LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

Phase I Environmental Site Assessment
and Soil and Ground Water Quality Evaluation

1310 Fourteenth Street

Oakland, California

This report has been prepared for:

DeNova Homes

1899 Clayton Road, Suite 110, Concord, California 94520

March 17, 2004
Project No. 1950-3

DRAFT

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March 17, 2004
1950-3

Mr. Bob Weiss
DENOVA HOMES
1899 Clayton Road, Suite 110
Concord, California 94520

RE: PHASE I ENVIRONMENTAL SITE ASSESSMENT AND SOIL, SOIL VAPOR, AND GROUND WATER QUALITY EVALUATION
1310 FOURTEENTH STREET
OAKLAND, CALIFORNIA

Dear Mr. Weiss:

As requested, we have performed a Phase I environmental site assessment, limited visual asbestos, lead-based paint, and fluorescent light ballast survey, soil, soil vapor, and ground water quality evaluation, and geophysical survey at 1310 Fourteenth Street in Oakland, California. This report was prepared in accordance with our agreement dated January 5, 2004.

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

DRAFT

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1.0 INTRODUCTION

1.1 Purpose

This Phase I environmental site assessment, limited visual asbestos, lead-based paint, and fluorescent light ballast survey, soil, soil vapor, and ground water quality evaluation, and geophysical survey was performed for DeNova Homes, who we understand is considering the purchase of the site, shown on Figures 1 and 2, for mixed-use redevelopment.

The purpose of this study was to strive to document recognized environmental conditions at the site related to current and historic use of hazardous substances and petroleum products. The term "recognized environmental conditions" means the presence or likely presence of hazardous substances or petroleum products on a property under conditions that indicate a significant release or significant threat of a release into the ground, ground water, or surface water.

1.2 Scope of Work

The scope of work for this study was outlined in our agreement dated January 5, 2004 and included the following tasks.

- Reconnaissance of the site and limited drive-by survey of adjacent properties for readily observable indications of current or historic activities that have or could significantly impact the site.
- Review of readily available topographic maps and reports to evaluate local hydrogeologic conditions including anticipated ground water depth and flow direction.
- Review of readily available documents, maps, and aerial photographs, and interviews with knowledgeable persons to evaluate past land uses.
- Acquisition and review of a regulatory agency database report to evaluate potential impacts to the site from reported contamination incidents at nearby facilities.
- Review of available regulatory agency files to obtain information about the use and storage of hazardous materials at the site.
- Review of files provided by DeNova Homes to obtain information about the former fuel release at the site.
- Review of previous asbestos survey documents provided by DeNova Homes.

- Conducting a limited visual asbestos, lead-based paint, and fluorescent light ballast survey.
- Drilling and logging of twenty-seven exploratory borings.
- Collecting soil and ground water samples for laboratory analysis.
- Evaluating the presence of underground metallic objects using geophysical techniques.

2.0 SITE RECONNAISSANCE

2.1 Site Location and Ownership

The approximately 6-acre site is located at 1310 Fourteenth Street in a mixed commercial and residential area. It is bounded by Sixteenth Street and commercial properties to the north, Poplar Street and commercial properties to the east, Mandela Parkway and residences to the west, and Fourteenth Street and commercial properties to the south. The site is owned by Encinal 14th Street, LLC; the Nestle Company had previously owned the site.

2.2 Topographic Features and Hydrogeology

Based on U.S. Geological Survey (USGS) topographic maps, the site's elevation is approximately 10 feet above mean sea level. Topography in the vicinity of the site slopes gently to the northwest toward the San Francisco Bay. Based on an on-site subsurface investigation conducted by us (Section 6), the shallow water-bearing zone likely is encountered at depths of approximately 5 to 8½ feet. Information reviewed in a previous environmental report documented the shallow water-bearing zone at depths of approximately 5 to 12 feet (ETIC, January 2002). Ground water beneath the site likely flows to the northwest.

2.3 Site Visit

To observe current site conditions, our representatives, Principal Environmental Geologist Peter Langtry, R.G., CH.G., and Staff Environmental Engineer Veronica Tiglao, visited the site on January 14, 2004 and were unaccompanied. At the time of our site visit, the subject property was developed with commercial structures formerly utilized by Carnation Dairy for the storage and processing of milk and ice cream. The site was vacant at the time of our site visit.

Exterior areas of the site were primarily paved with concrete or asphalt. At central portions of the site, apparent electrical equipment with attached outlets were observed. Based on review of historical information, outlets were formerly used to charge refrigerated compartments of delivery trucks (AGE, February 1989).

A large L-shaped building on the northwestern corner of the property appeared to have been formerly used mainly as a warehouse and auto repair. Fluorescent light fixtures were observed in this building. A former paint booth, former office spaces, and a former vehicle wash rack were located in this building (Figure 2). A hydraulic lift, a Fleet-brand wash system, two large, empty containers for the apparent storage

of oil or fuel were located on eastern portions of the building. Also, signs for lube oil and motor oil storage were painted on a wall at the eastern rooms. Former monitoring wells or borings (visibly capped) and sumps were located at several locations throughout the building. A former refrigeration unit, additional former wells or boring locations, and approximately fifty 55-gallon drums labeled as non-hazardous waste or "aqua-scrub" were visible to the south of the building.

The building on the northeast portion of the site appeared to have formerly been in use as a cold storage area (Figure 2). Large portions of cork insulation on the northern interior wall and ceiling appeared to have fallen off; debris was observed throughout the building. Loading docks and four hydraulic lifts were located adjacent to the northern, western, and southern sides of the building (exterior). A hydraulic oil tank for a lift and four dry-type, wall-mounted transformers were located on the exterior, south side of the building. Also, two small excavations and two small stockpiles of soil (likely from the excavations), were located on the north side of the building. We understand that the excavations were from a former structural evaluation of the building's foundation.

The building located just south of the cold storage building contained a former maintenance shop, former boiler room, and former compressor rooms (Figure 2). Three additional wall-mounted transformers were located at the boiler room. At the western compressor room, signs on a wall reported the former storage of hazardous materials, including vistac oil, turbine oil, cylinder oil, and multi-machine oil. An electrical control panel, labeled as formerly used for pumps, fans, compressors, and agitators, was located in a small room between the compressor rooms. In the eastern compressor room, an above-ground storage tank (AST) marked ammonia was observed. Also, a larger electrical control panel and a fume hood were located at the former maintenance shop within the building. Control panels observed at the maintenance shop were mainly labeled as slab heating, condensers, pumps, sump pumps, truck levels, conveyor belts, and hydraulic lifts. A second floor landing above the maintenance shop appeared to have formerly been used as offices and a storage area for various parts such as pipes and pipe fittings. A cabinet in the office space was labeled as "Blueprints for Greer Tunnel". Further information on the "Greer Tunnel" was not encountered during our investigation. Also, several ASTs were observed on the roof of the building. Pipes leading to the ASTs were marked as chocolate, sugar, etc. Also, a fenced area with a concrete pad that appeared to be a former transformer substation was located adjacent to the building's northeast corner. An additional AST was located adjacent to the northwest corner of the compressor rooms.

The building located on the southeast corner of the site was primarily comprised of cold storage rooms at the ground level with office spaces on upper floors (Figure 2). Holes in the walls and significant debris were also visible in this building. A trench and soil stockpile, that also appeared to be from a former foundation evaluation, were located in one of the cold storage rooms. A conveyor belt system, electrical control panels, and fluorescent light fixtures were observed in the interior areas of the building. Second and third floors of the building were primarily office and storage spaces. Signs on a small, metal storage shed located to the west of the building reported the former storage of acid, soap, and chlorine.

To the east of the cold storage and office building was the former milk unloading station (Figure 2). One former AST was located on the southeast end of the milk unloading station; the former content of the AST are unknown but was likely milk. There appeared to be areas to the east and northeast of the building for three additional ASTs. An office area with a control panel was located on the north side of the building.

A fenced area adjacent to the southern property boundary housed a transformer and switchboard (Figure 2).

Additional observed site features are listed in Table 1.

Table 1. Additional Readily Observable Site Features

Site Features				Comments
Heating/Ventilation/Air Conditioning System	☒ Natural Gas and/or Electrical ☒ Fuel Oil			Former fuel oil USTs closed-in-place (see Table 3).
Potable Water Supply	☒ Municipal	☐ On-Site Well		
Sewage Disposal Syst.	☒ POTW	☐ On-Site Septic		
Transformers	☒ Present ☒ PG&E	☐ Not Observed ☒ Privately Owned		Privately owned wall-mounted transformers and PG&E transformers.
Other Features	☒ Aboveground Storage Tanks ☐ Agricultural Wells ☐ Air Emission Control Systems ☐ Auto Servicing Areas ☒ Boilers ☐ Burning Areas ☐ Chemical Mixing Areas ☒ Chemical Storage Areas ☐ Clean Rooms ☐ Drainage ditches ☐ Elevators ☐ Emergency Generators ☒ Equipment Maintenance Areas ☐ Garbage Disposal Areas ☐ HazMat Storage Areas ☐ High Power Transmission Lines ☒ Hoods and Ducting ☒ Hydraulic Lifts ☐ Petroleum Pipelines ☐ Petroleum Wells ☐ Ponds or Streams ☐ Railroad Lines ☐ Row crops or orchards ☒ Stockpiles of Soil or Debris ☒ Sumps or clarifiers ☐ Underground Storage Tanks ☒ Vehicle Maintenance Areas ☒ Vehicle Wash Areas ☒ Waste Water Neutralization Systems ☒ Wells			ASTs at and northwest of compressor rooms, ASTs on building roofs, and AST at milk unloading station. Boilers in boiler room. Signs indicating former hazardous materials storage (including several oils, acid, and chlorine) at auto repair shop, compressor room, and shed. Former repair shop at northwestern corner of site. One fume hood at maintenance shop. Lifts observed at repair shop and northeastern building. Small stockpiles of dirt near northeastern building and inside southeastern cold room. Sumps at northwest building. Former repair shop at northwestern corner of site. Former wash rack. Fleet-brand wash system. Former monitoring wells.

Note: An unchecked box does not warrant that these features are not present on-site; it only states that these features were not readily observed during our site visit.

