LOWNEYASSOCIATES
Environmental/Geotechnical/Engineering Services

Mountain View
Oakland
San Ramon
Fullerton

March 6, 2003
1731-2G

Mr. Amir Gholami
ALAMEDA COUNTY DEPARTMENT OF ENVIRONMENTAL HEALTH
1131 Harbor Bay Parkway
Alameda, California 94502

RE: SITE SUMMARY REPORT
2901 GLASCOCK STREET
OAKLAND, CALIFORNIA

Dear Mr. Gholami:

As requested, we have prepared this Site summary report for 2901 Glascock Street located in Oakland, California.

We refer you to the text of the report for details regarding this study. Thank you for choosing us to assist you. If you have any questions, please call and we will be glad to discuss them with you.

Very truly yours,

LOWNEY ASSOCIATES

Gretchen L. Snoey, P.E.
Project Environmental Engineer

Peter M. Langtry, R.G., C.HG.
Principal Environmental Geologist

RLH:PML:GLS

Copies: Addressee (2)
Signature Properties (2)
Attn: Mr. Patrick Van Ness

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LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

Risk Management Plan
303 and 315 Derby Avenue
2901 and 2909 Glascock Street
Oakland, California

This report has been prepared for:

California Regional Water Quality Control Board
1515 Clay Street, Suite 1400, Oakland California 94612

February 3, 2003
Project No. 1731-2B

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Principal Geologist

Ron L. Helm, R.G., C.E.G.
Senior Principal Geologist

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RISK MANAGEMENT PLAN

303 AND 315 DERBY AVENUE, 2901 AND 2909 GLASCOCK STREET

OAKLAND CALIFORNIA

1.0 INTRODUCTION

1.1 Purpose

The purpose of this risk management plan is to provide guidelines for the management of residual contaminants in soil and ground water detected beneath 303 and 315 Derby Avenue, and 2901 and 2909 Glascock Street in Oakland, California (Site).

1.2 Background

The Site is located at 303 and 315 Derby Avenue (approximately 2¾ acres), 2901 Glascock Street (approximately 2 acres) and 2909 Glascock Street (approximately ¼ acre) in Oakland, California (Figures 1 and 2). The Site is bounded by Glascock Street to the north, Oakland Estuary to the south, Derby Avenue to the east, and a residential development (under construction) to the northwest. The 303 and 315 Derby Avenue parcel and the 2901 Glascock Street parcel are owned by the John and Charlene Weber Trust; 2909 Glascock Street is owned by the University of California Regents.

The 305 and 315 Derby Avenue parcel first was used as a bulk fuel terminal constructed in 1925 by Shell Oil Company; Shell Oil Company operated it as a fuel distribution terminal until 1980. By 1980, approximately 68,000 barrels of petroleum products were stored in several aboveground storage tanks (ASTs) with aboveground piping and three reported underground storage tanks (USTs). Based on information reviewed for the site, UST #1 and #2 were reportedly 9,000 gallons and 12,000 gallons in capacity; the capacity of UST #3 is unknown. The USTs appeared to be used to store various petroleum products, including gasoline and diesel.

Simmons Petroleum purchased the property from Shell in 1980 and continued operation as a fuel distribution terminal until 1985. In August 1985, John & Charlene Weber Trust purchased the Site. ICONCO, a demolition contractor, is the current tenant and has used the Site for storage of heavy equipment and building materials salvaged from their demolition activities. ICONCO removed the USTs in 1985 after the property was purchased by the John and Charlene Weber Trust.

Based on investigations performed on-Site, soil and ground water beneath 303 and 315 Derby Avenue have been impacted by petroleum fuel hydrocarbons from the former bulk fuel distribution facility. A corrective action plan (CAP), discussed in Section 1.3, has been prepared for 303 and 315 Derby Avenue that includes the cleanup of soil and ground water to concentrations acceptable for residential redevelopment of the Site. The CAP was approved by the California Regional Water Quality Control Board (CRWQCB) on December 3, 2002.

Petroleum hydrocarbons have been detected in sediment samples collected from the intertidal zone of the estuary along 303 and 315 Derby Avenue. In addition, some of the sediments exposed during low tide along the northern portion of the shoreline of 303 and 315 Derby Avenue have a petroleum odor. Potential concerns associated with the impacted sediments include nuisance to future residents because of odors and risk to ecologic health. The CAP included mitigating the sediments exposed along the intertidal zone. Additional detail regarding the intertidal zone is presented in Section 2.3.7.

The 2901 Glascock Street parcel is occupied almost entirely by an approximately 72,000-square-foot warehouse. The warehouse is constructed of wood and steel frame with corrugated metal paneling. A private apartment is located inside the southwest corner of the warehouse. On the exterior of the northwest side of the warehouse, an approximately 30-foot wide fenced strip extending from Glascock Street to the estuary is present. Along the estuary on the west side of the warehouse, an abandoned wood-plank dock is present. The 2901 Glascock Street parcel, adjacent to the estuary, is bordered by a concrete foundation/seawall. ICONCO uses 2901 Glascock Street for storage of equipment, minor maintenance of heavy equipment (bulldozers, loaders, etc.) and for office space.

Ground water beneath 2901 Glascock Street has been impacted by petroleum fuel hydrocarbons. In addition, previous investigations identified several locations with elevated [above 500 parts per million (ppm)] concentrations of petroleum hydrocarbons. Corrective actions have included the over-excavation of petroleum impacted soil and ORC injection to stimulate biodegradation of hydrocarbons in ground water. Petroleum hydrocarbon concentrations in ground water generally have been decreasing. During Noveber 2002, concentrations of petroleum hydrocarbons were below ground water cleanup goals with the exception of TPHd in well MW-2 that slightly exceeded the ecological cleanup goal. Monitoring well MW-2 is located approximately 240 feet from the estuary. The Alameda County Department of Environmental Health (ACDEH) has been providing regulatory oversight of 2901 Glascock Street.

During recent investigations on 2901 Glascock Street, two limited areas were identified that will require corrective actions prior to residential redevelopment. The areas include the northwest corner of the warehouse where metal filings were encountered. Elevated concentrations of lead and copper were detected in soil at this location. In addition, an apparently limited area of polychlorinated biphenyls (PCBs) and arsenic was encountered in the exterior unpaved area on the north side of the warehouse. Removal of the impacted soil is discussed in Section 2.4.

The 2909 Glascock parcel is occupied by the University of California Crew boathouse and dock. Based on historical information reviewed, a portion of the California Launch Works building extended onto the northwest portion of 2909 Glascock Street by 1911. California Launch Works appeared to be a boat maintenance or sales company. The current on-Site building (Cal Crew House) was constructed in approximately 1925.

1.3 Summary of October 31, 2002 Corrective Action Plan

The CAP for 303 and 315 Derby Avenue includes remediating ground water within an ecological buffer zone (50 feet from top of estuary bank) to ecological-based (protection of saltwater aquatic life) cleanup goals. Ground water beneath the

remainder of the site will be remediated to cleanup standards based on protection of human health under indoor air, direct contact, and nuisance exposure scenarios. The cleanup goals are summarized in Section 2.1.

The on-Site structures will include organic/water vapor barriers beneath floors to minimize the potential adverse effects on indoor air quality. In addition, soil that exceeds site-specific cleanup goals will be over-excavated to a depth of approximately 7 feet below existing ground surface (bgs) or to the depth of obvious gross contamination, whichever is greater. However, the excavation will not extent into the top of the capillary fringe of the ground water zone. The top of the capillary fringe was generally encountered at depths of approximately 7 to 9 feet.

A layer of oxygen releasing compound (ORC), a mixture of magnesium peroxide, will be placed at the base of the excavation. The excavation then will be backfilled with fine-grained soil.

ORC will be injected into the ground water yielding zone (approximately 10 to 20 feet bgs) across the Site and as a reactive barrier along the shoreline. The ORC releases oxygen into the ground water, increasing the rate of natural biological degradation of organic compounds. Additional ORC injections may be needed to achieve the ground water cleanup goals.

1.4 Planned Development of the Site

The crew team facility at 2909 Glascock Street will be relocated onto an approximately 1-acre portion of the Site adjacent to Derby Avenue (Figure 2). The UC crew is planning to build a new facility. The existing crew team facility includes a "boathouse" used for meetings, a storage shed for boats and equipment, and a dock. The new on-Site facility is likely to have similar activities as the existing facility.

During April to June 2003, all on-Site structures will be demolished. Ground water remedial actions are planned from January to August 2003. Soil remedial actions are planned from July to August 2003. Signature Properties is planning to construct 100-townhomes on-Site beginning September 2003. The current plans include a garage on the first level with a walk-up entrance to second and third floor living areas. A public access promenade is planned along the waterfront that will include a pedestrian path and landscaping. The Site will be cleaned to concentrations that will be protective of human health in a residential setting. The townhomes will be built with vapor/gas barriers beneath building slabs to help reduce the potential for migration of soil vapors into living spaces.

1.5 Key Project Staff

The project organizational structure establishes the specific chain of command and specifies the overall responsibilities of supervisors and employees. The organizational structure shall be reviewed and updated as necessary to reflect the status of site operations. The Key Project Staff currently includes:

- ✓ Lowney Associates is the environmental and geotechnical engineering professional and will provide full-time observation of grading and remediation activities. A 40-hour OSHA trained technician is required. The Single Point of Contact will be Peter M. Langtry, R.G., C.E.G., Principal Geologist, for environmental issues. The Point of Contact for geotechnical issues will be John R. Dye, P.E., G.E, Senior Project Engineer.

- ✓ Signature Properties will be the developer of the site.

- ✓ The CRWQCB (Betty Graham) will oversee site remediation activities.

Company	Contact	Telephone Number
Lowney Associates	Peter M. Langtry, R.G., C.E.G.	510-267-1970, ext. 203
Lowney Associates	John R. Dye, P.E., G.E	925-275-2550, ext. 100
Signature Properties	Patrick VanNess	925-463-1122
CRWQCB	Betty Graham	510-622-2358
ACDEH	Amir K. Gholami	510-567-6700

2.0 RISK MANAGEMENT PLAN

2.1 Potential Contaminants of Concern

Cleanup goals for contaminants of concern (COCs) detected in soil and ground water beneath the Site during previous investigations are listed in Table 1. Table 1 includes arsenic, copper, and polychlorinated biphenyls (PCBs), which were not included in the CAP for 303 and 315 Derby Avenue but which were detected on 2901 Glascock Street. The cleanup goal for arsenic (8 ppm) is from the CRWQCB's RBSL document, which considers arsenic below 8 ppm to be background. The residential RBSLs for copper and PCBs also were used for the cleanup goals in Table 1. The approximate extent of known soil exceeding the cleanup goals, based on results of previous investigations, is shown on Figure 2.

