5095 - Closure file

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GEOMATRIX

Alameda County

JUL 13 2004

Environmental Health

DRAFT

9 December 1997
3095.04

Emery Lofts Development Company, LLC
c/o The Martin Group
Attn: Mr. Dan McNevin
100 Bush Street, 26th Floor
San Francisco, California 94104

Subject: Additional Environmental Assessment
4226 Halleck Street
Emeryville, California

Dear Mr. McNevin:

Geomatrix Consultants, Inc. (Geomatrix), is pleased to report the results of additional assessment of environmental conditions at the property located at 4226 Halleck Street in Emeryville, California (Site). The purpose of the additional assessment was to provide better definition of the distribution of metals in soil underlying the Site. This information was used to evaluate the potential requirements for remediation or risk management prior to site development as a parking lot or as multi-family residential.

BACKGROUND

The Site reportedly was used for railroad freight loading and unloading from 1906 until sometime before 1975. Subsequent to 1975, the Site reportedly was used as a material storage and parking area.

In 1990, Emeryville Warehouse Company retained PES Environmental, Inc. of Novato, California (PES), to perform environmental investigations at the Site. PES collected soil samples from four borings. A discrete sample and a composite sample were analyzed for total extractable hydrocarbons (TEH), total volatile hydrocarbons (TVH) and polyaromatic hydrocarbons (PAH). Two additional composite samples were analyzed for metals. PES reported that organic constituents were either not detected or were detected at very low concentrations (toluene at 16 and 18 parts per billion). Concentrations of arsenic, barium, cadmium, copper, lead, and zinc were elevated in one composite sample of black sandy fill material (black sand) from a depth of approximately 2.5 feet. Groundwater samples were additionally collected from two soil borings and one monitoring well. PES reported organic concentrations to be non-detect, except for Total Volatile Hydrocarbons as gasoline at 53 parts per billion. Reported concentrations of metals in groundwater were low (below MCLs) or non-detect in the three samples.

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In 1994, Weiss Associates of Emeryville, California, installed two additional borings at the Site in the vicinity of two previous PES samples. Two soil samples and one groundwater sample were submitted for laboratory analysis. A maximum arsenic concentration of 6800 milligrams per kilogram (mg/kg) was detected in the black sand. Elevated concentrations of barium, cadmium, copper, lead, and zinc were also detected in the black sand. Concentrations of chemicals in groundwater were reportedly below detection limits, with the exception of arsenic, which was detected at 9 micrograms per liter (µg/l).

Review of results from the PES and Weiss investigations indicates that the upper approximately 1.5 feet of site fill does not contain significant concentrations of heavy metals. Higher concentrations of metals were found in the black sand layer found below the surface fill material. Therefore, subsequent site investigation was focused on further characterizing the black sand layer across the site.

FIELD ACTIVITIES

On 13 November, Geomatrix personnel conducted sampling activities at the Site. Precision Sampling, Inc. (PSI), of San Rafael, California, collected continuous cores from 11 borings using a direct-push technique. After perforating the top 1 foot (primarily asphalt and base rock), a 2½-inch split spoon sample was collected from the 1 to 2.5 foot interval. Samples from 2.5 feet and deeper were collected using a 2½-inch stainless steel probe equipped with 2-inch clear butyrate plastic sample tubes. Three-foot cores were retrieved and logged by a Geomatrix engineer. Boring logs are included in Appendix B. Samples from cores containing evidence of black sand and samples of underlying Bay Mud were collected for laboratory analysis. The samples were capped, labeled, and placed on ice for shipment to the laboratory under chain-of-custody control.

Difficult conditions encountered during boring resulted in completion of 11 of a planned 16 borings. Refusal was encountered in two locations, and at one of these locations PSI could not retrieve the split spoon from the boring. Due to the unconsolidated nature of the shallow soil at the Site, we experienced poor retrieval of samples in four locations.

Geomatrix collected a total of 11 samples from 6 of the borings to further characterize the distribution of metal concentrations in and below the black sand. These samples were analyzed for total concentrations of arsenic, barium, cadmium, copper, lead, and zinc using U.S. Environmental Protection Agency (EPA) Methods 6010/7000. The 2 black sand samples with the highest total metals concentrations were subsequently analyzed for leachable metals using

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the EPA Toxicity Characteristic Leaching Procedure (TCLP) to evaluate disposal options and the EPA Synthetic Precipitation Leaching Procedure (SPLP) to evaluate the feasibility of leaving the material in place.

