



A Report Prepared For:

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**FACILITY INVESTIGATION REPORT
AND RESULTS OF PRELIMINARY SOIL REMOVAL ACTION
BAXTER COURT PROPERTY AND PORTIONS OF
THE ADJACENT FORMER THOMAS PROPERTY
720 AND 694 WEST FRANCISCO BOULEVARD
SAN RAFAEL, CALIFORNIA**

JUNE 26, 2007

I, James P. Dunn, certify that the information contained in or accompanying this submittal is true, accurate and complete. As to those portions of this submittal for which I cannot personally verify the accuracy, I certify that this submittal and all attachments were prepared at my direction in accordance with procedures designed to assure that qualified personnel properly gathered and evaluated the information submitted.

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1.0 INTRODUCTION

PES Environmental, Inc. (PES) has prepared this draft Facility Investigation Report and Results of Preliminary Soil Removal for the former Baxter Court and portions of the adjacent former Thomas Property (collectively known as the “Site”) on behalf of the Baxter Family Trust (Baxter Trust) and Sonnen Motorcars (Sonnen), the current owners of the respective properties. The location of the subject properties and Site are shown on Plates 1 and 2, respectively.

1.1 Objectives of Facility Investigation Report

The objectives of this report are to provide: (1) the results of implementation of the Facility Investigation (FI) work plan; (2) the results of selective soil removal conducted during site demolition activities; (3) conclusions regarding environmental conditions at the subject property; and (4) recommendations for corrective measures based on the FI findings and proposed future use of the subject site.

1.2 Organization

The report has been organized into the following sections:

Section 1.0 – Introduction. The introduction presents a general explanation of the objectives and organization of the report.

Section 2.0 – Site Description and Background. This section provides a physical description of the Site, summarizes current and historical Site uses and the results of previous soil and groundwater investigations.

Section 3.0 – Facility Investigation Scope of Work. This section presents the scope of work implemented as part of the FI.

Section 4.0 – Results of Facility Investigation. This section presents the results of the FI as well as conclusions about environmental conditions at the subject property.

Section 5.0 – Preliminary Soil Removal Activities. This section presents the results of preliminary soil removal actions conducted during demolition of the aboveground features present on the Baxter Court property;

Section 6.0 - Evaluation of Site Conditions. This section evaluates the existing or potential migration pathways for residual contaminants and compares the data with regulatory screening criteria.

Section 7.0 – Conclusions and Recommendations. This section presents conclusions and recommendations for conducting additional remedial activities to be detailed in a separate Corrective Measures Proposal report.

Section 8.0 – References. This section presents a summary of letters and reports directly related to the Site and regulatory guidance documents used during the preparation of the Facility Investigation Report.

2.0 SITE DESCRIPTION AND BACKGROUND

2.1 Former Baxter Court

Baxter Court is a rectangle-shaped 1.9-acre parcel located on the southwest side of West Francisco Boulevard in San Rafael, California. The property has approximate dimensions of 130 feet by 610 feet (Plate 2). Twelve single-story structures of various sizes were located on the property until mid-2005 to late 2006 when the structures were removed as part of the California Department of Transportation's (CalTrans) Highway 101 widening project and expansion of the adjacent automobile sales and servicing business. The street addresses for the former Baxter Court structures are 708, 710, 712, 714, 716, 720, 722, 724/726, 728, 730, 732, 734 and 738 West Francisco Boulevard. A general address of 720 West Francisco Boulevard is used pertaining to the subject property as a whole.

The property is zoned for commercial use and was previously leased by numerous small businesses for various commercial and light industrial activities including metal plating, automotive repair, vehicle and materials storage, and towing services. Operations at two of the previous tenants of Baxter Court, Western Chrome Plating & Polishing (Western Plating) and Specification Chromium Corporation, included treatment and disposal of hazardous plating shop waste using on-site fixed treatment units operated under the State of California Department of Toxic Substances Control's (DTSC) Permit-By-Rule requirements. The prior locations of Western Plating (714 West Francisco Boulevard) and Specification Chrome (712 West Francisco Boulevard) are presented on Plate 2. A private street, Baxter Court provides access to the property.

2.2 Former Thomas Property

The Thomas property at 694 West Francisco Boulevard, (currently owned by Sonnen but formerly owned by the Thomas family) is located immediately adjacent to the Baxter Court property to the northwest. The Thomas property is a rectangular-shaped parcel measuring approximately 115 feet by 600 feet, encompassing approximately 1.6 acres. Only portions of the Thomas Property that may have been affected by past tenant activities on the Baxter Court property are included in the study area for the FI.

Previous tenants of the Thomas property included a paint shop and a used car dealer located on the northeast portion of the property, near West Francisco Boulevard. The remainder of the property to the southwest has remained undeveloped and vacant. Currently, Sonnen is utilizing the Thomas property for automobile parking.

2.3 Future Property Use

Sonnen proposes to expand their adjacent automobile sales and service business and construct a multi-story automobile dealership that spans the entire Baxter Court and Thomas properties. Preliminary design for this structure includes an elevated main showroom above a ground-level paved parking area.

2.4 Local Geology and Hydrogeology

The Site is located near the eastern shores of San Rafael Bay. The fine-grained soil deposited in these near shore areas are older alluvial sediments of the upper Pleistocene. These older alluvial sediments consist of dissected older alluvial fan deposits and younger Quaternary marine and marsh deposits known locally as bay mud. The bay mud is generally overlain locally by artificial fill that varies in thickness. The U.S. Geologic Survey Map titled *Geological Map and Map Database of Parts of Marin, San Francisco, Alameda, Contra Costa, and Sonoma Counties* provides coverage of geologic conditions over the site vicinity. A portion of this map covering the Site and vicinity is presented as Plate 3 (USGS, 2000).

Previous investigations on the Site as part of the CalTrans Highway 101 widening project encountered soils consisting of a combination of fill materials (3 to 5 feet in thickness), and native bay mud consisting of silty clay to approximately 10 feet below ground surface (bgs), the maximum depth investigated by CalTrans. However, the bay mud deposits are anticipated to extend more than 20 feet bgs beneath the site. Groundwater was encountered at approximately 5 to 6 feet bgs in borings drilled on the former Baxter Court property for CalTrans (PSI, 1999 and 2000).