Table 1. Ground Water Residential Occupancy Objectives and Soil and Ground Water Cleanup Goals

Compound	Site-Wide Ground Water Residential Occupancy Objectives (ppb)	Ecological Buffer Zone Ground Water Cleanup Goals (ppb)	Soil Cleanup Goals (ppm)	
TPHg	97,500	3,700	0 to 3 feet	500 ppm total gasoline/diesel/residual fuels
TPHd	Removal of free product*	640	3 to 7 feet	1,000 ppm total gasoline/diesel/residual fuels, with 500 ppm maximum gasoline
			7 feet to top of capillary fringe	5,000 ppm total gasoline/diesel/residual fuels (plus removal of gross free product)
Benzene	5,800	71	0 to 7 feet	2.4 ppm
			7 feet to top of capillary fringe	4.7 ppm
Toluene	530,000	130		8.4
Ethyl-benzene	170,000	290		24
Xylenes	160,000	130		10
MTBE	2.7E+07	1,800		10
Lead	NE	NE		200
Arsenic	NE	NE		8.0
Copper	NE	NE		225
PCBs	NE	NE		0.22

* If TPHd concentrations are above 5,000 ppb TPHd, ground water at the sampling point needs to be evaluated for presence of free product (greater than 1/10-inch thick floating on ground water).

NE No ground water cleanup goal established.

2.2 Applicability of the Risk Management Plan

The CAP includes the removal of soil with COCs above the Site-specific cleanup goals. Because building demolition will occur before the removal action, this RMP presents protocol for addressing contaminated soil and ground water encountered during demolition activities. After the over-excavation of impacted soils above cleanup goals from 303 and 315 Derby Avenue and 2901 Glascock Street, soil with COCs below the cleanup goals will remain on-Site. Because this soil may have minor odors or discoloration, this RMP presents protocol for the following post-cleanup activities that may encounter soil or ground water with residual levels of COCs:

- ✓ Excavation and grading;
- ✓ Subsurface utility installation, maintenance, or repair;
- ✓ Landscaping, and;
- ✓ Building foundation construction.

This RMP does not include asbestos or lead paint abatement of on-Site structures prior to building demolition or demolition activities of above-ground structures (with the exception of building foundations and floors). The asbestos and lead abatement and demolition contractors are required to comply with OSHA requirements for worker health and safety.

2.3 Risk Management During Demolition and Construction

This section presents the risk management procedures to be followed during demolition of the existing facility and construction of the on-Site development, including worker training, construction impact mitigation measures, excavation de-watering, and soil management protocol.

2.3.1 Site-Specific Health and Safety Worker Requirements

A health and safety plan (HSP) for the corrective action and construction activities that may encounter impacted soil or ground water at the Site is presented in Appendix A. Contractors must be responsible for the health and safety of their own workers, including but not limited to preparation of their own injury and illness prevention plan (IIPP). Building demolition workers that may contact impacted soil or ground water will be trained in accordance with 29 CFR Part 1910 Occupational Safety and Health Administration (OSHA), Occupational Safety and Health Standards. Construction and maintenance workers present on-Site after the completion of the corrective actions will not be required to have 29 CFR Part 1910 training; these workers must, however, be familiar with and have access to this RMP.

2.3.2 Destruction of On-Site Monitoring Wells

Prior to beginning demolition, the existing wells will be appropriately destroyed by pressure grouting. Well destruction permit applications will be submitted to the Alameda County Public Works Agency (ACPWA) for their approval.

2.3.3 Demolition and Construction Impact Mitigation Measures

During demolition and construction, measures will be taken to minimize dust generation, storm water runoff, and tracking of soil off-Site. In addition, measures will be taken to help prevent the creation of preferential migration pathways (vertical and horizontal) for contaminants detected on-Site. The construction impact mitigation measures are summarized below.

2.3.3.1 Dust Control

Demolition and construction operations will be conducted so as to minimize the creation and dispersion of dust, including the following measures:

- ✓ Application of water while grading, excavating, and loading, as needed;
- ✓ Limiting vehicle speeds to 5-miles per hour on unpaved portions of the site;
- ✓ Minimizing drop heights while loading/unloading soil;and
- ✓ Covering stockpiles with an impermeable layer, as discussed in Section 2.3.4.3.

2.3.3.2 Equipment Decontamination

Contractors whose vehicles and construction equipment contact impacted soil will be required to clean the equipment prior to leaving the Site. A gravel decontamination pad will be built at the construction exit. Decontamination may include dry methods, such as brushing, scraping, or vacuuming. If the dry methods are not effective, the contractor may use wet methods, such as steam cleaning or pressure washing. The contractor, however, will be required to collect and appropriately manage the wash water. Wash water management methods may include use for dust control in areas of impacted soil and/or off-Site disposal at an appropriate facility.

2.3.3.3 Prevention of Preferential Pathways

The current development plans do not include the construction of deep foundations, such as piers or piles. In addition, the homeowners association's CCRs for the development will not allow the installation of water supply wells on-site. Therefore, no vertical preferential pathways will be created.

To reduce vapor migration upward through soil, all utility trenches must be backfilled with a minimum of 3 feet of fine-grained low-permeability soil approved by the geotechnical engineer in the upper 7 feet of trench backfill.

Contractors installing utilities into the capillary fringe may use sand or gravel bedding for pipes and/or conduits; however, where sand or gravel bedding extends into the capillary fringe, barriers of low permeable material, such as a bentonite grout seal, will be used where the utility exits the site. The low-permeability barriers will be at least 5 feet in length.

2.3.3.4 Storm Water Pollution Controls

The Urban Runoff Pollution Prevention Program, also called the Non-Point Source Program, was developed in accordance with the requirements of the 1986 San Francisco Bay Basin Water Quality Control Plan to reduce water pollution associated with urban storm water runoff. This program was also designed to fulfill the requirements of the Federal Clean Water Act, which mandated that the EPA develop National Pollution Discharge Elimination system (NPDES) Permit application requirements for various storm water discharges, including those from municipal storm drain systems and construction site.

For properties of 5 acres or greater, a Notice of Intent (NOI) and Storm Water Pollution Prevention Plan (SWPPP) must be prepared prior to commencement of construction. Since the Site is approximately 5 acres, Signature's civil engineer will prepare a Storm Water Pollution Prevention Plan (SWPPP) for the grading and construction activities (post removal action) on the site. Storm water management controls will be implemented to reduce the potential for impacted soils to impact storm water runoff. These storm water controls will be based on best management practices (BMCs), such as those described in the *Erosion and Sediment Control Field Manual* (CRWQCB , 1998) and the *Manual of Standards for Erosion and Sediment Control Measures, Second Edition* (ABAG, 1995). The BMPs implemented may include, but are not limited to, the following:

- ✓ Construction of berms or silt fences at the perimeter of the site, as appropriate;
- ✓ Placing of straw bale barriers around entrances to storm drains and catch basins;
- ✓ Covering stockpiles of contaminated soil with visqueen during rain events;
- ✓ Placement of gravel at project entrances/exits where soil can be removed from vehicles prior to leaving the site.

2.3.3.5 Excavation De-Watering

If excavation de-watering is required, a sample of the ponded water will be collected for laboratory analyses, as discussed in Section 2.3.3.6. Depending on the analytical results, the ponded water may be:

- ✓ Used for dust control on-Site;
- ✓ Discharged to storm drain;
- ✓ Discharged to sanitary sewer; or
- ✓ Disposed at an appropriate off-site facility.

If used for dust control on soil stockpiles planned to be disposed off-Site, prior approval will be obtained from the disposal facility. If used for dust control for earthwork activities, prior approval would be obtained from the CRWQCB staff. Discharge into the storm sewer or sanitary sewer would be performed under an approved permit from the CRWQCB or East Bay Municipal Utility District, respectively. If water is to be discharged into the sanitary sewer system, approval will also be requested from the City of Oakland Public Works Department. If required, water will be treated prior to discharge.

2.3.4 Soil Management Protocols

As discussed in Section 1.2 and shown on Figure 2, several areas with COCs above cleanup goals have been identified during previous investigations. Based on the historical industrial use of the site, additional pockets of impacted soil may be encountered after the buildings are demolished. If pockets of impacted fill are encountered during Site development, additional sampling or analyses and/or soil removal may be required.

2.3.4.1 Management of Soil During Demolition

During demolition of building floors, foundations, and underground structures, impacted soil with COCs above the cleanup goals will be encountered in the areas shown on Figure 2. Soil over-excavated from these areas during demolition, if any, will be stockpiled inside the identified cleanup zones on top of and covered by a low-permeability liner (Section 2.3.4.3). The stockpiled soil will be evaluated and removed during the cleanup activities for appropriate off-Site disposal.

If suspect soil (soil with free product, significant staining, or petroleum odor) is encountered outside the cleanup zones shown on Figure 2, the demolition contractor must notify the project environmental consultant. The suspect soil will be evaluated, as discussed in Section 2.3.4.4. If the soil is found to contain COCs above the cleanup goals, the CRWQCB and ACDEH staff will be notified. The impacted soil will be over-excavated during the cleanup of the identified areas shown on Figure 2.

2.3.4.2 Management of Soil During Construction

After the cleanup action is complete, identified soil above COCs will have been excavated and removed from the Site. Soil with contaminants below the COCs will remain in-place. Soil with low levels (below COCs) of petroleum hydrocarbons may have noticeable minor petroleum odors or discoloration. If soil with minor discoloration or odors is over-excavated during construction, the excavated soil will be stockpiled and evaluated as discussed in Section 2.3.4.3. No sampling of the excavation sidewalls or base will be performed.

If the soil encountered on-Site during construction appears significantly impacted (free product, strong odors, or strong discoloration), the sidewalls and base of the excavation will be sampled and analyzed, as discussed in Sections 2.3.4.4, to evaluate whether soil above COCs is present that requires removal. Air monitoring will be performed, as discussed in Section 2.3.4.6. In addition, the excavated soil will be stockpiled and evaluated as discussed in Sections 2.3.4.3 and 2.3.4.4. If laboratory analyses of the verification samples detect COCs below cleanup goals, further work will not be performed. If COCs are detected above cleanup goals, the CRWQCB and ACDEH staff will be notified to evaluate whether further work is required.

2.3.4.3 Management of Excavated Soils

Suspect soil over-excavated during demolition and construction activities will be segregated from the "clean" soil and either loaded directly onto trucks for off-Site disposal or stockpiled on-Site on top of and covered by an impermeable liner (6 mil) to reduce infiltration by rainwater and contamination of the underlying soil. In accordance with Bay Area Air Quality Management District (BAAQMD) requirements, inactive stockpiles will be covered by plastic sheeting. Stockpiles also will be covered with plastic sheeting each night. A maximum 6,000 square feet of an actively used stockpile can be uncovered. Hay bales will be placed around the stockpile to reduce runoff. While remaining on-Site, the stockpiles will be checked daily to verify that they are adequately covered. The above protocol will be incorporated into the Site's Storm Water Pollution Prevention Program.

To evaluate disposal and re-use alternatives of the excavated soil, soil samples will be collected and analyzed in accordance with the November 2002 CRWQCB draft guidance document. Some of the soil may be evaluated prior to excavation by collecting additional soil samples from exploratory borings. Results of the stockpile sampling or pre-excavation sampling will be submitted to the CRWQCB for approval prior to re-use of the soil.