RESULTS AND CONCLUSIONS

Analytical laboratory results are presented in Table 1, and the laboratory report is included as Appendix A. Arsenic, barium, cadmium, copper, lead, and zinc were detected in all samples; however, concentrations appeared to be elevated only in samples G-2-2 and G-6-2, which were both black sand samples. Concentrations of metals in both of these samples exceeded the California hazardous waste criteria for total zinc, and sample G-2-2 also exceeded the hazardous waste criteria for total copper.

TCLP results indicate that the soil would not be classified as a federal hazardous waste and, therefore, could be disposed of as a nonhazardous waste outside of California. Geomatrix's experience indicates that transportation costs would negate potential cost savings for out-of state disposal of this soil. SPLP results indicate that arsenic is not likely to leach significantly from the black sand under expected site conditions and that in-place management of the material could be a feasible alternative.

The RWQCB has indicated in preliminary discussions that in-place management of the soil would likely be acceptable given appropriate management controls, such as a deed restriction and a soil management plan. Were the soil to be left in-place, residential development could be approved if the soil was sufficiently isolated from contact with residents and consumable plants. In order for the Site to be cleared for residential development without a deed restriction, it will be necessary to remove soils containing arsenic in excess of a RWQCB-approved human health risk-based concentration, which is assumed to be approximately 20 mg/kg.

EVALUATION OF ALTERNATIVES

Based upon the previous and current analytical data for the Site, Geomatrix developed high and low estimates of the volume of black sand that is present on the Site. Based on the results of previous samples, the Site surface soil (the upper approximately 1.5 feet) overlying the black sand does not appear to be significantly impacted by heavy metals. The extent of black sand was plotted in three dimensions using Surfer, a graphical analysis software application. Volume estimates based on this plot were then calculated using the software. The volume of in-place soil containing black sand is estimated to range between 450 and 600 cubic yards.

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Geomatrix calculated a tonnage estimate ranging from 675 to 900 tons of black sand potentially containing elevated heavy metal concentrations assuming an average ratio of 1.5 tons per cubic yard of soil. Because the arsenic concentrations were considered to be the primary concern for residential development of the site, arsenic was selected to be the target compound for discussion of removal and site management parameters.

Three alternatives were evaluated to facilitate future development of the Site.

1. Multi-Family Residential Without a Deed Restriction – This alternative requires removal of soil containing concentrations of arsenic greater than the health-based cleanup standard. This alternative would allow residential development of the Site without a deed restriction or management controls. This alternative would be protective of public health and the environment.

2. Multi-Family Residential with a Deed Restriction – This alternative entails removal of a limited volume of arsenic-affected soil to construct 4-foot-wide by 7-foot-deep utility corridors along the east and west sides of the property. This alternative would allow residential development of the Site with a deed restriction and site management plan, and would be protective of public health and the environment. Future subsurface work performed within the utility corridors would be unlikely to expose utility workers and residents to heavy metal-affected soil.

3. Parking Lot with a Deed Restriction – This alternative does not require removal of arsenic-affected soil. This alternative would allow the Site to be used as parking for residences and would require a deed restriction and a site management plan. This alternative is protective of public health and the environment.

The alternatives are summarized in the following table:

Alternative	Advantages	Disadvantages
1. Multi-Family Residential Without a Deed Restriction	Allows property to be unencumbered by deed restriction	Most expensive alternative.

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Alternative	Advantages	Disadvantages
2. Multi-Family Residential with a Deed Restriction	Allows residential use of property and limits potential for residents or utility workers to be exposed to arsenic-affected soil.	Property would be encumbered by deed restriction. Notification of RWQCB, owners, and residents would be required for earthwork outside of utility corridors.
3. Parking Lot with a Deed Restriction	Least expensive alternative	Does not consider residential use of the property.

It is recommended that Proposition 65 notification requirements for the selected development alternative be discussed with legal counsel.

We appreciate the opportunity to provide Emery Lofts Development Company with our environmental services. Please call either of the undersigned if you have any questions or need additional information.

Sincerely,

GEOMATRIX CONSULTANTS, INC.