Based on topographic conditions in the site vicinity, groundwater is expected to flow to the north or northeast, towards San Rafael Creek. PES previously sampled groundwater at the site in August and October 1991. Groundwater at that time was encountered at approximately 4 to 5 feet bgs. The chloride content of groundwater collected from a temporary piezometer installed on the former Thomas property was 4,600 milligrams per liter (mg/L) and the specific conductance of the sample was measured at 16,000 micro-mhos per centimeter. The recommended secondary California Maximum Contaminant Level (MCL) for chloride is 250 mg/L and for specific conductance is 900 micro-mhos per centimeter. As such, the measured values of chloride and specific conductance indicate that groundwater beneath the site is brackish and unsuitable for potable or industrial uses. The nearest water supply well is approximately two miles west of the Site.

2.5 Previous Environmental Investigations

2.5.1 Investigation Related to Pre-1987 Unauthorized Releases

State of California Department of Health Services [DHS (now the DTSC)] *Preliminary Assessment Summaries* from June 1987 indicated that unauthorized releases of hazardous waste had occurred to the ground surface on Baxter Court as well as into the drainage ditch formerly along the property boundary with the Thomas property. These releases were observed by DHS from former on-site radiator repair and plating operations (Griese Radiator, Specification Chrome, and Western Plating).

In response to the DHS Report of Violation, a supplemental soil investigation was conducted by PES in 1990 to augment the DHS results, to assess “background” metals concentrations in soil, and to develop a plan for remediation of affected soils. The results of the supplemental investigation identified two areas of environmental concern that required remedial action: (1) a 4,900-square foot portion of the drainage ditch formerly present on the Thomas property; and (2) a 350-square foot area on the south side of the Western Plating facility.

Based on supplemental investigation results, approximately 378 tons of affected soil was excavated from the two areas of concern and transported off-site for disposal in May and June 1990 (PES, 1990). Following excavation, verification samples were collected and analyzed for indicator heavy metals including chromium, copper, lead, nickel, and zinc. The location of verification samples that fall within the boundaries of the Site, and corresponding analytical results, are shown on Plate 4. Also included on Plate 4 are the supplemental investigation analytical results in those areas of the Site not affected by the soil removal action conducted in 1990. This analytical data as well as the analytical results from the verification sampling are summarized on Tables 1 and 2.

The range of residual concentrations of indicator metals found in verification samples included the following:

Chromium	58 to 700 mg/kg
Copper	23 to 1,900 mg/kg
Lead	< 10 to 460 mg/kg
Nickel	58 to 1,300 mg/kg
Zinc	63 to 2,300 mg/kg

One confirmation sample, AR6-4A, had a lead concentration of 6,100 mg/kg. However, this elevated concentration could not be duplicated in resampling efforts and was assumed to be an anomalous detection.

Total oil and grease (TOG) was previously detected in DHS inspection soil samples. The locations of TOG detections were coincident with areas exhibiting elevated levels of metals. PES collected and analyzed two background soil samples from the Thomas property as well as

analyzed two excavation confirmation samples for TOG by EPA Test Method 418.1. Results of the TOG analysis are also presented on Table 2. Detected TOG concentrations in the confirmation samples were similar to concentrations detected in background samples, which indicates that soil containing elevated TOG concentrations was removed during metals-affected soil removal activities.

Following the removal action, residual concentrations of contaminant indicators within the remediated areas were below hazardous waste levels and, in many areas, were within the range of background concentrations of the site vicinity. Based on this finding, PES concluded that the majority of contaminants originally discharged to the surface were limited to the surface and near surface soils and that additional excavation in these areas was not necessary to further minimize risk to human health of the environment.

2.5.2 PSI Investigations for CalTrans Highway Expansion Project

In addition to 1990 investigation conducted in response to unauthorized releases discovered during the 1987 DHS drive-by inspection, previous environmental investigations have been conducted at the site associated with the CalTrans Highway 101 Expansion project. Two phases of investigation, conducted in 1998 and 1999, were completed by PSI on behalf of CalTrans (PSI, 1999 and 2000).

As part of these investigations, PSI performed a geophysical survey to evaluate the possible presence of USTs remaining beneath the western end of the Baxter Court property. PSI also sampled soil from 10 borings advanced on the Baxter Court property (borings 720-1 through 720-10) and 7 borings on the Thomas property (borings 694-1 through 694-7). Three of the Thomas property soil borings (694-3, -5 and -7) were located along the property boundary with Baxter Court in the former drainage ditch area that was remediated in 1990. Grab groundwater samples were collected from seven of the Baxter Court borings and five of the Thomas property borings.

Norcal Geophysics of Petaluma, California performed a geophysical investigation on December 1 and 2, 1998 to evaluate the potential presence of USTs beneath the western end of Baxter Court. The geophysical survey did not identify any anomalies that might be indicative of USTs underneath the western end of Baxter Court.

A total of 71 soil samples were collected in the project study area (Baxter Court and Thomas properties) as part of the PSI preliminary site assessment. Selected samples were analyzed for Total Petroleum Hydrocarbons quantified as Gasoline (TPHg), Total Petroleum Hydrocarbons quantified as Diesel (TPHd), VOCs including methyl tert-butyl ether (MTBE), Title 22 List of Heavy Metals, and pH by EPA Test Method 9045. The results of the soil sampling and analysis program conducted by PSI are summarized on Tables 1 and 2 for organic and inorganic constituents, respectively. The results of the inorganic analyses are shown on Plate 4.

In general, the soil analytical results for metals on the subject property did not identify conditions of environmental concern and in most cases were suggestive of background conditions. As shown on Table 1, of the 71 samples analyzed, only 2 samples (surface samples from 720-3 and 720-5) from the Baxter Court property contained soluble concentrations of metals in excess of California's Soluble Threshold Concentrations (STLC). On the Thomas property, three locations (borings 694-3, -4 and -5) were identified where elevated concentrations of cadmium were detected at concentrations above the total and/or soluble threshold limit.

