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March 9, 2000

Barny Chan
Alameda County Health Agency
1131 Harbor Bay Parkway, 2nd Floor
Alameda, CA 94502

Dr. Ravi Arulanantham
Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, California 94612

Subject: Site Mitigation and Soil Removal Work Plan
Union Pacific Railroad Site
*Eastern Edge of Fruitvale Avenue to the Western Edge of 37th Avenue, Oakland, California*

Dear Mr. Chan and Dr. Arulanantham:

At the request of the Fruitvale Development Corporation ("FDC"), Applied Remedial Services, Inc. ("ARS") is pleased to present this proposed Site Mitigation and Soil Removal Work Plan for the Union Pacific Railroad Site, between the eastern edge of Fruitvale Avenue to the western edge of 37th Avenue, Oakland, California. The proposed activities are based on information provided to ARS by FDC and current Site conditions and use.

It is ARS' understanding that this workplan will be utilized by BART to select an appropriate consultant/contractor to implement the scope of work detailed in said plan.

Should you require any further assistance, please do not hesitate to call.

Sincerely,

Elias A. Rashmawi
Project Manager

# Site Mitigation and Soil Removal Work Plan

Union Pacific Railroad Site
Eastern Edge of Fruitvale Avenue to the Western Edge of 37th Avenue
Oakland, California

*Prepared for:*
*FRUITVALE DEVELOPMENT CORPORATION, INC.*
1900 Fruitvale Avenue, Suite 2A
Oakland, CA 94601

*Prepared by:*
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*Project Manager and Principal Hydrogeologist*
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## Certification Statement

We, Michael F. Kara and Elias A. Rashmawi, certify under penalty of law that this document entitled "Site Mitigation and Soil Removal Work Plan," prepared for the Union Pacific Railroad Site, between the Eastern Edge of Fruitvale Avenue to the Western Edge of 37th Avenue, Oakland, California, dated March 2, 2000, was personally researched and prepared in accordance with a system designed to assure that the information submitted was properly gathered and evaluated.

This information and analysis are, to the best of our knowledge and belief, true, accurate, complete and satisfy the scope of work prescribed by the Client. We are aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

*Elias A. Rashmawi, REA (No. 07321)*
*Project Manager & Principal Hydrogeologist*

3-9-2000
*Date*

M. F. Kara

*Michael F. Kara, REA (No. 07137)*
*Manager, Remedial Services*

3-9-2000
*Date*

# SITE MITIGATION AND SOIL REMOVAL WORK PLAN

Union Pacific Railroad
Between the Eastern Edge of Fruitvale Avenue to the Western Edge of 37th Avenue
Oakland, California

## 1.0 INTRODUCTION

At the request of the Fruitvale Development Corporation, Inc. ("FDC") Applied Remedial Services, Inc. ("ARS") has prepared this Work Plan (WP) to address environmental concerns during mitigation and soil removal activities that are scheduled for implementation at the Union Pacific (UP) Railroad tracks, between the eastern edge of Fruitvale Avenue to the western edge of 37th Avenue, Oakland, California (the "Site", Figure 1).

The subject WP has been amended from an earlier draft in order to incorporate comments and concerns from the San Francisco Bay Area Rapid Transit District ("BART") Safety Department as detailed in a letter dated November 4, 1999 from Mr. Gary C. Jensen of BART to Mrs. Patty Hirota-Cohen of BART's Real Estate Department

BART plans to develop the property as part of an overall development of the general area, which will involve the construction of a parking garage for BART patrons, an Intermodal facility, and surface parking. That is, the subject property will be used as parking for the BART Station. Construction activities associated with Site development may involve the handling of surficial soils that may potentially be impacted with hazardous substances.

## 2.0 SITE BACKGROUND

The subject Site was purchased as part of an exchange with BART for the land to develop the Fruitvale Transit Village. FDC plans to provide the Site as replacement parking for BART patrons. Construction activities associated with Site development will involve handling of soil that may be affected with hazardous substances as a result of past activities. Field construction activities have the potential to expose Site workers and surrounding community to chemicals in the subsurface. Available records indicate that the Site has been used mainly as a Union Pacific railroad track. Following a period of inactivity, UP recently removed the tracks leaving the Site vacant.

