

May 4, 1990

90 MAY 10 AM 10:13



Alameda County Health Care Services Agency
Hazardous Materials Division
80 Swan Way
Oakland, CA 94624

Attention: Ms. Pam Evans
Hazardous Materials Specialist

Subject: Work Plan for Groundwater Remediation
Crown Metal Manufacturing Company at Pacific International Steel
16525 Worthley Drive, San Lorenzo, California
Exceltech Project No. 3462E

Dear Ms. Evans:

This is in reply to your letter of April 10, 1990, requesting additional information to evaluate the subject Work Plan for Groundwater Remediation. Enclosed are the following:

- Site Safety Plan for Crown Metal Manufacturing Company at 16525 Worthley Drive, San Lorenzo, California
- Completed Underground Storage Tank Unauthorized Release (Leak)/Contamination Site Report
- Laboratory analysis results for soil samples
- Site location map indicating where the excavated soil was aerated

In regard to the eight items you requested in your letter, the following individual replies are made. The replies are numbered to correspond to the appropriate item number in your letter.

1. A check for \$500.00, payable to the County of Alameda, is enclosed.
2. Mr. Richard Ernest, President of Crown Metal Manufacturing Company, has supplied us with the following information concerning tank removal activities at the site. Two underground fuel storage tanks were removed in February, 1987, a 10,000 gallon tank and a 1,000 gallon tank. Who removed the tanks is not known. The 10,000 gallon tank was used to store unleaded gasoline. The 1,000 gallon tank was used to store aviation fuel. The 1,000 gallon tank is believed to have been empty since Crown Metal Manufacturing Company purchased the property in 1982.
 - ✕ No sampling connected with the removal of the tanks was performed.
 - ✕ No Hazardous Waste Manifests for the tanks were prepared.
- √3. A completed Underground Storage Tank Unauthorized Release (Leak)/Contamination Site Report is enclosed.

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Project No. 3462E
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4. On December 1, 1988, Ensco Environmental Services, Inc., now Exceltech, Inc., began excavation of the soil in and around the former storage tank complex. Notification/request to aerate the excavated soil was submitted to the Bay Area Air Quality Management District (BAAQMD) by telephone. Verbal approval to aerate the excavated soil was granted by BAAQMD.

On December 15, 1988, the excavation was completed. The area was excavated down to the water table, 15 ft. A detail drawing of the final excavation is given on Figure 1. The excavated soil was placed on 6 mil visqueen and allowed to aerate on-site, when weather permitted. The excavated soil was covered with 6 mil visqueen during rain.

On December 19, 1989, soil samples were taken from the excavated soil, and sent to a certified laboratory (Sequoia Analytical) for analysis. The analytical results indicated the excavated soil contained petroleum hydrocarbons above regulatory guideline limits. A copy of the analytical results is enclosed.

On April 5 and 6, 1989, the excavated soil was spread out to facilitate aeration.

On May 12, 1989, soil samples were taken from the excavated soil, and the samples sent to Sequoia Analytical for analysis. The analytical results indicated no detectable levels of petroleum hydrocarbons in the excavated soil. A copy of the analytical results is enclosed.

On May 29, 1989, soil samples were again taken from the excavated soil and sent to Sequoia Analytical for analysis. The analytical results indicated the petroleum hydrocarbon concentrations in the excavated soil were low enough to allow the soil to be disposed as Class III waste.

On August 21, 1989, the excavation was backfilled and compacted. The backfill material was 3/4" to 1 1/2" coarse aggregate. The excavation was lined with a geotechnical fabric liner to prevent backfill material from passing into the water table.

On September 8, 1989, the excavated soil was disposed at the Durham Road Landfill, as Class III waste.

5. Subsurface Soil Conditions. Subsurface soil conditions at the site were explored to a maximum depth of 26.5 feet. A total of 10 exploratory borings were drilled at the site. The drilling revealed that the site is primarily underlain by clays that vary from fat- to fine-grained sandy. Underlying the sandy gravel fill at the surface was clay to silty clay which ranged from 15 to 25 feet in depth. Underlying the clays and occurring locally, units of sandy silt, silt, clayey sand, and sand were observed.

Shallow Groundwater. Shallow groundwater at the site is present at depths ranging from 8 to 16 feet. From the subsurface investigations, it does not appear that an aquifer, per se, is present in these shallow conditions. Saturated conditions are present in the localized sand units, but not in the clay units where groundwater appears limited to the secondary porosity, i.e., rootholes and burrows. The quantity, quality, and presence of groundwater appear to be

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Project No. 3462E
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related to the presence of the Bockman Canal that is adjacent to the site. An aquifer pump test conducted in February 1990 revealed that groundwater levels at the site are tidally influenced up to 3/4 to 1 foot per day and that the yield in the uppermost groundwater zone is approximately 1 gallon per minute. Laboratory analysis of samples collected from existing wells show the water to be highly saline, having total dissolved solids concentrations up to 45,000 parts per million.

Impact. Groundwater contamination at the site has been limited to petroleum hydrocarbons as gasoline. Contamination was first detected in 1987, after installing groundwater monitoring wells. Quarterly monitoring, conducted since the detection of contamination, indicates that contamination is localized around the former underground tank complex, and has remained in that area. Quarterly Monitoring indicates the contaminant concentration levels have been generally decreasing with time. The short and long term impact to groundwater, therefore, appears to be relatively minor. The source of contamination is no long present; the soil impacted from the original contamination event has been excavated and aerated on site, and existing groundwater contamination is limited, and its concentrations are decreasing.

6. A Site Safety Plan for the installation and maintenance of the proposed Groundwater Extraction and Treatment System at the subject site is enclosed.
7. Presently, the Department of Health Services (DOHS) is not permitting nor issuing variances for carbon adsorption groundwater treatment systems like the proposed system. These systems fall under the proposed Permit by Rule regulations, which were issued for public review/comment on April 27, 1990. When these regulations become effective, Exceltech will notify DOHS that the system is operating.
8. The spent carbon beds will be removed by the carbon bed supplier (Westates Carbon, Inc.). It is our understanding that the spent carbon beds will be taken to a regeneration facility where the carbon will be regenerated. Westates Carbon, Inc. will issue Exceltech a certificate of destruction. The replacement carbon beds for the remediation system will contain only virgin carbon.

If you have any question or require additional information, please call our office.

Sincerely,
Exceltech, Inc.



Alonzo Granados
Project Engineer

Britt Von Thaden
Britt Von Thaden
Project Geologist

AG/da
Enclosures

cc: Mr. Richard Ernest, Crown Metal Manufacturing Company



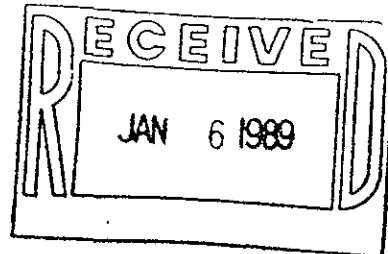
SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

EnSCO Environmental Services	Client Project ID: #4613F, Crown Metals, P.O. #11347	Sampled: Dec 19, 1988
41674 Christy Street	Matrix Descript: Soil	Received: Dec 20, 1988
Fremont, CA 94538	Analysis Method: EPA 5030 or 3810/8015/8020	Analyzed: Dec 30, 1988
Attention: Gary Mulkey	First Sample #: 812-2325	Reported: Jan 5, 1989

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
812-2325	#1	60	0.76	0.11	0.59	1.5
812-2326	#2	110	0.35	1.0	0.89	6.4



Detection Limits:	1.0	0.05	0.1	0.1	0.1
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Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard. Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Arthur G. Burton
Laboratory Director