2.3.4.4 Evaluation of In-Place Soil and Ponded Water in Suspect Areas

To evaluate the quality of suspect soil encountered during demolition (outside the cleanup areas shown on Figure 2) and construction activities, soil samples will be

collected from the base and sidewalls of the excavation area. Verification samples will be collected for every approximately 20 feet of excavation sidewall at the depth of the suspected soil. In addition, one verification soil sample will be collected for every approximately 1,000 square feet of excavation base where the suspect soil is observed. Soil samples will be collected in brass liners. If water ponds in the excavation, grab samples of the ponded water will be collected instead of the base soil samples. The soil and ponded water samples will be analyzed as discussed in Section 2.3.4.5.

2.3.4.5 Laboratory Analyses

Verification soil samples and ponded water samples collected from a suspect area will be analyzed for total petroleum hydrocarbons in the gasoline range (TPHg); benzene, toluene, ethylbenzene, and xylenes (BTEX) plus MTBE (EPA Test Method 8015M/8020); total petroleum hydrocarbons in the diesel range (TPHd) and motor oil range (TPHmo) (EPA Test Method 8015M). For samples located on the 2901 Glascock Street parcel, the soil samples will be additionally analyzed for arsenic, copper, and lead (EPA Test Method 6010), and PCBs (EPA Test Method 8082). This set of analyses will be used to evaluate which COCs are present in the suspect soil; subsequent samples, if needed, would be analyzed only for those compounds detected.

Stockpile soil samples will be analyzed for TPHg; BTEX, plus MTBE (EPA Test Method 8015M/8020); TPHd and TPHmo (EPA Test Method 8015M). Stockpiles from the 2901 Glascock Street parcel will be additionally analyzed for arsenic, copper, and lead (EPA Test Method 6010), and PCBs (EPA Test Method 8082). Additional analyses may be performed if requested by disposal facilities.

2.3.4.6 Air Monitoring

Air monitoring will be performed during the excavation of impacted soil (as needed) under the direction of the project certified industrial hygienist (CIH), as presented in the Health and Safety Plan (HSP) in Appendix A. The monitoring generally will consist of periodic air monitoring in the worker breathing zone using an organic vapor meter (OVM). A Lower Explosive Limit (LEL) meter will also be used in trenches and excavations. If organic vapors exceed 50 ppmv or if an LEL of 10 percent or greater is measured, the work in the trench and within 20 feet of the trench/excavation will be stopped until levels dissipate to within acceptable limits. The project CIH may also upgrade the personal protective equipment (PPE) and/or perform personal air monitoring, as discussed in the HSP.

2.3.5 Management of Buried Structures

If an abandoned pipe (other than common utility lines) and/or tank is encountered during construction, the ACHCS and RWQCB will be notified. Any abandoned tank and associated piping encountered during construction will be removed in accordance with ACHCS and RWQCB guidelines. Abandoned pipes that do not appear to be associated with a tank will be managed as outlined below:

If the pipe contains liquid or sludge, the following steps will be taken:

- ✓ The liquid or sludge will be removed from the pipe, if feasible, and placed in appropriate containers.

- ✓ The liquid or sludge will be tested to evaluate appropriate disposal options.
- ✓ The pipe and liquid or sludge will be removed from the site for appropriate disposal/recycling.

If the entire pipe is not removed during construction (if approved by the geotechnical engineer), the ends of the pipe that are to remain in-place will be capped.

During previous investigations, cylinders of compressed poison gas were encountered beneath the floor. The HSP in Appendix A provides guidelines for worker safety in case suspect gas cylinders are encountered. In general, if suspect gas cylinders are encountered, workers must:

- ✓ Stop all work and notify personnel listed in Section 1.5
- ✓ If gas is suspected to be leaking, evacuate the site and call 911 in addition to calling the site contacts.
- ✓ The environmental consultant and toxicologist will evaluate appropriate handling and disposal options for the cylinders.

2.3.6 Management of Shoreline Sediments

Construction activities along the shoreline includes the installation of riprap slope protection along the majority of the shoreline of 303 and 315 Derby Avenue, including the area where hydrocarbons have been detected in sediment samples and odors have been observed. The approximate location of the suspect shoreline sediments is shown on Figure 2.

To construct the riprap shore protection, soil between the top of slope and the mean low water will be over-excavated to a depth of approximately 4 feet (measured perpendicular to the existing slope). A geotextile fabric will be placed on the excavation surface to help prevent the movement of fine-grained soil particles into the riprap material. In areas where suspect soil or sediment is observed, the geotextile fabric will be supplemented or replaced by a polyethylene liner to help reduce nuisance odors from the soil.

Impacted soil and sediments encountered along the Oakland Estuary shore during construction activities will be segregated and stockpiled as discussed in Section 2.3.4.3. As discussed with CRWQCB staff, verification sediment samples will not be collected from the shoreline after the removal of the sediment; although, samples of the excavated sediment will be collected and analyzed to evaluate disposal and reuse alternatives. To evaluate the quality of the excavated/stockpiled material, the stockpiles will be evaluated as discussed in Section 2.3.4.5.

To capture any petroleum sheen mobilized as a result of the sediment excavation, a petroleum absorbent boom will be placed in the estuary along the shore during construction of the riprap shore protection. A sediment wall also will be used to reduce the amount of sediment mobilized during the construction.

2.4 Post-Construction Risk Management

Post-construction risk management includes precautions that will be taken to reduce long-term risks to human health and the environment from residual petroleum hydrocarbons in soil and ground water after the construction of the on-Site residential and retail development.

2.4.1 Long-Term Risk to Human Health

The Site will be remediated to concentrations that are acceptable for residential redevelopment. Therefore, the concentrations of residual COC concentrations will not be a significant threat to the health of future residents of development.

2.4.2 Protocol for Future Subsurface Activities

Individuals who contact impacted on-Site soil and/or ground water during future activities that require excavation will be required to follow the risk management procedures outlined in this document. Future activities may include, but are not limited to, modification or repair to utilities, construction of building foundations, and changes to paved areas. Because of the 3-foot cap of clean soil placed in communal outdoor landscaped areas, landscape workers are not expected to contact impacted soil during routine landscaping activities. If modifications to landscaping areas are performed that require excavation greater than 3 feet, however, landscaping contractors will be required to comply with the management protocol in this document.

2.4.3 Long-Term Compliance with Risk Management Plan

For long-term compliance with the risk management plan, the following measures will be implemented

- ✓ The risk management plan will be submitted to the RWQCB and the ACHCS for their files.
- ✓ The risk management plan will be referenced in the Covenants, Conditions, and Restrictions (CCRs) for the development. Sellers of the townhouses will be required to disclose the risk management plan to buyers.
- ✓ The homeowners' association or their management firm will be required to inform workers and contractors who may contact Site soils about the risk management plan.
- ✓ The land-use of the Site will not be significantly changed without notifying the RWQCB and the ACHCS.
- ✓ Restrictions on Site use, in the form of a deed restriction, will be implemented to prevent the use of on-site ground water for domestic, industrial, or irrigation purposes. The deed restriction will also prevent the construction of detached single-family residences with backyards on the Site. In addition, the deed restriction will require that any future excavation will be backfilled with a minimum of 3 feet of low-permeability fine-grained soil in the upper 7 feet.

- ✓ Signature Properties or its assigns will be responsible for compliance with this RMP until Site closure is obtained. After Site closure is obtained from regulatory agencies, the homeowners association will be responsible for long-term compliance with this RMP.

3.0 LIMITATIONS

This risk management plan was prepared for the use of Signature Properties, the CRWQCB and ACDEH, ICONCO, and the homeowners association of the future development. We make no warranty, expressed or implied, except that our services have been performed in accordance with environmental principles generally accepted at this time and location. We are not responsible for the accuracy of information provided by others.

4.0 REFERENCES

Lowney Associates, October 31, 2002. Corrective Action Plan 303 and 315 Derby Avenue and 2909 Glascock Street, *Oakland California.*