## 3.0 INVESTIGATIVE ACTIVITIES PREVIOUSLY COMPLETED BY ARS

ARS' activities detailed in this section were presented in a report dated July 8, 1999, and entitled "Limited Phase II Environmental Site Assessment Report". The completed scope of work was conducted in accordance with ARS' final proposal titled "Final Proposal for a Limited Phase II Environmental Site Assessment," dated April 27, 1999. In accordance with ARS' proposal, an agreement was executed between ARS and FDC that included a Permit to Enter the Site by Union Pacific. All field activities that are described in this report were completed following a transmittal of "intent to enter" the Site and conduct the approved activities. The subject "intent to enter" was communicated to UP by ARS and FDC. Site Field activities were conducted by ARS on June 24, 1999.

The area investigated by ARS at that time included the portion of the railroad track located between Derby Avenue and 37th Avenue and included the excavation of 21 test pits for the purpose of soil sample collection. Five of the 21 pits were located in the section between Derby Avenue and Fruitvale Avenue (Pits 1, 2, 3,4 and 5). Information collected from these pits, although outside the currently defined Site, will be presented in this report only if deemed relevant by ARS as a result of field observation and laboratory analytical results.

In accordance with FDC's request, ARS provided the following investigative activities:

- Completion of a detailed records and documents review for the subject Site and surrounding properties
- Development and implementation of a Site-specific Health and Safety Plan
- Completion of an underground structures and utilities survey of accessible areas under investigation
- Advancement of soil test pits and collection of soil samples for laboratory analyses

The completed scope of work includes the following specific tasks:

Task 1: Development of a Site Health and Safety Plan
Task 2 Geophysical and Underground Utilities Survey
Task 3: Characterization of Subsurface Conditions
Task 4: Laboratory Analyses
Task 5: Final Report Preparation

These tasks are described in more details below.

## 3.1 Development and Implementation of a Site Health and Safety Plan

In accordance with Occupational Safety and Health Administration (OSHA) guidelines, the ARS Health and Safety Director developed a Site-specific HSP that included an analysis of hazards that may be encountered by on-site workers conducting the proposed work and precautions to mitigate the identified hazards. The provisions of the subject HSP were presented to on-site workers and implemented throughout the duration of the project. Field activities were completed without any incidents.

## 3.2 Geophysical and Underground Utilities Survey

An underground structures and utilities survey was performed utilizing a variety of non-intrusive magnetometer and electromagnetic instruments. The survey was conducted by downUnder Technologies, a California licensed surveyor, under the direct supervision of ARS. In addition to avoiding subsurface damage to utility lines, the magnetometer survey was utilized to investigate the potential presence of underground storage tanks (UST), vaults, and metallic containers such as buried drums or product delivery lines in the immediate area of the test pits to be excavated.

The field surveys completed by downUnder Technologies included a utility survey and a magnetometer and an electromagnetic survey. An instrument that consists of a signal transmitter and a receiver was used in conducting the utility survey. The transmitter generates a radio frequency (signals) onto a conductive (metallic) pipe or cable by connecting the transmitter directly to the exposed utility or by induction. Once the signal is applied to the desired utility it is located with a hand held receiver tuned into the frequency of the transmitter.

downUnder also performed a magnetometer survey of the subsurface. This survey entailed the use of a metal detector that, depending on ground composition and object size, is capable of finding subsurface anomalies to a depth of several feet below ground surface (bgs). A radiodetection RD300 Trufflehound was utilized to locate small metal objects.

## 3.3 Characterization of Subsurface Conditions

### *3.3.1 General Geologic and Lithologic Formation of Surficial Soils*

The area of the Site is immediately adjacent to the Fruitvale BART Station ("BART Station") and has a similar geologic and lithologic formation.

General area-wide geotechnical information available for the BART station indicates that the overall surficial soils at the Site are Younger Alluvial Fan Deposits. The Aerial and Engineering Geology Map of the Oakland East Quadrangle by Radbruch indicated that the Site is underlain by undivided Quaternary deposit that is comprised of alluvial soils consisting of interfingered lenses of clayey gravel, sandy silty clay and sand/clay/silt mixtures.