2.4 Site Vicinity Drive-By Survey

To evaluate adjacent land use, we performed a limited drive-by survey. Our observations are presented in Table 2.

Table 2. Adjacent Properties

Business Name and Address	Direction from Site	Observations
Commercial Properties	North	Apparent Warehouses
Mayway Corporation 1338 Mandela Parkway	South	Apparent Offices and Warehouse
National Recycling Corporation 1312 Kirkham Street	South	Recycling Facility
ABM Engineering Services 1266 Fourteenth Street	East	Apparent Offices; Equipment Storage Yard
Commair 1266 Fourteenth Street	East	Apparent Offices; Equipment Storage Yard
Residential Properties	West	Single-Family Residences
Globe Distributors Mandela Parkway	West	Commercial Property

2.5 Interview

During our study, we contacted Mr. Kirk Haley of the Hall Equities Group for general information regarding past and current site usage. Mr. Haley was asked to complete a questionnaire; a copy of the completed questionnaire is presented in Appendix A.

Based on the completed questionnaire, the site has been vacant since 1989. The site had previously been in use by Carnation as an ice cream dairy, from approximately 1915 to 1989. According to Mr. Haley, boilers, elevators, equipment and vehicle service areas, transformers, and Underground Storage Tanks (USTs) had historically been located on-site.

3.0 HISTORICAL REVIEW

3.1 Photograph and Map Review

To evaluate the site history, we reviewed:

- Stereo-paired aerial photographs (dated 1930, 1949, 1953, 1959, 1966, 1971, 1977, 1983, 1989, 1993, 1998, and 2002) from Pacific Aerial Surveys in Oakland, California.
- USGS 15-minute and 7.5-minute topographic maps (1980).
- Historic Sanborn fire insurance maps (dated 1902, 1912, 1951, 1952, 1957, 1958, 1961, 1967, and 1970) obtained from Sanborn Mapping and Geographic Information Service (Sanborn GIS) in Pelham, New York.

The above maps and photographs commonly provide historical information regarding a site including land uses and changes in development over time. Copies of these maps and photographs are presented in Appendix B. The following is a summary of our observations for the site and site vicinity.

3.1.1 Site

1902: On the 1902 Sanborn Map, Fifteenth Street was visible on the western portion of the site, aligned east to west. Also, Kirkham Street, aligned north to south, was visible along the center of the site. Approximately fifty-five residences and approximately eight associated garages reportedly occupied the site and storage sheds.

1912 and 1930: On the 1912 Sanborn Map, a retail store was reported on the northwest portion of the site (the area bounded by Sixteenth Street to the north, Fifteenth Street to the South, Kirkham Street to the east, and Center Street to the west). Also, an additional residential building was visible on the southwest portion of the site (the area bounded by Fifteenth Street to the north, Fourteenth Street to the south, Kirkham Street to the east, and Center Street to the west). A retail store, office building, and pharmacy were reported on the eastern half of the site (the area bounded by Sixteenth Street to the north, Fourteenth Street to the south, Poplar Street to the east, and Kirkham Street to the west). A 100-gallon gasoline UST was reportedly located on the eastern portion of the site. The approximate location of the former UST is shown on Figure 2. The site on the 1930 aerial photographs appeared similar to the site on the 1912 Sanborn Map.

1949, 1951, 1952, and 1953: By the 1949 aerial photographs, the site had been redeveloped and primarily in use for commercial purposes. Four apparent commercial structures were visible on the northwest portion of the site; three residences visible on the 1930 aerial photographs remained. The site's southwestern corner appeared to have been redeveloped with five commercial buildings; seven residences remained from the 1930 aerial photographs. The northeast portion of the site was in use as a parking area. The parking area appeared unpaved. On the southeast portion of the site, one large commercial structure with a truck dock, three ASTs, and an apparent fuel pump were visible. The approximate location of the fuel pump is shown on Figure 2. Large trucks and vehicles were visible on several areas of the site. The site on the 1951 Sanborn Map appeared similar to the site on the 1949 aerial photographs. The 1951 Sanborn Map reported the commercial properties on the northwest portion of the site as a gas and oil station, truck repair shop, retail stores, and a bocce ball alley. A retail store and an oil and gas station were located on the southwest corner of the block; the gas and oil station appeared to have been off-site in the area that was later developed for Interstate 880 (Cypress Freeway), currently Mandela Parkway. Additional commercial buildings on the southwest portion of the site were reportedly owned by the Carnation Company and in use for storage, painting, and auto repair. The eastern portion of the site was also reported as owned by the Carnation Creamery Company. Two large commercial buildings near the site's southeast corner were primarily in use for offices, loading and unloading areas, and storage spaces. A boiler room and engine room were shown at the most northeastern building. The fuel pump observed on the 1949 aerial photographs was reported as a gas and oil pump and was shown to the north of the building. The northeast portion of the site was reported as an auto parking area. A steel incinerator was also

reported in this area. The site on the 1952 Sanborn map and 1953 aerial photographs appeared similar to the site on the 1951 Sanborn map.

1957 and 1958: By the 1957 Sanborn Map, the previous commercial structures and all but one residence had been demolished on the northwest portion of the site. A large L-shaped commercial building reportedly in use as a warehouse, auto repair, sign painting booth, grease area, body shop, tire shop, and wash rack was visible in this area. On the southwest portion of the site, two residences, the oil and gas station (off-site), and the Carnation creamery buildings were no longer visible. The incinerator was no longer visible on the eastern portion of the site. The site on the 1958 Sanborn Map appeared similar to the site on the 1957 Sanborn Map.

1959: By the 1959 aerial photograph, Fifteenth Street was no longer visible. On the southwest portion of the site, the former store had been demolished and an additional commercial building was visible. Remaining areas of the southwest portion of the site appeared as a paved parking lot. The eastern half of the site appeared similar to the site in the 1958 Sanborn Map except that the fuel pump was no longer visible.

1961: By the 1961 Sanborn Map, the residence on the northwest portion of the site was no longer visible. The commercial building on the southwest portion of the site was reported as a milk unloading station. Also, an addition (a reported cooler) was shown at the commercial facility on the eastern portion of the site. Kirkland Street was no longer visible on-site

1966 and 1967: By the 1966 aerial photographs, one additional commercial building was located on the northeast portion of the site. Areas surrounding the buildings appeared paved. The site on the 1967 Sanborn Map appeared similar to the site on the 1966 aerial photograph.

1970 and 1971: On the 1970 Sanborn Map, the additional building on the site's northeastern corner was reported to be comprised of a cold storage room and refrigeration equipment room. The site on the 1971 aerial photographs appeared similar to the site on the 1970 Sanborn Map.

1977, 1983, and 1989: On the 1977 aerial photographs, two residential structures on the southwestern portion of the site had been demolished. An additional residential structure on the southwestern portion of the site had been demolished by the 1983 aerial photographs. Also, additions were visible on the large commercial structure on the southeast portion of the site. The site on the 1989 aerial photographs appeared similar to the site on the 1983 aerial photographs.

1993, 1998, and 2002: By the 1993 aerial photographs, the site appeared vacant. Vehicles and trucks were not visible on-site. The site on the 1998 and 2002 aerial photographs appeared similar to the site on the 1993 aerial photographs.

3.1.2 Site Vicinity

1902: Based on the 1902 Sanborn Map, the site vicinity appeared developed with primarily residential structures except for a large laundry facility located to the south/southwest of the site.

1912: On the 1912 Sanborn Map, DeFremery Park was visible to the northeast of the site. Areas to the south of the site were not visible on the 1912 Sanborn Map. Also, a railroad right-of-way was visible along Poplar Street by 1912.

1930 and 1949: Some commercial development, primarily warehouses, was visible in the site vicinity by the 1930 and 1949 aerial photographs.

1951 through 2002: By the 1951 Sanborn Map, the vicinity appeared as mixed residential and commercial. Also, the Eastshore Freeway was visible to the west of the site by the 1957 Sanborn Map. The Eastshore Freeway was no longer visible by the 1993 aerial photographs. The vicinity on the 1998 and 2002 aerial photographs appeared similar to the vicinity on the 1993 aerial photographs.

3.2 Summary of Previous Environmental Reports

To further evaluate the site history, we reviewed and relied upon the information presented in the following reports that were obtained from DeNova Homes.

Results of the Off Site Investigation at the Carnation Facility Located at 1310 14th Street in Oakland, California, Anania Geologic Engineering, January 17, 1990.

Anania Geologic Engineering (AGE) installed five off-site monitoring wells in August 1989. The purpose of the work was to evaluate off-site extent of petroleum hydrocarbons in soil and ground water resulting from releases from five USTs formerly located in the northwest corner of the site. Soil samples at the time of installation and ground water samples collected in September, October, and November 1989 were analyzed for total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene, and xylenes (BTEX); total lead; oil and grease; and polychlorinated biphenyls (PCBs). Free product was not reported in the wells. Concentrations of up to 1,170 parts per million (ppm) total petroleum hydrocarbons in the gasoline range (TPHg), 945 ppm oil and grease, 7.8 ppm benzene, 39 ppm toluene, 13 ppm ethylbenzene, and 70 ppm xylenes were detected in analyzed soil samples. Maximum concentrations were detected at well MW-OS-26 at depths of 7½ feet to 10½ feet below ground surface (bgs). A maximum concentration of 40 ppm total lead in soil was detected at MW-OS-29 at an approximate depth of 9½ feet to 10 feet bgs. Ground water sampling results for the three months detected maximum concentrations at well MW-OS-26. Maximum concentrations detected included 590 parts per billion (ppb) total petroleum hydrocarbons in the diesel range (TPHd) in September, 12,000 ppb TPHg in November, 4,200 ppb benzene in November, 3,000 ppb toluene in November, 110 ppb ethylbenzene in September, 1,100 ppb xylenes in September, and 1,000 ppb oil and grease in September. Lead and PCBs were not detected in samples analyzed. Additionally, a natural gas leak at the time of the October sampling event was believed to have impacted the October sampling results.

Request for Case Closure Report, Former Nestle USA, Inc. Facility, 1310 14th Street, Oakland, California, ETIC Engineering, Inc., January 2002.

