

**Work Plan
Sampling of Foundry Sands
6000 Stevenson Boulevard
Fremont, California**

April 25, 1990
1983

Prepared for:

6000 S Corporation
6000 Stevenson Boulevard
Fremont, California



LEVINE·FRICKE



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CONSULTING ENGINEERS AND ENVIRONMENTAL SCIENTISTS

April 25, 1990

LF-1983

Ms. Linda Vrable
Hazardous Materials Division
Public Work Department
City of Fremont
39572 Stevenson Place, Suite 125
Fremont, California 94538

Subject: Work Plan
Sampling of Foundry Sands
6000 Stevenson Boulevard
Fremont, California

Dear Ms. Vrable:

Enclosed for your review is the Work Plan for the investigation of foundry sands located at 6000 Stevenson Boulevard, Fremont, California.

Purpose of Proposed Work

This work will be conducted to screen the foundry sands for soluble lead concentrations which may exceed the Soluble Threshold Limit Concentrations (STLCs) set by the State of California Department of Health Services. This work is proposed based on Ensco's previous composite sampling results which indicated elevated soluble lead concentrations in the sands. This work is proposed to verify whether these concentrations are present in the sands. Based on the sampling of the foundry sands and chemical analyses, two possible scenarios have been identified:

- 1) If the testing shows that lead concentrations exceed the STLC, Levine·Fricke would likely recommend excavation and disposal of the material off site.
- 2) If the testing shows that the average lead concentrations are below the STLC, Levine·Fricke would likely recommend further sampling to assess whether the sands can remain on site to be used as fill. The cost-effectiveness of further testing versus excavation and off-site disposal would be closely examined at this point. However, additional sampling may not be cost-effective in comparison to off-site disposal costs.

1900 Powell Street, 12th Floor
Emeryville, California 94608
(415) 652-4500
FAX (415) 652-2246

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Sampling Approach

The proposed initial sampling of foundry sands will be conducted as follows.

- 1) Twelve samples will be collected at random locations from the foundry sands; duplicate samples will also be collected at each location.
- 2) Samples from the twelve locations will be combined into three composite samples (of four samples each) which will be analyzed for soluble lead concentrations.
- 3) The twelve duplicate samples will be stored in the event further information is needed to evaluate disposal options or possible on-site use.

We look forward to your prompt review of the Work Plan so that we can move forward with closure of the 6000 Stevenson site. We anticipate that the tasks outlined in this Work Plan will be completed five weeks after the Plan is accepted in writing by the City of Fremont and Mr. Sobek.

If you have any questions, please call me or Carol Yamane of Levine·Fricke (415-652-4500), or Mr. Sobek (415-657-7633).

Sincerely,



Bob Roat
Senior Staff Engineer

Enclosure

April 25, 1990

LF-1983

**WORK PLAN
SAMPLING OF FOUNDRY SANDS
6000 STEVENSON BOULEVARD
FREMONT, CALIFORNIA**

INTRODUCTION:

Mr. Dale Sobek, owner of the 6000 S Corporation, located at 6000 Stevenson Boulevard in Fremont, California ("the Site"), has requested that Levine·Fricke prepare this Work Plan to investigate the concentrations of soluble lead present in foundry sands at the Site. These sands, which were imported to the site in 1986, are a waste product of a cast iron pipe foundry.

This Work Plan describes the proposed sampling methodology for sampling and analyses of foundry sands located at the Site. The objective of the sampling and subsequent analysis is to assess the concentrations of soluble lead present in the foundry sands and to evaluate those concentrations relative to regulations for Soluble Threshold Limit Concentrations (STLCs). This information will be used by Mr. Sobek to evaluate the need for further sampling or removal of the sands.

HISTORY OF THE FOUNDRY SAND

According to a report by Earthmetrics, Inc., dated February 1, 1988, approximately 2,000 cubic yards of foundry sands were transported to the Site from the American Brass and Iron Foundry (AB&I) of Oakland, California, in 1986. (The Oakland facility of AB&I produces only cast iron pipe and does not produce brass.) Because of their superior compaction properties, the foundry sands were imported to the Site by Mr. Sobek for use as compacted fill.