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

EnSCO Environmental Services 41674 Christy Street Fremont, CA 94538 Attention: Gary Mulkey	Client Project ID: #4613F, Crown Metals, P.O.#11347 Matrix Descript: Soil, #2 Analysis Method: EPA 3550/8015 First Sample #: 812-2326	Sampled: Dec 19, 1988 Received: Dec 20, 1988 Analyzed: Dec 30, 1988 Reported: Jan 5, 1989
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TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015) AS A AS AVIATION FUEL

Sample Number	Sample Description	High B.P. Hydrocarbons mg/kg (ppm)
812-2326	Soil, #2	41

Detection Limits:

1.0

High Boiling Point Hydrocarbons are quantitated against a diesel fuel standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Arthur G. Burton
Laboratory Director



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

EnSCO Environmental Services	Client Project ID: #4613F, Crown Metals, P.O.#11347	Sampled: Dec 19, 1988
41674 Christy Street	Sample Descript: Soil	Received: Dec 20, 1988
Fremont, CA 94538		Extracted: Jan 2, 1989
Attention: Gary Mulkey	Lab Number: 812-2325	Analyzed: Jan 5, 1989
		Reported:

LABORATORY ANALYSIS

Analyte	Detection Limit mg/kg	Sample Results mg/kg
Lead, mg/kg	0.05	9.1

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Arthur G. Burton
Laboratory Director



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Enesco Environmental Services 41674 Christy Street Fremont, CA 94538 Attention: John Lynch	Client Project ID: #4613F, Crown Metals, PO #13524 Matrix Descript: Soil Analysis Method: EPA 5030/8015/8020 First Sample #: 905-1795	Sampled: May 12, 1989 Received: May 15, 1989 Analyzed: May 26, 1989 Reported: May 31, 1989
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TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
905-1795	Composite A,B,C	N.D.	N.D.	N.D.	N.D.	N.D.
905-1796	Composite D,E,F	N.D.	N.D.	N.D.	N.D.	N.D.

Detection Limits:

1.0

0.05

0.1

0.1

0.1

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Arthur G. Burton
Laboratory Director



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

EnSCO Environmental Services 41674 Christy Street Fremont, CA 94538 Attention: John Lynch	Client Project ID: #4613F, Crown Metals, PO #13524 Sample Descript.: Water, G Analysis Method: EPA 5030/ 8015/8020 Lab Number: 905-1797	Sampled: May 12, 1989 Received: May 15, 1989 Analyzed: May 26, 1989 Reported: May 31, 1989
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TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTEX DISTINCTION (EPA 8015/8020)

Analyte	Detection Limit µg/L (ppb)	Sample Results µg/L (ppb)
Low to Medium Boiling Point Hydrocarbons.....	30.0	N.D.
Benzene.....	0.3	N.D.
Toluene.....	0.3	N.D.
Ethyl Benzene.....	0.3	N.D.
Xylenes.....	0.3	N.D.

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Arthur G. Burton
Laboratory Director

Sequoia analytical

CHAIN OF CUSTODY RECORD

P.O. # 13524


PROJECT NO		PROJECT NAME				TEST REQUESTED										REMARKS	
4613 F		Crown metals															
SAMPLERS: (Signature)														TTH-G TYPE DISTRICT	REMARKS		
Ron Thibe																	
NO	DATE	TIME	DRIVE	GRAS	STATION AND LOCATION												
A	5-12			X	Stack pile by excavator	X											soil
B	5-12			X	Stack pile by excavator	X											soil
C	5-12			X	Stack pile by excavator	X											soil
				X													soil
D	5-12			X	Stack pile in rear	X											soil
E	5-12			X	Stack pile in rear	X											soil
F	5-12			X	Stack pile in rear	X											soil
G	5-12			X	taken from elevation	X											liquid
					(Composite A, B, C)												
					(Composite D, E, F)												

RELINQUISHED BY Ron Thibe	DATE 5-12-99	TIME	RECEIVED BY	RELINQUISHED BY	DATE	TIME	RECEIVED BY
RELINQUISHED BY	DATE	TIME	RECEIVED BY	RELINQUISHED BY	DATE	TIME	RECEIVED BY
					5-15-99	3:10	P. J. Lynch

REMARKS: NORMAL TAT

DISTRIBUTION: John Lynch

FORM DATED 1-28-87



onsco
environmental
services, inc.

41674 Christy Street
Fremont, CA 94538-3114
(415) 659-0404
Fax (415) 651-4677
Contr. Lic. No 464324



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Ensko Environmental Services 41674 Christy Street Fremont, CA 94538 Attention: Gary Mulkey	Client Project ID: #4613F, Crown Metals, PO#13648 Matrix Descript: Soil Analysis Method: EPA 5030/8015/8020 First Sample #: 905-3711	Sampled: May 29, 1989 Received: May 31, 1989 Analyzed: Jun 12, 1989 Reported: Jun 14, 1989
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TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
905-3711	#1	N.D.	N.D.	N.D.	N.D.	N.D.
905-3712	#2	N.D.	N.D.	N.D.	N.D.	N.D.
905-3713	#3	N.D.	N.D.	N.D.	N.D.	N.D.
905-3714	#4	1.0	N.D.	0.4	N.D.	N.D.
905-3715	#5	1.1	N.D.	0.41	N.D.	N.D.
905-3716	#6	N.D.	N.D.	0.38	N.D.	N.D.

Detection Limits:	1.0	0.05	0.1	0.1	0.1
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Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Arthur G. Burton
Laboratory Director

Sequoia Analytical
 688 Chesapeake Dr.
 Redwood City, Ca 94063

CHAIN OF CUSTODY RECORD


PO# 13648

PROJECT NO		PROJECT NAME				TEST REQUESTED										REMARKS
4613F		Crown Metals														
SAMPLERS: (Signature)														Normal TAT		
Ron O'Neil																
NO	DATE	TIME	DEPTH	GRAB	STATION AND LOCATION										REMARKS	
1	5-29	12:00		X	Stock pile in back of bldg.											
2	5-29	12:05		X	" " " "											
3	5-29	12:10		X	" " " "											
4	5-29	12:15		X	stock pile by excavation											
5	5-29	12:20		X	" " " "											
6	5-29	12:25		X	" " " "											

RELINQUISHED BY: Ron O'Neil	DATE 5-31-87	TIME 2:31p	RECEIVED BY: <i>[Signature]</i>	RELINQUISHED BY:	DATE	TIME	RECEIVED BY
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LABORATORY