In this report, ETIC Engineering presented data in support of case closure for the northwest portion of the Nestle Facility. The report cited contaminant source removal via removal of two gasoline and two diesel USTs (December 1988) and one waste oil UST (January 1989). Approximately 1,200-cubic yards of soil from the UST

excavation were treated on-site and replaced into the excavation. Following the UST removal, ground water was extracted from on-site wells for the removal of an estimated 5,000-gallons of liquid phase hydrocarbons (LPH). Remediation activities at the site also included product skimming, initiated in January 1989 and continued to July 1989, resulting in approximately 3,855-gallons of recovered LPH; a Soil Vapor Extraction System (SVE) operated from January 1994 to December 1995 which reportedly removed approximately 5,200-gallons of LPH; and a Multi-Phase Extraction System (MPE) operated from August 1997 through June 2000 that resulted in approximately 10,875 pounds of recovered LPH.

At the time of the January 2002 Report, 34 vapor extraction wells, 103 product recovery wells, and 22 other wells had been drilled at the site; 79 wells were known to have been abandoned by the date of the report. Based on past investigations, TPHg impacted soil was reportedly limited to between 10 and 15 feet bgs. Also, ETIC reported that quarterly ground water monitoring of selected wells indicated that TPHg, BTEX, and halogenated volatile organic compounds (VOCs) detected in ground water were primarily limited in extent to the area that was remediated. The lateral extent of the LPH impacted area was also reported to be limited in extent and not migrating. Soil gas sampling conducted in August 1999 indicated that soil vapor concentrations did not present a human health risk under the site use limitations (non-residential) outlined by the Risk Management Plan and Covenant and Environmental Restriction Document.

Groundwater Monitoring Report, First and Second Quarters 2002, Former Nestle USA, Inc. Facility, 1310 14th Street, Oakland, California, ETIC Engineering, Inc., August 2002.

Ground water monitoring results from the first and second quarters of 2000 (while the MPE was in operation) were compared with ground water monitoring results collected from the third and fourth quarters of 2000 (during a period the MPE was no longer in operation). A comparison of ground water monitoring results by ETIC indicated that the dissolved phase hydrocarbon levels had stabilized. Gauging non-aqueous phase liquid (NAPL) levels in wells found 0.70 feet of NAPL in well PR64 during the first quarter 2002 sampling event and 0.02 feet in PR53, 0.46 feet at PR54, and 0.49 feet at PR64 during the second quarter 2002 sampling event. Concentrations of petroleum hydrocarbons detected in ground water during the second quarter event (May 2002) were up to 35,800 ppb benzene, 53,600 ppb toluene, 43,800 ppb ethylbenzene, 216,000 ppb xylenes, 3,280,000 ppb TPHg, 113,000 ppb TPHd, 130 1,1-DCA, 29 1,2-DCA, and 20.9 ppb MTBE.

4.0 REGULATORY RECORDS

4.1 City and County Agencies File Review

To obtain information on hazardous materials usage and storage, we reviewed readily available information at the Oakland Building Department (OBD), Oakland Fire Department (OFD), and Alameda County Environmental Health Department (ACEHD) pertaining to 1310 Fourteenth Street. The information made available to us is summarized in Table 3.

Table 3. Available File Review Information

Agency	Date	Entity	Remarks
OBD	April 1940 through August 1986	Carnation Company 1300-1310 14th Street; 1324 14th Street; 1401 Poplar Street	Various Building Permit Applications (BPA) and Building Department Inspections (BDI) for building additions, remodeling, storage structures, freezer rooms, equipment replacement, etc. On-site work reported as a fresh milk plant and ice creamery.
OBD	May 11, 1944	Carnation Company 1310 14th Street	BPA reports a can washing area.
OBD	June 16, 1947	Carnation Company 1310 14th Street	BPA for a maintenance shop.
OBD	October 20, 1961	Carnation Company 1310 14th Street	Inter-office letter from the L.A. General Office regarding a field visit to the Carnation Facility; reports a compressor room, boiler room, and maintenance shop.
OBD	May 17, 1965	Carnation Company 1310 14th Street	BPA for new construction of concrete slab foundation for liquid nitrogen tank.
OBD	February 2, 1968	Carnation Company 1310 14th Street	BPA for addition of silo storage tank #1.
OBD	February 21, 1972	Carnation Company 1310 14th Street	BPA for addition of silo storage tank #2.
OBD	June 19, 1972	Carnation Company 1310 14th Street	BPA for platform construction for mix tanks.
OBD	June 13, 1979	Carnation Company 1310 14th Street	BDI reporting building use as industrial warehouse.
OBD	October 7, 1980	Carnation Company 1310 14th Street	BPA for structural steel construction to support a new tank.
OBD	April 12, 1983	Carnation Company 1310 14th Street	BPA for a roof repair and paint spray booth rebuild.
OFD	August 17, 1988	Carnation Company 1310 14th Street	Facility Questionnaire reporting the use of ammonia hydroxide on-site. Also reports hazardous chemical storage in underground tanks or sumps.
OFD	August 17, 1988	Carnation Company 1310 14th Street	Inspection Report (IR) indicating 11,400-gallon low sulfur fuel tank, 12,000-gallon low sulfur tank, 12,000-gallon diesel tank, 10,000-gallon gasoline tank, 10,000-gallon diesel tank, and 500-gallon waste oil tank on-site. No violations reported.
ACEHD	December 15, 1988	Carnation Company 1310 14th Street	UST Closure/Modification Plans for 12,000-gallon gasoline UST, 12,000-gallon diesel UST, 10,000-gallon gasoline UST, 10,000-gallon diesel UST, and 550-gallon waste oil UST.
OFD	January 17, 1989	Carnation Company 1310 14th Street	Notes reporting that five USTs had been removed from the site and two low sulfur fuel oil tanks remained.
ACEHD	January 17, 1989, January 24, 1989	Carnation Company 1310 14th Street	Unauthorized Release Report reporting floating product at gasoline and diesel UST excavation.
ACEHD	February 1, 1989, February 13, 1989, April 3, 1989, August 7, 1989, January 17, 1990	Carnation Company 1310 14th Street	Correspondence from the Alameda County Health Care Services (ACHCS), Preliminary Site Characterization, Work Plan for Site Characterization of UST Excavation Area, Remedial Action Plan regarding UST Excavation, Work Plan for Off-site Exploration to evaluate fuel contamination extent due to USTs, and Results of Off-site Investigation Report.

(continued)

Table 3. Available File Review Information
(continued)

Agency	Date	Entity	Remarks
OFD	February 2, 1989	Carnation Company 1310 14th Street	UST application forms for one 12,000-gallon oil UST installed in 1973 and one 11,405-gallon low sulfur fuel oil UST installed in 1947.
OFD	March 27, 1989	Carnation Company 1310 14th Street	Work plan for site characterization of two boiler fuel tanks.
OFD	April 25, 1989	Carnation Company 1310 14th Street	Letter from ACHCS not allowing the use of monitoring alternative 4 (the installation and sampling of ground water wells) to monitor the existing boiler fuel USTs.
OFD	June 5, 1989, September 15, 1989	Carnation Company 1310 14th Street	Request for in-place abandonment for one 11,4000-gallon (installed in 1946) and one 12,000-gallon boiler fuel tanks (installed in 1977). Four monitoring wells were installed at selected locations near the boiler fuel tanks. Soil samples collected and analyzed did not detect TPHg or TPHd above 10 ppm and did not detect oil and grease above 50 ppm. Constituents of up to 1.6 ppm total lead, up to 0.01 ppm toluene, up to 0.24 ppm acetone, and 0.017 ppm benzylbutylphthalate were detected. Acetone was believed to have been a laboratory contaminant due to its presence in the method blank and benzylbutylphthalate was a common ice cream constituent. One water sample collected before well development and analyzed indicated it was not impacted.
ACEHD	September 12, 1989	Carnation Company 1310 14th Street	Unauthorized Release Report reported PCBs in ground water sample at monitoring well PR-12 at a concentration of 66 ppm arochlor 1254.
ACEHD	October 9, 1989	Carnation Company 1310 14th Street	Summary Report for the period of April through July 1989 regarding on-site remediation.
ACHEHD	November 1989	Carnation Company 1310 14th Street	Quarterly Ground Water Monitoring Reports by Anania Geologic Engineering.
OFD	April 4, 1990	Carnation Company 1310 14th Street	Billing change form adjusting the number of tanks from two to zero; noted that USTs were closed in-place.
ACEHD	May 16, 1991, September 17, 1991	Carnation Company 1310 14th Street	Work Plan and Site Characterization Report.
ACEHD	September 1991 through September 1992	Carnation Company 1310 14th Street	Quarterly Ground Water Monitoring Reports by Harding Lawson Associates.
ACEHD	December 1992 through August 1995	Carnation Company 1310 14th Street	Quarterly Ground Water Monitoring Reports by Park Environmental.
ACEHD	February 10, 1993	Carnation Company 1310 14th Street	Workplan for Soil and Ground Water Remediation for the Carnation Facility.
ACEHD	May 19, 1994, February 1995	Carnation Company 1310 14th Street	Vapor Extraction Remediation Update and Vapor Extraction Monitoring Report reporting the initiation of the soil vapor extraction system on January/February 1994.
ACEHD	February 1996 through December 1998	Carnation Company 1310 14th Street	Quarterly Ground Water Monitoring Reports by EA Engineering, Science, and Technology.