Site-specific information obtained during geotechnical investigations at the BART Station indicate that the native soils at the Site are mostly alluvial deposits of alternating layers of clays and sands. The surficial native soil layer in the upper 1 ½ to 5 feet generally consist of clay of with high plasticity, i.e. fat clay. This gray/black fat clay is mostly stiff to very stiff in consistency. The surficial fat clay layer is underlain by alternating layers of lean clay (i.e. clays with low to medium plasticities) and sand/gravel. These layers extend to the formerly investigated depth at the BART Station of approximately 50 bgs. The lean clay layers encountered are generally stiff to very stiff. These layers contain significant amount of sand and gravel at many locations. Their contact with sand/gravel layers appear to be gradational.

The following is a lithologic description of borings that were advanced within the BART Station in the immediate vicinity of the UP tracks:

| | |
|---|---|
| 2"-3.5' | Dark gray FAT Clay, stiff, moist |
| 3.5'-9' | Yellow with rust mottling SANDY LEAN CLAY WITH GRAVEL, hard, moist, gravel up to 2", subangular to angular |
| 9'-16.5' | Yellow/brown, LEAN CLAY with pockets of sand/gravel, very stiff, moist, gravel up to 1", subangular |
| 16.5'-24' | Brown/gray LEAN CLAY with pockets of medium to coarse sand/gravel, gravel up to ½", moist to wet, petroleum odors were detected |
| 24'-29' | Yellow/brown SANDY LEAN CLAY, stiff wet |
| 30' | Groundwater observed at 30' below ground water surface |

In summary, the type of surficial soils that were encountered throughout the former UP railroad tracks are mostly dense expansive clays with excessively low hydraulic conductivities due to their fine particle distribution. The fine particle size and high organic content of the clay-silt composition of expansive clays generally hold migrating water in negative capillary pressure thus significantly retarding any potential transport. Surface infiltration and contaminant transport into deeper soils past the existing clay layer are expected to be minimal at best.

This is particularly true since the potential presence of on-site contaminants is limited mostly to heavy metals constituents that are highly insoluble in water at normal conditions and are not likely to migrate within the process of mass transport.

### 3.3.2 *Overview of Field Investigative Activities*

As a result of previous Site use as a railroad track, surface soil at the Site may have undergone extensive grading (cut and fill) as well as exposure to surficial contaminants resulting from the historical activities associated with railroad tracks. Shallow surficial soils (between 1 - 2 feet bgs) were expected to consist of fill material that may have been imported from off-site locations.

Accordingly, ARS excavated 21 Test Pits ("TP") to a depth of 2 to 3 feet below ground surface utilizing conventional construction equipment in the form of a Case 580 backhoe. Pits 1 through 5 were excavated between Derby and Fruitvale Avenues. Test pits excavating activities were conducted by SEMCO/HK2, a State-licensed general engineering contractor with Hazardous Materials Certification and earth-work license. All field activities were completed under the immediate supervision of ARS field engineers in accordance with ARS' standard operating procedure, terms of the HSP, and the scope of work prescribed by the Client.

The TPs were excavated along the extent of the area of the subject Site in a manner that would reflect Site conditions as well as particular areas of interest within the Site. The depth of 2 to 3 feet was selected for investigation because the proposed development of the parking lot area would involve grading activities that may infringe upon the upper 2 feet of soil at the Site. One to two composite soil samples were collected from each TP. The samples were collected in accordance with applicable protocols and in accordance with ARS' Standard Operating Procedures) SOP under a strict chain of custody. The samples were subsequently delivered to State certified laboratories for analysis. Several samples were obtained from the clay layer that underlies the loose fill material that appears to have been emplaced in the past. These clay samples were identified by ARS with a "B" notation (Pit 2-B, Pit 3-B, and Pit 4-B).

Soil samples obtained for organic analysis were collected in brass tubes that were sealed with pre-cut Teflon tape, capped with plastic end caps, and sealed with inert tape at each end. All soil samples were placed on dry ice and sent to a state certified laboratory for analysis. Samples obtained for heavy metal analysis only were collected in plastic zip-lock bags, clearly identified and placed in a chilled cooler pending delivery to a State-certified laboratory. As the soil samples were collected, ARS field engineers documented the presence of soil conditions and signs of visible or odorous potential contamination. The samples were also screened in-situ for volatile organic compound contamination using a set of Organic Vapor Analyzer (OVA) instruments equipped with a Photo Ionization Detector and a Flame Ionization Detector. TP Locations are presented on Figure 2.

