample if the samples are to be submitted for laboratory analysis for compounds with low detection limits, such as VOCs and SVOCs. However, gloves may be changed at a slightly lesser frequency of between sampling locations, only if the samples are to be submitted for laboratory analysis only for metals which have relatively high detection limits. The sampling equipment shall be cleaned in accordance with the decontamination SOP.

Samples will be delivered to the laboratory performing the analyses following the appropriate procedures. This includes packaging, shipping with sample logs, analysis request forms, and chain-of-custody forms.

DOCUMENTATION

The following records should be kept of soil sampling activities:

- Field Log Book or Investigation Daily Report;
- Boring logs;
- Chain-of-custody forms; and
- Shipping airbills and forms.

The shipping form identification number (airbill number) should always be recorded on the chain–of–custody document and in the field logbook to maintain chain–of–custody documentation.

STANDARD OPERATING PROCEDURE FOR DIRECT-PUSH SOIL SAMPLING

PURPOSE

This Standard Operating Procedure (SOP) outlines protocols for the use of direct push technology to sample soil.

FIELD SUPPLIES

- Geoprobe or equivalent direct push rig
- Appropriately sized split stainless steel samplers with sleeves or plastic liners and fittings
- Appropriately sized stainless steel screen point groundwater sampler, with associated casing pull assembly, O-rings, and fittings or temporary PVC casing
- Appropriate sample jars and sample custody equipment
- Various tools and utility knives
- Small trowel and stainless steel mixing bowls for composite soil samples
- Small diameter Teflon tubing, soft silicon tubing
- Aluminum foil or Teflon tape for headspace analysis.

SAMPLING PROCEDURES

Soil Sampling Procedures

- Decontaminate the direct push sampler (DP) according to the decontamination SOP.
- Assemble the first section of the DP.
- Advance the DP to the desired depth using the system hydraulics. A hydraulic hammer capable of 1,600 taps per minute may be used to drive the DP to the desired depth.
- Remove the stop pin and continue driving DP downward to collect soil.
- Back DP out of hole using the system hydraulic cylinder. Pull drill rods straight out, being careful not to bend the DP point. The soil sample will be contained in a stainless steel or plastic liner. Select and cut sections for laboratory analysis, hydrophobic dye evaluation, and organic vapor headspace analysis as appropriate. Split the remaining liner lengthwise with a utility knife. Immediately screen for organic vapors if volatile organics are chemicals of concern. Log and sample soil in accordance with the SOP for soil sampling.

- Disassemble and decontaminate the DP after each use. Check 0-rings and piston screen for wear and abrasion. Change 0-rings when necessary, approximately every three to four samples, or after sampling soil with high concentrations of contaminants. Leave piston screen in place for decontamination, unless it will be replaced.
- Decontaminate the DP according to the SOP for decontamination.
- Reassemble the DP, wearing disposable gloves to keep the DP clean.
- If plastic liners are not used, decontaminate the DP as if it were soil sampling equipment in accordance with the decontamination SOP, after each sample is taken.

PRECAUTIONS

Refer to the HSP before intrusive work is initiated. Become familiar with necessary PPE and action levels.

REFERENCES

None.

Treadwell&Rollo

STANDARD OPERATING PROCEDURE FOR FIELD LOGGING

PURPOSE

The purpose of this standard operating procedure is to outline protocols for recording field survey and sampling information in the Field Log.

FIELD SUPPLIES

- Treadwell & Rollo field log forms
- Indelible ink pen

PROCEDURES

All information pertinent to a field survey or sampling effort will be recorded in a field log. Each page/form will be consecutively numbered, dated, and signed. All entries will be made in indelible ink and all corrections will consist of line-out deletions that are initialed and dated. The person making the correction will provide a brief explanation for the change. There should be no blank lines on a page. If only part of a page is used, the remainder of the page should have an "X" drawn across it. At a minimum, entries in the logbook will include but not be limited to the following:

- Project number.
- Purpose of sampling or activity.
- Unique, field sample number/name.
- Location, description, and log of photographs of each sampling point if available.
- Details of site and sample locations (for example, the elevation of the casing, casing diameter and depth, integrity of the casing, etc.)
- Name and contact information of field contact(s) and site visitors.
- Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters and absorbing reagents).
- Identification of field crew members, contractors, and subcontractors.
- Type of activity or sample (for example, groundwater or surface water).

- Suspected waste composition.
- Number and volume of sample taken.
- Sampling methodology, including distinction between grab and composite sample.
- Sample preservation.
- Date and time of collection.
- Collector's sample identification number(s).
- Sample shipment (for example, name of the laboratory and cartage agent: Federal Express, United Parcel Service, etc.)
- References such as maps of the sampling site.
- Field observations (e.g. oily sheen on groundwater sample, incidental odors, soil color, grain size, plasticity, moisture content, layering, U.S.C.S. classification, etc.)
- Any field measurements made (for example, pH, conductivity, explosivity, water depth, OVA readings, etc.)
- Signature and date by the personnel responsible for observations.
- Decontamination procedures.

Sampling situations vary widely. No general rules can specify the extent of information that must be entered in a logbook. However, records should contain sufficient information so that someone can reconstruct the sampling activity without relying on the collector's memory.