(continued)

Table 3. Available File Review Information
(continued)

Agency	Date	Entity	Remarks
ACEHD	May 1996, July 1996	Carnation Company 1310 14th Street	Draft Interim Recoverability Report and Product Recoverability and Vapor Extraction/Air Sparging Pilot Test Report.
ACEHD	October 10, 1996	Carnation Company 1310 14th Street	IR indicating sumps at wash station, grouted sumps at machine work bay and lube rack, existing solvent wash rack, and possible hydraulic lift reservoir. Also reported drums of motor oil stored in paint room.
ACEHD	October 31, 1996	Carnation Company 1310 14th Street	IR indicating two Safety-Kleen systems, kerosene AST, and 1,000-gallon motor oil AST on-site. Waste solvent from system disposed to waste oil UST. Prior to Safety-Kleen System (approximately 1976), Carnation had own parts cleaner system.
ACEHD	June 9, 1999, January 26, 2000	Carnation Company 1310 14th Street	Letters regarding meetings between RWQCB-SF, ACHCS, and ETIC.
ACEHD	July 1999 through August 2002	Carnation Company 1310 14th Street	Quarterly Ground Water Monitoring by ETIC Engineering, Inc.
ACEHD	March 17, 2000	Carnation Company 1310 14th Street	Memo from Javaherian Consulting, Inc. regarding Risk-Based Corrective Action Analysis.
OFD, ACEHD	June 12, 2000	Carnation Company 1310 14th Street	Copy of Covenant and Environmental Restriction.
ACEHD	May 3, 2000, July 6, 2000	Carnation Company 1310 14th Street	Letter from RWQCB-SF regarding Risk Assessment for Nestle USA, Inc. Facility.
ACEHD	July 25, 2000	Carnation Company 1310 14th Street	Letter by ETIC regarding Status Report of the Site.
ACEHD	January 24, 2001, March 28, 2001, June 11, 2001	Carnation Company 1310 14th Street	Comprehensive Site Characterization Report, subsequent comments by the RWQCB-SF, and ETIC response to comments.
ACEHD	January 24, 2001	Carnation Company 1310 14th Street	Risk Management Plan for Deed Restricted Portion of Former Nestle Facility.
ACEHD	July 26, 2001, August 8, 2001, October 12, 2001	Carnation Company 1310 14th Street	Correspondence between ACHCS and ETIC regarding the proper abandonment of 32 wells. Wells abandoned in August 2001.
ACEHD	September 26, 2001	Carnation Company 1310 14th Street	Well Installation Report by ETIC. A site history summary reported that American Creamery originally constructed site facilities in 1915, Carnation Creamery purchased the site in 1929, and Nestle USA purchased the property in 1985 and continued operations until 1991.
ACEHD	October 2002 through November 2002	Carnation Company 1310 14th Street	Letters from the ACHCS reporting their concurrence with the destruction of all on-site wells with the exception of eleven, to be monitored for two additional years. Site closure could be requested after this time if it were shown the on-site plume was not migrating.

4.2 Regulatory Agency Database Report

During this study, a regulatory agency database report was obtained and reviewed to help establish whether contamination incidents have been reported in the site vicinity. A list of the database sources reviewed, a detailed description of the sources, and a radius map indicating the location of the reported facilities relative to the project site are presented in Appendix C.

Nearby reported hazardous materials spills and releases considered to have a moderate or high potential to impact the site are presented in Table 4. The potential for site impact was evaluated based on information in the database records regarding the type of release, current case status, and distance and direction from the site.

Table 4. Nearby Reported Hazardous Materials Spills and Releases

Facility	Map ID No.	Address	Distance and Direction From Site	Potential Concern
Carnation Dairies	A4	1310 14th Street	On-site	Listed in Leaking Underground Storage Tanks (LUST) and Cortese databases for a gasoline release. Ground water affected; remedial actions underway.
Nabisco Brands Inc.	D16	1267 14th Street	<1/8 mile southeast	Listed in LUST and Cortese databases for a waste oil release. Ground water affected; case closed 06/08/93.
Vacant Lot Sabek Inc.	F25	1230 14th Street	1/8-1/4 mile east/southeast	Listed in LUST and Cortese databases for a gasoline release. Ground water affected; no action yet taken.
City of Oakland Fire House #4	M40	1235 14th Street	1/8-1/4 mile southeast	Listed in LUST database. Case closed. No other information given.
Shell/Vacant Lot/Sabek Inc	M43	1230 14th Street	1/8-1/4 mile southeast	Listed in LUST database. Leak being confirmed/remedial action underway. No other information given.

Additionally, Nestle USA Inc. and Encinal 14th Street, LLC, at 1310 14th Street, were listed on the Haznet database as hazardous waste generators for oil-containing and asbestos-containing wastes. Nestle USA Inc. was also listed in the Emissions Inventory Data (EMI) database for NOx and SOx emissions.

5.0 LIMITED ASBESTOS, LEAD-BASED PAINT, AND FLUORESCENT LIGHT BALLAST SURVEY

RGA Environmental Inc., a certified building inspector for asbestos and lead-based paint, performed a limited visual survey of the site and a document review of previous asbestos-related documents associated with the site. Based on the documents reviewed, some identified asbestos-containing materials (ACMs) had been reportedly removed from the southeastern most building (designated by RGA as the main production building) and boiler building. However, some ACMs were documented as remaining on the roofing of all buildings, in wall and ceiling chases in the main production building, and in the surfacing/texture of the main production building's exterior. Additional ACMs identified in a referenced October 2000 report likely remain on-site, but were not specifically identified by RGA. Suspect ACMs identified during RGA's limited visual survey included duct wrap in the main production building, pipe

flange gaskets and internal boiler materials in the boiler building, skim coat on the perimeter walls, broken cement shingles/panels observed in the courtyard, and finish materials in the guard house and storage unit.

Additionally, due to the age of on-site buildings, RGA reported that all painted surfaces were likely lead containing. A significant amount of paint was observed as damaged and peeling. Fluorescent light fixtures were also observed in on-site buildings.

The asbestos and lead-based paint survey letter, which includes a list of documents reviewed, is presented in Appendix D.

6.0 SOIL, SOIL VAPOR, AND GROUND WATER QUALITY EVALUATION

6.1 Subsurface Investigation

On February 9, 10, 12, and 17, 2004 and under the supervision of Principal Environmental Geologist Peter M. Langtry, R.G., C.HG , Staff Environmental Engineer Veronica Tiglao directed a subsurface exploration program and logged twenty-seven borings (EB-1 through EB-27) to approximate depths of 4 to 17 feet.

Five borings were drilled to an approximate depth of 5 feet for collection of soil vapor samples (EB-1, EB-3, EB-6, EB-7, and EB-8) at selected locations near the documented former fuel release on the northwestern portion of the site.

Two borings were drilled to an approximate depth of 15 feet for the collection of ground water samples. Borings were located on the northeastern portion of the site (EB-2) and between the sumps in the building at the northwestern portion of the site (EB-4).

Eleven borings were drilled to depths of approximately 15 feet to 17 feet for collection of soil and ground water samples. One boring was located in the area of an auto repair facility formerly at the southwestern portion of the property (EB-5), one boring was located at the approximate area of a former gasoline service station at the southwest corner of the site (EB-9), one boring was located in the approximate area of a former UST near central portions of the site (EB-11), four borings were located in areas near the closed-in-place fuel oil tanks (EB-14, EB-24, EB-26, and EB-27), two borings were located in the area of the former gasoline pump (EB-15 and EB-25), one boring was located in the boiler room (EB-21), and one boring was located in the maintenance shop at the eastern portion of the property (EB-22).

Nine borings were drilled to a depth of approximately 4 feet for collection of shallow soil samples. Two borings were located in the central portions of the site (EB-10 and EB-13), one boring was located near the chemical storage shed at the southern portion of the site (EB-12), and one boring was located in the approximate location of the former incinerator at the site (EB-16). In addition, five borings were located in the fill below selected building floors (EB-17 through EB-20 and EB-23).

Ground water was encountered at approximate depths of 5 to 8½ feet bgs. Soil sampling protocol, boring logs, and permits are presented in Appendix E.

6.2 Soil Sample Collection

Soil samples were obtained from the borings at 5-foot depth intervals, significant changes in lithology, or other significant field observations. The soil samples were monitored for volatile hydrocarbons using an organic vapor meter (OVM). The OVM generally detected organic vapors consistent with ambient background concentrations, with the exception of EB-15; concentrations of up to 494 ppm were detected at an approximate depth of 1½ to 2 feet bgs. The OVM results are shown on the boring logs presented in Appendix E.

Soil samples were collected from the surface (asphalt, concrete, and or baserock) to a depth of approximately ½ foot at the exploratory borings drilled to approximately 4 feet. Selected soil samples were submitted to a state-certified analytical laboratory. A discussion of sampling protocol is included in Appendix E.

At deeper exploratory boring locations, soil samples were collected at each boring from just above the shallow water-bearing zone, those with suspect staining, or those with the highest OVM readings. Selected soil samples were submitted to a state-certified analytical laboratory. A discussion of sampling protocol is included in Appendix E.

6.2.1 Subsurface Materials

Soils encountered during the subsurface investigation consisted primarily of silty and clayey sands, with the exception of poorly-graded sands encountered at boring locations EB-2 and EB-11, at approximate depths of 11 to 12 feet bgs. Fill, primarily a dark brown silty sand, was encountered from beneath the paved surfaces (asphalt, and/or concrete and underlying baserock) to approximate depths of 4 feet bgs, except for EB-14 where burnt trace wood debris was observed at depths of up to 15 feet bgs. Boring EB-14 appears to have been located in the backfill of the in-place abandoned UST. Trace brick and/or burnt wood debris was encountered within the fill at boring locations EB-5, EB- 12, EB-14, EB-18, EB- 21, EB- 25, and EB-26. Additionally, an approximately 6-inch layer of black, medium coarse sized, angular material of unknown origin was encountered between concrete layers at boring location EB-20. A sample of this material was collected and analyzed (EB-20, Subslab; see below).

6.2.2 Laboratory Analyses

Nine soil samples from the former auto shop, gasoline service station, former USTs, and former fuel pump locations (EB-5, EB-9, EB-11, EB-14, EB-15, and EB-24 through EB-27) were analyzed for TPHg, TPHd, and total petroleum hydrocarbons in the motor oil range (TPHmo) (EPA Test Method 8015M); BTEX and MTBE (EPA Test Method 8020). Three selected soil samples collected from selected exterior areas (EB-10, EB-13, and EB-16) were analyzed for organochlorine pesticides (EPA Test Method 8081) and lead (EPA Test Method 6010/7000). One soil sample collected from the former incinerator area (EB-16) was additionally analyzed for polynuclear aromatic hydrocarbons (PNAs) (EPA Test Method 8310). One soil sample from the chemical storage shed (EB-12) was analyzed for CAM 17 metals (EPA Test Method 6010/7000) and acidity (pH). Seven soil samples collected from the interiors of on-site buildings (EB-17 through EB-23) were analyzed for 17 California Assessment Manual (CAM 17) metals (EPA Test Method 6010/7000) and asbestos (polarized light microscopy).