Selected soil samples collected during the PSI investigation from Baxter Court and the Thomas property were also analyzed for TPHg, TPHd, and aromatic VOCs benzene, toluene, ethylbenzene, xylenes (BTEX) and MTBE. Nine of 34 soil samples analyzed for TPHg from Baxter Court had detected concentrations of TPHg ranging from 0.51 mg/kg to 4.8 mg/kg. TPHg was detected in only one sample on the Thomas property at 0.69 mg/kg. From Baxter Court, TPHd was detected in 20 of 34 samples at concentrations ranging from 10 mg/kg to 2,000 mg/kg. TPHd was detected in 10 of 24 samples analyzed from the Thomas property at concentrations ranging from 11 mg/kg to 51 mg/kg. Because the analytical laboratory noted that the hydrocarbons detected in these samples did not match the typical diesel fuel chromatograph and the samples with the highest concentrations of TPHd were collected at or just below ground surface, PSI indicated that the detected TPH may have been due to surficial asphaltic materials. In general, only low concentrations of BTEX and MTBE were identified in soil samples from the Baxter Court property. Ethylbenzene and MTBE were detected in only two of the 18 samples analyzed for VOCs from Baxter Court, at concentrations up to 0.091 mg/kg for ethylbenzene and up to 0.011 mg/kg for MTBE. Toluene was detected in four of the 18 samples analyzed at concentrations ranging from 0.021 mg/kg to 0.44 mg/kg. BTEX and MTBE were not detected in soil samples collected from the Thomas property.

Groundwater was encountered during the PSI investigation at approximately 5 to 6 feet bgs. Based on topographic conditions in the site vicinity, PSI indicated that groundwater was expected to flow to the northeast, towards San Rafael Creek. Within the Site boundary, grab groundwater samples were collected from seven borings advanced on Baxter Court (720-1, 720-3, 720-6, 720-7, 720-8, 720-9, and 720-10) and four borings on the Thomas property (694-4, 694-5, 694-6, and 694-7). Groundwater analytical results from the PSI investigations are summarized on Tables 3 and 4 and shown graphically on Plate 5.

Barium, chromium, copper, and zinc were the only metals detected in groundwater samples from Baxter Court. Zinc was detected in three of the seven Baxter Court groundwater samples at concentrations ranging from 0.14 mg/L to 0.61 mg/L.

Copper was detected in two of the seven Baxter Court groundwater samples at concentrations of 0.059 mg/L and 0.078 mg/L. Chromium was detected above analytical reporting limits in sample 720-1, at a concentration of 0.067 mg/L. Barium was detected in all seven Baxter Court groundwater samples at concentrations ranging from 0.18 mg/L to 1.0 mg/L.

Metals of concern from former plating activities (chromium, copper, lead, nickel, and zinc) were not detected in groundwater samples collected from the Thomas property. This includes samples from borings advanced in the former drainage ditch area (borings 694-5 and 694-7) adjacent to Specification Chrome. Barium was the only metal detected in groundwater from the Thomas property at concentrations ranging from 0.13 mg/L to 0.34 mg/L.

MTBE was detected in five of the seven Baxter Court samples at concentrations ranging from 0.0047 mg/L to 0.36 mg/L. Other VOCs detected in groundwater from Baxter Court include two detections of benzene at 0.0009 mg/L and 0.001 mg/L, two detections of toluene at 0.0005 mg/L and 0.0036 mg/L, four detections of ethylbenzene at concentrations ranging from 0.0006 mg/L to 0.0043 mg/L, and four detections of xylenes at concentrations ranging from 0.0027 mg/L to 0.017 mg/L. Except for MTBE, aromatic VOCs were not detected in groundwater samples collected from the Thomas property. MTBE was detected in three of the four Thomas property samples at concentrations of 0.001 mg/L to 0.0016 mg/L.

3.0 FACILITY INVESTIGATION

3.1 Facility Investigation Background

In December 2005, a current conditions report (CCR) was prepared to provide DTSC with a summary of historical uses for the subject properties as well as a compilation of all environmental investigations and remediation that had been conducted during prior site mitigation and property environmental assessments. The CCR identified (1) areas of the site that were impacted by releases of hazardous materials from previous tenant activities; and (2) data gaps beneath the foundation footprints of the plating shop structures that could potentially affect formulation of corrective action activities for mitigation and closure of the site. Therefore, a facility investigation was completed to augment prior site investigations and to evaluate shallow soils and/or groundwater in the following areas:

- The near-surface and vadose-zone soils present beneath the building footprints of the former Specification Chrome and Quality Chrome plating operations;
- The first-encountered shallow groundwater beneath the same building footprints;
- Surface and near-surface soils in areas on the Baxter Court and Thomas Property parcels where elevated levels of total or soluble metals were identified during the CalTrans property transaction Phase I environmental assessment conducted by Professional Service Industries (PSI, 2000); and
- Subsurface soil and first-encountered groundwater in the vicinity of the underground fuel storage tank (UST) formerly located in the rear of the Baxter Court parcel.

The scope of work for the facility investigation was presented in a work plan attached to the CCR. After revision, the work plan was approved by the DTSC on June 13, 2006.

3.2 Facility Investigation Scope of Work

The scope of work for the FI included the following activities: (1) field preparation activities; (2) soil sampling; (3) shallow groundwater sampling; (4) laboratory analyses of groundwater and selected soil samples; and (5) data evaluation and reporting. These tasks are further described below.

3.2.1 Field Preparation Activities

Prior to conducting field activities, PES prepared an updated site-specific Health and Safety Plan (HSP). The HSP complies with applicable federal and California Occupational Safety and Health Administration (OSHA) guidelines. PES also obtained a drilling permit from the City of San Rafael.

Prior to drilling, PES contracted a private underground utility locating service to conduct a subsurface electromagnetic survey to clear the proposed sampling locations of subsurface utilities. Underground Service Alert was contacted to schedule visits by public and private utility companies.

3.2.2 Subsurface Soil and Shallow Grab Groundwater Sample Collection

Sampling services were provided by a licensed contractor possessing a valid C-57 water well contractor's license issued by the State of California, and in accordance with California Department of Water Resource Water Well Standards (Bulletin 74-90). The sampling was conducted under the supervision of a California-registered geologist or engineer.

Soil samples were collected from 22 sampling locations within the footprint of the Specification Chrome, 12 sampling locations within the footprint of Quality Chrome, and 5 sampling locations within the footprint of the former San Rafael Plating building (see 6). Soil samples were also collected in the vicinity of the former AST, south of the Specification Chrome building, as indicated on Plate 6.