Brad Job, P.E.
Project Engineer

Tom Graf, P.E.
Principal Engineer

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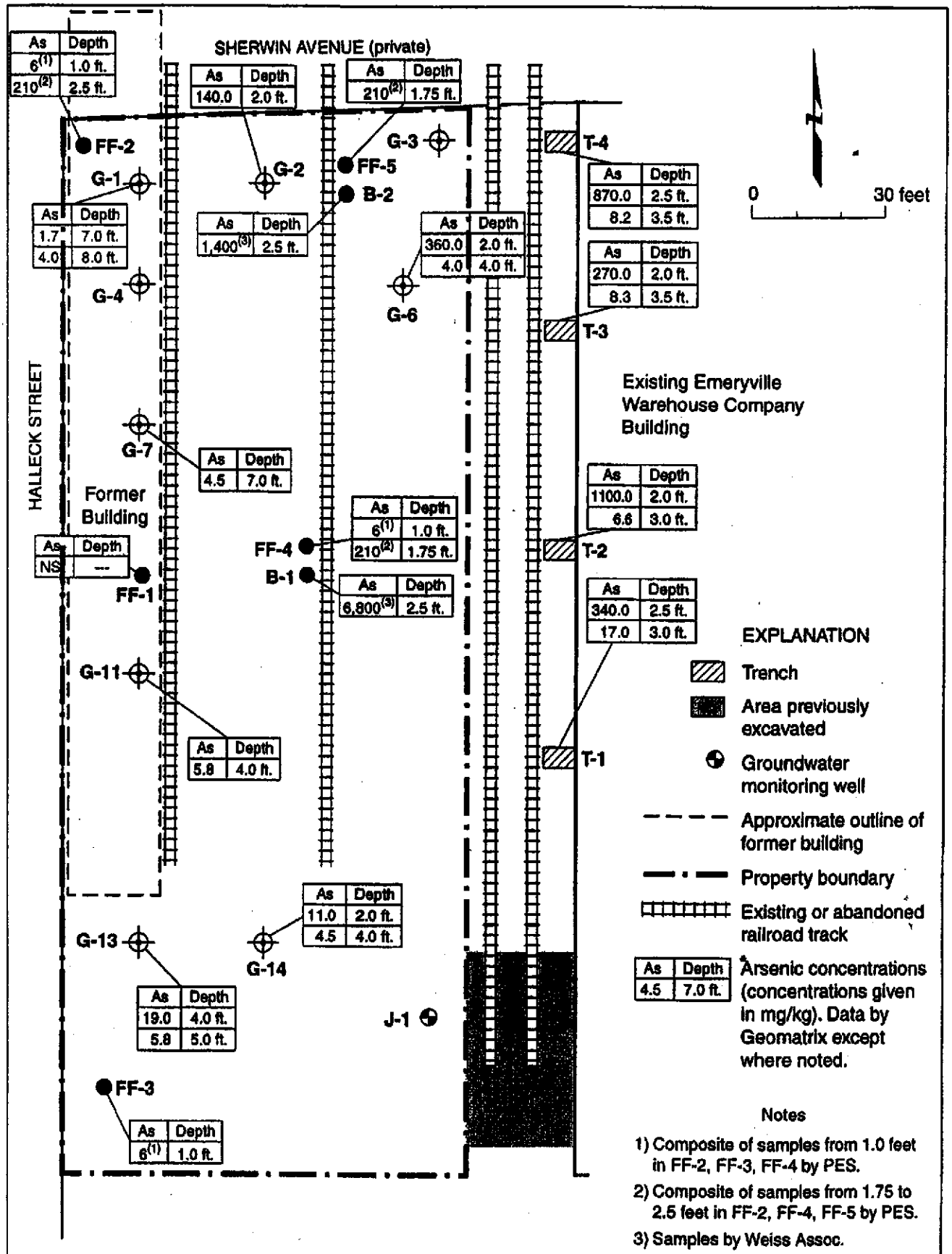
Attachments: Table 1 – Summary of Analytical Results for Soil
Table 2 – Summary of Soil Leachability Results
Figure 1 – Site Location Map
Figure 2 – Previous and Current Boring Locations
Appendix A – Laboratory Report
Appendix B – Boring Logs



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ARSENIC CONCENTRATIONS IN SOIL
Emeryville Warehouse
Emeryville, California

Figure 1

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TABLE 1

SUMMARY OF ANALYTICAL RESULTS FOR SOIL

4226 Halleck Street
Emeryville, California

Concentrations in milligrams per kilogram (mg/kg)

Sample Number	Arsenic	Barium	Cadmium	Copper	Lead	Zinc
G-1-7	1.7	96	0.3	16	5	30
G-1-8	4	140	0.5	40	12	150
G-11-4	5.8	200	0.7	22	7	55
G-13-4	19	240	4.1	130	450	670
G-13-5	5.8	230	0.7	20	7	45
G-14-2	11	110	0.9	64	11	290
G-14-4	4.5	180	0.5	19	6	43
G-2-2	140	2400	6	3000	200	10,000
G-6-2	360	910	2	1700	450	6900
G-6-4	4	300	0.9	20	6	42
G-7-7	4.5	81	0.3	15	5	28