Visual inspection of the sands in March 1990 by Levine·Fricke personnel indicated that the reported 2,000 cubic yards of sand are present in discrete piles, about 8 to 10 feet high, over an area roughly 240 feet by 300 feet, or about 72,000 square feet.

California Waste Extraction Tests (WET) conducted for CAM 17 metals on May 15, 1986, by Fredrickson Engineering for AB&I indicated that all seventeen metals were well below STLC levels (Appendix A) and that only copper was present at a detectable level (Table 1).

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One additional sample was collected from the on-site foundry sands by Ensco on March 30, 1989, during a Preliminary Site Assessment (conducted by Ensco for the City of Fremont) and analyzed by NET Laboratories. Using lower detection limits, the lab reported detectable concentrations of arsenic, barium, chromium, lead, vanadium and zinc (Table 1). Of these six metals, only lead (10 mg/l) exceeded its STLC of 5 mg/l. Detection limits used for the second sample were lower than the detection limits used in the Fredrickson report. This allowed detection of arsenic, barium, chromium, and vanadium in the second sample, which were not detected in the first sampled collected by Fredrickson.

Because of the discrepancies between previous analysis results further assessment of the concentration of lead in the foundry sands was requested by the City of Fremont. Therefore, Levine·Fricke proposes that additional sampling be conducted to assess concentrations of soluble lead in the foundry sands.

PROPOSED SAMPLING PLAN

In order to verify previous sampling results and to assess whether lead concentrations exceed the California STLC in the foundry sands, the following sampling plan is proposed.

Task 1: Layout of the Sampling Locations

The area of the foundry sands has already been marked with flags. The sampling locations will be laid out by dividing the foundry sands into a grid with 10-foot increments. Using a random number generator, twelve grid points will be chosen for sampling. Each chosen grid point will be located on the foundry sands by measurement. A flag will be placed at the center of the foundry sand pile located nearest to the chosen grid point.

Since the foundry sands were generated in Oakland, loaded onto trucks, transported to the Site and dumped in discrete piles, it is reasonable to assume that the individual piles are well mixed. We therefore do not believe that samples collected at multiple depths are appropriate or necessary. Samples will be collected at a uniform depth of approximately 1 foot to 1.5 feet beneath the surface of the piles.

Task 2: Sample Collection

Twelve samples will be collected in duplicate from twelve locations in laboratory-supplied glass containers. Duplicate samples will be collected for use as composites. Samples will be collected using a shovel and a stainless steel trowel. The shovel and trowel will be washed with Alconox, a laboratory-grade

detergent, and rinsed with dionized water prior to collection of each sample. Samples will be labeled with the location number and other pertinent information and stored in a chilled ice chest for transportation to a State-certified laboratory for analysis.

Task 3: Laboratory Analysis and Statistical Testing

Samples will be analyzed by a State-certified laboratory using the following protocol.

The twelve samples will be combined by the analytical laboratory into three composites of four samples each.

The three composite samples will be analyzed for soluble lead as determined by the California Waste Extraction Test (WET). The results of these composites will be used to evaluate the potential for lead to leach from foundry sands.

After receiving the results of the lead analysis, an assessment will be made to determine the need for further sampling, based on the concentrations found and evaluation of cost of alternative responses to the findings. If further sampling is needed to assess whether the foundry sands can be used on site, a proposed work plan for further sampling will be prepared.

Task 4: Report Preparation

A letter report detailing the sampling techniques, laboratory analysis and the results of the statistical evaluations will be prepared and submitted to Mr. Sobek. After incorporation of his comments, the report will be finalized for submittal to the City of Fremont and the Alameda County Water District.

Task 5: Project Management and Meetings

Mr. Bob Roat, Senior Staff Engineer, will be the overall Project Manager for the project. As such, he will be the primary contact for Mr. Sobek and will be responsible for all technical and administrative aspects of the project. Ms. Carol Yamane, Senior Project Hydrogeologist, and Mr. Thomas M. Johnson, Principal Hydrogeologist, will review project work. Ms. Yamane will also provide hydrogeologic support.

If meetings with representatives of the regulatory agencies are required, additional costs will be incurred.

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SCHEDULE

We anticipate that the Scope of Work outlined in this proposal will be completed within five weeks of receiving written authorization to proceed. This estimated time is contingent on subcontractor availability and precludes significant increases in the Scope of Services or changes in conditions beyond the control of Levine·Fricke that would prohibit initiation or continuation of work (e.g., permit delays, extreme weather conditions, etc.).

TABLE 1

EXISTING FOUNDRY SAND ANALYSIS RESULTS

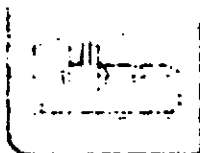
METAL	Ensco* Data 3/30/89 (ppm)	Frederickson* Data 5/15/86 (ppm)	STLC (ppm)
Arsenic	0.057	<1.0	5
Barium	5	<5.0	100
Chromium	0.67	<0.5	5
Copper	<0.05	0.98	25
Lead	10	<0.5	5
Vanadium	0.18	<1.0	24
Zinc	4.1	<0.5	250

STLC = Soluble Threshold Limit Concentration
 Metals analysis followed California WET test.

APPENDIX A

CALIFORNIA WASTE EXTRACTIONS TESTS

D



**FREDERIKSEN
ENGINEERING**

CONSULTING
ENGINEERS
ARCHITECTS

OAKLAND

LONG BEACH

July 9, 1986

Mr. George Meyer
The American Brass & Iron Foundry
7825 San Leandro Street
Oakland, CA. 94621

File: J-59-34
- Laboratory Analysis

Dear Mr. Meyer:

Enclosed you will find our laboratory report with the results of the Waste Extraction Test (WET) and the analysis for metals (17) in accordance with title 22, section 66693 of the California Administrative Code. The Foundry sand was found to be NON HAZARDOUS.

If you have any questions please feel free to call us.

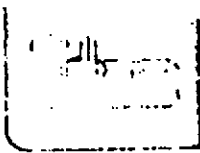
Very truly yours,
FREDERIKSEN ENGINEERING CO., INC.

Arnold B. Menar

Arnold B. Menar, Ph.D.
Laboratory Director

ABM/amh
enclosure

JAN 28 1988



FREDERIKSEN ENGINEERING

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ARCHITECTS

OAKLAND

LONG BEACH

LABORATORY REPORT

File: J-59-84

Client: AMERICAN BRASS & IRON FOUNDRY

Address: Mr. George Meyer
7825 San Leandro Street
Oakland, CA. 94621

Sample: Foundry Sand

Date of Sampling: 5-15-86

Date of Report: 7-9-86

METALS	mg/1	STLC* mg/1
Antimony	<1.0	15
Arsenic	<1.0	5.0
Barium	<5.0	100
Beryllium	<0.10	0.75
Cadmium	<0.10	1.0
Chromium	<0.50	560
Cobalt	<1.0	80
Copper	0.98	25
Lead	<0.50	5.0
Mercury	<0.010	0.2
Molybdenum	<1.0	350
Nickel	<0.50	20
Selenium	<0.10	1.0
Silver	<0.10	5
Thallium	<1.0	7.0
Vanadium	<1.0	24
Zinc	<0.50	250

*STLC = Soluble Threshold Limit Concentration,
22CA66693 (CA Title 22)

The Foundry Sand was found to be non hazardous material

Arnold B. Menar

Arnold B. Menar, Ph.D.
Laboratory Director



NATIONAL
ENVIRONMENTAL
TESTING, INC.

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623

Formerly: ANATEC Labs, Inc.

David Siegel
ENSCO
41674 Christy St
Fremont, CA 94538

04-19-89
NET Pacific Log No: 5965 (-1)
Series No: 509
Client Ref: PO# 13133

Subject: Analytical Results for One Sand Sample Identified as "WRT Sobek"
Received 03-31-89.