REMARKS Normal TAT

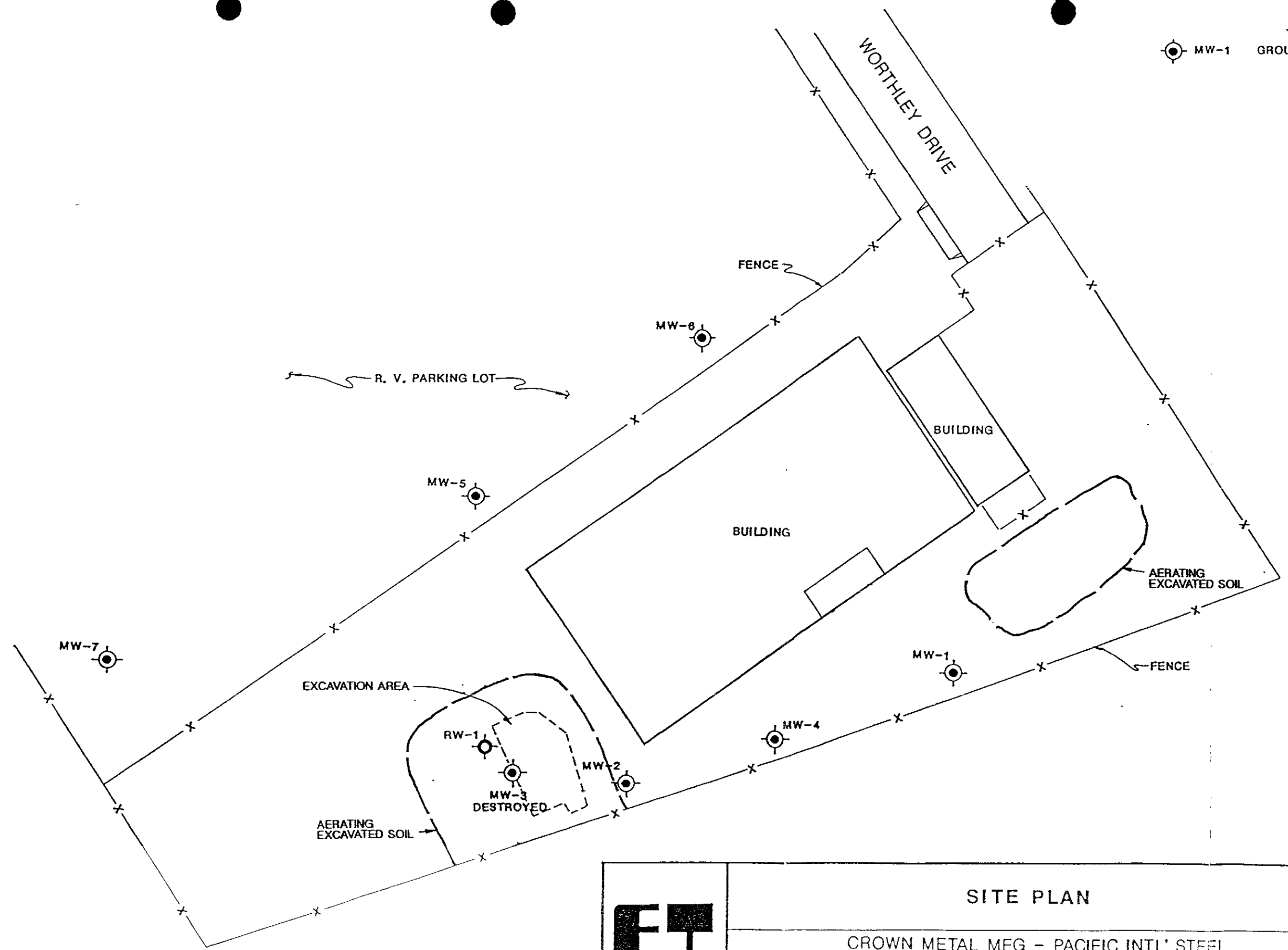
DISTRIBUTION



ensco environmental services, inc.
 41674 Christy Street
 Fremont, CA 94538-3114
 (415) 659-0403
 Fax: (415) 651-4677
 Contr. Lic. No. 464324

LEGEND

MW-1 GROUNDWATER MONITORING WELL

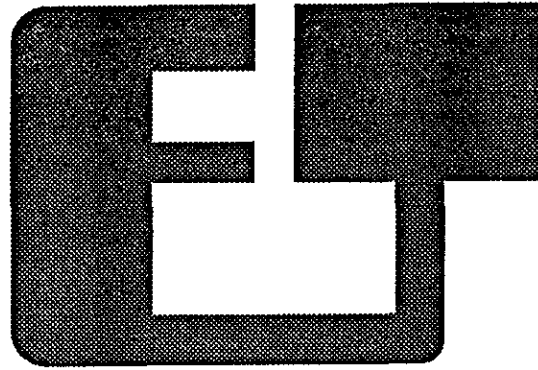


SITE PLAN

CROWN METAL MFG - PACIFIC INTL' STEEL
 16525 WORTHLEY DRIVE
 SAN LORENZO, CALIFORNIA

REVIEWED BY:	APPROVED BY:
DESIGNED BY:	DATE:
JOB #: 3462E	DRAWN BY: SLS
DATE: 4/4/90	DRAWING #: FIG. 1

90.MAY 10 AM 10:13



EXCELTECH

**SITE SAFETY PLAN
FOR
CROWN METAL
MANUFACTURING COMPANY**

AT

**16252 WORTHLEY DRIVE
SAN LORENZO, CALIFORNIA**

**Project No. 3462E
May 1990**

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**SITE SAFETY PLAN
FOR
INSTALLATION AND MAINTENANCE
OF
GROUNDWATER EXTRACTION AND
TREATMENT SYSTEM
AT
16252 WORTHLEY DRIVE,
SAN LORENZO, CALIFORNIA**

PURPOSE AND SCOPE

This Site Safety Plan (SSP) establishes the basic safety guidelines and requirements for installing and maintaining a Groundwater Extraction and Treatment System at the facility located at 16252 Worthley Drive, San Lorenzo, California. A site location map is presented in Figure 1. The provisions set-forth in this SSP will apply to Exceltech, Inc. (Exceltech) employees and any subcontractor working for Exceltech at the job site. All personnel working for Exceltech at the job site must read this SSP, and sign the attached Compliance Agreement, before entering the work area.

Field personnel may deviate from the safety provisions set-forth in this SSP, but only to upgrade or increase the safety requirements. All modifications to this SSP require the express written approval of an Exceltech Office Safety Coordinator, or the Exceltech Corporate Safety Officer. Exceltech personnel may suspend work if unauthorized modifications to the safety provisions set-forth in this SSP are made.

This SSP addresses the expected potential hazards that may be encountered during field activities for this project. Field activities are expected to begin on June 13, 1990. The installation phase of the project is scheduled to be completed three days after the start date. The maintenance phase of the project is expected to continue for six months after the completion of the installation phase of the project. If changes in site or working conditions require changes in safety procedures, appropriate amendments to this SSP will be provided by the Exceltech Project Manager, with the approval of an Exceltech Office Safety Coordinator, or the Exceltech Corporate Safety Officer.

I FACILITY BACKGROUND/WORKPLAN

The groundwater beneath the subject site contains petroleum hydrocarbons above regulatory guideline limits. Currently a sheet metal processing plant operates at the site. The suspected source of the contamination was two underground fuel storage tanks, which spilled fuel when they were removed. The tanks stored aviation fuel and unleaded gasoline. The amount of each fuel spilled is not known. The petroleum hydrocarbon concentrations in the groundwater are expected to be as high as 1,600 parts per billion (ppb). No free-phase petroleum hydrocarbons are expected to be on the groundwater. The latest map of the contaminant concentrations in the groundwater is presented in Figure 2.

Exceltech intends to install a Groundwater Extraction and Treatment System to remove the petroleum hydrocarbons from the groundwater. The groundwater remediation system will consist of a groundwater extraction pump, a groundwater filter, a flow totalizer, two 200 pound liquid phase carbon beds, and an electric control panel.

The field activities associated with the installation and maintenance of the Groundwater Extraction and Treatment System can be divided into the following tasks:

- Task 1: Transport equipment to job site:
The carbon beds will be delivered to the job site by the supplier. All other material and equipment required to install the remediation system will be transported from the Exceltech warehouse to the job site on an Exceltech truck. Heavy equipment and material (over 50 pounds per person) will be moved with a fork lift. If a fork lift is required and not available, one will be rented and delivered to the job site.
- Task 2: Install groundwater extraction pump:
A one-third horsepower, 115 VAC, submersible groundwater extraction pump will be installed in the recovery well. Conventional plumbing tools will be used to perform the installation.
- Task 3: Install equipment skid:
The equipment skid will be installed using the fork lift.
- Task 4: Install liquid phase carbon beds:
The liquid phase carbon beds will be delivered to the job site by the supplier. A fork lift will be used to install the carbon beds on the remediation system.
- Task 5: Connect discharge line to the facilities sanitary sewer line:
The discharge line will be connected to the facilities sanitary sewer line using conventional PVC tools. No underground pipe work will be performed in this project.
- Task 6: Draw groundwater sample to evaluate system's efficiency:
One groundwater sample will be collected from the recovery well with a clean bailer. The water sample will be placed in a laboratory-supplied bottle, labeled, logged on a chain of custody form, and transported in a chilled cooler to a state certified analytical laboratory for analysis for TPHG and BTEX characterization.