The soil samples were analyzed for selected chemicals in order to provide a better understanding of chemical constituents that may be present and quantify potential costs associated with transport and disposal of the exported fill in accordance with Federal, State, local regulations and the requirements of landfill disposal facilities. Soil samples were also obtained at depths where a change in lithology was observed, or when field observations and/or field detectors indicated the potential for environmental concerns. All pits were backfilled and appropriately compacted following termination of sample collection.

### 3.4 Laboratory Analytical Results

As previously indicated, the collected samples were analyzed at off-site State-certified analytical laboratories for a variety of suspected contaminants. The analytical methods utilized were as follows:

1. Total Extractable Petroleum Hydrocarbon via EPA method 8015 modified – for identification of turpentine, paint thinner, mineral spirit, diesel, motor oil, and kerosene.
2. Title 22 CAM 17 heavy metals via EPA Method 6010/7470/7471
3. Herbicides via EPA method 8150
4. Semi volatile organic compounds via EPA method 8270A
5. Selective heavy metal analysis (lead and arsenic) via EPA Method 6010/7420
6. CAM 17 heavy metal analysis via EPA Method 6010/7420
7. CAL WET Extraction on lead and arsenic via EPA Method 6010/7420

The following tables present the respective laboratory analytical findings:

**TABLE 1**
**CONCENTRATIONS OF LEAD & ARSENIC IN SOIL SAMPLES**
*(Concentrations expressed in mg/Kg)*

| Sample ID | Lead | Arsenic |
|---|---|---|
| Pit 1 | 41 | 50 |
| Pit 2-A | 34 | 54 |
| Pit 2-B | 18 | 12 |
| Pit 3-A | 341 | 194 |
| Pit 3-B | 19 | 8.9 |
| Pit 4-A | 111 | |
| Pit 4-B | 15 | 115 |
| Pit 5 | 687 | 127 |
| Pit 6 | 66 | 57 |
| Pit 7 | 1,495 | 198 |
| Pit 8 | 144 | 100 |
| Pit 9 | 41 | 199 |
| Pit 10 | 66 | 70 |
| Pit 11 | 43 | 28 |
| Pit 12 | 145 | 195 |
| Pit 13 | 105 | 167 |
| Pit 14 | 59 | 57 |
| Pit 15 | 339 | 127 |
| Pit 16 | 250 | 12 |
| Pit 17&18 | 980 | 71 |
| Pit 19 | 630 | NA |
| Pit 21 | 443 | <2.5 |
| **Sample Size** | **22** | **21** |
| **Maximum Value** | **1,495** | **240** |
| **Mean** | **276** | **99** |
| **Standard Deviation** | **376** | **75** |
| **95% Confidence Interval** | **157** | **32** |
| **95% UCL** | **433** | **131** |

**NA:** *Not analyzed*

## TABLE 2
### SOLUBLE LEAD & ARSENIC CONCENTRATIONS IN SOIL SAMPLES
*(Concentrations expressed in mg/L)*

| Composite Sample | Lead | Arsenic |
|---|---|---|
| Pit 3-A,5,15,21 | 24 | NA |
| Pit 10,12,13,14 | 6.8 | NA |
| Pit 3-A,4-A,5,7,9,17&18 | NA | 71 |