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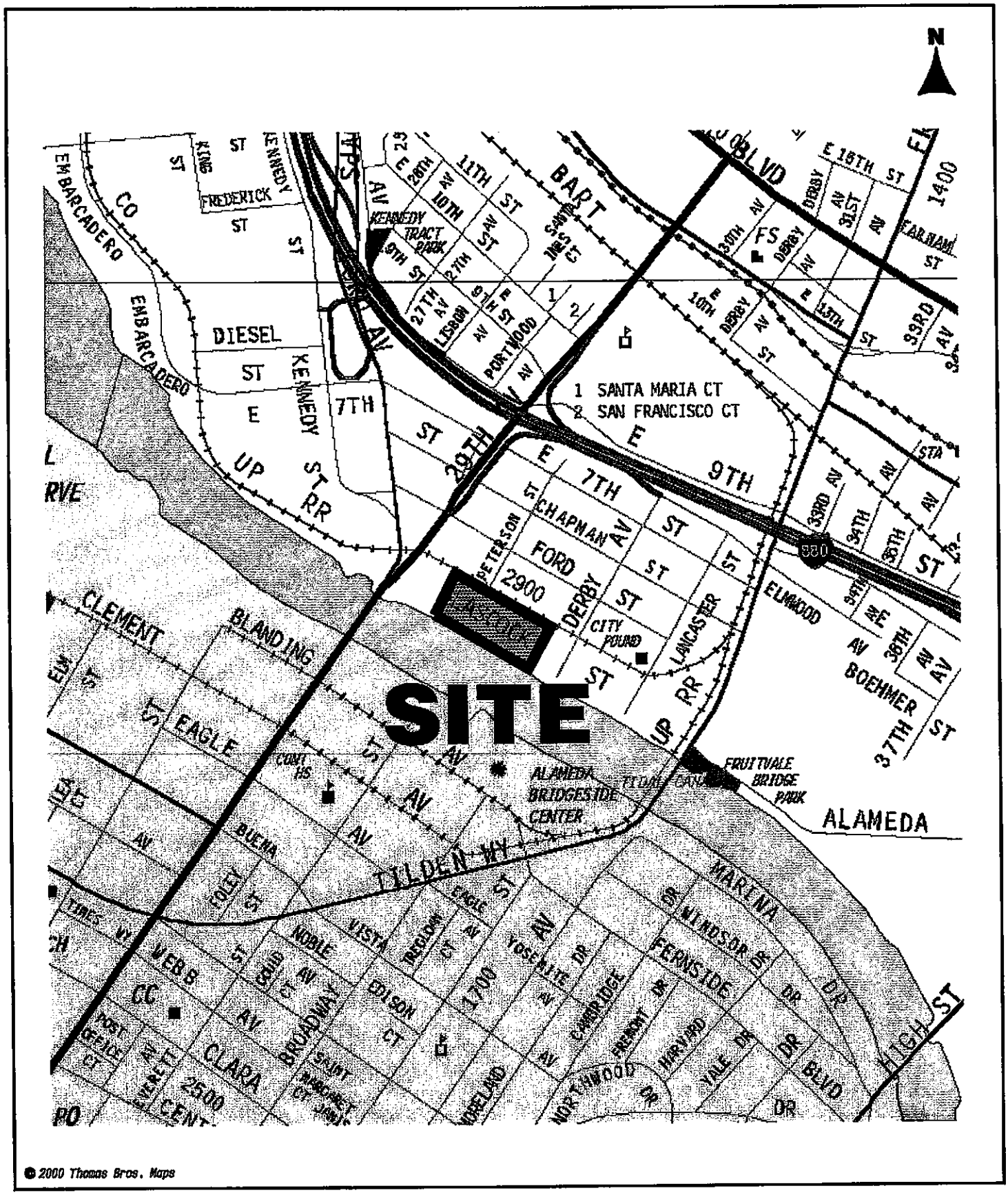
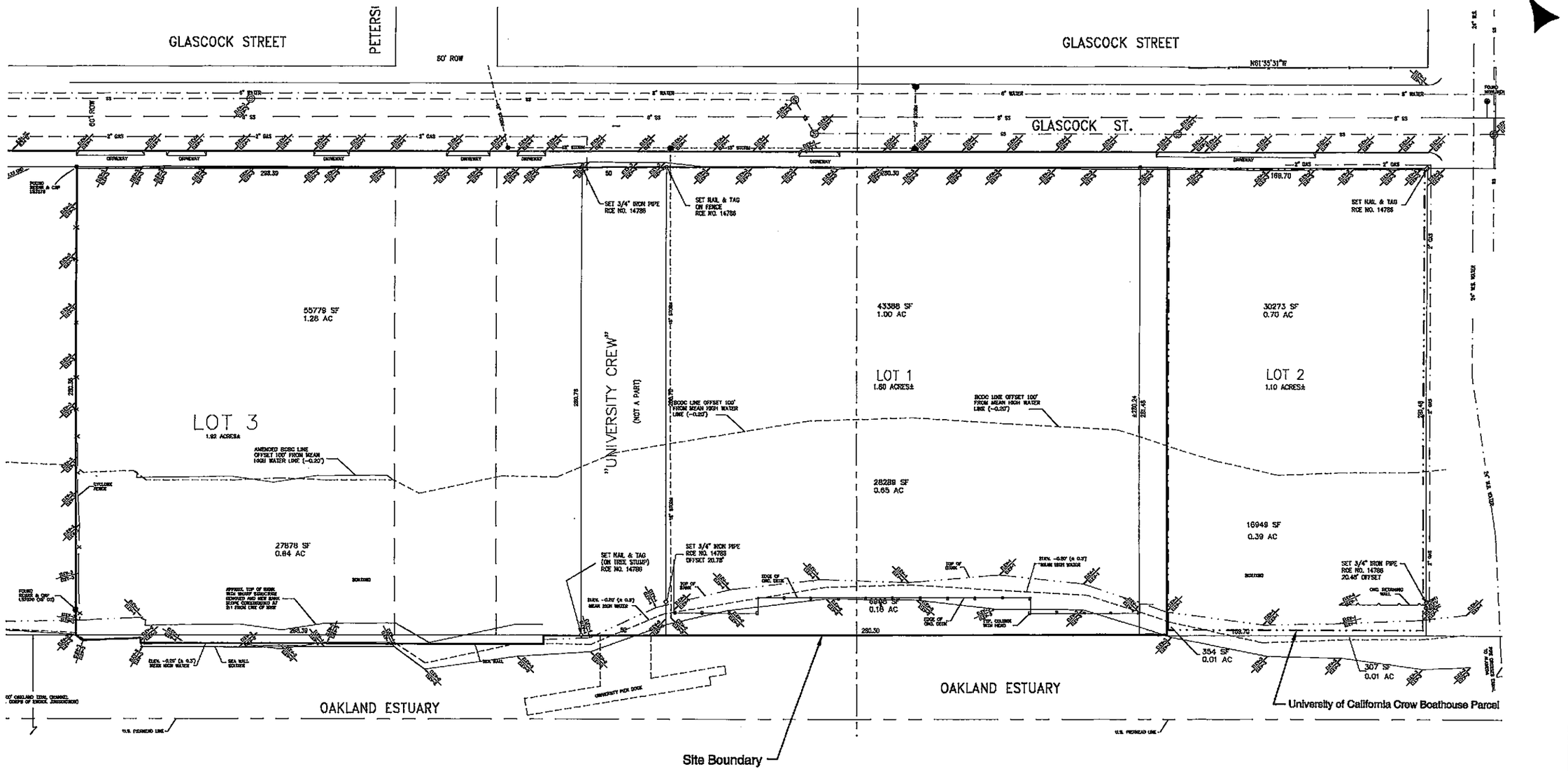


VICINITY MAP

303/315 DERBY AVENUE, 2901 AND 2909 GLASCOCK STREET
Oakland, California

LOVNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE 1
1731-2B



Base by KCA Engineers.

SITE PLAN

303/315 DERBY, 2901 AND 2909 GLASCOCK STREET
Oakland, California

LOVNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE 2

1731-2B

1/03*EB

APPENDIX A

SITE-SPECIFIC HEALTH AND SAFETY PLAN

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

Health and Safety Plan -
Soil Excavation and Off-Haul

2901 Glascock Street, and 303/315 Derby Avenue
Oakland, California

This report has been prepared for:

Signature Properties
4670 Willow Road, Suite 200, Pleasanton, California 94588

January 28, 2003
Project No. 1731-2B

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HEALTH AND SAFETY PLAN - SOIL EXCAVATION AND OFF HAUL 2901 GLASCOCK STREET, AND 303/315 DERBY AVENUE OAKLAND, CALIFORNIA

1.0 INTRODUCTION

Lowney Associates has developed this Health and Safety Plan (HSP) to inform personnel of the potential hazards associated with implementing on-Site soil remedial activities at 2901 Glascock and 303 and 315 Derby Avenue, in Oakland, California (Site) (Figure 1). The Site is approximately 5.3 acres in size and is slated for residential re-development. Proposed demolition activities to be completed by ICONCO, Inc. before soil remediation will include demolition and removal of on-Site structures, and demolition/removal of subsurface structures. ICONCO will provide a separate HSP that covers demolition of and removal of subsurface structures within the contaminated areas of the Site.

The soil remediation program, to be completed by Pacific States Environmental Contractors, Inc., will include the excavation and off-haul of impacted on-Site soils to an approximate depth of 7 feet below ground surface (bgs). This HSP will address the potentials hazards posed by chemicals in Site soil during excavation of soil above cleanup goals.

It should be recognized that this Site is unique and conditions can occur that may affect the health and safety of on-Site workers. All proposed remedial contractors, construction contractors, and maintenance contractors are required to have developed comprehensive Injury and Illness Prevention Programs (IIPP), which are to be incorporated into this HSP by reference. Detailed procedures contained in the individual IIPPs must be made available by contractors to the RWQCB, if requested.

If additional subsurface risks (buried tanks, drums, unusual odors, unexpected signs/symptoms of exposure, etc.) are encountered and/or suspected, the Site Safety Officer (SSO) will be notified immediately and work must be stopped until appropriate actions can be taken. The Risk Management Plan (RMP) presents guidelines for addressing additional subsurface risks encountered, if any.

1.1 Project Background

Previous investigations have identified moderate to high concentrations of gasoline, diesel, and motor oil range hydrocarbons in soil beneath the Site. In addition, localized areas of soil at the Site contain low concentrations of PCBs and metallic elements. In shallow soil, gasoline range hydrocarbons (TPHg) have been detected to 590,000 mg/kg, and in subsurface soil to 670,000 mg/kg. Diesel range hydrocarbons (TPHd) have been detected to 5,200 mg/kg in shallow soil, and to 820 mg/kg in subsurface soils. Motor oil range hydrocarbons (TPHmo) have been detected at a maximum concentration of 2,100 mg/kg in shallow Site soil. Benzene, toluene, ethyl benzene, and xylenes (BTEX) have also been routinely detected at the Site. In shallow soil, benzene was detected at a maximum of 36 mg/kg, toluene at 13 mg/kg, ethyl benzene at 47 mg/kg, and xylenes were detected at a maximum of 170 mg/kg. In addition, at one

location on-Site PCBs were detected at a maximum concentration of 2 mg/kg in shallow soil.

With respect to metallic compounds, arsenic, chromium, cadmium, copper, and lead were detected at maximum concentrations of 100 mg/kg, 400 mg/kg, 11 mg/kg, 5600 mg/kg, and 5300 mg/kg respectively. The elevated arsenic was detected at one apparently localized location. The remaining metals were detected in one apparently localized location where metal shavings were encountered beneath the floor fo the warehouse.

1.2 Site Tasks and Operations

Tasks and operations for this project are primarily associated with the excavation and haul off of soil exceeding residential cleanup goals. Approximatley 18,000 cubic yards of soil will be excavated from the Site. Of the total amount excavated, approximately 5,000 cubic yards may be reused on Site. The operation will involve an average crew size of five to seven employees including excavator operator, scraper operators, water truck operator, grade checker, and other ground support personnel. Equipment anticipated to be used for this project includes: excavator, paddle wheel scrapers, end dump trucks, water truck, compaction equipment, and miscellaneous hand tools.

Site excavation is expected to last approximately three weeks, and highly impacted soil excavation is expected to last approximately five to seven days. An initial excavation will be completed to an approximate depth of 4 feet below ground surface (bgs), with the excavated soils to be stock piled and covered for further testing. The second phase of the excavation (highly impacted soils) will be completed to a depth of approximately seven feet bgs and will be directly loaded into dump trucks for disposal off-Site.

Most of the work is to be completed during the day light hours. However, if work is conducted during evening hours, illumination will be provided in accordance with 8 CCR 5192 (c) (4) (A and C).

2.0 PROJECT SAFETY AUTHORITY

2.1 Site Safety Officer

The Site Safety Officer (SSO) responsible for the on-Site health and safety activities for both ICONCO and Pacific States will be appointed prior to on-Site activities. The SSO is an individual who is responsible to the employer and has the authority, training, experience, and knowledge necessary to implement the Site HSP and verify compliance with applicable safety and health requirements. Pacific States will be solely responsible for the health and safety of their employees as well as for compliance with all applicable federal, state, and local laws and guidelines. This HSP also will be provided to any subcontractors providing services, however, the subcontractor will be responsible for the health and safety of their employees.

The SSO must verify that all on-Site personnel are qualified, trained, and prepared to implement the HSP and safely perform the planned Site work. Field personnel should be required to indicate in writing that they have read and understand the provisions of the HSP.

Safe work practices will be emphasized during safety meetings to be conducted by the SSO and implemented throughout the project. The SSO also is responsible for documenting that all personal protective equipment (PPE) and other safety equipment specified in this HSP are available at the Site and in working order.

2.2 Project Industrial Hygienist

Mr. Daniel W. Hernandez, CIH (408-292-3266) will act as the Project Industrial Hygienist (IH) for the project. The IH is responsible for the preparation of this HSP and for evaluating health hazards associated with work envisioned for this project. The CIH will periodically monitor the job site on an on call basis to ensure compliance with this HSP, provide technical support for upgrading/downgrading personal protective equipment, and coordinate modifications to the HSP with the PM and SSO.

2.3 Project Managers

Signature Properties will identify a project manager (PM) for directing the contractor's activities. Lowney Associates will provide contractor guidance and perform verification sampling. Lowney Associates' PM is Peter Langtry (510-267-1967).