Also, a subslab layer located between two concrete slabs at EB-20 was analyzed for PNAs (EPA Test Method 8310) and total extractable petroleum hydrocarbons (EPA Test Method 8015M).

Analytical results are presented in Table 5. Copies of the analytical reports and chain of custody documentation are presented in Appendix F.

Table 5A. Analytical Results of Selected Soil Samples
(concentrations in parts per million)

Boring Number	Depth (feet)	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
EB-5	4½-5	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005	<0.005
EB-9	4½-5	<1.0	1.9	<50	<0.005	<0.005	<0.005	<0.005	<0.005
EB-11	8½-9	<1.0	1.5	<50	<0.005	<0.005	<0.005	<0.005	<0.005
EB-14	10-10½	2.0	3,700	21,000	<0.005	<0.005	<0.005	<0.005	<0.005
EB-15	1½-2	610	230	300	<0.005	<0.005	0.56	<0.005	<0.005
EB-20	subslab	NA	1,000	11,000	NA	NA	NA	NA	NA
EB-24	5-5½	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005	<0.005
EB-25	6½-7	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005	<0.005
EB-26	5½-6	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005	<0.005
EB-27	4½-5	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005	<0.005
Residential PRG*		NE	NE	NE	0.60	520	8.9	270	17
Residential ESL**		100	100	500	0.044	2.9	3.3	1.5	0.023

< Indicates that the compound was not detected at or above the stated laboratory reporting limit
* Preliminary Remediation Goal–EPA Region 9, October 2002
** Environmental Screening Level-SF Bay RWQCB, July 2003
NE Not established
NA Not analyzed

Table 5B. Analytical Results of Selected Soil Samples
(concentrations in parts per million)

Boring Number	Depth (feet)	Total Lead	PNAs	Organochlorine Pesticides
EB-10	0–½	9.2	NA	ND
EB-13	0–½	9.4	NA	ND
EB-16	0–½	1.7	ND	ND
EB-20	Subslab	NA	ND	NA
Residential PRG*		150	--	--
Residential ESL**		200	--	--

* Preliminary Remediation Goal–EPA Region 9, October 2002
** Environmental Screening Level-SF Bay RWQCB, July 2003
NA Not analyzed
ND Not detected above laboratory reporting limits

Table 5C. Analytical Results of Selected Soil Samples

(concentrations in parts per million)

Boring Number	Depth (feet)	Arsenic[1]	Cadmium[1]	Chromium[1]	Lead[1]	Mercury[1]	Asbestos	pH
EB-12	0–½	1.5	<0.5	28	2.5	0.55	NA	8.1
EB-17	0–½	2.2	<0.5	32	110	<0.05	ND	NA
EB-18	0–½	2.6	<0.5	26	36	0.16	ND	NA
EB-19	0–½	2.3	<0.5	24	50	0.15	ND	NA
EB-20	0–½	1.7	<0.5	24	3.6	<0.05	ND	NA
EB-21	½-1	2.7	0.5	13	130	0.21	ND	NA
EB-22	½-1	2.3	<0.5	25	38	0.072	ND	NA
EB-23	0-½	4.0	<0.5	32	4.3	0.053	ND	NA
Residential PRG*		260/ 1.6[2]	7.4	450	150	310	NE	--
Residential ESL**		5.5	7.4	58	750	10	NE	--

< Indicates that the compound was not detected at or above the stated laboratory reporting limit
* Preliminary Remediation Goal–EPA Region 9, October 2002
** Environmental Screening Level-SF Bay RWQCB, July 2003
NA Not analyzed
NE Not established
ND Not detected above laboratory reporting limits
1 Other CAM 17 metals analyzed were either not detected above laboratory reporting limits or were significantly below their respective Industrial PRGs and ESLs
2 Noncancer/Cancer endpoint

The Environmental Screening Levels (ESLs), revised from earlier Risk-Based Screening Levels (RBSLs), presented in Table 5 are published by the San Francisco Bay California Regional Water Quality Control Board (RWQCB-SF) to address environmental protection goals presented in the *Water Quality Control Plan for the San Francisco Bay Basin* (RWQCB, 1995). RBSLs were developed to protect human and ecological health and to be protective of beneficial uses of ground water taking into account site-specific conditions. The presence of a chemical at a concentration above an ESL does not necessarily indicate that adverse impacts to human health or the environment are occurring; exceeding ESLs indicates that the potential for impacts may exist and that additional evaluation is needed.

The preliminary remediation goals (PRGs) presented in Table 5 are risk-based concentrations developed by EPA Region 9; PRGs are for use as screening levels in determining if further evaluation is warranted, in prioritizing areas of concern, in establishing initial cleanup goals, and in estimation of potential health risks.

The PRGs are chemical concentrations that correspond to fixed levels of risk (either a cancer risk of one in one million [10^{-6}] or a non-carcinogenic hazard quotient of one, whichever occurs at a lower concentration). These levels are based on common exposure pathways, but effects of exposure to multiple contaminants and other site specific conditions are not considered. Thus, they are not intended as a substitute for a site specific health risk assessment. Chemical concentrations above the PRGs would not automatically designate the site as a health threat or trigger a response action. Exceeding a PRG, however, may suggest that further evaluation of potential risks is appropriate. This further evaluation may include additional sampling and/or the reassessment of the assumptions and routes of exposure that were used to develop the non-site specific PRGs.

Generally, regulatory agencies do not require cleanup below natural background concentrations. In some cases, the predictive risk-based models generate PRG levels that lie below typical background concentrations. If natural background concentrations are higher than the risk-based PRGs, an adjustment of the PRG is probably needed. An example is naturally-occurring arsenic in soils, which frequently has a higher concentration than the risk-based concentration set at a one-in-one-million cancer risk (the PRG for residential soils is 0.39 mg/kg.). After considering background concentrations in a local area, which is generally less than 10 ppm in Santa Clara County, EPA Region 9 has at times used the non-cancer PRG (22 mg/kg) to evaluate sites recognizing that this value tends to be above background levels yet still falls within the range of soil concentrations (0.39 to 39 mg/kg) that equates to the EPA's acceptable cancer risk range of 1×10^{-6} to 1×10^{-4}.

6.3 Soil Vapor Collection and Analyses

To evaluate soil vapor quality in the petroleum-impacted northwest area of the site, we collected five soil vapor samples (EB-1, EB-3, EB-6, EB-7, and EB-8) at a depth of approximately 5 feet. A discussion of sampling protocol is included in Appendix E.

The five soil vapor samples were analyzed at a state-certified laboratory for TPHg, BTEX, and VOCs (EPA Test Method TO-15) and propane (EPA Test Method 42). Analytical results are presented in Table 6. Copies of the analytical reports and chain of custody documentation are presented in Appendix F.

Table 6A. Analytical Results of Selected Soil Vapor Samples

(concentrations in ug per cubic meter)

Boring Number	Depth (feet)	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes	Propane	1,2,4-Trimethyl-benzene[1]	Ethanol[1]
EB-1	5	530	2.8	4.6	4.2	6.8	<147	5.1	11
EB-3	5	230,000	200	<64	<74	<74	2,199	<84	<130
EB-6	5	140	<2.6	3.7	<3.6	<3.6	<147	<4.0	8.1
EB-7	5	1,800	28	38	11	43	161	8.2	11
EB-8	5	860	8.8	9.0	<3.6	6.1	<147	4.6	9.9
Residential ESL**		10,000	84	83,000	2,200	21,000	NE	NE	NE

< Indicates that the compound was not detected at or above the stated laboratory reporting limit
* Preliminary Remediation Goal–EPA Region 9, October 2002
** Environmental Screening Level-SF Bay RWQCB, July 2003
NE Not established
ND Not detected above laboratory reporting limits
1 Other VOCs analyzed were not detected above laboratory reporting limits

Table 6B. Analytical Results of Selected Soil Vapor Samples
(concentrations in ug per cubic meter)

Boring Number	Depth (feet)	Freon 12 [1]	Freon 11[1]	1,3-Butadiene[1]	Hexane[1]	Cyclo-hexane[1]	Heptane[1]	Acetone[1]	2-Propanol[1]	2-Butanone[1]
EB-1	5	<4.0	<4.6	3.2	<2.9	<2.8	<3.4	66	<8.0	<9.6
EB-3	5	<84	<96	<38	1,100	320	<70	<160	<170	<200
EB-6	5	<4.0	<4.6	<1.8	<2.9	<2.8	3.4	8.7	<9.0	<9.6
EB-7	5	14	<4.8	14	12	4.9	7.6	79	<8.4	24
EB-8	5	330	8.2	8.6	5.0	<2.8	<3.4	56	9.1	13
Residential ESL**		NE	NE	NE	NE	NE	NE	73,000	NE	210,000

< Indicates that the compound was not detected at or above the stated laboratory reporting limit
* Preliminary Remediation Goal–EPA Region 9, October 2002
** Environmental Screening Level-SF Bay RWQCB, July 2003
NE Not established
ND Not detected above laboratory reporting limits
1 Other VOCs analyzed were not detected above laboratory reporting limits

6.4 Ground Water Sample Collection and Analyses

To evaluate ground water quality at the site, ground water grab samples were collected from borings EB-2, EB-4, EB-5, EB-9, EB-11, EB-14, EB-15, EB-21, EB-22, and EB-24 through EB-27. A discussion of sampling protocol is included in Appendix E.

Thirteen ground water samples (EB-2, EB-4, EB-5, EB-9, EB-11, EB-14, EB-15, EB-21, EB-22, and EB-24 through EB-27) were analyzed for TPHg, TPHd, TPHmo (EPA Test Method 8015M); and BTEX and MTBE (EPA Test Method 8020). Also, nine ground water samples (EB-2, EB-4, EB-5, EB-9, EB-11, EB-14, EB-15, EB-21, EB-22) were additionally analyzed for halogenated VOCs (EPA Test Method 8260). Analytical results are presented in Table 7. Copies of the laboratory reports are attached in Appendix F.