Shallow groundwater samples were collected from 3 locations with the footprint of Specification Chrome, 2 locations within the footprint of Quality Chrome and one location within the footprint of San Rafael Plating. One groundwater sampling location was also selected at the former UST location. The groundwater sampling locations are also shown on Plate 6.

Additional soil samples were collected from 21 sampling locations on the Thomas Property. Three of the sample locations were selected to re-sample previously sampled locations 694-4, TP-5, and TP-6. The remaining 13 locations provided additional information regarding the lateral extension of heavy metals in these areas. Soil sampling locations on the Thomas Property are presented on Plate 6.

3.2.2.1 Soil and Shallow Grab Groundwater Sampling Methodology

The borings for subsurface soil and grab groundwater sampling were drilled utilizing a truck-mounted direct push drilling rig. Soil matrix samples were collected from continuous cores from borings advanced using the direct-push drilling rig. The continuous cores were collected by driving a 4-foot long by 2-inch outside-diameter split-spoon sampler into undisturbed soil. The split-spoon sampler was lined with one 4-foot long, clear acetate sample sleeve. Soil samples from discrete depths at each location were collected by cutting the acetate liner at the proper sampling depth into a 3-inch long section, covering each end of the cut section with Teflon sheeting, then placing plastic endcaps on either side of the cut section.

Soil samples collected from Baxter Court analyzed for volatile organics constituents were collected in accordance with U.S. EPA Method 5035A using Encore™ samplers. This sampler device is made of an inert composite polymer, designed to collect, store and deliver soil in a sealed, headspace-free state. Three Encore™ samples were collected at each discrete depth to provide the laboratory with two samples for low-level analysis and one sample for high-level analysis. The samples were labeled, sealed in a re-sealable bag, and placed in a chilled, thermally insulated cooler for storage and transport to the project laboratory. The cooler containing soil samples was delivered under chain-of-custody protocol to the project State-certified laboratory.

Grab groundwater samples were collected from the first-encountered water-bearing zone beneath Baxter Court (estimated to be approximately 5 feet below ground surface). Following sample collection, the containers were labeled for identification and immediately placed in a chilled, thermally-insulated cooler containing bagged ice or blue ice. The cooler containing the samples was delivered under chain-of-custody protocol to the project State-certified laboratory.

Implementation of the FI work plan occurred prior to decontamination and demolition of the former plating shop structures. Sampling locations covered by the foundation slab inside the structures were cored to access the underlying shallow soils and groundwater. Following sample collection, the boreholes were backfilled with a cement/bentonite slurry and the foundation slab repaired so that subsequent decontamination activities would not result in a release of liquids to the subsurface.

3.2.2.2 Quality Control Procedures

Quality Control (QC) procedures were implemented during the site investigation activities to assess the quality of the collected data and to provide validation of the results. These QC procedures included: (1) decontamination of sampling and drilling equipment; (2) submittal of field duplicate samples, and field and travel blank samples for chemical analyses; (3) chain-of-custody protocol; and (4) internal laboratory QC procedures. A discussion of these QC procedures is presented below.

3.2.2.2.1 Decontamination Procedures

Non-dedicated material and equipment that is placed in boreholes was decontaminated between uses. Decontamination of soil and groundwater sampling equipment was performed by either steam cleaning or by washing with an Alconox solution and then rinsing with tap water and distilled water prior to and between each use. Direct-push soil sampling equipment was steam cleaned prior to drilling each borehole.

3.2.2.2.2 Quality Control Samples

Duplicate samples, field blanks and travel blanks were collected or prepared and submitted for chemical analysis. Duplicate samples of soil and groundwater samples were collected at a frequency of one per twenty samples or fraction thereof. If less than twenty samples were collected, duplicate samples were collected at a minimum frequency of one per day. Field equipment blanks were prepared during each sampling activity, as appropriate, by decanting distilled water through or across decontaminated sample collection equipment into the appropriate sample containers.

3.2.2.2.3 Sample Custody Procedures

Sample custody procedures were followed through sample collection, transfer to the analytical laboratory, and analysis at the laboratory to ensure that the integrity of samples was maintained during collection, transportation, and storage prior to analysis.

Samples were labeled to ensure proper sample identification. The following information was included on each label:

1. Project name;
2. Project number;
3. Sample identification number;
4. Date and time of sample collection;
5. Preservative used (if applicable); and
6. Analyses required.

Every sample collected was listed on a chain-of-custody form. The form accompanied each sample shipment to the analytical laboratory to document sample possession from the time of collection. A carbon copy of the chain-of-custody form was retained in the project files for documentation. The form contains the following information:

1. Sample identification number;
2. Signature of collector (sampler);
3. Date and time of collection;
4. Site name and project number;

5. Sample Matrix;
6. Sample container description;
7. Analyses requested;
8. Special analytical procedures requested;
9. Laboratory sample number;
10. Preservatives added (if any);
11. Signature of persons involved in chain of possession (relinquished by and received by); and
12. Date and time of sample receipt.

3.2.3 Facility Investigation Analytical Program

Soil and groundwater samples collected during the FI were submitted to Entech Analytical Labs (Entech) of Santa Clara, California, the project laboratory for the Facility Investigation. Entech is a California-certified analytical laboratory for each of the analytical methods conducted as part of the investigation. Samples were analyzed for one or more of the following inorganic and organic compounds: Title 22 list of heavy metals, hexavalent chromium, volatile organic compounds (VOCs), TPH quantified as gasoline (TPHg), diesel (TPHd), motor oil (TPHmo) as well as cyanide and pH. Summaries of the analytical program for soil and groundwater are presented on Tables 5 and 6, respectively. Electronic copies of the analytical reports are provided in Appendix A.

3.2.3.1 Analytical Laboratory Quality Control

Analytical laboratory tests were conducted in accordance with Entech's strict quality control standards and procedures. All analyses were performed using U.S. EPA approved methods within the specified holding times. Analytical services were documented in laboratory reports that include the following quality control and documentation:

- Detection limits on all reports;
- Chain of Custody forms;
- Method blanks;
- Matrix spike/matrix spike duplicate results;
- Surrogate recoveries for volatile and gas chromatograph/mass spectrometer (GC/MS) analyses;
- Laboratory control sample recoveries; and
- Surrogates.