- **Task 7:** Clean filter and change carbon beds as necessary to maintain system efficiency:

The groundwater filter shall be cleaned on a bi-weekly basis. The filter bag may contain a small amount of mud with low concentrations of petroleum hydrocarbons. The filter bag shall be placed on the equipment skid, and allowed to aerate. After aeration the filter bag will be disposed of as Class III waste. Because of the small amounts of petroleum hydrocarbons aerated, this should not pose any health threat to field personnel, or the environment.

The carbon beds will be replaced on an as-needed basis, approximately one vessel every two weeks. The carbon bed supplier will remove the spent carbon bed(s) from the job site, and deliver replacement carbon bed(s).

Because the groundwater remediation system was designed for easy installation, the only personnel required to physically install the system are a Construction Manager/Site Safety Officer and a field technician.

II KEY SAFETY PERSONNEL AND RESPONSIBILITIES

All personnel working for Exceltech at the job site are responsible for project safety.

The operational and health and safety responsibilities of pertinent Exceltech personnel are identified below.

Corporate Safety Officer: Mr. Eric Kieselbach

The Corporate Safety Officer is responsible for establishing and directing the Exceltech Health and Safety program. In this capability he sets policies with respect to SSPs and ensures that the requirements are implemented company-wide. The Corporate Safety Officer reports to the company president, Mr. Steve Anderson. Mr. Kieselbach can be reached at (714) 756-8666.

Office Safety Coordinator: Mr. Jim Jordan and Mr. Gary Mulkey

The Office Safety Coordinators are responsible for disseminating requirements with respect to SSPs, for monitoring training related to SSPs, and for submitting specified SSPs to the Corporate Safety Officer for approval. The Office Safety Coordinators report to the Corporate Safety Officer. Mr. Jim Jordan and Mr. Gary Mulkey can be reached at (415) 659-0404.

Project Manager: Mr. John Turney

The Project Manager is responsible for the provisions and submittal of this SSP to the Site Safety Officer and for advising the Site Safety Officer on health and safety matters. He has the authority to provide for the auditing of compliance with the provisions of this SSP, suspend or modify work practices, and to recommend disciplinary action for individuals whose conduct does not meet the provisions presented in this SSP. The Project Manager reports to the Office Safety Coordinators. Mr. John Turney can be reached at (415) 659-0404.

Site Safety Officer: Mr. Tom Hicks

The Site Safety Officer is responsible for the dissemination of the information contained in this SSP to all Exceltech personnel working at the job site, and to the responsible representative(s) of each subcontractor firm working for Exceltech at the job site.

The Site Safety Officer is responsible for ensuring the following items are adequately addressed:

- Safety Supplies & Equipment Inventory
- Medical Surveillance Program/Physical Examinations
- Training Programs/Hazard Communication
- Accident/Incident Reporting Procedures
- Decontamination/Contamination Reduction Procedures

The Site Safety Officer has the authority to suspend work anytime he determines the safety provisions set-forth in this SSP are inadequate to ensure worker safety. The Site Safety Officer shall also inform the Project Manager of individuals whose conduct does not meet the safety provisions of this SSP. The Site Safety Officer reports to the Project Manager.

The Site Safety Officer will also serve as the Construction Manager, supervising the installation of the remediation system. Because of the simplicity of this project, Mr. Hicks should be able to serve both roles. If Mr. Hicks finds he cannot satisfactorily serve both roles, he will bring this matter to the attention of the Project Manager. The Project Manager will then assign a new Site Safety Officer, with the approval of one of the Office Safety Coordinators, or the Corporate Safety Officer. Mr. Hicks will then serve only as the Construction Manager.

Mr. Tom Hicks will be on-site during the installation and maintenance of the groundwater remediation system. At other times he can be reached at (415) 659-0404.

III JOB HAZARD ANALYSIS/SITE CHARACTERIZATION

The expected potential hazards to personnel working in the work area are: 1) over exposure to contaminants, 2) physical injury from heavy equipment being operated at job site, and 3) heat stress.

The contaminants expected to be encountered in the exclusion zone are petroleum hydrocarbons, including benzene, toluene, ethyl benzene, and xylene. Workers may be exposed to petroleum hydrocarbons in four ways. They are: inhalation, ingestion, absorption, and injection. Petroleum hydrocarbons can cause serious burns and rashes where they come in contact with the body. Groundwater samples taken from the recovery well indicate the groundwater in the recovery well contains low levels of petroleum hydrocarbons. Figure 2 presents a map of the petroleum hydrocarbon concentrations in the groundwater. Because of the low contaminant concentrations expected to be encountered, and the expected duration of exposure, potential levels of exposure are not expected to exceed the permissible exposure limit (PEL), or the threshold limit. However, the following steps will be taken to control contaminant exposure.

Low concentrations of petroleum hydrocarbons may be inhaled by the workers at the site. Though the concentrations of petroleum hydrocarbons are not high enough to require field personnel to wear respirators while working in the exclusion zone, respirators with organic vapors and acid gases cartridges (MSA 464046, or equivalent) shall be available to workers.

Ingestion of contaminants will be controlled by prohibiting eating, drinking, smoking, and /or chewing in the work area. In addition, workers shall wash their hands and face before engaging in any of the above activities.

Absorption of contaminants will be controlled by requiring workers to wear long sleeved uniforms, cotton work gloves, and safety glasses.

The physical and toxicological characteristics of the contaminants expected to be encountered in the exclusion zone are presented in Table 1.

The physical hazards are those normally expected on a job of this type. There is a risk of physical injury resulting from activities involved with operating a fork lift. For example, the cargo being carried by the fork lift may accidentally be dropped on a worker, or the fork lift operator may accidentally run into, or over, a worker. In addition, there are the noise and diesel fumes associated with the operation of the fork lift. Workers should be aware of the presence of these hazards and take steps to avoid them. Use of steel toe boots, hard hats, and safety glasses, will be required when in the work area. Ear/noise protection, though not required, shall be available to all personnel within the job site. Personnel should be cognizant of the fact that when protective equipment such as respirators, gloves, and/or protective clothing are worn, visibility, hearing, and manual dexterity are impaired. Because the installation, and a portion of the maintenance, of the remediation equipment is scheduled to take place during the summer season, workers may suffer from heat stress.

The anticipated weather conditions for the installation phase of the project are sunny skies, with temperatures in the 65 - 90 °F range. The highest temperature on record for the San Lorenzo area during the month of June is 92 °F.

The anticipated weather conditions for the maintenance phase of the project range from sunny skies to rain, with temperatures ranging from 48 to 80 °F. The highest temperature on record for the San Lorenzo area during the months of July through December is 84 °F.

Some signs and symptoms of heat stress are presented below:

- Heat rash may result from continuous exposure to heat or humid air.
- Heat cramps are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include:
 - muscle spasms
 - heavy sweating
 - dizziness
 - nausea
 - fainting
- Heat exhaustion occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include:
 - pale, cool, moist skin
 - heavy sweating
 - dizziness
 - nausea
 - fainting
- Heat stroke is the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occurs. Competent medical help must be obtained. Signs and symptoms are:
 - red, hot, usually dry skin
 - lack of or reduced perspiration
 - nausea
 - dizziness and confusion
 - strong, rapid pulse
 - coma

Preventing heat stress is particularly important because once someone suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat injuries.