Project managers for contractors will be identified prior to the undertaking of Site work. The PMs will have full responsibility for their on-Site operations. The contractor's PM will work with the IH and the SSO to ensure that work is being performed safely and in compliance with this HSP.

2.4 Enforcement of the HSP

Enforcement of the policies and practices of the HSP will be the responsibility of the SSO and PMs. The SSO has the authority to suspend work in the area of the Site where the provisions of the HSP are not being met. The SSO also shall inform the PMs in writing about individuals whose conduct is not consistent with the requirements of this HSP.

2.5 Evaluation of Effectiveness

The SSO shall evaluate the effectiveness of the HSP. As applicable, deficiencies and associated corrective actions must be documented and a written summary evaluation prepared and maintained on-Site. The CIH will audit the effectiveness of any on-Site monitoring systems as necessary.

3.0 HAZARD ASSESSMENT AND CONTROL MEASURES

This HSP provide standard operating methods for personnel involved in activities that may expose them to chemical and/or physical hazards within the project areas. Field personnel are required to control chemical and physical exposures primarily through the use of safe work practices and engineering controls (see Sections 3.0, 4.0, 5.0, 6.0, 7.0). Working conditions will be regularly monitored and assessed by the SSO using visual observations and other techniques as required.

3.1 Chemical Hazards

Health hazard information for chemicals of concern (COCs) is provided in the table below.

Table 1. Hazard Information for Soil Bound Chemicals of Concern

COC	Maximum Concentrations Detected in Soil (mg/kg)[1]	TLV or PEL[2] (in Air)	IDLH[3] (in Air)	Routes of Entry[4]	Acute Exposure Symptoms[4] & Chronic Effects
Benzene Toluene Ethyl benzene Xylenes	36 13 47 170	0.5 ppm 50 ppm 100 ppm 100ppm	3,000ppm 2,000 ppm 2,000ppm 1,000ppm	Inhalation, dermal contact, ingestion	Irritation eyes, nose, and throat (respiratory symptoms); CNS effects including narcosis, giddiness, and headache; skin effects including irritation and dermatitis. Chronic exposure may result in adverse effects of the kidneys, liver and nervous system. Benzene is a suspected carcinogen.
Petroleum Hydro-Carbons TPHg: TPHd TPHo	 670,000 5,200 2,100	 300 ppm NE 5 mg/m3	 NE NE NE	Inhalation, dermal contact, ingestion	Irritation eyes, nose, and throat (respiratory symptoms). Light fractions can cause narcosis, skin irritation, and increased skin sensitivity to sunlight. Some components may be carcinogenic.
Cadmium	11	0.01 mg/m3 8-hour TWA	50 mg/m3	Inhalation, dermal contact, ingestion	Nasal and respiratory irritation, dermatitis. Carcinogenic through the inhalation route.

(continued)

Table 1. Hazard Information for Soil Bound Chemicals of Concern

COC	Maximum Concentrations Detected in Soil (mg/kg)[1]	TLV or PEL[2] (in Air)	IDLH[3] (In Air)	Routes of Entry[4]	Acute Exposure Symptoms[4] & Chronic Effects
Lead	540	0.05 mg/m3 8-hour TWA 0.03 mg/m3 Action Level	100 mg/m3	Inhalation, ingestion	Irritation of mucous membranes, weakness, weight loss, abdominal pain, anemia, colic. Reproductive and nervous system effects.
Arsenic	100	0.01 mg/m3	100 mg/m3	Inhalation, dermal contact, ingestion	Nasal and respiratory irritation, dermatitis, gastro-intestinal disturbances, hyper pigmentation of the skin. Carcinogenic.
Chromium	400	0.5	NE	Inhalation, dermal contact, ingestion	Skin irritation, irritation of respiratory tract
Copper	5600	1 mg/m3	NE	Inhalation, dermal contact, ingestion	Irritation, gastrointestinal irritation
PCBs	2	0.5 mg/m3	5 mg/m3	Inhalation, dermal contact, ingestion	Chloracne, irritation, central nervous system effects, liver damage, carcinogenic.

NE Not established
(1) mg/kg = milligrams of contaminant per kilogram of soil.
(2) PEL = Permissible Exposure Limit given in Title 8, CCR, Section 5155, or Threshold Limit Value from ACGIH. mg/m3 = milligrams per cubic meter, ppm = parts per million by volume.
(3) IDLH = Immediately Dangerous to Life and Health.
(4) Routes of entry and acute exposure to symptoms given in NIOSH Pocket Guide to Chemical Hazards (U.S. Department of Health and Human Services, June 1990), and Chemical Hazards of the Workplace (Procter and Hughes). Note: Because an individual may not be exhibiting the acute health effects of lead, they still may be exposed to hazardous levels.

The PELs/TLVs listed in Table 1 are identified as the time-weighted average (TWA_8) concentrations for a normal 8-hour workday and a 40-hour workweek, to which nearly all workers repeatedly may be exposed without adverse health effects (Title 8, CCR, Section 5155), unless otherwise noted. The IDLH values represent a maximum level from which a person could escape within 30 minutes, without suffering escape-impairing symptoms or irreversible health effects (NIOSH Pocket Guide to Chemical Hazards). The concentrations of the COCs reported in the impacted soil are based on a weight-to-weight volume ratio. The airborne criteria listed above (PELs and IDLH) are reported as volume-to-volume

or weight-to-volume ratio in air, and therefore are not directly comparable to the soil concentrations.

3.1.1 Exposure Pathways and Hazard Assessment

The potential exposure pathways for the COCs in the soil include incidental ingestion, direct skin contact (dermal contact), and inhalation of particulate components and vapor components.

3.1.1.1 Inhalation

The primary Site activities, which will result in the emissions of chemical vapors and dusts, include excavation and dumping. Site soils will be excavated, stockpiled and/or directly loaded (dumped) into end dump trucks.

Volatile Compounds in Soil

To provide a screening level evaluation of the inhalation pathway, equilibrium vapor concentrations of the volatile compounds in the pore spaces of the soil are calculated then compared those concentrations to permissible exposure guidelines. If the soil vapor concentrations are lower than exposure guidelines, than it can be concluded with certainty that the potential inhalation hazard is minimal.

The relationship below describes the calculation of soil vapor concentrations from chemical concentrations in the soil matrix. The calculations assume linear equilibrium partitioning within the soil matrix between sorbed, dissolved, and vapor phases, where partitioning is a function of constant chemical and soil specific parameters. For chemical concentrations below the sorptive capacities of the soil:

$$Cv = \frac{(H \times \rho_b \times C_s)}{[\theta_w + (n - \theta_w) \times H + \rho_b \times f_{oc} \times K_{0c}]}$$

Where: C_v = vapor concentration in micrograms per liter ug/L
H = Henry's dimensionless constant (chemical specific)
C_s = soil concentration in ug/kg
Y_w = soil moisture content - dimensionless ($cm^3/cm3$) assumes 0.33
η = soil porosity -dimensionless (cm3/cm3) assumes 0.43
ρ_b = soil bulk density (g/cm3) assumes 1.5
f_{oc} = soil organic carbon content dimensionless assumes 0.01
K_{oc} = chemical specific organic carbon partition coefficient (cm3/g)

Soil vapor calculations for the primary volatile compounds are summarized in the table below.

Table 2. Vapor Calculation Results

VOC Compound	Maximum Soil Concentration Detected before Cleanup (mg/kg)	Calculated Soil Saturation Concentration (mg/kg)	Pore Space Soil Vapor Concentration (mg/m3)	TLV (mg/m3)
Benzene	36	1443	9,920	1.5
Toluene	13	1083	1,700	188
Ethyl Benzene	47	654	3,900	434
Xylenes	170	694	12,000	434
TPHg	670,000	292 to 919[a]	16,900 to 591,000[b]	1,300[c]

a Surrogates C5-C8 aliphatics to C9-C10 aromatics.
b Estimated from soil saturation concentrations.
c Assumes average molecular weight of 104 g/mole.

The results of the calculation indicate that there is a high potential for inhalation exposure to petroleum hydrocarbon vapor at worst-case soil concentrations.

Further assuming a wind speed of 3 meters per second, benzene at the maximum soil concentration, an excavator bucket size of 3 cubic yards, 100 percent transfer of pore space vapor during a bucket dump, and 10 percent air filled porosity of the spoil, the approximate short term duration air concentration of benzene at a nearby location down wind of the bucket dump is estimated at 76 mg/m3.

Screening level calculations indicate a high potential for the inhalation exposure pathway. In addition, since gasoline range hydrocarbons at some locations exceed the sorptive capacity of Site soils, vapor concentrations are likely to be high. During Site excavation activities in areas of high hydrocarbon impact, air monitoring for hydrocarbon vapors and benzene will be necessary. In addition respiratory protection is required. Fence line monitoring at down wind locations is also recommended.

Particulate Compounds in Soil

Particulate inhalation for metallic compounds is not likely to be significant since areas of impact are localized, and due to relatively low concentrations of metallic compounds detected. Assuming a total dust concentration of 5 mg/m3, proportional air concentrations of metallic elements will not be significant.

3.1.1.2 Oral and Dermal Exposure

The potential carcinogenic and non-carcinogenic risks for oral and dermal exposure were evaluated using U.S. EPA and Cal/EPA exposure assessment methods. For oral exposure, this evaluation assumes 50 mg/day of soil ingested; for dermal exposure, the absorbed dose of chemical though skin contact is calculated by incorporating chemical-specific absorption factors, surface area of skin exposed, soil adherence factors, and chemical concentrations. The absorbed dose is then multiplied by the carcinogenic potency factor for carcinogenic compounds or divided by a reference dose to provide numerical estimates of risk.

Dermal absorption values for the chemicals of concern are from Cal EPA Preliminary Endangerment Assessment (PEA) Guidance. For construction worker exposure, this assessment assumes an exposed skin surface area of 5,700 cm^2 for an adult, a soil-to-skin adherence factor (AF) of 0.51 mg soil/cm^2 of skin (referring to the amount of soil that remains deposited on the skin after contact) and an exposure frequency and duration assumed to be 66 working days per year for a 7-year duration. Risk estimate calculations indicated that carcinogenic risks (due to benzene) are in the acceptable range i.e., less than 1×10^{-5}; however, the combined hazard index is greater than unity for non-carcinogenic effects. The results of the calculation indicate that skin contact is a significant concern for chemicals detected in project soils. Following safe work practices and protective clothing will mitigate the dermal absorption and ingestion pathways.

3.1.1.3 Hazard Analysis Summary

The results of the hazard analysis indicate that risks for chemical exposure are high. Proper hygienic procedures, personal protective equipment, and dust control will ensure that exposure to on-Site soil will be minimized.

3.1.1.4 Unexpected Chemical Hazards

Preliminary environmental assessments to assess the past uses of the have been previously completed and the project area has been chemically characterized. In addition, subsurface structure demolition and removal will be accomplished prior to soil excavation. Although indicated by previous environmental assessments of the property, in the remote possibility that unsuspected contamination or other subsurface features are present, on-Site personnel will be informed to be aware of and promptly report any of the following conditions:

- ✓ Unusual soil staining/discolorations,
- ✓ Unusual chemical odors or smells,
- ✓ Signs and symptoms of exposure including headache, dizziness, nausea, burning eyes, nose, and upper respiratory tract irritation,
- ✓ The uncovering of debris, unexpected fill, or potential chemical containers such as paint cans, drums, cartons, tanks, unusual piping, etc.,
- ✓ The appearance of smoke and or visible fumes.