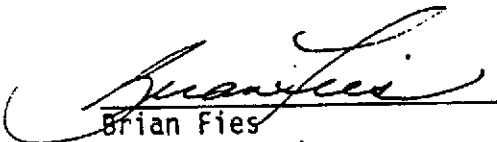
Dear Mr. Siegel:

Analysis of the sample referenced above has been completed. Results are presented following this page.

Please feel welcome to contact us should you have questions regarding procedures or results.

Submitted by:

Approved by:


Brian Fies
Project Chemist


Kim Hansard
Project Manager

/sm
Enc: Sample Custody Document

KEY TO ABBREVIATIONS

- mean : Average; the sum of the measurements divided by the total number of measurements.
- mg/Kg (ppm) : Concentration in units of milligrams of analyte per kilogram of sample, wet-weight basis (parts per million).
- mg/L : Concentration in units of milligrams of analyte per liter of sample, unless noted otherwise.
- mL/L/hr : Milliliters per liter per hour.
- MPN/100 mL : Most probable number of bacteria per one hundred milliliters of sample.
- N/A : Not applicable.
- NA : Not analyzed; see cover letter for details.
- ND : Not detected; the analyte concentration is less than the listed reporting limit.
- NR : Not requested.
- NTU : Nephelometric turbidity units.
- RL : Reporting limit.
- RPD : Relative percent difference, $[(V^1 - V^2) / V \text{ mean}] \times 100$.
- SNA : Standard not available.
- ug/Kg (ppb) : Concentration in units of micrograms of analyte per kilogram of sample, wet-weight basis (parts per billion).
- ug/L : Concentration in units of micrograms of analyte per liter of sample.
- ug/filter : Concentration in units of micrograms of analyte per filter.
- umhos/cm : Micromhos per centimeter.
- * : See cover letter for details.

Parameter	Regulatory Criteria ^a	
	TTLC	STLC
Antimony & compounds	500	15
Arsenic & compounds	500	5.0
Barium & compounds ^b	10,000	100
Beryllium & compounds	75	0.75
Cadmium & compounds	100	1.0
Chromium (VI) & compounds	500	5.0
Chromium & compounds	2,500	560
Cobalt & compounds	8,000	80
Copper & compounds	2,500	25
Lead & compounds	1,000	5.0
Mercury & compounds	20	0.2
Molybdenum & compounds	3,500	350
Nickel & compounds	2,000	20
Selenium & compounds	100	1.0
Silver & compounds	500	5.0
Thallium & compounds	700	7.0
Vanadium & compounds	2,400	24
Zinc & compounds	5,000	250
Boron	--	100 ^c

^aTTLC--Total threshold limit concentration, from Section 66699, Article 11, California Administrative Code; STLC--Soluble threshold limit concentration, from California Administrative Code.

^bExcludes barite.

^cLake County limit.

SAMPLE DESCRIPTION: S-1 03-23-89 1100
LAB NO.: (-24905)

<u>Parameter</u>	<u>Reporting Limit</u>	<u>Results</u>	<u>Units</u>
17 CAM METALS			
Antimony	0.05	ND	mg/L
Arsenic	0.005	0.057	mg/L
Barium	0.05	5.0	mg/L
Beryllium	0.05	ND	mg/L
Cadmium	0.05	ND	mg/L
Chromium, hexavalent	0.005	ND	mg/L
Chromium	0.05	0.67	mg/L
Cobalt	0.05	ND	mg/L
Copper	0.05	ND	mg/L
Lead	0.2	10 ←	mg/L
Mercury	0.005	ND	mg/L
Molybdenum	0.1	ND	mg/L
Nickel	0.05	ND	mg/L
Selenium	0.010	ND	mg/L
Silver	0.02	ND	mg/L
Thallium	0.3	ND	mg/L
Vanadium	0.05	0.18	mg/L
Zinc	0.05	4.1	mg/L