The goals for laboratory accuracy, precision, and completeness are based on the results of analyses of matrix spike and matrix spike duplicate (MS/MSD) using spike compounds as well as surrogate spikes for each method.

3.2.4 Data Evaluation and Reporting

Following receipt of the laboratory analytical results, the data collected during the Facility Investigation were compiled and evaluated for completeness and accuracy. Using these data, PES assessed and formulated conclusions regarding environmental conditions at the subject property and made recommendations for corrective action. The results of the Facility Investigation and corresponding conclusion and recommendations are provided in Section 4.0.

4.0 RESULTS OF FACILITY INVESTIGATION

4.1 Site-Specific Geologic and Hydrogeologic Conditions

Consistent with prior investigation on the Baxter Court and Thomas properties, the subsurface geology was found during the FI to be relatively uniform with a sequence of import fill consisting of silts, clays, sands and gravel overlying bay mud deposits. The thickness of the fill ranged from 3 to 5 feet. The fill was found to contain small amounts of asphaltic and brick construction debris as well as occasional glass and metal fragments. The fill was generally well compacted. A representative boring log detailing subsurface soil conditions across the Site is provided as Plate 7.

Groundwater, based on the presence of saturated soils, was typically encountered at depths of 4 to 5 feet and appeared to be consistent with the fill/bay mud interface. Groundwater flow at this interface was found to be highly restricted due to the low permeability nature of the soils.

4.2 Soil Analytical Results

As summarized on Tables 7 and 8, the FI soil analytical results identified detectable concentrations of several heavy metals above anticipated naturally-occurring background levels as well as selected VOCs at concentrations above laboratory reporting limits. The distribution of the analytical results are shown on Plates 8 and 9. In summary, the range of concentrations of selected heavy metals in soil include the following:

<u>Detected Metal</u>	<u>Range of Detections</u>
Arsenic	2.6 to 26 mg/kg
Cadmium	1.0 to 52 mg/kg
Chromium (total)	15 to 2,500 mg/kg
Chromium (hex)	0.1 to 11 mg/kg
Copper	9.9 to 1,600 mg/kg
Lead	4.2 to 870 mg/kg
Nickel	22 to 5,700 mg/kg

Total cyanide was also detected at concentrations up to 28 mg/kg.

Detectable organic compounds identified in soils during the FI include the following:

<u>Detected Organic Constituent</u>	<u>Range of Detections</u>
Trichloroethylene (TCE)	0.0062 to 28 mg/kg
Cis-1,2-Dichloroethylene (cis-1,2-DCE)	0.0047 to 45 mg/kg
Trans-1,2-Dichloroethylene (trans-1,2-DCE)	0.56 mg/kg
Vinyl Chloride	0.092 mg/kg
Toluene	0.0082 mg/kg
Ethylbenzene	0.009 mg/kg
Total Xylenes	0.06 mg/kg
TPHg	26 to 59 mg/kg
TPHd	170 to 370 mg/kg
TPHmo	22 to 3900 mg/kg

4.3 Groundwater Analytical Results

Detectable concentrations of metals and organic constituents were identified in groundwater samples collected during the FI. The results of the groundwater sampling and analysis are provided on Tables 9 and 10 and shown graphically on Plates 10 and 11. Metals detected in the groundwater samples included low concentrations of arsenic, barium, chromium, cobalt, copper, lead, molybdenum, nickel, and vanadium. The ranges of detected concentrations of these metals, in milligrams per Liter (mg/L), are as follows:

<u>Detected Metal (occurrences)</u>	<u>Range of Detections</u>
Arsenic (7 locations)	0.01 to 0.031 mg/L
Barium (6 locations)	0.15 to 0.5 mg/L
Chromium (5 locations)	0.005 to 0.012 mg/L
Cobalt (6 locations)	0.006 to 0.036 mg/L
Copper (2 locations)	0.15 to 0.26 mg/L
Lead (6 locations)	0.007 to 0.015 mg/L
Molybdenum (6 locations)	0.018 to 0.051 mg/L
Nickel (6 locations)	0.013 to 2.2 mg/L
Vanadium (4 locations)	0.005 to 0.017 mg/L

Detected organic constituents found in groundwater included TPHg at two locations ranging from 0.083 to 0.12 mg/L, MTBE from 4 locations at concentrations from 0.0013 to 0.081 mg/L, toluene from 2 locations at concentrations ranging from 0.00054 to 0.0007 mg/L, and TCE at two locations at concentrations ranging from 0.0013 to 0.0016 mg/L.

5.0 SOIL REMOVAL ACTIONS DURING DEMOLITION

Because of the age and relatively unknown construction of the plating shop structures and the lack of information concerning past operational practices by the former plating shop operators, the condition of the subsurface soils directly beneath the foundation slabs was largely unknown and limited to information obtained during the FI. Therefore, PES was prepared to address unknown or unanticipated environmental concerns identified during foundation slab removal conducted as part of the site demolition activities. These actions included focused removal of visually discolored affected soil as well as soils which exhibited elevated concentrations of VOCs based on field screening activities. In addition, PES also assessed and removed a process sump discovered abandoned beneath the Specification Chrome foundation slab. Details of these removal actions are provided in the following sections.

5.1 Focused Removal of Shallow Metal-Bearing/VOC Soils

Several areas of discolored soil were observed immediately beneath the foundation slabs upon removal. The appearance and distribution of the soil discoloration was indicative of plating shop solutions that had penetrated the foundation slabs along expansion joints and along sections of the foundation where two slabs from different construction periods met. The location and areal extent of the discolored soils encountered during foundation removal is shown on Plate 12. Approximately 15 tons of discolored soil were removed during site demolition activities along with 131 tons of affected concrete structural debris.

Soils with detectable levels of VOCs, using field screening equipment, were also encountered along the southern edge of the former Specification Chrome facility. A shallow process sump that was encountered during floor slab removal appears to be the source of the VOCs in shallow soil in this area. Soils were removed until field screening indicated that VOCs levels had significantly decreased. Approximately 15 tons of VOC-affected soil were removed during site demolition activities.

Soil samples were taken from the bottom and/or sidewalls of the excavations created during the focused soil removal activities. The locations of these samples are shown on Plate 12 and summarized on Table 11.