If any of the above conditions are encountered, employees are required to stop work, move to a safe upwind location and contact the SSO and PM. The SSO and/or PM will provide initial evaluation of the condition and initiate emergency response procedures if necessary.

3.2 Physical Hazards and Biological Hazards

Physical hazards associated with excavation activities, include fire/explosion, noise, heat-related disorders, slips, trips, falls, falling objects, flying debris, electrical shock, buried utilities, overhead power lines, and traffic. Proper lock

out /tag out procedures in compliance with all applicable federal, state, and local regulations will be observed for field maintenance and repair activities on all machinery utilized on the Site.

3.2.1 Fire and Explosion

During Site activities, potential fire and explosion hazards can be present when hydrocarbon concentrations exceed the lower explosive limit (LEL) in the presence of sources of ignition. Ignition sources can include (but no limited to) lighted cigarettes, sparking from excavator bucket (hitting rock, steel objects etc), electrical utilities, hot exhaust manifolds, exhaust sparks, and static electricity. Gasoline range hydrocarbons have an LEL greater than 1.2 percent by volume (approximately 50,000 mg/m3). On-Site likely scenarios for the occurrence of LEL concentrations are as follows:

- ✓ In excavation pits/trenches where high concentration hydrocarbons (> saturation) are encountered,
- ✓ In the headspace above the soil in the bed of a **covered end dump truck** where high concentration hydrocarbon soils have been dumped.

Minimizing LEL conditions, awareness of potential LEL concentrations, awareness and removal of ignition sources will control fire and explosion hazards. Each on-Site contractor will be required to develop job specific fire and explosion control procedures. In addition, real-time measurements of LEL concentrations will be accomplished during Site operations in highly impacted hydrocarbon areas.

3.2.2 Noise Hazards

Noise-generating equipment will be used during field activities. This equipment will include excavating and grading equipment. Elevated noise levels could constitute a hearing hazard and interfere with communication. Field personnel will be protected from noise levels exceeding 85 dBA with appropriate personal protective equipment. Noise hazards will be addressed in accordance with 8 CCR, Article 105.

3.2.3 Heavy Equipment Hazards

Heavy equipment can pose significant hazards to on-Site employees. The SSO will ensure that motor vehicles and excavation equipment meet the requirements specified in the Department of Industrial Relations, General Industry Safety Orders and Construction Safety Orders (8 CCR Division 1, Chapter 4, Subchapters 4 and 7).

- ✓ Never walk directly behind or to the side of heavy equipment without the operator's knowledge. Be aware of the location and operation of heavy equipment; do not assume that the operator is aware of keeping track of your presence.

- ✓ While working on-Site, wear reflective/visible safety vests, maintain visual contact with the operator at all times, and remain alert.

- ✓ Rollover protection shall be provided on equipment operating on sloping surfaces as determined by the project engineering.
- ✓ Competent persons will supervise operations, conduct daily inspections, and implement protective systems for excavation operations if soils are not sufficiently stable.
- ✓ Windshields must be maintained clean and free of visual obstructions.
- ✓ All heavy equipment must be fitted with audible reversing signals mandated by OSHA.
- ✓ Unless a spotter is present to guide the operator, equipment with obstructed rear view will have an audible alarm that sounds when moving in the reverse direction.
- ✓ Establish hand signals with the operator when verbal communication is not possible.
- ✓ Whenever operations are conducted in tight quarters, the equipment contractor should make provisions for another person to help guide the operator's movements.
- ✓ All non-essential personnel will be kept out of work areas.
- ✓ On-Site employees will wear appropriate PPE while on-Site.

3.2.4 Traffic Safety

Where needed, a separate traffic safety plan will be developed for this project in areas requiring traffic control. Any traffic plans created will include provisions for lane closure, signage, lighting, and protective barriers as necessary.

3.2.5 Heat-Related Disorders

Since heavy physical labor may be required during Site excavation, loading and other activities, heat stress is a potential hazard. The SSO is responsible for monitoring workers for signs and symptoms of heat stress during conditions of high temperatures and heavy physical activity. Water will be provided on-Site, and frequent work breaks will be instituted during high risk conditions, and the Site supervisors will have first aid/CPR training and will be familiar with the early signs of heat related disorders, and appropriate treatment procedures.

3.2.6 Slips, Trips, and Falls

Slipping, tripping, and falling are the most common sources of injuries at these types of sites. These injuries can be prevented by proper Site control measures, safe work practices, and by keeping the work area free from obstructions. Tailgate safety briefings will be held prior to each day's field activities to identify specific Site locations of concern (slippery surfaces, steep grades, or uneven

terrain) and to specify work practices and controls necessary to avoid or eliminate the hazards in those areas.

3.2.7 Buried Utilities and Overhead Utilities

Buried utilities at the Site will be identified through Underground Service Alert (USA). If buried utilities, such as natural gas piping, are damaged during excavation activities, the area should be immediately evacuated and Emergency 911 should be immediately notified. The SSO should notify all on-Site employees of the rupture and the area of the release should be evacuated.

Elevated superstructures (excavators) shall remain a distance of 10 feet away from utility lines and 20 feet away from power lines. Distance from utility/power lines may be adjusted by the SSO depending upon actual voltage of lines.

3.2.8 Muscular-Skeleton Injury Hazards

Field activities may require some lifting of heavy objects. No one should attempt to lift large, heavy (greater than 50 pounds), or cumbersome objects without assistance. All on-Site employees who are generally called upon to do frequent lifting are instructed in proper lifting procedures.

3.2.9 Biological Hazards

The biological hazards that may be encountered include spiders, bees, ticks, and rodents. A first aid kit to treat minor skin irritations, stings, and bites will be maintained at the Site. Severe bites from rodents and or swarming bees or wasps will require immediate medical attention.

4.0 SAFETY EQUIPMENT, PERSONAL HYGIENE, AND SANITATION

4.1 Personal Protective Equipment (PPE)

PPE and clothing are used to isolate individuals from the COCs and physical hazards. The minimum level of protection for workers within the exclusion zone is generally Level C (as defined by the EPA [July 1998]) and should include the following:

1. Tyvek coveralls and boot covers, taped to wrists and ankles
2. Reflective/visible safety vests
3. Chemical resistant gloves
4. Steel-toed boots with over-the-ankle protection
5. Safety glasses, as necessary
6. Hard hat, as necessary
7. Hearing protection, as necessary
8. Half-face air purifying respirators equipped with organic vapor cartridges

In the exclusion zones described below (Section 5), Level C will include all the above. Initial air monitoring data well provide additional information with which decisions can be made relative to upgrading or down grading PPE.

4.2 Personal Hygiene

Employees are prohibited from smoking, eating, and drinking within exclusion zones designated on-Site. Prior to smoking, eating, and drinking, employees will be required to thoroughly wash hands and face at supplied sanitation facilities.

4.3 Sanitation

Potable water, toilet facilities, and washing facilities will be provided at the Site at support zones adjacent to established exclusion zones. This equipment and location will vary depending upon work progress.

5.0 SITE CONTROL

This section provides a description of the Site control areas that must be established during excavation activities. Site control procedures are established to control the flow of personnel, vehicles, and materials (including hazardous materials) in and out of the Site. Access and egress will be controlled via gates and a perimeter fence surrounding the Site. The gates that provide Site access will be locked after working hours. Signs instructing visitors to check in at the project support area will be posted at all entrances to the Site.

For some field operations, a two-zoned approach will be implemented where possible. The zones include a work zone and the support/staging area zone. At locations on-Site where excavation operations will entail the removal of contaminated soils, a three-zone approach will be utilized. At these areas, there will be an exclusion zone, a contaminant reduction zone, and support zone. In addition to the areas described below, a meeting place will be designated before operation begins, based on the field activity planned. Communication between field personnel and off-Site parties will proceed using cellular telephones and radios.

5.1 Work Zone

At non- hazardous waste areas of the Site, areas of the Site that are being excavated will be considered "Work Zones." Access to the work areas must be controlled by the SSO. Unauthorized personnel and visitors shall not be allowed access to the Site. Work-area boundaries will be delineated in the field using physical barriers and/or construction tape and stakes. PPE (see Section 4.0) is required for personnel within the work areas. All personnel will enter and exit the Work Zone through the Support Zone. Eating, drinking, smoking, chewing tobacco, or applying cosmetics is prohibited in the Work Zone.

Prior to initiating work, a Site figure depicting the proposed work and support zones will be provided to the Lowney Associates. The work and support zone configurations may change as work is completed. Pacific States will inform the Lowney Associates and the RWQCB of significant changes in the project lay out.

Each access route to the "Work Zone" must be posted with signs that read:

WARNING **CONTAMINATED WORK AREA** **POISON** **NO SMOKING OR EATING**	**WARNING** **This Site is contains chemicals known to the State of California to cause cancer or other reproductive toxicity.** **AUTHORIZED PERSONNEL ONLY**

5.2 Support/Staging Zone

The "Support/Staging Zone" will be set up on-Site to provide for administrative and support functions (command post, first-aid station, rest area, truck staging, etc.) necessary to keep the field activities running smoothly. The contractor shall provide potable water and wash facilities for the field personnel in this location. The "Support/Staging Zone" will be established prior to the beginning of remedial activities.

5.3 Exclusion Zones

At locations on-Site where excavation operations will entail the removal of contaminated soils that are designated as California Hazardous Waste and/or RCRA Hazardous Waste, an exclusion zone surrounding the area to be excavated will be set up. Access to exclusion zones will be provided only to personnel directly involved in the work. In this zone, all tools and equipment having contact with the contaminated soils will remain until decontamination is completed in the contaminant reduction zone. Access into and out of the exclusion zone will only be provided through the contaminant reduction corridor.

Loading of hazardous waste soils into dump trucks will be completed in a manner that minimizes spillage and migration of contaminants outside of the exclusion zone. After loading dump trucks will be dry brushed and covered in the CRZ.

5.4 Contaminant Reduction Zone (CRZ)

Contaminant Reduction Zones will provide an access corridor into and out of exclusion zones.

The CRZ will be marked with barricade tape, and contain the decontamination facilities to consist of decontamination pad, decontamination tools, refuse containers, and hygienic facilities. The decon pad will be constructed over a polyethylene layer and hygienic facilities will consist of portable washing stations.

In the contaminant reduction zone, employees and equipment will be required to implement decon procedures. Decon procedures will include a physical removal of soil resides by dry bushing of equipment, tools, and work boots over the pad. Tyvek coveralls and boot covers, will be removed and placed into refuse containers for disposal, hands and face will then be washed. Specific decon

procedures will be developed by each contractor engaged in exclusion zone operations.

5.5 Visitors

All visitors desiring to gain access to any part of the Site will be required to announce themselves at the project support area and indicate their presence at the Site in the visitor log book. The SSO should be notified immediately upon the arrival of any visitors. Additionally, visitors will be required to read and indicate in writing their understanding of this HSP.