Table 7. Analytical Results of Selected Ground Water Samples
(concentrations in parts per billion)

Boring Number	Date	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	Vinyl Chloride[1]	1,2-Dichloro-benzene[1]
EB-2	02/09/04	<50	54	<500	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5	<0.5
EB-4	02/09/04	<50	53	<500	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5	<0.5
EB-5	02/09/04	<50	<50	<500	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5	<0.5
EB-9	02/10/04	<50	58	<500	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5
EB-11	02/10/04	<50	74	<500	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5
EB-14	02/10/04	670	120,000	650,000	0.74	3.7	1.6	5.8	<0.5	12	<2.0
EB-15	02/10/04	85,000	1,600	770	350	<100	450	<200	<100	120	27
EB-21	02/12/04	<50	<50	<500	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5
EB-22	02/12/04	<50	<50	<500	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5
EB-24	02/17/04	51	<50	<500	0.70	<0.5	<0.5	<0.5	<5.0	NA	NA
EB-25	02/17/04	<50	63	<500	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA
EB-26	02/17/04	<50	77	<500	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA
EB-27	02/17/04	<50	<50	<500	<0.5	<0.5	<0.5	0.54	<5.0	NA	NA
MCL*		NE	NE	NE	1.0	150	300	1,750	13	0.5	600

< Indicates that the compound was not detected at or above the stated laboratory reporting limit
* Drinking water Maximum Contaminant Levels–California DHS, June 2003
NE Not established
NA Not analyzed
1 Other VOCs analyzed were not detected above laboratory reporting limits

6.5 Silica Gel Filter

The ground water samples were passed through a silica gel column prior to the TPHd analysis (EPA Test method 8015) to help remove non-fuel hydrocarbons. The silica gel removes oxygenated organic compounds produced by biologic degradation of organic materials. Studies have shown that the silica gel filter does not significantly remove extractable range petroleum hydrocarbons, including diesel, because the petroleum hydrocarbons are composed of non-polar substances (Zemo, 1997). Performing the silica gel filtration prior to analysis is important where the samples are collected from organic rich environments common to the shallow ground water-bearing zones in the San Francisco Bay Area; these environments contain significant concentrations of naturally-occurring hydrocarbons that can be detected in the EPA 8015 analysis and falsely quantified by the laboratory as diesel.

7.0 HYDRAULIC FLUID TANK AND WIPE SAMPLE QUALITY EVALUATION

7.1 Hydraulic Fluid Tank Sample Collection and Analyses

To evaluate for the presence of PCBs in the hydraulic fluid formerly used for hydraulic lifts at the eastern portion of the property, a sample of the hydraulic fluid was collected from the hydraulic fluid tank and submitted to a state-certified laboratory for analysis (Hydraulic Oil). A discussion of the sampling protocol is included in Appendix E.

The hydraulic fluid sample was analyzed for PCBs (EPA Test Method 8082). Analytical results are presented in Table 8. Copies of the laboratory reports are attached in Appendix F.

Table 8. Analytical Results of Hydraulic Fuel Sample
(concentrations in parts per million)

Sample Name	PCBs
Hydraulic Oil	<0.50

< Indicates that the compound was not detected at or above the stated laboratory reporting limit

7.2 Wipe Sample Collection and Analyses

To evaluate the presence of PCBs on the surfaces of the former compressor rooms, wipe samples were collected from one wall and the floor of the easternmost compressor room. A discussion of sampling protocol is included in Appendix F.

The two wipe samples (Floor-Wipe and Wall-Wipe) were analyzed for PCBs (EPA Test Method 8082). Analytical results are presented in Table 9. Copies of the laboratory reports are attached in Appendix F.

Table 9. Analytical Results of Selected Soil Samples
(concentrations in ug per wipe)

Sample Name	PCBs
Floor-Wipe	<0.25
Wall-Wipe	<0.25

< Indicates that the compound was not detected at or above the stated laboratory reporting limit

8.0 GEOPHYSICAL SURVEY

To evaluate whether USTs or other subsurface metallic structures may be present around the on-site structures, Jim Rezowalli, a registered geophysicist, used a magnetometer and a pipe and cable locator to map the vertical magnetic gradient on accessible areas of the site.

The magnetic gradient is uniform throughout a site free of ferrous metal. Metal objects, however, will produce magnetic anomalies with characteristic shapes and magnitudes if not masked by overlying or nearby metallic debris. Magnetic data were collected on stations at 10-foot intervals along traverse lines spaced 10 feet apart. The data were downloaded to a computer and contoured. Ground penetrating radar (GPR) was used to augment the magnetic investigation as needed. Radar penetration at the site appeared to be approximately 2½ feet.

The site contained numerous strong magnetic anomalies from surface metal and buried utilities. The magnetic anomalies will mask magnetic anomalies from buried metal structures in these areas. Ten magnetic anomalies that did not appear to be caused by surface metal were located on several areas of the site. According to the geophysical survey report, these magnetic anomalies were likely associated with metal debris from the demolition of former buildings, sheared posts, or buried pipes.

Additionally, three radar anomalies were located in the area of the tanks that were reportedly abandoned in-place (Figure 2). According to the geophysical survey report, two of the radar anomalies may potentially be associated with two USTs. The third radar anomaly was suspected to be caused by a buried storm or sewer line. Also, metal rings observed imbedded in the concrete appeared to be indicative of a third possible UST location. Detailed results of the survey are presented in Appendix G.

9.0 CONCLUSIONS

9.1 Historical Summary

Based on the information reviewed, the site was developed with residences by 1902. By 1912, some commercial facilities were located on the site. Facilities to manufacture ice cream and packaged milk were constructed on-site by American Creamery by 1915. Carnation purchased the site in 1929 and constructed additional structures between 1946 and 1973 for dairy product processing and distribution. Nestle USA, Inc. purchased the site in 1985 and continued operations until sometime between 1989 and 1991. The site was vacant at the time of this report.

9.2 Chemical Storage and Use

Based on the information reviewed, a gasoline UST was located on-site by at least 1912. Additionally, two oil and gas stations and a truck repair shop were located on-site between approximately 1949 and 1957. Operations at the Carnation Company, and, subsequently, Nestle USA, included the use of an incinerator (approximately 1949 to 1957); gas and oil pump (approximately 1949 to 1959); two boiler fuel USTs (approximately 1947 to in-place abandonment in 1990 and approximately 1973 to in-place abandonment in 1990); two gasoline USTs, two diesel USTs, and a waste oil UST (removed in 1988/1989); a paint booth (approximately 1949 to 1991); a kerosene AST (1996); auto repair and maintenance (approximately 1949 to 1991); wash rack (approximately 1949 to 1991); a boiler room and engine room (approximately 1949 to 1991); and cold storage rooms (approximately 1949 to 1991). Signs observed during the site reconnaissance also indicated storage areas of various oils, ammonia, acid, and chlorine.

9.3 Fuel Leak, Northwest Portion of Site

Two gasoline and two diesel USTs and one waste oil UST were removed from the northwest area of the site in 1988 and 1989. Approximately 1,200-cubic yards of petroleum-impacted soil from the UST excavation were treated on-site and replaced into the excavation. Redial activities have included skimming of petroleum product from ground water, soil vapor extraction, and ground water extraction. Ground water beneath the northwest corner of the site is significantly impacted, with petroleum concentrations, including benzene, exceeding residential ESLs. In addition, petroleum product still appears to be present on ground water beneath the site. The petroleum-impacted ground water does not appear to be significantly migrating off-site, based on information reviewed. A deed restriction has been placed on the northwest corner of the site that restricts use of the burdened area to industrial purposes.

9.4 General Soil Quality

Laboratory analyses of soil samples collected from EB-5, EB-9, EB-11, EB-14, EB-15, and EB-24 through EB-27 (drilled at the approximate areas of the former auto shop, gasoline service station, former USTs, and former fuel pump locations) did not detect BTEX or MTBE above laboratory reporting limits. TPHg, TPHd and TPHmo were detected at EB-14 and EB-15 (near the abandoned-in-place USTs near the boiler room) at concentrations of up to 610 ppm TPHg at EB-15, 3,700 ppm TPHd at EB-14, and 21,000 ppm TPHmo at EB-14. The residential ESLs for TPHg, TPHd, and TPHmo are 100 ppm, 100ppm, and 500 ppm, respectively. There are no established PRGs for these contaminants. Regulatory agencies likely will require removal of the USTs and the over-excavation of soil in this area prior to residential development.

Soil samples collected from EB-10, EB-13, and EB-16 (drilled at selected exterior areas of the site) were analyzed for organochlorine pesticides and lead. Organochlorine pesticides were not detected above laboratory reporting limits. Lead concentrations detected ranged from 1.7 ppm to 9.4 ppm; concentrations detected appeared consistent with naturally occurring background levels and were significantly below residential PRGs and ESLs. One soil sample collected from the former incinerator area (EB-16) was additionally analyzed for PNAs; PNAs were not detected above laboratory reporting limits.

Seven soil samples were collected beneath the concrete slabs at the interiors of on-site buildings (boring locations EB-17 through EB-23) and analyzed for CAM 17 metals and asbestos. Asbestos was not detected above laboratory reporting limits. Metal concentrations detected in the samples were either below laboratory reporting limits or were within the range of naturally occurring background concentrations, with the exception of lead. Lead was detected at 110 ppm in sample EB-17 and 130 ppm in sample EB-21. The concentrations detected were below the residential ESL of 200 ppm. However, based on our experience, total lead concentrations greater than 100 ppm likely will exceed the soluble hazardous waste limit (STLC), or California's hazardous waste criteria of 5 ppm. The soil, if excavated, could potentially be classified as a hazardous waste. If a higher degree of comfort is desired, we recommend further soil sampling in the area of samples EB-17 and EB-21 for total and soluble lead analyses.

A sample of suspected insulation material was collected between layers of concrete from boring location EB-20 at the southeastern cold storage room. Laboratory analyses for total recoverable petroleum hydrocarbons detected 1,000 ppm TPHd and 11,000 ppm TPHmo. The sample was also analyzed for PNAs; PNAs were not detected above laboratory reporting limits. This material may require appropriate handling and disposal during building demolition.

One soil sample collected from the chemical storage shed (boring location EB-12) was analyzed for CAM 17 metals and acidity. Metal concentrations detected in the samples were either below laboratory reporting limits or were within the range of naturally occurring background concentrations. pH detected (8.1) appeared within the normal range for soil.