REFERENCES

U.S. EPA. 1990. Sampler's Guide to the Contract Laboratory Program. EPA/540/P-90/006, Directive 9240.0-06, Office of Emergency and Remedial Response, Washington, D.C., December 1990.

U.S. EPA. 1991. User's Guide to the Contract Laboratory Program. EPA/540/O-91/002, Directive 9240.0-01D, Office of Emergency and Remedial Response, January 1991.

U.S. EPA. 1980, Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, QAMS-005/80.

Treadwell&Rollo

STANDARD OPERATING PROCEDURE FOR DECONTAMINATION

PURPOSE

All equipment involved in intrusive sampling, or which enters a hazardous waste site must be thoroughly decontaminated prior to leaving the site to minimize the spread of contamination and prevent adverse health effects. This procedure describes the normal decontamination of sampling equipment. Site personnel decontamination is described in the Health and Safety Plan.

FIELD SUPPLIES

- Plastic sheeting, buckets, etc. to collect wash water and rinsate
- Tap water
- Deionized or distilled water
- Non-phosphate detergent, such as Alconox or Liquinox
- Aluminum foil or plastic sheeting
- Pressure sprayer, spray bottles, rinse bottles, brushes
- Plastic garbage bags

PROCEDURES

- Drilling Equipment

  Drilling equipment will be cleaned prior to use in the field, and between drilling locations. This equipment consists of slide-hammer samplers, hand augers, hollow-stem augers and casing, direct-push tips and casing, etc, and other reusable equipment. This equipment does not include sample containers, sleeves, or tubes.

  Steam-cleaning procedures:

  - Steam clean drilling equipment at an established decontamination area to remove visible dirt.
  - Tap water may be used for steam cleaning.
  - Collect wash and rinse waters and dispose of properly.

- Drilling Equipment – continued:

  Hand wash procedures:

  - Hand wash drilling equipment with a detergent solution at an established decontamination area to remove visible dirt.
  - Rinse equipment with tap water.
  - Collect wash and rinse waters and dispose of properly.

- Soil Sampling Equipment

  Re-usable soil sampling equipment will be cleaned prior to sample collection. This equipment consists of metal sample sleeves. Single-use equipment such as Teflon sheets, plastic caps, plastic sample tubes, is provided clean by the manufacturer and does not require decontamination.

  Steam-cleaning procedures:

  - Steam clean following the same procedures above for drilling equipment.

  Hand wash procedures:

  - Scrub with detergent solution
  - Rinse twice with potable water.
  - Rinse a third time ("triple rinse") with deionized or distilled water.
  - Collect wash and rinse waters and dispose of properly.

PRECAUTIONS

- Dispose of all wash and rinse water, and other sampling wastes (tubing, plastic sheeting, etc.) in properly labeled, closed containers, or as directed by the health and safety plan.
- Once a piece of equipment has been decontaminated, be careful to keep it in clean condition until needed.

REFERENCES

Site-specific health and safety plan.

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STANDARD OPERATING PROCEDURE FOR CHAIN-OF-CUSTODY FORM

PURPOSE

The purpose of this standard operating procedure (SOP) is to outline protocols for use of the Chain-of-Custody (COC) Form. The COC form is the physical evidence of the tracking of the custody of the sample(s). A sample is within custody of the responsible person (signature) if it is:

- In the actual physical possession of the responsible person
- In view of the responsible person
- In a locked area
- In a designated, secure storage area

FIELD SUPPLIES

- Chain-of-Custody Form
- Indelible ink pen

PROCEDURES

- Complete fully, in ink, the COC header information. Print in the appropriate space the: site name; project number; Project Manager's name; the sampler's name; and sign (signature must match that of the first "relinquished by" signature) as recorder.
- Enter the field sample identification number (sample ID).
- Indicate the sampling dates for all samples.
- List the sampling times (military format) for all samples.
- Indicate sample matrix.
- Enter the total number of containers per sample and preservative.
- List the appropriate analytical test and indicate with an "X" the analysis requested.
- Record any additional information or requests in the "Remarks" section.

- Indicate the requested "Turnaround Time".
- State the courier service or carrier service and airbill number, and analytical laboratory.
- Sign, date, and time the "relinquished by" section. Again, the "Recorder" signature must match the first "Relinquished by" signature.
- Upon completion of the form, retain the "pink" copy, and seal the other copies in a "zip-lock" plastic baggie before being placed inside of the sample cooler to be sent to the designated laboratory.

MAINTENANCE

- Not applicable

PRECAUTIONS

- Any correction to the data listed on the COC should be "lined out", initialed and dated.
- When relinquishing custody of the samples, be sure to have the person accepting custody sign, date, and note the time in the appropriate spaces on the COC.

REFERENCES

U.S. EPA. 1990. Sampler's Guide to the Contract Laboratory Program. EPA/540/P-90/006, Directive 9240.0-06, Office of Emergency and Remedial Response, Washington, D.C., December 1990.

U.S. EPA. 1991. User's Guide to the Contract Laboratory Program. EPA/540/O-91/002, Directive 9240.0-01D, Office of Emergency and Remedial Response, January 1991.

U.S. EPA. 1980, Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, QAMS-005/80