Visitors are expected to comply with all local, state, and federal training regulations and medical surveillance requirements and to provide their own PPE. Visitors failing to adhere to the provisions of this HSP will not be allowed access to the Site.

5.6 Changes to Site Control

In the event that circumstances require, the Site will be reconfigured as necessary to ensure the control of off-Site migration of contaminants. Such circumstances can include the receipt of additional chemical information that indicates the presence of restricted soils and hazardous soil.

6.0 DECONTAMINATION PROCEDURES

Specific decon procedures will be developed by each contractor engaged in exclusion zone operations.

6.1 Equipment Decontamination

Decontamination procedures must be performed to reduce the physical transfer of impacted materials from the project area where necessary. The procedures will ensure that before being removed from the Site, all vehicles and equipment with visible accumulations of soil that are potentially contaminated must be thoroughly dry brushed to remove residual restricted soil. Equipment decontamination must take place in a Contamination Reduction Zone developed.

6.2 Personnel Decontamination

Workers in the exclusion zone should minimize the amount of dirt or dust on their hands, face, clothing, or footwear. Personnel decontamination will included removing Tyvek coveralls, boot covers, (where utilized) and work gloves, and washing hands and face prior to eating drinking, smoking, or leaving the project site. In the event that emergency life-saving first aid and/or medical treatment are required, decontamination procedures should be omitted.

6.3 Spill Containment

Residual spills of designated soils at truck loading locations will be contained and swept up as they are generated. Excavator operators will exercise care to minimize soil spillage. Spills of non-designated soils will not require special handling.

7.0 DUST CONTROL

Dust control measures will include the use of a water truck as necessary to ensure the wetting of soils during excavation and loading. The goal of dust suppression during excavation and loading is to minimize the generation of visible dust.

8.0 AIR MONITORING

Personal exposure and perimeter fence line air monitoring for COCs will be required during the Site excavation activities. Personal breathing zone air samples for vapor phase contaminants will be collected during excavation activities, and real-time monitoring for total hydrocarbons and LEL will be accomplished using OVAs/PIDs and LEL meters respectively. Personal exposure monitoring will be performed in accordance with Subchapter 7 of the California General Industry Safety Orders, Article 110 Section 5218 Benzene. In addition, workers engaged in excavation activities near high hydrocarbon impact areas of the Site, will be equipped with belt mounted LEL dosimeters that provide low and high level audible alarming capability.

In addition periodic real time monitoring of particulate concentrations during the excavation of soils at high impact locations will provide a measure of dust control effectiveness. Total dust monitoring will be accomplished using a MIE aerosol monitors.

8.1 Site Action Levels (ALs)

On-Site

Each contractor engaged in exclusion zone work will establish total hydrocarbon action levels. The AL shall be protective for potential benzene exposures and other hydrocarbons. In addition, an AL for potential fire and explosion hazards will be set at 50 percent of the LEL. Each contractor will establish procedures for monitoring and for actions to be taken if established ALs are exceeded. Procedures will also include provisions for monitoring covered end dump truck beds prior to releasing the truck for off-Site transport of contaminated soils.

A continuous breathing zone concentration of 5 mg/m3 total dust is established as the Site action level (AL) for occupational exposure. The AL will ensure that over exposure to particulate COCs will not occur.

Fence Line

At the fence line, an average total dust concentration of 0.150 mg/m3 over the workday is established.

For hydrocarbons and Prop 65 chemicals (benzene/toluene), periodic monitoring at 2 down wind locations and one upwind location is required. The contractor will establish fence line ALs in conformance to Prop 65 no-significant risk levels.

9.0 TRAINING AND MEDICAL SURVEILLANCE

The SSO will conduct a safety training session at the beginning of the project to ensure that on-Site workers understand the provisions of the HSP. Health and safety training and hazard communication must be implemented as addressed below and in accordance the Site-specific health and safety plan. All personnel must be familiar with the provisions of this HSP and verify in writing that they have read it and understand it.

9.1 HAZWOPER Training

Employees conducting excavations and/or work in an "Exclusion Zone" with exposure or potential exposure to chemical hazards must have completed a 40-Hour HAZWOPER training course, as well as training in accordance with 8 CCR 1532.1, including respirator and personal protective equipment training.

9.2 Site-Specific Training Program

A Site-specific training program will be instituted prior to on-Site work and all attendees will be documented by signature. The SSSO will conduct a Site-specific training session to ensure that all Site personnel are familiar with the requirement of this plan. The Site-specific training meeting will be conducted at the project site. Training will include discussion of the following:

1. The health effects (acute and chronic) of the chemical hazards and discussion of physical hazards that may be encountered during work at the Site
2. Proper control measures for the chemical and physical hazards that may be encountered
3. Discussion of salient IIPP procedures and other procedures to be implemented
4. Proper personal hygiene procedures
5. Emergency procedures
6. The contents of this HSP.

9.3 First Aid/CPR Training

At least one person with first aid and cardio-pulmonary resuscitation (CPR) training will be on-Site at all times. This person will be identified by the SSO.

9.4 Site Specific Medical Monitoring

Field personnel will not undergo specific tests prior to beginning field activities. All field personnel have had baseline medical monitoring, including annual audiometric testing (audiograms). In addition, a medical monitoring program in accordance with Subchapter 7 of the California General Industry Safety Orders, Article 110 Section 5218 Benzene, will be established as necessary.

9.4.1 Exposure/Injury Medical Support

All employees who suffer an illness, injury, or chemical exposure during the course of field activities are required to see a physician. The physician responsible for conducting the employee's medical surveillance examinations will be notified and consulted to determine the type(s) of tests required to accurately monitor the employee. Workers may return to work only with written approval of the physician.

10.0 EMERGENCY AND CONTINGENCY PLANNING

10.1 Relevant First Aid Procedures

Minor injuries, including minor cuts, scrapes, and abrasions should be treated on-Site. If an injured individual requires further attention, the individual should be immediately transported to the nearest hospital. A map illustrating the route to the nearest emergency medical facility (Figure 2) must be present on-Site. *All accidents, without regard to severity, must be reported in writing to Site SSOs within 24 hours.*

10.2 Emergency Treatment

When transporting an injured person to a hospital, this HSP must be taken with the injured person to assist medical personnel with diagnosis and treatment. In all cases of chemical overexposure, standard procedures are to be followed as outlined below for poison management, first aid, and, if applicable, CPR. The following are four different routes of exposure and their respective first aid/poison management procedures.

1. **Ingestion:** CALL THE POISON CONTROL CENTER AT (800) 662-9886 FOR INSTRUCTIONS.

2. **Inhalation: Move the person from the contaminated environment.** Initiate CPR if necessary. Call, or have someone call, for medical assistance. If necessary, transport the victim to the nearest hospital as soon as possible.

3. **Skin Contact: Immediately wash off skin with a large amount of water.** Remove any contaminated clothing and rewash skin using soap, if available. Transport the injured person to a medical facility if necessary.

4. **Eyes: Hold eyelids open and rinse the eyes immediately with copious amounts of water for 15 minutes.** If possible, have the person remove his/her contact lenses (if worn). Never permit the eyes to be rubbed. Trans-port the injured person to a hospital as soon as possible.

10.3 Evacuation Procedures

Various emergencies may warrant a Site evacuation. Although these conditions are not anticipated, they may include fire, explosion, chemical release, or other event that could cause personal injury. Emergency evacuation plan will be developed prior to the conduct of any work on-Site. The plan will include:

- ✓ Conditions that warrant emergency evacuation of the Site
- ✓ Site layout plan that identifies evacuation routes
- ✓ Site layout plan that identifies re-assembly locations
- ✓ Designation of the Emergency Response Coordinator (SSO), and personnel roles, lines of authority, communications
- ✓ Initiating Emergency Response, and decisions relative to initiating evacuation
- ✓ Emergency contact list and phone numbers
- ✓ Discussion of the Plan with workers
- ✓ Pre-emergency planning with appropriate agencies

10.4 Emergency Services and Contact Telephone Numbers

In the event of an emergency, the nearest emergency services to the Site are located at Alameda County Medical Center – Highland Hospital in Oakland, California. The telephone number is (510) 437-4800. Figure 2 shows the hospital route map.

If an injury is serious enough to require ambulance medical transport or the fire department, immediately call 911.

The Pacific States project personnel that must be contacted in the event of an emergency will be established prior to any work activity.

11.0 ACCIDENT PREVENTION AND REPORTING

The SSO and PM will investigate accidents to on-Site employees. All accidents, no matter how small, must be reported to the SSO and PM within 24 hours of occurrence.

12.0 INTERNAL AND EXTERNAL COMMUNICATIONS

Methods for internal and external communication should be addressed in the contractor's Site-specific HSP. Generally, cellular telephones will be used to communicate, however personnel may also have a radios for communication. Although excavation and other heavy equipment may generate excessive noise, cellular telephones should be an adequate means of communication. An air horn, however, will be maintained on-Site as a means of notifying on-Site personnel of an emergency. Procedures for using the air horn should be established on the first day of work and reviewed frequently as well as the emergency evacuation routes and meeting locations in the event of an emergency.

13.0 EMERGENCY TELEPHONE NUMBERS

13.1 External Contacts

Ambulance (Paramedics)	911
Hospital	(925) 779 -7200
Poison Control Center	(800) 662-9886
Fire/Police Department	911
Chemtrec	(800) 424-9300
California Office of Emergency Services	(800) 852-7550
Cal/EPA Toxic Substances Control Division	(510) 540-2043
Regional Water Quality Control Board	(510) 622-1200
U.S. Environmental Protection Agency	(415) 974-8076
California Highway Patrol	(916) 327-3310
Bay Area Air Quality Management District	(415) 771-6000
National Response Center	(800) 424-8802

13.2 Internal Emergency Contacts

General Superintendent	TBA	
Site Safety Officer - Superintendent	TBA	
Site Industrial Hygienist	Daniel W. Hernandez, CIH	(408) 292-3266 Off (408) 390-2154 Cell
Project Manager – Lowney	Peter Langtry	(510) 267-1970 Off