IV JOB HAZARD SUMMARY

Because of the low contaminant concentrations, and the type of work being done at the site, there does not seem to be any potential health risk to the surrounding community, or environment, arising from the work being performed at the site.

V EXPOSURE MONITORING PLAN

The Site Safety Officer shall monitor the ambient air in the work area with an organic vapor photoionization meter on an hourly basis. If the meter indicates high contaminant concentrations, or strong odors are encountered, the Site Safety Officer shall require personnel in the work area to wear respirators, with organic vapors and acid gases cartridges (MSA 464046, or equivalent).

All personnel working for Exceltech at the job site shall be monitored for heat stress. Because workers at the job site are expected to be wearing permeable clothing (e.g. standard cotton or synthetic work clothes), monitoring for heat stress will consist of personnel constantly observing each other for any of the heat stress symptoms discussed in Section V.

No dust monitoring shall be performed because none of the tasks in this project are expected to generate large quantities of dust.

No noise monitoring shall be performed because none of the tasks in this project are expected to generate enough noise to exceed the PEL limit. However, ear/noise protection shall be made available to all personnel at the job site.

VI PERSONAL PROTECTIVE EQUIPMENT

Level D personal protection equipment is expected to be the highest protective level required to complete the field activities for this project. Modified Level C protection may also be required at the discretion of the Site Safety Officer. The following lists summarize the personal protective equipment that shall be available to all field personnel working in the work area:

Level D Protection (Shall be worn at all times)

- Boots, steel toe
- Safety glasses, chemical splash goggles, or face shield
- Hard hat
- Work gloves
- Long sleeve uniform

Modified Level C Protection (Personal Protective Equipment that shall be worn in addition to that listed for Level D protection. Shall be available at all times.)

- Half-face air purifying respirator. Because low concentrations of hydrocarbon vapors are expected to be encountered, the respirators shall be equipped with organic vapors and acid vapors cartridges, MSA 464046 or equivalent.
- Nitrile gloves (outer)
- Latex disposable gloves (inner)
- Rubber boots with steel toe and shank
- Boot covers (disposable) optional
- Goggles
- Hooded tyvek suit

VII SITE CONTROL

To provide site security, work/safety zones shall be set up at the job site. The work zones shall be marked off with orange traffic cones, caution tape, and barricades. The exclusion zones, contamination reduction zone, and support zone are shown in Figure 3. The location of an available telephone is also show on Figure 3.

VIII DECONTAMINATION MEASURES

Field personnel shall wash hands and face before entering a clean area. Additional decontamination measures are discussed in the General Safe Work Practices section.

IX GENERAL SAFE WORK PRACTICES

The project operations shall be conducted with the following minimum safety requirements employed:

- Eating, drinking, and smoking shall be restricted to a designated clean area.
- Gross decontamination and removal of all disposable personal protective equipment shall be performed prior to exiting the facility. Contaminated disposable clothing and other disposable equipment will be removed and collected on-site in a drum for disposal. No contaminated equipment will leave the site.
- Shaking or blowing of potentially contaminated clothing or equipment to remove dust or other materials is not permitted.
- The Site Safety Officer shall be responsible to take necessary steps to ensure that employees are protected from physical hazards, which could include;
 - Falling objects such as tools or equipment
 - Falls from elevations

- Tripping over hoses, pipes, tools, or equipment
 - Slipping on wet or oily surfaces
 - Insufficient or faulty protective equipment
 - Insufficient or faulty operations, equipment, or tools
 - Noise
- All personnel shall wash hands and face before eating, drinking, or smoking.
 - Field personnel shall be cautioned to inform each other of non-visual effects of the presence of toxins, such as:
 - Headaches
 - Dizziness
 - Nausea
 - Blurred vision
 - Cramps
 - Irritation of eyes, skin, or respiratory tract
 - Changes in complexion or skin discoloration
 - Changes in apparent motor coordination
 - Changes in personality or demeanor
 - Excessive salivation or changes in pupillary response
 - Changes in speech ability or pattern
 - Field personnel shall be cautioned to observe each other for any of the symptoms of heat stress. A detailed description of the symptoms of heat stress is presented in Section III.

X SANITATION

The sheet metal processing facility located at the site has properly stocked sanitation facilities available to Exceltech personnel, and subcontractors working for Exceltech. The sanitary facilities include adequately stocked washing facilities, toilets, and potable water. The location of the available sanitary facilities are shown on Figure 3.

XI STANDARD OPERATING PROCEDURES

Because no activities for this project have been standardized, this section of the site safety plan has been omitted.

XII EMERGENCY RESPONSE PLAN

In the event of an accident resulting in physical injury, first aid will be administered and the injured worker will be transported to the Physician's Community Hospital for emergency treatment. A hospital site location map is presented in Figure 4.

Directions to the hospital are as follow:

North on Worthley Dr.. Right on Grant. Left on Hesperian. Follow 150th Street (right) where Hesperian forks into 150th Street and Brancroft. Follow 150th Street over 580 Freeway. Left on 149th Street. Enter 580 Freeway (North). Exit 580 on Sherry Ct.. Immediate right on Benedict Dr.. Hospital will be on left hand side.

In the event of fire, explosion, or property damage at the job site, the Project Manager, Mr. James H. Lewis and Mr. Richard C. Ernest shall be immediately notified by the Site Safety Officer. Their telephone numbers are given below. If necessary, local fire or response agencies shall be called. An Exceltech Incident/Accident Report, attached, shall be prepared and submitted within 48 hours.

A fire extinguisher will be available on-site during the installation and maintenance of the remediation system, and will be located in the engineering service vehicle (Ford Truck F-150, License No. 2H42318).

Emergency Telephone Numbers:

Fire and Police..... 911

Physician's Community Hospital (415) 357-0300
2800 Benedict Dr.
San Leandro, California

Additional Contingency Telephone Numbers:

Mr. Richard Ernest, Crown Metal Manufacturing Company.....(312) 873-3833

Mr. James H. Lewis, Pacific International Steel Corporation(415) 487-0900

Exceltech, Inc., Fremont..... (415) 659-0404

Occupational Health and Safety Group.....(408) 253-6300

XIII TRAINING REQUIREMENTS

All site personnel will be required to have completed the 40 hours of basic OSHA-SARA training for personnel assigned to hazardous waste sites in compliance with OSHA Standard 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response, and all are required to participate in the annual OSHA-SARA 8-hour refresher courses.

XIV MEDICAL SURVEILLANCE PROGRAM

Exceltech personnel and subcontractors engaged in field operations shall be participants in the Medical Surveillance program, and must be cleared by the examining physician(s) to wear respiratory protection devices and protective clothing for working with hazardous materials. The applicable requirements under California Administrative Code (CAC) Title 8, Section 5216, which is available at the Exceltech office for review, shall be observed. No project-specific medical surveillance is required.

XV DOCUMENTATION

Daily documentation shall be provided by a daily log, completed by the Site Safety Officer. The Site Safety Officer shall record entry and exit times and dates of all personnel working for Exceltech and any site visitor(s). He shall also record accidents, illness, incidents of safety infractions by field personnel, and other safety related matters. In the case of an accident, or injury, during field operations, he will prepare and submit the Incident/Accident Report attached to this SSP.



INVESTIGATION PREVENTION REPORT

Employee's Name: _____ Date: _____

Employee's Signature: _____

Date of Accident: _____ Check one: Fremont Irvine Tempe

Reviewed by: Department Manager: _____ Date: _____

Signature: _____

Office Safety Officer: _____ Date: _____

Signature: _____

Company Safety Officer: _____ Date: _____

Signature: _____

**Corrective
Action:**

Action Required: _____

Party Responsible: _____

Date Due: _____ Date Completed: _____

Office Safety Officer: _____ Date: _____

Signature: _____

This report is to be written by the employee(s) that has been named in the attached Accident/Illness Report.