**NA:** *Not analyzed*

## TABLE 3
### CONCENTRATION OF HEAVY METALS IN SOIL SAMPLES
*(Concentrations expressed in mg/Kg)*

| Analyte | Pit-4A | Pit Composite (6,7,12,13,14) | Pit-16 | Pit Composite (3-A,4-A,5,7,9,17,18) | Average Analyte Concentration[1] | USGS Survey[4] Background Levels |
|---|---|---|---|---|---|---|
| Antimony | ND<2.0 | ND<2.0 | ND<2.0 | 19 | 5.5[2] | <2.0[5] |
| Arsenic | 170 | 95 | 12 | 210 | **122**[3] | 9 |
| Barium | 110 | 180 | 250 | 230 | 193 | 700 |
| Beryllium | ND | ND | ND | ND | ND | <1 |
| Cadmium | ND<0.5 | ND<0.5 | 0.59 | 0.65 | 0.44 | --[6] |
| Chromium | 49 | 56 | 42 | 65 | 53 | 125 |
| Cobalt | 9.4 | 9.5 | 9.6 | 13 | 10.4 | 18 |
| Copper | 30 | 41 | 63 | 140 | 68.5 | 62 |
| Lead | 40 | 78 | 250 | 450 | **205**[3] | 46 |
| Molybdenum | ND | ND | ND | ND | ND | <3 |
| Nickel | 65 | 65 | 71 | 80 | 70 | 43 |
| Selenium | ND<2.0 | ND<2.0 | ND<2.0 | 4.6 | 1.9 | <0.5 |
| Silver | ND | ND | ND | ND | ND | -- |
| Thallium | ND | ND | ND | ND | ND | -- |
| Vanadium | 28 | 31 | 33 | ND<1.0 | 23.1 | 168 |
| Zinc | 59 | 89 | 610 | 1,000 | 440[3] | 185 |
| Mercury | 1.4 | 0.17 | 6.5 | 8.0 | 4[3] | .18 |

[1] Non Detect values were counted as one half of the method detection limit for calculation of Average Analyte Concentration.
[2] Level indicated is slightly higher than background concentrations.
[3] Level indicated is more elevated than background concentrations.
[4] Average concentrations for the San Francisco Bay Area (measured in mg/Kg) of the respective analytes calculated by ARS from data presented in the United States Geological Survey Professional Paper 1270, entitled "Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States."
[5] Less than the indicated value.
[6] Data not available.

**Table 4**

**TOTAL EXTRACTABLE PETROLEUM HYDROCARBON LEVELS IN SOIL SAMPLES**
*(Concentrations expressed in mg/Kg)*

| Sample ID | TEPH *(Kerosene)* | TEPH *(Motor Oil)* | TEPH *(Diesel)* | TEPH *(Paint Thinner)* | TEPH *(Mineral Spirits)* |
|---|---|---|---|---|---|
| Pit-4A | ND | ND | 11 | ND | ND |
| Pit-16 | ND | 22,000 | 6,300 | ND | ND |
| Pit-19 | ND | 6,000 | 2,800 | ND | ND |

Total Extractable Petroleum Hydrocarbons (TEPH) presented in Table 4 were analyzed via 8015M preparation Method 3550/8015M. Phenols were analyzed via GC/MS 8270A and were not detected above their respective detection limits.

## 3.5 LSI Discussion

Based on ARS' Site inspection, investigation, and laboratory analytical results, the following issues were identified about which conclusions can be reached with the limited existing information and for which further more definitive investigative testing will be required at the time of field remedial activities. The issues of concern are as follows:

1. Chemical constituent analytical data of surficial soil samples collected at the Site and from the general vicinity indicate the presence of elevated levels of lead and arsenic. The average lead and arsenic levels detected were 276 mg/Kg and 99 mg/Kg, respectively (Table 4, Figure 3 and 4). The highest levels of lead and arsenic detected in the general vicinity during this investigation were 1,495 mg/Kg and 240 mg/Kg respectively.

   - The primary source of lead in this surficial soil, may be from urban runoff due to deposition of lead onto surface of the soil from lead added in the past to gasoline as a lubricant, and/or from contaminants present within the imported fill material previously placed at the railroad track beneath the ballast.
   - The primary source for arsenic in the surficial soil is likely due to the previous application of sodium arsenate as a sterilant & herbicide or sodium arsenite for soil treatment against termites. The application of arsenicals to soil has been superseded because of the hazards to man and animals.

2. Laboratory analytical results of soluble lead (CAL-Wet Extraction) from composite samples Pit 3A-5-15-21 and Pit 10-12-13-14 indicated the presence of lead at 24 mg/L and 6.8 mg/L respectively. Laboratory analytical results of soluble arsenic (CAL-Wet Extraction) from composite sample Pit 3-A,4-A,5,7,9,17&18 indicated the presence of arsenic at 71 mg/L. The California Code of Regulations, Title 26 Division 22, Section 66261.24 "Characteristics of Toxicity" requires that soil containing concentrations of these constituents at or above their respective STLC limits of 5 mg/l must be managed as hazardous waste if it were disturbed, excavated or moved during Site development activities. Accordingly, upon determining which soil has to be excavated at the subject Site for grading purposes, it would be necessary to appropriately characterize the soil that is scheduled for off-site disposal, for purposes of identifying and segregating the soil into appropriate groups in

preparation for off-site transport and disposal to permitted Class I Hazardous Waste or Modified Class II non-hazardous landfill facilities.