5.2 Abandoned Process Sump Assessment and Removal

During the slab removal activities in the northern portion of the former Specification Chrome structure, a cylindrical metal feature encased in concrete was revealed immediately beneath the former slab. The location of this feature is shown on Plate 12. This metal feature, measuring approximately 30 inches in diameter, extended vertically into the ground. This feature was exposed to ascertain whether or not it was an abandoned underground storage tank and required extensive breaking of the concrete encasement. The result of the encasement removal revealed that the cylindrical metal pipe was not part of a UST but was constructed as a former process sump extending approximately 14 feet below ground surface. The sump was encased

within concrete throughout its entire length. Soils surrounding the process sump included import fill to a depth of approximately 3 feet overlying saturated bay muds to the bottom of the sump.

Removal actions were successful in dislodging and removing the sump in two approximately 7-foot long vertical sections as well as the majority of the reinforced concrete encasement. The interior of the sump contained solidified material and semi-solids that appeared to be a combination of plating waste, concrete and sand backfill materials. The bottom 4-foot section of the outer concrete encasement was not removed as part of the interim action because of its large size, depth and the requirement for extensive over-excavation of surrounding materials in order to facilitate removal. During the removal activity, approximately 100 to 200 gallons of groundwater entered the excavation and mixed with the metal-affected wastes. The groundwater was pumped out and placed in a holding tank prior to being sampled, analyzed and disposed off-site. The analytical laboratory report for the water characterization sample (GW-1) is provided electronically in Appendix A. Once the sump and the majority of the concrete encasement had been removed, the excavation was backfilled to remove the potential safety hazard and minimize collection of rainwater and surface runoff.

During the encasement removal, discolored soils and concrete were observed indicative of chromate waste (yellow and red discoloration). These discolored soils and concrete were removed from the excavation and stockpiled for characterization. Approximately 132 tons of affected soil and concrete were removed as part of the sump removal.

Samples of the affected soils were collected and submitted to the project laboratory for metals and VOCs analyses. Samples were also collected from the sidewalls exposed during the sump removal. The results of these analyses are provided on Table 11.

It is noted that groundwater samples were collected during the FI in close proximity to the process sump [Sample 06SC-10-GW (10 feet east) and Sample 06SC-9-GW (30 feet southwest)] and did not reveal the presence of significant releases of contaminants to the groundwater in this area. This is consistent with field observations during the sump removal which indicated that the sump and concrete encasement were surrounded by very low permeability bay muds.

5.3 Preliminary Soil Removal Activities

Based on the soil analytical results from the FI and comparison to Office of Environmental Health Hazard Assessment (OEHHA) California Human-Health Exposure-Based Screening Levels (CHHSLs) (OEHHA, 2005), it was determined that soils on the subject properties which exceeded criteria for sites designated for commercial use were very limited in extent. Six localized areas were designated for focused soil removal due to levels of cadmium that exceed the CHHSLs screening level of 7.5 mg/kg. These locations, as shown on Plate 8, include 06SC-2, 06SC-15, GW-06SR-05, 06TP-02, 06TP-08 and 06TP-14. In all cases, the elevated cadmium levels were identified in soil within the upper 12 inches of soil.

Because of the limited extent of soil exceeding the commercial CHHSLs and the availability of excavation equipment, focused soil removal in these areas was also conducted during the site demolition phase. The location and approximate size of each excavation is shown on Plate 12. In all cases, depths of these shallow excavations ranged from 12 to 15 inches. A total of approximately 10 tons of soil were removed from these areas.

Following excavation, confirmation soil samples were collected from the base of each excavation. The results of the confirmation testing, as summarized on Table 11, indicated that the soils with elevated cadmium levels above the commercial regulatory guideline have been removed.

5.4 Waste Profiling and Disposal

Approximately 304 tons of metal- and VOC-affected soil and concrete debris were excavated from the site as part of the demolition phase soil removal actions. The materials were stockpiled on the site and encased in plastic sheeting until waste characterization and landfill acceptance procedures were completed. Once profiles were approved for the wastes, the soils were removed from the site on January 15, 2007 and transported under appropriate manifest procedures to the Class I landfill facility in Kettleman Hills, California. Copies of the manifests are provided in Appendix B.

6.0 EVALUATION OF SITE CONDITIONS

As provided in the Consent Agreement and detailed in the CCR, existing or potential migration pathways for chemical releases from the subject property into the environment have been identified as subsurface vadose-zone soil, groundwater, and surface water runoff.

Extensive investigation of subsurface soils has been conducted at the Baxter Court and Thomas properties to evaluate the subsurface vadose-zone migration pathway. The results of these investigations have determined that the majority of the surface and shallow vadose-zone soil in areas investigated have not been adversely affected by past tenant operations. When unauthorized releases have been identified, remedial action has taken place to mitigate the unauthorized releases. In these areas, it was found that the buffering capacity of the soil has limited the downward migration of contaminants to the shallow groundwater. Recent testing conducted during the FI and prior investigations did not identify significant areas of contamination in the surface and subsurface soils, and confirmed the effectiveness of prior removal actions to mitigate environmental concerns caused by past unauthorized releases.

Due to the shallow nature of groundwater at the site, the potential for contaminant migration from past unauthorized releases to groundwater has been considered a likely possibility. However, groundwater data collected during the FI supported the data collected during the PSI investigation to suggest that the releases of contaminants to the groundwater have not

significantly affected groundwater conditions beneath the site. This is likely due to the low permeability nature of the clayey soil, the buffering capacity of the soil to neutralize acidic conditions necessary to allow significant migration of metals, and the prior remedial actions to remove metal-affected soil identified on the site.

Because the site is reclaimed marshland with brackish groundwater located in the low permeability bay muds and largely unsaturated fill soils (3 to 5 feet thick) above the bay mud, it is not anticipated that well developed pathways for groundwater migration are present on the site. Therefore, it is considered unlikely that contaminants, if released to onsite shallow groundwater, would migrate significantly from the source or off the subject property. This is supported by the groundwater data collected from the site.

Groundwater data from the FI and PSI investigations identified several organic compounds, including VOCs, TPHg, aromatic hydrocarbons, and MTBE at low concentrations in several groundwater samples collected across the subject property. With the exception of the TCE found beneath the former Specification Chrome facility, potential sources of these compounds were not identified during the investigations and it was concluded that the hydrocarbon-related organic compounds may have been from an offsite source.