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TABLE 2

SUMMARY OF SOIL LEACHABILITY RESULTS

4226 Halleck Street
Emeryville, California

Concentrations in milligrams per liter (mg/l)

Leachability								
SPLP			As	Ba	Cr	Cu	Pb	Zn
G-6	2	G-6-2	0.062	0.2	ND	0.16	0.05	0.22
G-2	2	G-2-2	0.015	0.4	ND	0.28	ND	0.54
TCLP								
G-6	2	G-6-2	0.007	0.8	ND	1.1	ND	1.9
G-2	2	G-2-2	ND	1.7	ND	2	ND	6

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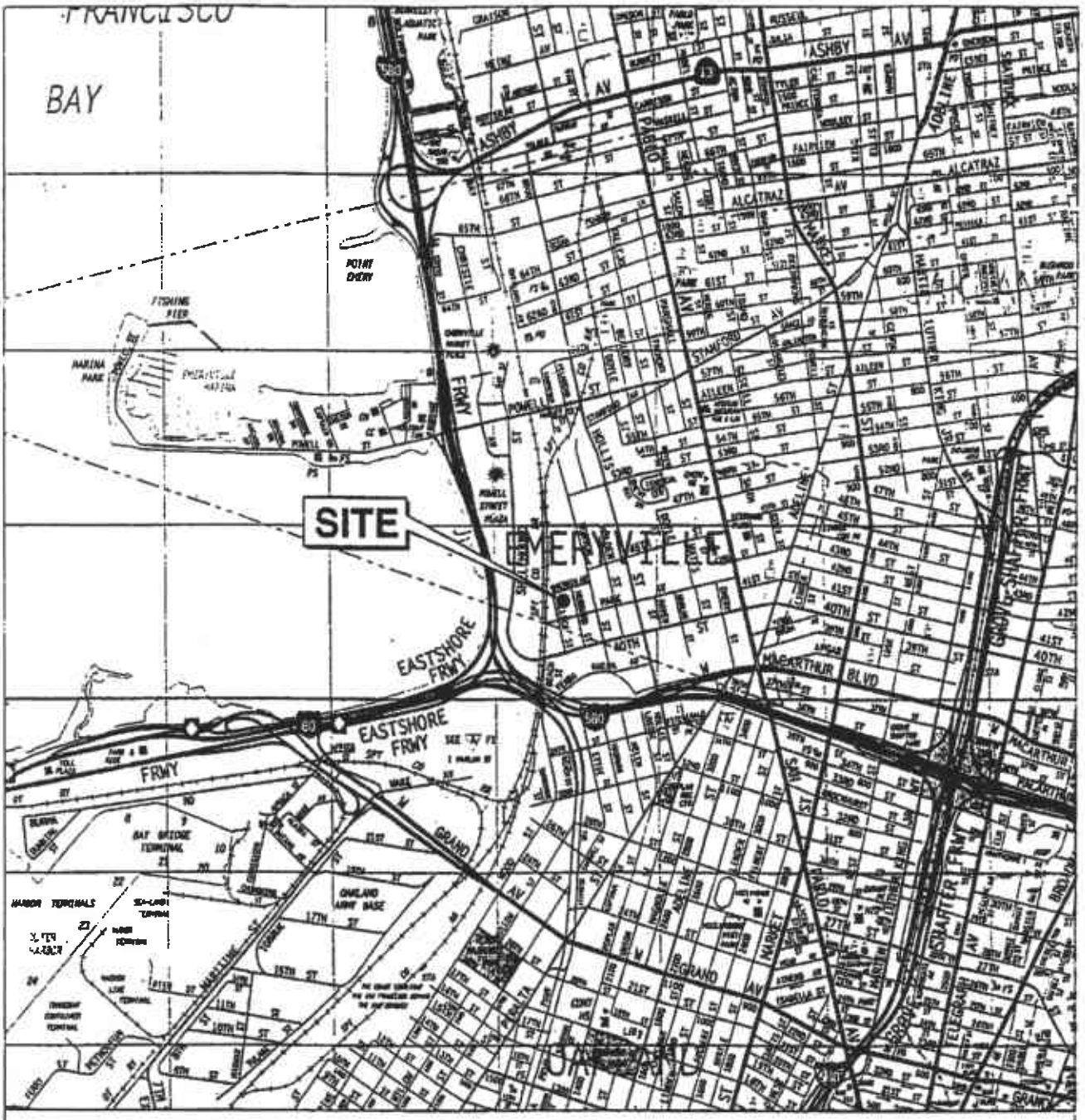
FIGURES