3. The northwestern corner of Hansen's Windows, located at 3600 San Leandro Blvd., appeares to be affected with elevated levels of petroleum hydrocarbon related compounds and heavy metal contaminants. Visible discoloration and petroleum hydrocarbon odors were noted in Pits 16, 17, 18, and 19. Clear indications of improper discharge onto the ground surface exist at this location (Figure 2). It is noteworthy that the discoloration and odors appeared to be limited to the upper 2 feet below the ground surface. The affected area may extend 50 feet from the corner of Hansen's building parallel to the railroad tracks and 30 feet parallel to 36th Avenue; this area comprises approximately 1,500 square feet. Although ARS was able to identify the northern, southern, and eastern boundary of the affected area, the western boundary that extends beneath Hansen's building in a direction towards San Leandro Blvd. could not be investigated due to the presence of the building. Soils within this area should be removed, isolated, appropriately characterized and loaded onto trucks for off-site disposal at an appropriate disposal facility. Confirmatory clearance samples should be collected from the sidewalls and floor of the excavated area in order to document that removal activities were thorough and complete.

4. The area extending between 35th Ave. and 37th Ave. appears to contain a preponderance of a small variety of containerized chemicals (paints, oils & grease). Various other types of discarded debris were encountered in quantities that appeared to be greater than the remaining portions of the tracks.

5. Laboratory analytical results did not indicate the presence of phenolic compounds above their respective method detection limits. Laboratory analytical results for chlorinated herbicides are pending.

No reported results

6. With the exception of lead and arsenic, all metals listed in Title 22 CAM 17 were not detected above hazardous waste levels. Mercury and zinc were detected at levels higher than USGS background values for the San Francisco Bay Area (measured in mg/Kg) calculated by ARS from data presented in the United States Geological Survey Professional Paper 1270, entitled "Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States."

### 3.6 Evaluation Process

use most current values

In order to evaluate the quality of on-site soils subject to this WP for the purpose of evaluating their hazard criteria and risk factors, analytical results for heavy metals were compared to Industrial Preliminary Remediation Goals (PRGs) as established by the US Environmental Protection Agency (USEPA) Region IX, dated 1998. Selected soil samples were also compared to ten times the Soluble Limit Threshold Concentrations (STLCs) as established in The California Code of Regulations, Title 26 Division 22, Section 66261.24 "Characteristics of Toxicity".

### 3.7 Recommendations

ARS recommended the following:

1. An accurate account of the location, depth, extent of the soils that will be removed from the Site should be determined from surveyor's maps detailing the existing topography and extent as well as from the proposed design criteria that may be clearly depicted on structural plans. Once the

cuts and fills are appropriately defined laterally and vertically, an estimate of amount and type of soils to be disposed of off-site can be quantified by ARS.

2. All soils scheduled for off-site removal should be properly characterized at the time of transport for appropriate classification and disposal.

3. ARS does not expect the gravel base that was formerly utilized as ballast for the railroad tracks to be affected with elevated levels of Site contaminants. Accordingly, the existing surface gravel may be recycled or reused so long as it is not co-mingled with the underlying soil layer.

4. As was previously mentioned, the northwestern corner of Hansen's Windows is affected with elevated levels of petroleum hydrocarbons and heavy metal contaminants. The existing contamination extends to 2 feet below the ground surface, 50 feet from the corner of Hansen's building parallel to the railroad tracks and 30 feet parallel to 36th Avenue, a total area of approximately 1,500 square feet. Although ARS was able to identify the northern, southern, and eastern boundary of this affected area, the western boundary which may potentially extend beneath Hansen's building towards San Leandro Blvd. has not been defined. In addition to the recommendation that soils within this area should be appropriately characterized and excavated for off-site disposal at either a Class I or a Class II landfill, ARS also recommends that FDC consult with legal counsel regarding potential liability to and from Hansen's Windows, if any.

5. Since the area extending between 35th Ave. and 37th Ave. is impacted with a variety of containerized chemicals such as old leaded paint and various other types of discarded debris, ARS recommends the appropriate containerization of existing chemicals for off-site disposal at appropriate facilities.