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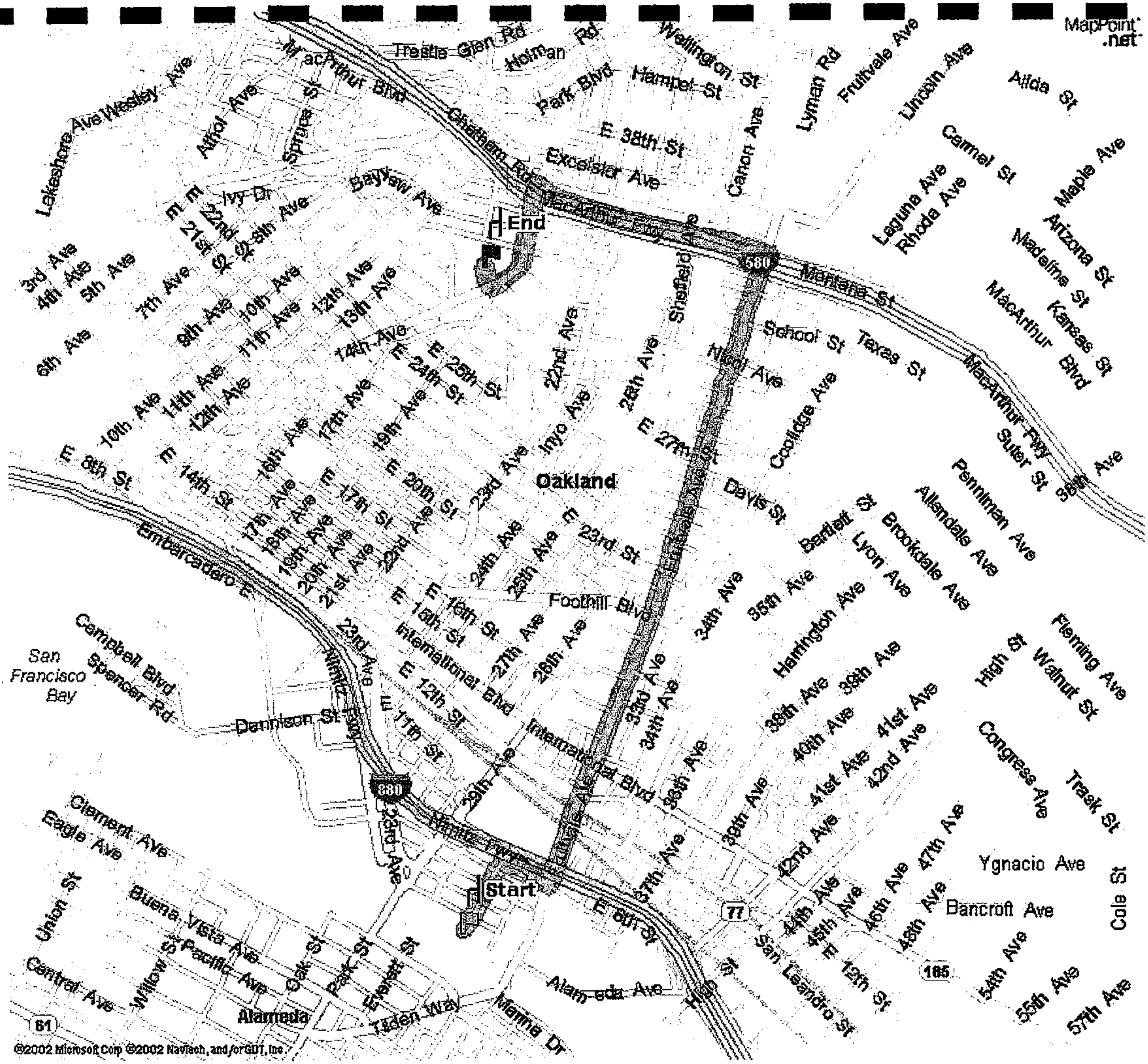
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International Blvd
Nimitz Fwy
Embarcadero
Fruitvale Ave
Lincoln Ave
Coolidge Ave
Davis St
School St
Texas St
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E 15th St
E 16th St
E 23rd St
San Leandro St
Alameda Ave
Park St
Oak St
Buena Vista Ave
Pacific Ave
Central Ave
Union St
Clement Ave
Eagle Ave
Campbell Blvd
Spencer Rd
Dennison St
Lakeshore Ave
Park Blvd
Excelsior Ave
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Allendale Ave
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Harrington Ave
Fleming Ave
Congress Ave
Trask St
Ygnacio Ave
Bancroft Ave
Cole St
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FACT SHEET FOR THE OAKLAND ESTUARY RESIDENTIAL DEVELOPMENT IN OAKLAND, CALIFORNIA

About the Oakland Estuary Residential Development

The Oakland Estuary Residential development consists of 100 townhomes located between the north shore of the Oakland Estuary and Glascock Street. A public access promenade exists along the waterfront and includes a pedestrian path and landscaping. The multi-story approximately townhomes are 2 to 3 bedrooms, including a garage on the first level with a walk-up entrance to second and third floor living areas. The units range in size from approximately 1,344 to 2,180 square feet.

Site Background

Before beginning construction on the subdivision, the developer conducted an environmental investigation of the property. The property on which The Oakland Estuary Residential development is built was previously used for industrial and commercial purposes. Previous uses of the property and surrounding properties introduced hazardous materials to the soil and subsurface ground water. Petroleum hydrocarbons (mainly gasoline and diesel fuel), as well as minor amounts of arsenic, copper, lead, and PCBs, were detected in soil on the property. Petroleum hydrocarbons also were detected in the ground water.

After completing the environmental investigation, the Regional Water Quality Control Board (a branch of the California Environmental Protection Agency) and the County of Alameda Environmental Health Department reviewed the environmental data. Then, a corrective action plan was approved by the Regional Water Quality Control Board to address the contaminated soil and ground water on the property. In addition, a risk management plan and deed restriction were created for the Oakland Estuary Residential development.

Buyers and others interested in the Oakland Estuary Residential development should thoroughly review the environmental documents prepared for the property. By being knowledgeable about the past and present environmental conditions on the site, you will more thoroughly be able to enjoy living at the Oakland Estuary Residential development. Copies of the environmental documents are available for review in the Sales Center.

Cleanup Actions Taken

Based on an evaluation of the contaminants on the property, soil cleanup goals and ground water residential occupancy objectives were established to guide cleanup actions performed on the property. Regional Water Quality Control Board staff approved these goals and objectives based on the fact that concentrations of contaminants below these goals and objectives were well within the California Environmental Protection Agency's health protective risk range and do not pose a significant health risk to future residents, neighbors or on-site construction workers.

Contaminated soils with concentrations exceeding the soil cleanup goals were excavated and appropriately disposed off-site. _#__ *(note: this paragraph and the next paragraph will be completed after the cleanup is finished)* confirmation samples were collected to verify that the soil remaining on the property did not contain concentrations exceeding the soil cleanup goals in the upper 7 feet of soil. __#___ confirmation samples also were collected from the imported material used to fill the excavations. Regional Water Quality Control Board staff reviewed this

confirmation data and determined that the cleanup actions and confirmation sampling were performed according to the approved plan.

Free-floating petroleum product was removed from the ground water. Oxygen release compound (ORC) was injected into the ground water in __#__ locations across the property to help increase the speed of biodegradation of the petroleum hydrocarbons. Ground water samples collected every three months from __#__ on-site monitoring wells have not detected contaminants above the residential occupancy objectives for the past __#__ months. Regional Water Quality Control Board staff have reviewed these data and determined that the ground water sampling results meet the approved residential occupancy objectives.

In addition to the ground water residential occupancy objectives, ecological ground water cleanup goals were established for a 50-foot strip along the estuary to protect the ecological receptors in the estuary. Since the ecological goals are lower than the residential occupancy objectives and take longer to meet, ground water sampling to monitor the degradation of petroleum hydrocarbons is still on going. Ground water sampling will continue until the levels of contaminants in ground water in the 50-foot strip along the estuary are below the ecological ground water cleanup goals. After these goals are met, a petition for site closure will be issued to the Regional Water Quality Control Board.

Please refer to the environmental documents prepared for the property for further details regarding the cleanup actions taken.

Risk Management Plan and Deed Restriction

The Risk Management Plan (Plan) provides protocols for evaluating, handling, and disposing of materials suspected to be contaminated that are encountered during future activities at the Development. Future activities may include, but are not limited to, modification or repair to utilities, construction of building foundations, and changes to paved areas. The Developer and/or home owner's association will be responsible for compliance with this Plan until site closure is obtained. After site closure is obtained from regulatory agencies, the homeowners association will be responsible for long-term compliance with this Plan.

The deed restriction requires that any future excavation be backfilled with a minimum of 3 feet of low-permeability fine-grained soil in the upper 7 feet of soil beneath the ground surface.

How Much Risk will Future Residents be Exposed to from Contaminants on the Property?

An evaluation of the concentrations of contaminants remaining on the property (levels below soil cleanup goals and ground water residential occupancy objectives) was developed using Human Health Risk Assessment. A Human Health Risk Assessment study follows set protocols and procedures that consider what type of chemicals are involved, their toxicity, concentrations and type of exposure to be expected under specific scenarios. In this case, exposure was assessed based on a residential scenario.

The Human Health Risk Assessment produced a statistical "risk" associated with exposure to the chemicals of concern. The determined "risk" is within the range considered acceptable by Cal-EPA for such sites. Therefore, the concentrations of residual contaminants will not be a significant threat to the health of residents of the Development.

Frequently Asked Questions

Where did the contaminants come from? How did they get on the Oakland Estuary Residential Development?
A fuel distribution depot, a storage facility for demolition equipment, and a heavy machinery warehouse formerly occupied the site. These past activities left contaminants on the property.

Where are the contaminants?
The contaminants historically were found in soils and ground water beneath the property. After cleanup of the property, some contaminants below the cleanup goals were left in soil and ground water beneath the property.

How will I be exposed to contaminants?
The majority of contaminants have been excavated and removed from the property. However, some soils across the property contain low concentrations of residual contaminants. The potential ways in which a person could be exposed to the low concentrations of residual contaminants in the soil would be by breathing dust particles of the soil or inhalation of vapors migrating through the soil. However, exposure to contaminants is greatly reduced since the property is covered with buildings, pavement and at least 3 feet of clean, clayey soil. The presence of the low concentrations of contaminants in soil beneath the property does not represent a significant risk.

The potential ways in which a person could be exposed to the low concentrations of contaminants in the ground water would be by inhalation of the ground water vapors. However, concentrations in ground water have been reduced to levels that are not a significant risk to residents at the Oakland Estuary Residential development. The concentrations of chemicals in ground water also will decrease over time as a result of the natural decay of the chemicals.

Could contaminants affect my health?
It is highly unlikely that the low levels of contaminants remaining on site will cause health problems for you or your children. While developing the environmental standards for the property, the use of the property for residences was taken into account along with the type of potential exposure discussed above.

Do contaminants on the property affect my drinking water?
No, drinking water has not been affected and most drinking water in Oakland is supplied from the Hetch Hetchy Reservoir in the Sierra Nevada or deep drinking water wells in the area.

Is asbestos one of the contaminants?
Between April and June 2003, several buildings were demolished as a part of the construction process. Prior to the beginning of demolition. The asbestos contained in these buildings was removed and disposed off-site in accordance with the requirements of the Bay Area Air Quality Management District. No asbestos contamination remains on the property.

What responsibilities do I have as a homeowner?
The Homeowners Association will be responsible for long-term compliance with the Risk Management Plan. Sellers of the townhouses will be required to disclose the Risk Management Plan to future buyers.

Key Contact

SIGNATURE PROPERTIES
4670 Willow Road, Pleasanton, California 94588
(925) 463-1122

LOWNEY ASSOCIATES
167 Filbert Street, Oakland, California 94607
(510) 267-1970

Ms. Betty Graham
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
1515 Clay Street, Suite 1400, Oakland, California 94612
(510) 622-2300

This fact sheet produced by Lowney Associates – Environmental, Geotechnical, Engineering Services