A potential had existed for migration of releases from tenant operations on the subject property to the environment via surface water flows. This was occurring prior to 1987 when surface water was being channeled towards a drainage located along the Baxter Court/Thomas property boundary. However, this migration pathway was stopped in 1990 by removal of impacted soil, rerouting surface drainage towards West San Francisco Boulevard, and backfilling of the drainage ditch as part of remedial efforts in this area.

Based on this evaluation, two potential migration pathways were evaluated for risk to human health and the environment. These pathways include transport of contaminants through vadose-zone soils and migration of contaminants through shallow groundwater.

6.1 Vadose-Zone Soil Evaluation

For each compound detected in the soil investigations, five factors were evaluated to establish which chemicals are of concern and whether further evaluation and cleanup goal development might be needed for each chemical of concern: (1) frequency of detection; (2) evaluation of the potential threat to human health by comparison of soil data to CHHSLs and U.S. EPA Region 9 residential and commercial PRGs (EPA, 2004b); (3) evaluation of the potential threat to groundwater by comparison of organic¹ soil data to State of California Water Quality Control Board (SWRCB) residential and commercial Environmental Screening Levels (ESLs);

¹ Evaluation of the potential threat to groundwater was not conducted for inorganic constituents for several reasons. First, the published ESLs, which are a summary of a variety of risk components for human health and the environment, do not include a component for threat to groundwater and are limited to human health and surface water aquatic life factors; thus, not appropriate for comparison. Secondly, site groundwater data does not show evidence elevated inorganic constituents that would suggest leaching is occurring.

(4) comparison with U.S. EPA hazardous waste criteria [Total Threshold Limit Concentration (TTLC)]; and (5) comparison of soil data to background (i.e., ambient) soil conditions. The evaluation of these factors resulted in the following:

- Further evaluation/cleanup goal development was recommended and conducted for compounds that are frequently detected at concentrations greater than their respective regulatory guidance levels and background conditions;
- Compounds frequently detected at concentrations greater than their respective regulatory guidance levels, but less than or similar to background soil conditions were not evaluated further;
- Compounds infrequently detected (generally at a frequency of less than 5%) at concentrations greater than their respective regulatory guidance levels were not evaluated further provided the 95% UCL concentration of the compound was less than the respective cleanup level and the detected concentration was not significantly greater than its cleanup level; and
- Compounds not detected or only detected at concentrations less than their respective regulatory guidance levels were not evaluated further.

The results of this evaluation process are summarized below for various metals and organic compounds detected in soil. The distribution of the soils that exceed regulatory criteria is sporadic as shown on Plate 13.

Identified Constituent	Range of Detection	Exceeded Regulatory Criteria
Arsenic	2.6 to 16 mg/kg	Residential PRG (0.4 mg/kg) Residential CHHSL (0.1 mg/kg) Commercial PRG (1.6 mg/kg) Commercial CHHSL (0.2 mg/kg)
Cadmium	1.2 to 200 mg/kg	Residential PRG (37 mg/kg) Residential CHHSL (1.7 mg/kg) Commercial CHHSL (7.5 mg/kg) TTLC (100 mg/kg)
Chromium (total)	6.5 to 2500 mg/kg	TTLC (2500 mg/kg)
Chromium ⁺⁶	0.1 to 240 mg/kg	Residential PRG (30 mg/kg) Residential CHHSL (17 mg/kg) Commercial PRG (64 mg/kg) Commercial CHHSL (37 mg/kg)
Copper	10 to 1900 mg/kg	No exceedances

Identified Constituent	Range of Detection	Exceeded Regulatory Criteria
Lead	6.1 to 490 ² mg/kg	Residential PRG (150 mg/kg) Residential CHHSL (150 mg/kg)
Nickel	22 to 5700 mg/kg	Residential PRG (1600 mg/kg) Residential CHHSL (1600 mg/kg) TTLC (2000 mg/kg)
Zinc	37 to 1800 mg/kg	No exceedances
TPH(gasoline)	56 mg/kg	No exceedances
TPH (middle distillates)	170 to 370 mg/kg	Residential ESL (100 mg/kg)
TPH (motor oils)	22 to 3900 mg/kg	
TCE	0.0062 to 13 mg/kg	Residential PRG (0.053 mg/kg) Commercial PRG (0.11 mg/kg)
Cis-1,2-DCE	.0047 to 8.8 mg/kg	Residential ESL (0.19 mg/kg) Commercial ESL (0.19 mg/kg)
Trans-1,2-DCE	0.56 mg/kg	No exceedances
1,3,5 - Trimethylbenzene	0.018 to 0.46 mg/kg	No exceedances
1,2,4 - Trimethylbenzene	0.058 to 0.2 mg/kg	No exceedances

Arsenic was detected in all soil samples collected as part of the FI at concentrations that exceed the health-based regulatory criteria. While such an exceedance would warrant further extensive evaluation based on the criteria stated above, the elevated concentrations found in the majority of the fill and native bay mud samples at the Site are characteristic of background conditions found in the San Francisco Bay Area and the State of California. PES conducted a statistical evaluation³ using on-site soils to determine the range of likely background concentrations of arsenic present on the subject property. The results of this evaluation indicated that background concentrations are likely at the site at concentrations up to 13 mg/kg. This value is consistent with background concentration determinations estimated in other studies conducted in the Bay Area and California, (Lawrence Livermore, 1995; Hunter et al, 2005). Therefore, for this evaluation, PES will assume that all arsenic results above 13 mg/kg and outside the range of expected background concentrations may be the result of past onsite plating activities and will be addressed as part of the Corrective Measure Proposal.

TPHd and TPHmo concentrations were typically detected at highest concentrations in surficial soils. It is likely that the presence of these compounds is due to oil treatment related to surface

² Total lead results from sampling at the subject property indicate a single occurrence above the commercial CHHSL of 3,500 mg/kg. The 6,100 mg/kg result was obtained in an excavation bottom sample approximately 4 feet below ground surface during site mitigation activities in 1990. The result is not considered valid based on additional sampling in close proximity to the sample which did not duplicate or confirm the elevated concentration. It is assumed that this sample contained a piece of metallic debris and not the result of past tenant releases. Based on this understanding, the 6100 mg/kg result has been eliminated from the evaluation. The second highest concentration, 490 mg/kg, was used as the maximum concentration present at the site.