6. Due to the involvement of BART and FDC in determining disposition of the subject Site, ARS strongly recommends that the concerned parties determine the extent of regulatory agency involvement desired. The potential regulatory agency that will oversee the cleanup and final disposition of the subject Site will, in all likelihood will set cleanup criteria and long term management plans.

## 4.0 SITE MITIGATION AND SOIL REMOVAL PROPOSED SCOPE

The activities described in this Scope of Work are proposed to address the environmental concerns that are present or may arise at the subject Site during future proposed development of the Site as a street level parking lot for BART patrons. The work described herein is of a preliminary nature and may be amended as the project progresses. The activities presented herein were prepared to address the following issues:

- Health and safety of onsite workers
- Air surveillance & monitoring to insure a safe and compliant work environment
- The appropriate classification and profiling of affected soils
- Removal, transport & disposal of heavy metal affected soils from the Site
- Post-removal soil sample collection & analytical testing for the potential completion of Health Risk Assessment(s) (HRA) to assess health effects to workers' exposure during foundation construction activities, and quantify future exposure levels to the Site occupants as a result of exposure to residual heavy metal concentrations; and
- Completion of all relevant appropriate documents and reports

The proposed Scope of Work includes the following specific tasks:

Task 1: Preparation of a Site Specific Health and Safety Plan & Regulatory Agency Interface
Task 2: Soil Characterization
Task 3: Monitoring of Fugitive Dust Emissions
Task 4: Disposal Site Interface and Coordination
Task 5: Soil Remediation
Task 6: Soil Transportation and Disposal
Task 7: Laboratory Analyses
Task 8: Report Preparation
Task 9: Preparation of a Health Risk Assessment and Long Term Site Management Plan

These Tasks are described in more detail below:

*Task 1: Preparation of a Health and Safety Plan & Regulatory Agency Interface*

In accordance with Occupational Safety and Health Administration (OSHA) guidelines, mandates of the Regional Water Quality Control Board (RWQCB) and Alameda County Department of Environmental Health, a Health and Safety Plan (HSP) should be prepared for implementation at the site during soil removal activities. The HSP should include an analysis of hazards that may be encountered by on-site workers conducting the proposed soil removal activities and Site construction. Precautions to minimize the identified hazards should be addressed. All required permit applications and documents should be filed with the appropriate local City & County agencies.

All relevant contractors should be informed of the appropriate protective measures that should be instituted to insure a safe work environment.

*Task 2: Soil Characterization*

Activities completed to date at the subject Site have provided preliminary data on the distribution, type, concentration variability and extent of existing chemicals of concern. Accordingly, ARS recommends that a thorough sampling plan be prepared and submitted to the lead agencies prior to commencement of any soil removal activities. The plan would be implemented in order to investigate the depth, spatial distribution (lateral & vertical) extent, and concentration levels for existing chemicals of concern. The plan should include the collection of in-situ soil samples from depths and locations to provide an accurate stratification of soil contamination for purposes of risk assessment and appropriate transport and disposal of affected soil. An adequate number of soil samples should be collected from the soil layer located immediately beneath the ballasts and extending to the depth of the proposed excavation cut as required by the project design. The samples should be collected at changes in lithology, soil composition, suspected chemical content and from areas that exhibit visible debris and/or discoloration.

Soil samples should also be collected from what appears to be a native clay layer that underlies the Site particularly at or near the proposed depths of the excavation in order to confirm that the subject chemicals of concern are absent or present at reasonable levels that would not be of regulatory agency concern.

Overall, a sufficient number of samples should be collected and analyzed in order to determine with statistical significance, appropriate distribution of the chemicals of concern and associated soil classifications.

Based on preliminary information at the Site, three types of soils may potentially be present requiring appropriate classification and characterization. These soil types are as follows:

1. Soil that exceeds federally regulated RCRA Hazardous waste standards (RCRA Soil)
2. Soils that do not exceed RCRA standards but that are at or exceed California regulated hazardous waste standard (Non-RCRA soil)
3. Non-hazardous contaminated soils (Class II soil)
4. Clean native or imported backfill soil and or ballast (Clean soil)

*Task 3: Monitoring of Fugitive Dust Emissions*

In accordance with applicable regulations, the firm implementing field remedial activities should prepare and implement an air monitoring program at the Site. Appropriate methods should be utilized to prevent the generation of dust during site excavation activities. The remediation firm responsible for remedial activities at the Site shall require that the construction contractor spray the project Site with water during excavation, grading and Site preparation activities; spray unpaved construction areas with water at least twice per day; cover stockpiles of soil; all trucks hauling debris, soil or other such material; and sweep surrounding streets during field activities at least once per day in order to reduce emissions of fugitive heavy metal affected dust particulates.