Please described the accident in your own words: How do you feel you could have prevented this accident; and How do you believe this accident could be prevented in the future. Mention any factors, in your opinion, that could be or should have been in place to eliminate this accident whether it involves: yourself, others, EES procedures, personal protective equipment, etc.

Use as many pages as you wish to communicate how this accident could be averted in the future.



INCIDENT/ACCIDENT REPORT

Fremont, CA	Irvine, CA	Tempe, AZ	Date:
-------------	------------	-----------	-------

Exceltech Department:

Job Location (On-Site):

Company (Client) Name:

Company (Client) Address: Street & Number: City:

County: State: Zip:

Incident Date: Incident Time: Incident Location:

Name of Person Involved or Injured: Occupation or Title: Name of Witness:

Describe Incident: _____

Describe Type of Injury:

Body Area Affected: Materials Causing Injury:

Was First Aid Given? Yes No Type of First Aid Given: Name of Person doing First Aid:

Did Injured Leave Work? Yes No

Was Injured Taken to Doctor? Yes No Time Injured Left Work: Time Injured saw Dr.: Time Injured Returned to Work:

Did Injured Return to Work? Yes No am/pm am/pm am/pm

Level of Safety Worn by Injured A B C D

Lighting Adequate? Yes No Work in Confined Space? Yes No Heat Stress? Yes No

Cold Temperatures? Yes No Work Height? High Low Work in Tight Space? Yes No

Describe Other Conditions: _____

Describe Action Taken to Prevent Further Occurrence: _____

Name of Person Preparing This Report: Name or Signature of Injured:

Exceltech Safety Representative: Exceltech Department Manager:

Name of Client Contact: Client Phone No.: ()

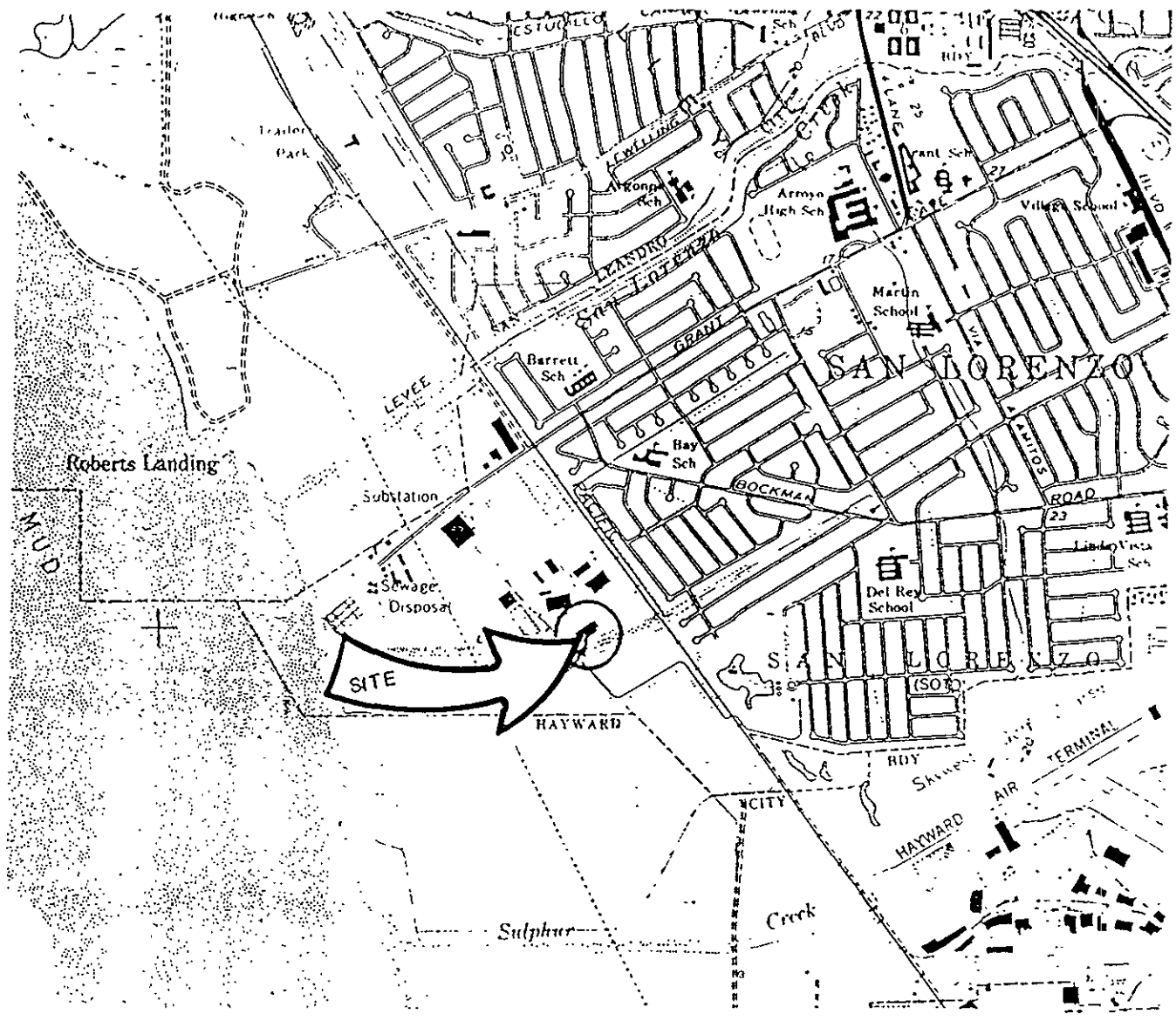
Name of Treatment Clinic:

Treatment Clinic Address: Street & Number: City:

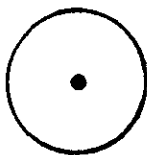
County: State: Zip:

Exceltech Vehicle ID No.: Rented Vehicle:

NOTE: IF INJURY IS A RESULT FROM THE ACCIDENT, PLEASE SEE THE FIELD OPERATIONS SECRETARY FOR THE EMPLOYEE'S CLAIM FOR WORKERS' COMPENSATION BENEFITS FORM. Thank You