9.5 General Ground Water Quality

During this investigation, ground water grab samples were collected from borings EB-2, EB-4, EB-5, EB-9, EB-11, EB-14, EB-15, EB-21, EB-22, and EB-24 through EB-27, advanced at selected locations across the site.

Analysis of ground water samples from EB-14 and EB-15 (located near the abandoned-in-place USTs) detected significant concentrations of TPHg (670 ppb at EB-14 and 85,000 ppb at EB-15), TPHd (120,000 ppb at EB-14 and 1,600 ppb at EB-15), and TPHmo (650,000 ppb at EB-14 and 770 ppb at EB-15). Also, 0.74 ppb benzene, 3.7 ppb toluene, 1.6 ppb ethylbenzene, 5.8 ppb xylenes, and 12 ppb vinyl chloride were detected at EB-14; MTBE and other VOCs were not detected above laboratory reporting limits. Concentrations of 350 ppb benzene, 450 ppb ethylbenzene, 120 ppb vinyl chloride, and 1,2-dichlorobenzene were detected at EB-15; toluene, xylenes, MTBE and other VOCs were not detected above laboratory reporting limits. Based on the analytical data from ground water samples EB-24 through EB-27, the impacted ground water in the area of the abandoned in-place USTs appears limited. Regulatory agency staff may, however, require collection of additional samples to evaluate the extent of petroleum and VOC (vinyl chloride) impact. Regulatory agency staff also may require the evaluation of soil vapor quality in this area.

Analysis of ground water samples from EB-2 (northeast corner of the site), EB-4 (near sump in storage building), EB-5 (near former maintenance building), EB-9 (near former service station adjacent to southwest corner of site), EB-11 (near former gasoline UST shown on 1912 Sanborn map), EB-21 (former boiler room), and EB-22 (former maintenance shop), did not detect TPHmo, toluene, ethylbenzene, MTBE, or VOCs at or above laboratory reporting limits. Low concentrations of TPHd (74 ppb or less) were detected in samples EB-2, EB-4, EB-9, and EB-11. These concentrations were below the residential ESL and do not appear to be a significant threat to human health. Further evaluation of ground water quality in these areas does not appear required at this time.

9.6 General Soil Vapor Quality

During this investigation, soil vapor samples were collected from locations near the documented former fuel leak case in the northwest area of the site, at borings EB-1, EB-3, and EB-6 through EB-8. Varying concentrations of TPHg, benzene, toluene, ethylbenzene, and xylenes were detected below their respective residential ESLs, except for concentrations of 230,000 ug/cubic meter TPHg and 200 ug/cubic meter benzene at EB-3. Sample EB-3 was colleted near the former USTs. The residential ESLs for TPHg and benzene are 10,000 ug/cubic meter and 84 ug/cubic meter, respectively. Additionally, propane and several additional VOCs, including freon, hexane, heptane, and acetone, were detected.

9.7 Asbestos

Several types of suspect ACM were observed in the on-site buildings. We recommend performing a supplemental hazardous material survey to identify remaining ACMs

prior to demolition of the buildings, as required by the National Emissions Standards for Hazardous Air Pollutants (NESHAP) guidelines.

9.8 Lead-Based Paint

In 1978, the Consumer Product Safety Commission banned the use of lead as an additive in paint. Currently, the U.S. EPA and U.S. Department of Housing and Urban Development are proposing additional lead-based paint regulations. Based on the age of the buildings, lead-based paint is likely present. If lead-based paint is still bonded to the building materials, its removal is not required prior to demolition. It will be necessary, however, to follow the requirements outlined by Cal/OSHA Lead in Construction Standard, Title 8, California Code of Regulations (CCR) 1532.1 during demolition activities; these requirements include employing training, employee air monitoring, and dust control. If lead based paint is peeling, flaking or blistered, it should be removed prior to demolition; peeling and damaged paint was observed at several buildings during the limited visual survey. It is assumed that such paint will become separated from the building components during demolition activities; thus, it must be managed and disposed as a separate waste steam. Any debris or soil containing lead paint or coating must be disposed at landfills that are permitted to accept the waste being disposed.

If a further degree of comfort is desired with respect to the suspected lead-based paint, we recommend a supplemental hazardous material survey to identify lead-containing paints prior to demolition or renovation of the buildings.

9.9 Fluorescent Light Ballasts and Tubes

Fluorescent lights were observed on-site. Fluorescent light ballasts manufactured before 1978 may contain PCBs. Ballasts manufactured after January 1, 1978 should not contain PCBs and are required by law to contain a label that states that no PCBs are present within the units. Fluorescent light tubes also may contain mercury. The Department of Toxic Substances Control (DTSC) considers these wastes Universal Wastes. Universal Wastes are lower risk hazardous wastes that require proper disposal and handling. Disposal at an appropriate recycling facility is encouraged.

If a further degree of comfort is desired with respect to the suspected mercury- or PCB-containing fluorescent light ballasts, we recommend a supplemental hazardous material survey to identify these materials prior to demolition or renovation of the buildings.

9.10 Transformers

A transformer, owned by PG&E, was observed on the southern portion of the site. Additionally, several wall-mounted transformers and a former apparent transformer substation were observed on the eastern portion of the site. Transformers may contain transformer oil. Transformers observed appeared to be in relatively good condition and no oil leaks were observed. Although oil is typically not highly toxic or mobile in the environment, transformer oil may contain PCBs. If the transformers are to be removed or if leaks are observed, testing of the oil for PCBs should be performed. The manufacturer may also be able to provide information regarding the PCB content, if any.

9.11 Hydraulic Lifts

Five hydraulic lifts were observed at the site. Prior to purchase of the site, we recommend contacting the local regulatory agency to evaluate their requirements regarding the lifts. Hydraulic fluid leaks potentially can occur from the pistons, reservoirs, and piping. Although hydraulic fluid is typically not highly toxic or mobile in the environment, some hydraulic fluids may have contained PCBs. During this investigation, a hydraulic oil sample was collected from the hydraulic fluid oil tank at the site. Analysis of the hydraulic oil sample did not detect PCBs at or above laboratory reporting limits. Following removal of the lifts, we recommend that soil samples be collected to document soil quality.

9.12 Compressor Room Wall and Floor Surface Quality

During this investigation, wipe samples were collected from the surfaces of the former compressor rooms. Analysis of wipe samples did not detect PCBs at or above laboratory reporting limits. .

9.13 Geophysical Results

The site contained numerous strong magnetic anomalies from surface metal and buried utilities. Such magnetic anomalies mask magnetic anomalies from buried metal structures. Therefore, it is possible that some ferrous objects will not produce an anomaly for several reasons, including if the object is buried too deep, is too small, is buried under something, or is near another ferrous object. As noted above, ten magnetic anomalies that did not appear to be caused by surface metal were located on several areas of the site. According to the geophysical survey report, these magnetic anomalies were likely associated with metal debris from the demolition of former buildings, sheared posts, or buried pipes. Additionally, two radar anomalies potentially associated with two USTs were detected in the area of the closed-in-place tanks. Also, metal rings imbedded in the concrete observed in this area appeared to be indicative of a third possible UST location. Consideration should be given to excavating test pits in the areas of the closed-in-place tanks (radar anomalies) and former oil and gas station and former auto repair shop locations (magnetic anomalies).

9.14 Urban Runoff Pollution Prevention Program

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 sites.

Construction activity resulting in a land disturbance of 1 acre or more, or less than 1 acre but part of a larger common plan of development or sale, must obtain a Construction Activities Storm Water General Permit. A Notice of Intent (NOI) and

Storm Water Pollution Prevention Plan (SWPPP) must be prepared prior to commencement of construction.

9.15 Potential Environmental Concerns Within the Site Vicinity

Several nearby facilities are listed in the Leaking Underground Storage Tank (LUST) database. The facilities listed are located more than 1/8 mile from the site, with the exception of the facility located at 1267 Fourteenth Street. This adjacent facility is located up-gradient direction from the site (assuming ground water flow is northwest toward the San Francisco Bay). However, the 1267 Fourteenth Street site is reported as closed. Thus, it is unlikely to have significantly impacted the site. Laboratory analyses of ground water samples collected during this investigation did not indicate impact from an up-gradient source. If desired, additional information could be obtained regarding these nearby fuel releases to better evaluate the potential for impact to the site. As general policy, the overseeing regulatory agencies would not require the site owner to characterize or clean up contamination from an off-site source.

9.16 Soil Management Plan

Based on the long commercial and industrial history of the site, buried structures, debris or impacted soil may be encountered during site development activities; these materials may require special handling and disposal. To limit construction delays, we recommend that a Soil Management Plan (SMP) be developed to establish management practices for handling these materials/structures if encountered.

9.17 Environmental Insurance

Due to the lengthy industrial use of the site, contaminated materials may be encountered during site development. Consideration should be given to purchasing insurance to help protect against these liabilities. There are two primary insurance policies that provide significant protection against environmental liability risks:

- Pollution Legal Liability protects against third party claims for personal injury and property damage, and related risks;
- Cleanup Cost-Cap protects against increases in cleanup costs due to unknown or changing conditions, including more stringent requirements than currently exist.

Other environmental insurance coverages are available to protect financial institutions lending money for the purchase of distressed assets, contractors working on environmental projects, and underground storage tank closure liability. Generally, if the risk is related to environmental conditions, it is likely that an insurance product can be adapted to protect against risk.

10.0 LIMITATIONS

As with all site assessments, the extent of information obtained is a function of client demands, time limitations, and budgetary constraints. Our conclusions and recommendations regarding the site are based on readily observable site conditions, review of readily available documents, maps, aerial photographs, and data collected and/or reported by others. Due to poor or inadequate address information, the

regulatory agency database report listed several sites that may be inaccurately mapped or could not be mapped; leaks or spills from these or other facilities, if nearby, could impact the site. As directed by you, we are relying on information presented in reports provided to us by you or your representative. We are not responsible for the accuracy of information or data presented by others. Because publicly available information often cannot affirm the presence of recognized environmental conditions, there is the possibility that such conditions exist.

The chemical and other data presented in this report can change over time and are applicable only to the time this study was performed. We are not responsible for the data presented by others. The accuracy and reliability of geo- or hydrochemical studies are a reflection of the number and type of samples taken and extent of the analyses conducted, and are thus inherently limited and dependent upon the resources expended. Chemical analyses were performed for specific parameters during this investigation, as detailed in the scope of services. Please note that additional constituents not analyzed for during this evaluation may be present in soil and ground water at the site. Our sampling and analytical plan was designed using accepted environmental principles and our judgment for the performance of a soil and ground water quality evaluation and was based on the degree of investigation approved by you. It is possible to obtain a greater degree of certainty, if desired, by implementing a more rigorous soil and ground water sampling program or evaluating the risk posed by the contaminants detected, if any.

Magnetic methods locate ferrous objects from the anomalies they produce in the earth's magnetic field. Some ferrous objects may not produce an anomaly. Some possible reasons are that the object is buried too deep, the object is too small, the object is buried under or near another ferrous object, or an object is buried near a utility. The anomalies from metal on the ground surface can mask the anomalies from objects buried below them.

This report was prepared for the sole use of DeNova Homes. 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.

11.0 REFERENCES

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APPENDIX A
QUESTIONNAIRE

APPENDIX B
AERIAL PHOTOGRAPHS AND MAPS

APPENDIX C
REGULATORY AGENCY DATABASE REPORT

The following regulatory agency database report was obtained and reviewed to help establish whether contamination incidents have been reported within the site vicinity. A list of the database sources reviewed, a detailed description of the sources, and a radius map indicating the location of the reported facilities relative to the project site are included in the report.

The information presented is obtained from a variety of public databases and other sources. No warranty or representation is made regarding the accuracy or completeness of the presented data. In some cases, a listed facility cannot be mapped with confidence, but instead may be located only by city or zip code. These unmappable sites are referred to as "orphan" sites and, if present, they are listed in the database report.

APPENDIX D
ASBESTOS, LEAD-BASED PAINT, AND FLUORESCENT LIGHT BALLAST LIMITED VISUAL SURVEY LETTER

APPENDIX E
SUBSURFACE INVESTIGATION, AND SAMPLING PROTOCOL

Drilling: The subsurface investigation was performed on February 9, 10, 12, and 17, 2004 using a truck-mounted or limited access drill rig equipped with Direct Push Technology. Twenty-five soil borings (EB-1 through EB-27, with the exception of EB-17 and EB-23) were drilled to depths of approximately 4 feet to 17 feet bgs. Hand-sampling equipment was used at the EB-17 and EB-23 locations due to access problems.

Soils encountered in the borings were logged using the Unified Soil Classification System (ASTM D-2487). The logs of the borings, as well as a key to the classification of soil (Figure A-1), are included as part of this appendix. Permits obtained for the borings are also included.

Soil Sampling: Soil samples for laboratory analysis were collected in brass or acetate liners. The ends of the liners were covered in Teflon film, fitted with plastic end caps, taped, and labeled with a unique identification number. The samples were then placed in an ice-chilled cooler, and transported to a state-certified analytical laboratory with chain of custody documentation. Soil vapors from each sample were also monitored with an OVM by first placing the soil in a Ziplock™ bag for several minutes. The OVM probe was then used to pierce the bag and record the organic vapor levels present.

Soil Vapor Sampling: Soil vapor sampling procedures followed during this investigation were generally based on the Geoprobe Subsurface Vapor Sampling Guidelines, as presented in the San Mateo County Draft GPP Guidance (2003).

At borings EB-1, EB-3, EB-6, EB-7, and EB-8, steel probes with expendable points were hydraulically driven to a depth of 5 feet and the sampling lines (Teflon tubing) were installed and capped with a vapor tight valve. The valve was closed and the probes were then withdrawn approximately 4 inches. The expendable points were released as the probe was withdrawn, exposing the end of the probe. Prior to purging and sampling, hydrated bentonite was placed around the drill rod at the ground surface to inhibit surface air migration. After a minimum of 30 minutes, three volumes of soil vapor were purged from the probes prior to sample collection. The tubing was connected directly to laboratory cleaned and certified Summa canisters for collection of vapor samples.

The purging and sampling flow rate was regulated to approximately 200 milliliters per minute to limit stripping, reduce the potential for ambient air dilution of the sample, and increase the likelihood that representative soil vapor samples were collected.

For leak check purposes, shaving cream containing propane (a common ingredient/propellant) was placed on all sample line fittings, at the top of the sample rods, and at the ground surface around the bentonite seal.

Ground Water Sampling: Borings EB-2, EB-4, EB-5, EB-9, EB-11, EB-14, EB-15, EB-21, EB-22, and EB-24 through EB-27 were converted into "temporary" wells with the installation of 1-inch I.D. flush-threaded, Schedule 40 PVC casing. Ground water grab samples were collected from the temporary wells with a Teflon bailer. Samples were collected in

appropriately sampled bottles, labeled, and immediately placed into an ice-chilled chest for delivery to a state-certified analytical laboratory for analysis.

Hydraulic Fluid Tank Sampling: A hydraulic fluid sample was collected from a tank opening with the use of a disposable Teflon bailer. The sample was collected in an appropriately sampled bottle, labeled, and immediately placed into an ice-chilled chest for delivery to a state-certified analytical laboratory for analysis.

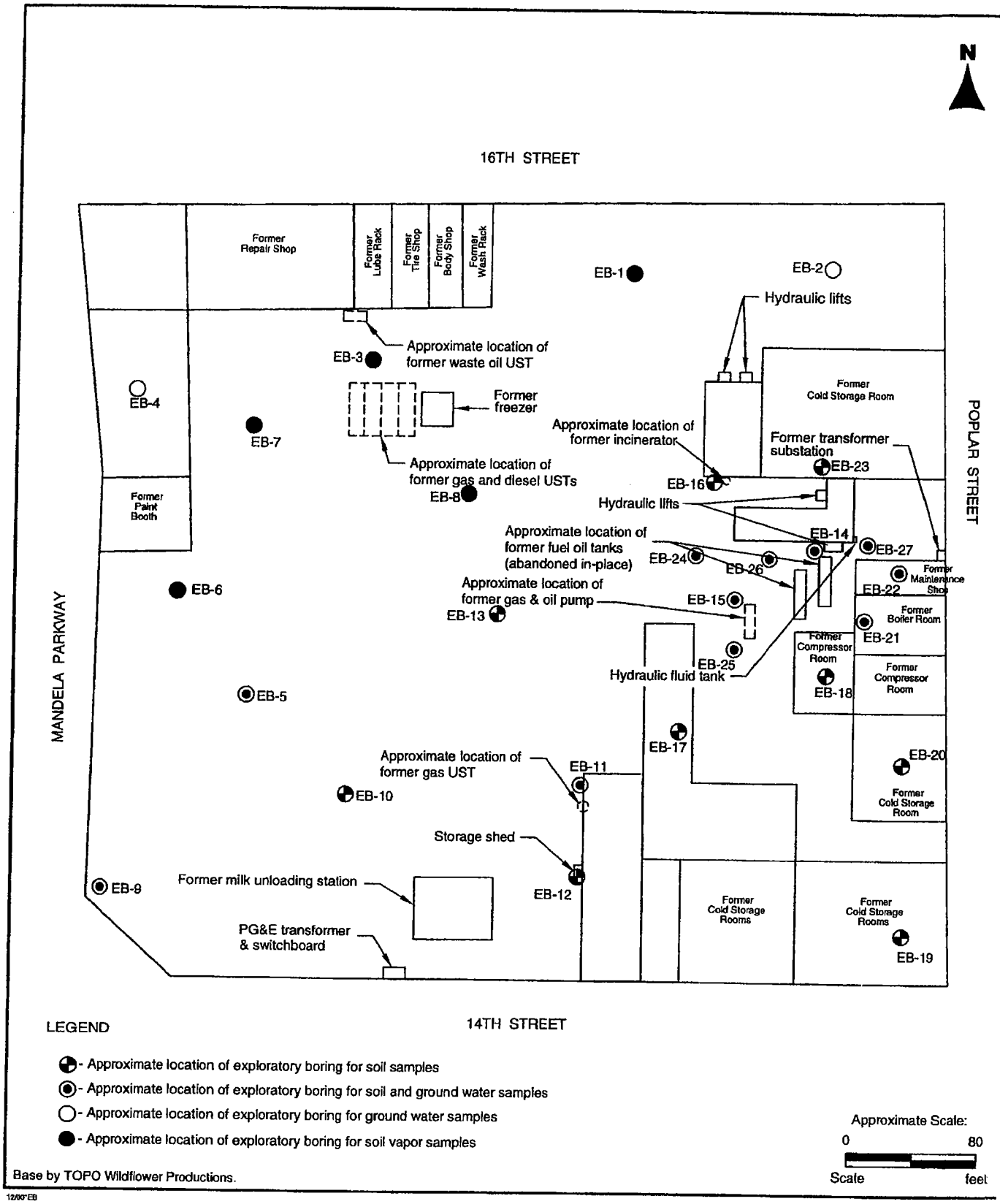
Wipe Sampling: Each wipe sample was collected using a 3-inch by 3-inch gauze pad pre-moistened in laboratory-grade de-ionized water. The gauze pad was folded in half length-wise, then additionally folded in half width-wise, so that a quarter of the pad was available for wipe sampling. The gauze pad was then wiped over an approximately 1-foot by 1-foot area of wall or floor surface in an S-shaped stroke in either a vertical or horizontal direction. The gauze pad was then turned over and the procedure was repeated. The gauze pad was then un-folded and re-folded so that clean areas of the gauze pad were available for sampling. This procedure was repeated until each quarter of the gauze pad had been wiped over the test surface. The sample was then collected in an appropriately sampled bottle, labeled, and immediately placed into an ice-chilled chest for delivery to a state-certified analytical laboratory for analysis.

Equipment Decontamination: All drilling and sampling equipment was cleaned in a solution of laboratory grade detergent and distilled water or steam cleaned before use at each sampling point.

Analytical Results: The chilled samples were delivered to a state-certified analytical laboratory. Chain of custody documentation was maintained for all samples. Attached are copies of the analytical results and the chain of custody forms.

APPENDIX F
ANALYTICAL RESULTS

APPENDIX G
GEOPHYSICAL INVESTIGATION REPORT



SITE PLAN

1310 FOURTEENTH STREET
Oakland, California

LOVNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE 2
1950-3E