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SITE LOCATION MAP
Emeryville Warehouse
Emeryville, California

Figure
1

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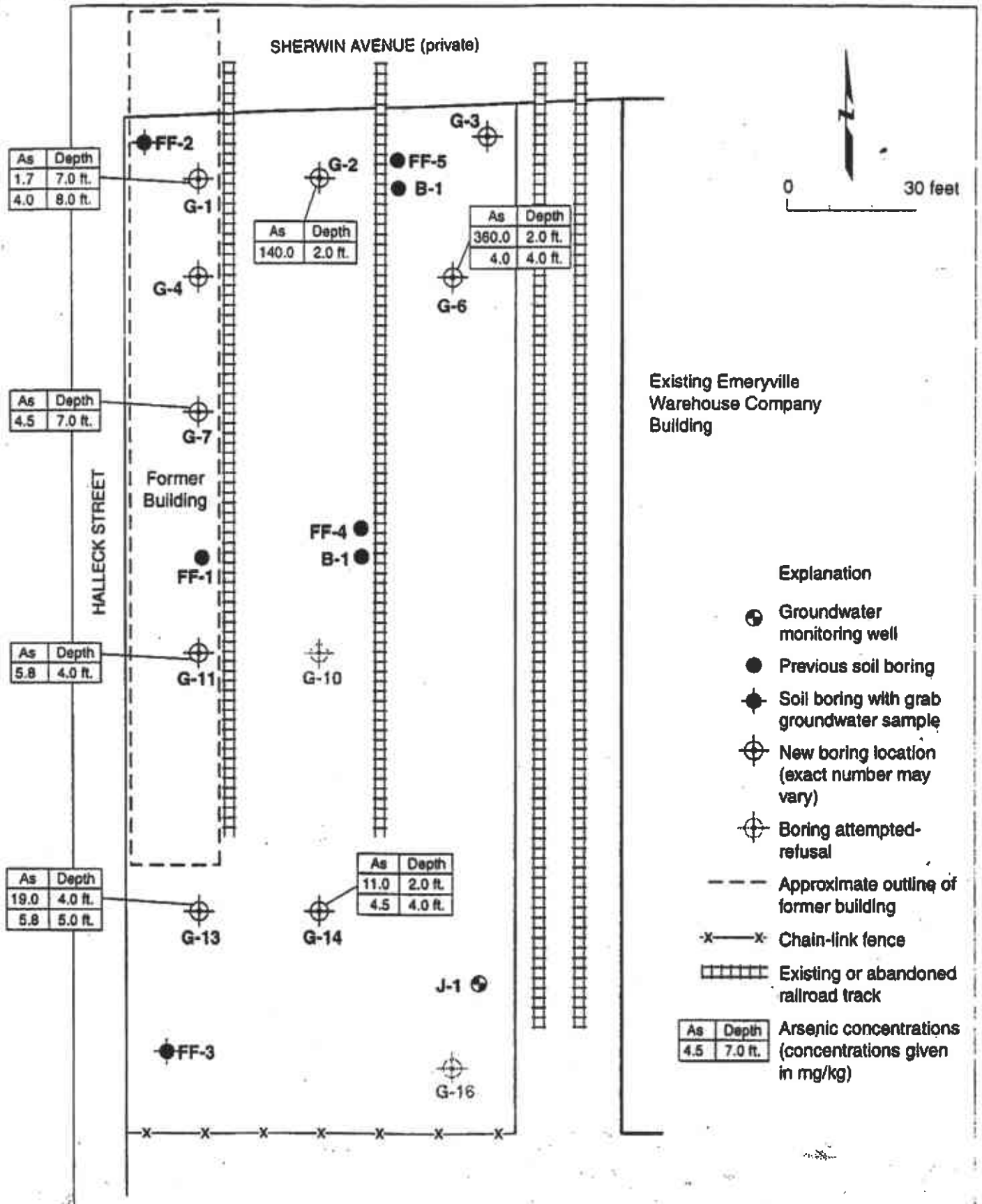

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PREVIOUS AND CURRENT BORING LOCATIONS
Emeryville Warehouse
Emeryville, California

Figure 2

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