LEGEND



SITE LOCATION



SCALE IN MILES

USGS 7.5 MINUTE SAN LEANDRO QUADRANGLE 1980

SITE LOCATION MAP



CROWN METAL MFG-PACIFIC INT'L STEEL

16525 WORTHLEY DRIVE

SAN LORENZO, CALIFORNIA

JOB #: 3462E



SCALE: 1:24000

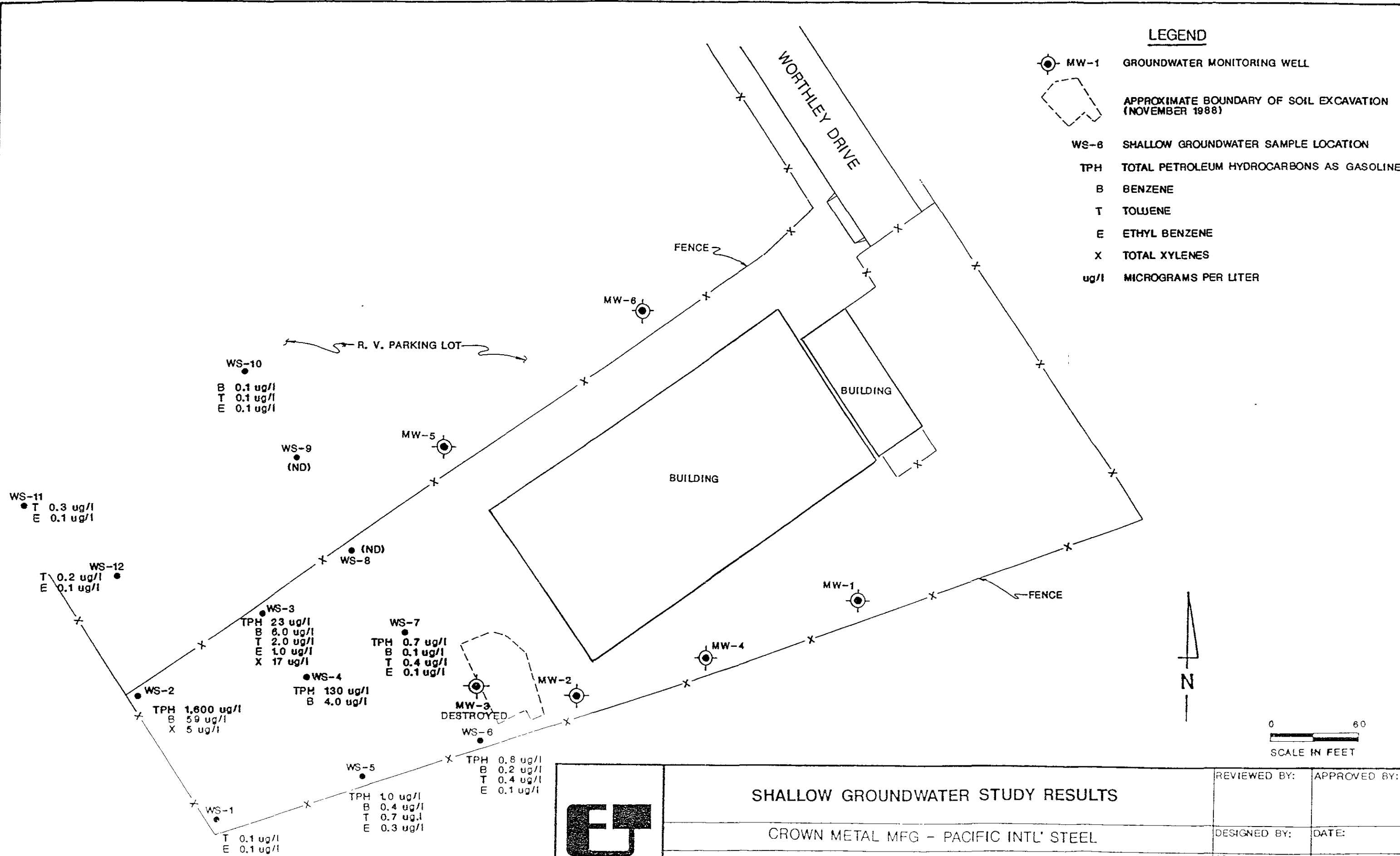
DATE 4/4/90

DRAWN BY

DRAWING # FIG. 1

LEGEND

-  MW-1 GROUNDWATER MONITORING WELL
-  APPROXIMATE BOUNDARY OF SOIL EXCAVATION (NOVEMBER 1988)
- WS-8 SHALLOW GROUNDWATER SAMPLE LOCATION
- TPH TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
- B BENZENE
- T TOLUENE
- E ETHYL BENZENE
- X TOTAL XYLENES
- ug/l MICROGRAMS PER LITER



WS-10
 B 0.1 ug/l
 T 0.1 ug/l
 E 0.1 ug/l

WS-9
 (ND)

WS-11
 T 0.3 ug/l
 E 0.1 ug/l

WS-12
 T 0.2 ug/l
 E 0.1 ug/l

WS-3
 TPH 23 ug/l
 B 6.0 ug/l
 T 2.0 ug/l
 E 1.0 ug/l
 X 17 ug/l

WS-7
 TPH 0.7 ug/l
 B 0.1 ug/l
 T 0.4 ug/l
 E 0.1 ug/l

WS-4
 TPH 130 ug/l
 B 4.0 ug/l

WS-2
 TPH 1,600 ug/l
 B 59 ug/l
 X 5 ug/l

MW-3
 DESTROYED

WS-6
 TPH 0.8 ug/l
 B 0.2 ug/l
 T 0.4 ug/l
 E 0.1 ug/l

WS-5
 TPH 1.0 ug/l
 B 0.4 ug/l
 T 0.7 ug/l
 E 0.3 ug/l

WS-1
 T 0.1 ug/l
 E 0.1 ug/l



SHALLOW GROUNDWATER STUDY RESULTS

CROWN METAL MFG - PACIFIC INTL' STEEL

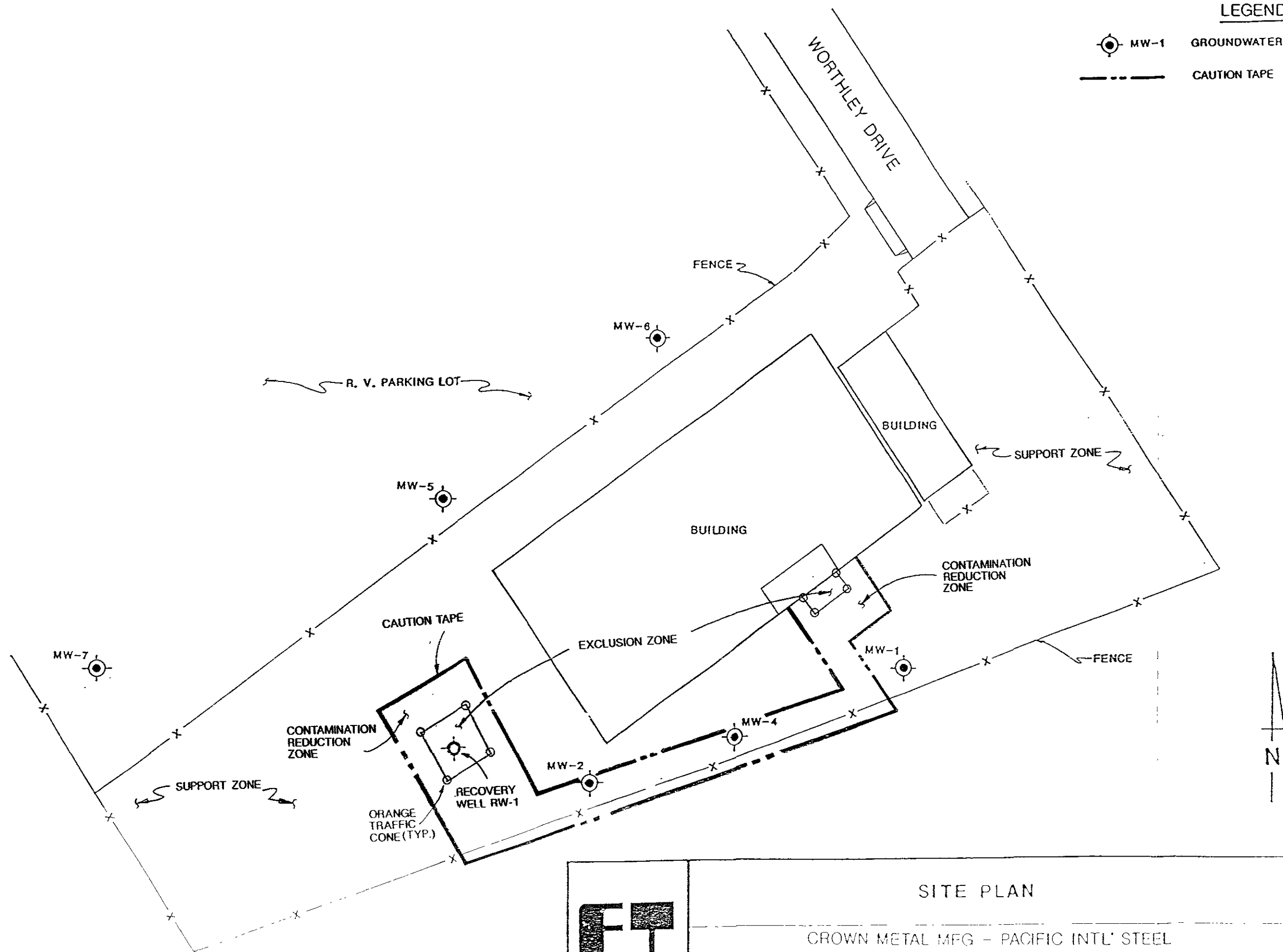
16525 WORTHLEY DRIVE


SAN LORENZO, CALIFORNIA

REVIEWED BY:	APPROVED BY:
DESIGNED BY:	DATE:
JOB #: 3462E	DRAWN BY: SLS
DATE: 4/4/90	DRAWING #: FIG. 2

LEGEND

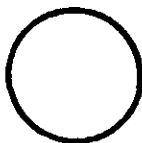
- MW-1 GROUNDWATER MONITORING WELL
- CAUTION TAPE