*Task 4: Disposal Site Interface and Coordination*

As presented in Task 2, representative soil samples should be collected in-situ and analyzed per disposal site requirements. Upon receipt of the appropriate identification numbers from the State Board of Equalization-Environmental Assessment Unit, the Environmental Protection Agency and laboratory analytical results, the soil should be properly profiled to appropriate disposal facilities. Depending on the chemical profile of the respective soil, the affected soil would be disposed off-Site at a Class III, Modified Class-II and a Hazardous Waste Class I secure landfill. Soils that with metal concentrations exceeding ten times their respective STLC values should be extracted via Cal Wet extraction STLC.

*Task 5: Soil Remediation*

Site preparation prior to excavation activities should be conducted. These activities include the removal and off-site disposal/recycling of the gravel layer that currently exists on-site. Activities associated with the excavation and loading of gravel should be conducted in a manner that would prevent inadvertent soil removal along with the ballasts. Additionally, dust suppression measures should be instituted, including wetting the surface of the soil to be excavated as necessary to control airborne dust.

Based on laboratory analytical results, the lateral and vertical extent of the various types of soils should be determined and marked in-situ in preparation for excavation and disposal. Hazardous waste soils should be handled by a licensed contractor permitted by the state of California to handle hazardous waste. The selected contractor must have a Hazardous Substance Remedial Action Certification endorsement to its license. The excavation of heavy metal affected soils at hazardous waste levels should cease only when laboratory analytical results indicate that elevated levels of the subject heavy metals

have been excavated, or upon attainment of proposed soil grades set by construction requirements, depending on the direction provided by BART personnel. The general contractor at the site will be responsible for setting soil grades and locations of soil cuts. Impacted soils affected with non-hazardous waste heavy metal levels should be loaded and transported to an off-site Class II Modified landfill facility.

*Task 6: Soil Transportation and Disposal*

The excavated soils should be loaded onto end-dump trucks for disposal at landfill disposal facilities. Prior to leaving the Site, all trucks should be brushed clean and tarped to isolate the contaminated soil from the environment during transportation.

*Task 7: Laboratory Analyses*

Soil samples should at least be analyzed by a state-certified analytical laboratory for the following:

- TTLC-CCR 17 metals utilizing EPA methods 6010/7000
- TCLP extraction, if necessary, utilizing EPA method 1311, on individual components listed in CFR 40, Subpart B section 261.24, Table 1 (Toxicity Characteristic)
- Reactivity, Corrosivity and Ignitability
- STLC-lead and arsenic, if necessary, utilizing California Assessment Manual extraction procedure
- Selected soil samples may have to be analyzed using EPA methods 3550 and 5030 (8015 Modified) to identify possible petroleum hydrocarbon components
- VOC's, TPHg ?

*Task 8: Report Preparation*

A final report that includes a narrative of all completed field activities and a presentation of laboratory analytical data should be prepared. The report should address Site remedial conclusions and present clear recommendations. Laboratory data sheets, summary tables of the sample results should be included.

*Task 9: Health Risk Assessment and Long Term Site Management Plan*

In the event residual levels of chemicals remain at the Site at the completion of final soil removal and foundation construction activities, a Health Risk Assessment ("HRA") and a Long Term Site Management Plan would be required in accordance with regulatory mandates and stipulations set by RWQCB. The objectives of the HRA would be to evaluate potential human health risks associated with exposure to residual chemicals that are detected in the subsurface soils at the Site during and after the completion of foundation construction activities.

The HRA would evaluate potential risks to future BART patrons at the Site in the completed parking area. Exposure pathways such as inhalation, incidental ingestion and dermal contact with residual chemically affected soils would be evaluated and the resulting risks, if any, would be quantified.

The objective of the Long Term Site Management Plan would be to provide institutional and engineering measures that would mitigate any remaining concerns at the Site, including the implementation of a cap management plan, and a deed restriction for the Site.