³ The statistical evaluation used for evaluation of the arsenic in the Site soils was conducted using the graphical determination methods used by the DTSC in their studies for development of arsenic cleanup goals for school sites, (DTSC, 2007).

asphalt paving and/or incidental drips of hydrocarbons from vehicles on the site and not from past tenant waste management activities. Detected hydrocarbon concentrations at depth may also be the results of organic materials present in the bay muds underlying the site since the lab analyses did not differentiate between naturally occurring hydrocarbons and refined petroleum products. However, because it is not definitive that the TPHd and TPHmo found at depth is solely biogenic in nature, the elevated concentrations of hydrocarbons will be further evaluated or removed during the Corrective Action process.

6.2 Groundwater Evaluation

Evaluation of groundwater conditions at the subject property was based on an assessment of each chemical of concern in accordance with four factors: (1) frequency of occurrence; (2) comparison of groundwater data with SWRCB ESLs published by the State of California Water Quality Control Board for protection of estuarine waters; and (3) comparison of groundwater data with published background concentrations for multiple locations in California (Hunter et al, 2005).

Shallow groundwater at the subject property was found to contain low concentrations of a variety of metals as well as very low concentrations of TPHg, MTBE, toluene, ethylbenzene and TCE. An initial comparison of the shallow groundwater analytical results with the ESLs for estuarine waters (San Rafael Canal) was conducted. PES also notes that releases of groundwater from this site to San Rafael Canal are highly unlikely due to the very low permeability's of the bay mud and distance to the San Rafael Canal. The ESL comparison identified concentrations of several metals in excess of the ESLs for protection of estuarine environments. These metals include arsenic, cobalt, copper, lead and nickel and were detected in one sample collected under each of the former plating shops.

A comparison of the groundwater data to background data was also conducted using data collected during a study of naturally occurring inorganic constituents in groundwater throughout California. The comparison suggests that the levels of most metals found at the subject properties were typically in the range found in natural conditions in most areas (95% of the sites where data was evaluated) of California. Metals which exceeded the 95% percentile concentrations included cobalt, copper, and nickel. Arsenic was found to exceed the ESLs in all samples collected but was in the range of concentrations indicative of naturally occurring conditions.

The shallow groundwater beneath the Site and vicinity is not considered a drinking water source based on its salinity and likely low sustainable yield. Groundwater in the Site vicinity is not used as a drinking water source and drinking water is supplied by Marin Municipal Water District (MMWD).

7.0 CONCLUSIONS AND RECOMENDATIONS

7.1 Vadose Zone Soils

As noted in the CCR, prior environmental investigations at the Site had determined that the majority of the surface and shallow vadose-zone soil in areas outside the footprints of the former structures had not been adversely affected by past tenant operations. Little to no data was available to evaluate environmental conditions beneath the plating shop structures. The FI was conducted to close the data gaps in these areas so that potential releases to the subsurface soils could be evaluated. The results of the FI revealed that while some elevated concentrations of metals and VOCs were identified in localized areas, the majority of the soils beneath the plating shops had not be significantly affected by past tenant operations and widespread environmental impairment had not occurred.

Based on the results of the FI and comparison of the concentrations of residual metals and selected VOCs in the soils to regulatory criteria, it appears that additional localized soil removal is warranted at the Site to prepare the property for the planned commercial use. Using the results of the vadose-zone soil evaluation, PES recommends that “source” soil removal be conducted for the following constituents:

- **Arsenic:** Locations where arsenic has been identified outside the expected background concentration population. This includes locations where arsenic was found above 13 mg/kg, (06QC-02, 06QC-04 and 06SR-01);
- **Cadmium:** Locations where cadmium exceeds the commercial CHHSLs criteria of 7.5 mg/kg, (694-3, 694-5 and 06SR-05);
- **Chromium:** Locations where total chromium exceeds the TTLC of 2,500 mg/kg, (06QC-09);
- **Hexavalent Chromium:** Locations where hexavalent chromium exceeds the commercial CHHSLs of 37 mg/kg, (Bottom-10.0-S);
- **Lead:** Locations where lead exceeds the commercial CHHSLs of 150 mg/kg, (06SC-19, 06SR-01, 06SR-3, 06SR-5, 06TP-03, and 06TP-04);
- **Nickel:** Locations where nickel exceeds the TTLC of 2,000 mg/kg, (06SC-16, 06QC-01, and 06QC-06);
- **TPH-motor oil:** Locations deeper than 1 foot where the TPHmo exceeds the commercial PRG of 1,000 mg/kg (06SR-02 and 06SR-05);
- **Trichloroethylene:** Locations where TCE exceeds the commercial PRG of 0.11 mg/kg, (Bottom-2.0); and

- **Cis-1,2-DCE:** Locations where cis-1,2-DCE exceeds the commercial PRG of 0.19 mg/kg, (Bottom-2.0).

Details of the proposed soil removal action will be provided in a forthcoming Corrective Measures Proposal.

7.2 Shallow Groundwater

Groundwater data collected during the FI supports the observations made in the CCR that tenant operations have not had a significant impact to groundwater conditions. This is likely due to the clayey nature of the soils at the site and the buffering capacity of soils to neutralize any acidic metal-bearing wastes that may have penetrated the floor slabs.

The occurrence of metals in groundwater samples at concentrations above the ESLs for the protection of estuarine environments and greater than levels typically found associated with background conditions were limited to two locations on the subject properties. These locations include a location (06SC-16-GW) beneath the former Specification Chrome building and a location (06QC-5-GW) beneath the former Quality Chrome building. The elevated concentrations appear to be localized to former plating areas and do not extend significantly from those locations. Data from other groundwater samples in close proximity to these locations and across the site indicate that significant or widespread groundwater contamination is not present.

Based on the saline nature of shallow groundwater, the presence of low permeability soils in the saturated zone, and the isolated occurrences of groundwater that exceeds the ESLs for the protection of estuarine environments, no further action is considered necessary for the subject property. Additionally, under future land use plans there are no recognized routes of exposure to the shallow groundwater or pathways of migration to surface water.

8.0 REFERENCES

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