 EXCELTECH	SITE PLAN		REVIEWED BY:	APPROVED BY:
	CROWN METAL MFG - PACIFIC INTL' STEEL		DESIGNED BY:	DATE:
	16525 WORTHLEY DRIVE		JOB #:	DRAWN BY:
	SAN LORENZO, CALIFORNIA		DATE:	DRAWING #:
			3462E	SLS
			4/4/90	FIG 3



LEGEND



SITE LOCATION



BASE: THOMAS BROS. GUIDE, ALAMEDA CO. 1987



HOSPITAL LOCATION MAP

CROWN METAL MFG - PACIFIC INTL' STEEL

16525 WORTHLEY DRIVE

SAN LORENZO, CALIFORNIA

REVIEWED BY: APPROVED BY:

JOB #: 3462E

DATE: 5/3/90

DRAWN BY: J.C.

DRAWING #: FIG. 4

TABLE 1

Chemical Name, Formula, CAS, RTECS, and DOT UN or NA and Guide Numbers	Synonyms	Exposure Limits	IDLH Level	Physical Description	Chemical and Physical Properties	Incompatibilities	Measurement Method (See Tables 1a and 1b)	Personal Protection and Sanitation (See Table 2)	Respirator Selection Upper Limit Devices Recommended (See Table 3)	Health Hazards					
										Route	Symptoms (See Table 4)	First Aid (See Table 5)	Target Organs		
Benzene C ₆ H ₆ 71-43-2 CY1400000 1114 27	Benzol, Cyclohexatriene, Coal tar naphtha, Phenyl hydride	10 ppm 50 ppm cell (10 min) (NIOSH) 0.1 ppm 8-hr TWA 1 ppm 15-min cell See Appendix A (ACGIH) 10 ppm, A2	Ca	Colorless liquid with an aromatic odor	MW: 78 BP: 176°F Sol: 0.18% Fl P: 12°F IP: 9.25 eV	VP: 75 mm MP: 42°F UEL: 7.1% LEL: 1.3%	Strong oxidizers; chlorine, bromine with iron	Char; CS; GC; III	Clothing: Repeat prolong Goggles: Reason prob Wash: Soap wash promptly Change: N.A Remove: Any wet immed (flamm)	NIOSH E: SCBAF:PD,PP/SAF,PD,PP/ASCBA Escape: GMFOV/SCBAE	Inh Abs Ing Con	Irrit eyes, nose, resp sys; giddy; head; nau; staggered gait, fig, anor, lass, derm, bone marrow depres, abdom pain, [carc]	Eye: Skin: Breath: Swallow	Irr immed Soap wash promptly Art resp Medical attention Immed	Blood, CNS, skin, bone marrow, eyes, resp sys
Xylene (o-, m-, and p-isomers) C ₈ H ₁₀ (CH ₃) ₂ 1330-20-7 ZE2100000 1307 27	p-ortho-Xylene, 1,2-Dimethyl-benzene; meta-Xylene, 1,3-Dimethyl-benzene; para-Xylene, 1,4-Dimethyl-benzene	100 ppm (435 mg/m ³) (NIOSH) 100 ppm 10-hr TWA 200 ppm 10-min cell	1000 ppm	Colorless liquid with aromatic odors (pure p-xylene is a solid at < 55°F)	MW: 106 BP: 292/282/281°F Sol: 0.00003% Fl P: 90/84/81°F IP: 8.56/8.56/8.44 eV	VP: 79/9 MP: -12/-54/55°F UEL: 67/7% LEL: 1/1 1/1.1%	Strong oxidizers	Char; CS; GC; III	Clothing: Repeat prolong Goggles: Reason prob Wash: Promptly upon contam Change: N.A Remove: Any wet immed (flamm)	NIOSH 1000 ppm: CCROV*/PAPROV*/SA*/SCBA* 2: SCBAF:PD,PP/SAF,PD,PP/ASCBA Escape: GMFOV/SCBAE	Inh Abs Ing Con	Dizz, excitement, drow, inco, staggering gait, irrit eyes, nose, throat; corneal vacuolization; anor, nau, vomit, abdom pain; derm	Eye: Skin: Breath: Swallow	Irr immed Soap wash promptly Art resp Medical attention Immed	CNS eyes G ¹ tract blood liver kidneys skin
Ethyl benzene C ₈ H ₁₀ C ₆ H ₅ 100-41-4 DA0700000 1175 26	Phenylethane, Ethylbenzol	100 ppm (435 mg/m ³)	2000 ppm	Colorless liquid with an aromatic odor	MW: 106 BP: 277°F Sol: 0.015% Fl P: 59°F IP: 8.76 eV	VP: 7.1 mm MP: -139°F UEL: 6.7% LEL: 1.0%	Strong oxidizers	Char; CS; GC; III	Clothing: Repeat prolong Goggles: Reason prob Wash: Promptly upon contam Change: N.A Remove: Any wet immed (flamm)	OSHA 1000 ppm: PAPROV*/SA*/SCBA*/CCROV* 2000 ppm: GMFOV*/SAF/SCBAF 2: SCBAF:PD,PP/SAF:PD,PP/ASCBA Escape: GMFOV/SCBAE	Inh Ing Con	Irrit eyes, muc memb; head, derm, narco, coma	Eye: Skin: Breath: Swallow	Irr immed Water flush promptly Art resp Medical attention Immed	Eyes upper resp sys skin CNS
Toluene C ₇ H ₈ CH ₃ 108 88-3 XS5250000 1294 27	Toluol, Phenyl methane, Methyl benzene	200 ppm 300 ppm cell 500 ppm 10 min peak (NIOSH) 100 ppm 10-hr TWA 200 ppm 10-min cell (ACGIH) 100 ppm	2000 ppm	Colorless liquid with an aromatic odor like benzene	MW: 92 BP: 231°F Sol: 0.05% Fl P: 40°F IP: 8.82 eV	VP: 22 mm MP: 139°F UEL: 7.1% LEL: 1.3%	Strong oxidizers	Char; CS; GC V	Clothing: Repeat prolong Goggles: Reason prob Wash: Promptly upon wet Change: N.A Remove: Any wet immed (flamm)	NIOSH 1000 ppm: CCROV*/SA* PAPROV*/SCBA* 2000 ppm: SA-CF*/SCBAF/SAF-GMFOV 2: SCBAF:PD,PP/SAF:PD,PP/ASCBA Escape: GMFOV/SCBAE	Inh Abs Ing Con	Fig, weak, conf, euph, dizz head dil pup, lac, ner, musc fig, insom pares derm photo	Eye: Skin: Breath: Swallow	Irr immed Soap wash promptly Art resp Medical attention Immed	CNS liver kidneys skin

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

PUBLIC HEALTH SERVICE CENTERS FOR DISEASE CONTROL NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH