

**WORK PLAN FOR
GROUNDWATER REMEDIATION**

AT

**PACIFIC INTERNATIONAL STEEL
16525 WORTHLEY DRIVE
SAN LORENZO, CALIFORNIA**

**Project No. 3462E
April 1990**



April 4, 1990

Alameda County Department of Health Services
Hazardous Materials Division
80 Swan Way
Oakland, CA 94624

Attention: Ms. Pam Evans
Hazardous Material 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:

Exceltech, Inc. is pleased to submit this work plan for the remediation of the groundwater beneath the subject site. The work plan outlines the proposed scope of work for the installation of a groundwater extraction and treatment system.

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

Sincerely,
Exceltech, Inc.

A handwritten signature in black ink, appearing to read 'Alonzo Granados'.

Alonzo Granados
Project Engineer

A handwritten signature in black ink, appearing to read 'John H. Turney'.

John H. Turney, P. E.
Manager, Facilities Design

AG
Enclosure

cc: Richard Earnest, Crown Metal Manufacturing Company

**WORK PLAN FOR
GROUNDWATER REMEDIATION
AT
PACIFIC INTERNATIONAL STEEL
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SAN LORENZO, CALIFORNIA**

Prepared for:

Alameda County Department of Health Services
Hazardous Materials Division
80 Swan Way
Oakland, CA 94624

Prepared by:

Exceltech, Inc.
41674 Christy Street
Fremont, CA 94538

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SAN LORENZO, CALIFORNIA**

INTRODUCTION

The groundwater beneath the subject site contains petroleum hydrocarbons above regulatory guideline limits. Based on results from a soil and groundwater investigation conducted by Ensco Environmental Services, Inc. (EES), now Exceltech, Inc., this work plan for remediation of the groundwater has been prepared. Exceltech proposes to install a groundwater extraction and treatment system to remove the petroleum hydrocarbons from the groundwater. Because the remediation of the groundwater is expected to take only a few months, the system will be a temporary installation.

SITE BACKGROUND

The subject site is in an area zoned for commercial use. An aircraft engine maintenance facility formerly occupied the site. It's operations included the use of underground fuel storage tanks. The fuel storage tanks were removed because they were suspected of leaking.

In July 1987, EES installed six groundwater monitoring wells on the site, to quantify the contamination, and to evaluate it's presence across the site. Analytical results revealed petroleum hydrocarbon contamination in the groundwater in two of the wells, MW-2 and MW-3, and in the soils adjacent

to the wells. A quarterly groundwater monitoring program was then initiated. The locations of the groundwater monitoring wells and recovery wells are presented in Figure 2.

In April 1988, EES conducted a soil gas survey (SGS), to further delineate the extent of the soil contamination. The SGS revealed two soil contamination "hot spot" areas. EES conducted soil sampling in August, 1988, to confirm the results of the SGS. Analytical results supported the SGS investigation, generally. The results of the SGS are presented in Figure 3.

EES excavated the "hot spot" areas adjacent to monitoring well MW-3 in November, 1988. The contaminated soil was aerated on-site. The excavation was approximately 40 ft wide by 60 ft long by 10 ft deep. The excavation was backfilled in August, 1989, after quarterly sampling. Monitoring well MW-3 was damaged during excavation, and was therefore properly destroyed. The location of the excavated "hot spot" area is presented in Figure 2.

In September 1989, EES conducted a Shallow Groundwater Investigation (SGI) to determine the approximate outer limits of the petroleum hydrocarbon plume, before installing an additional monitoring well. Emphasis was placed on the western portion of the site, because contaminant concentrations were relatively unknown there. The SGI revealed contaminant concentration levels just above the monitoring equipment detection limits, generally. Three samples, WS-2, WS-3, and WS-4, contained contaminant concentrations that were significantly higher than the rest. The highest contaminant

concentrations were detected in sample WS-2, which was taken at the northwest corner of the fenced perimeter. Permission to expand the SGI onto the adjacent property, to the west, was denied by its owner. The results of the SGI are presented in Figure 4.

In November, 1989, a groundwater monitoring well, MW-7, and a groundwater recovery well, RW-1, were installed in an area up-gradient from the suspected source of contamination. Analytical results from groundwater samples taken from RW-1 indicated the groundwater in RW-1 contained detectable levels of petroleum hydrocarbons. The detected contaminant concentrations are as follows:

Benzene:	150 ppb
Toluene:	15 ppb
Ethylbenzene:	100 ppb
Xylene:	170 ppb
Total Petroleum Hydrocarbons:	1,300 pp

Analytical results indicated no detectable levels of petroleum hydrocarbons in the groundwater in MW-7.

In February, 1990, a step-drawdown pump test was conducted at the site. The test revealed a well yield of approximately 1 gpm. This yield was sustained through a 24 hour constant-discharge test. Background data indicate tidal fluctuations influence on-site groundwater levels approximately 1/2 ft to 1 ft, on a daily basis.

PROPOSED GROUNDWATER REMEDIATION SYSTEM

Exceltech proposes 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 lb liquid phase carbon beds; and an electric control panel.

As shown on Figure 5, the groundwater extraction pump (P-1) will pump groundwater from RW-1 into the two liquid phase carbon beds, in series. The carbon will remove the petroleum hydrocarbons from the groundwater. The treated groundwater will then be discharged into the sanitary sewer. A flow-meter (FIQ-1), on the discharge side of the second carbon bed (V-2), will gauge and total the treated groundwater.

SCOPE OF WORK

The scope of work for the proposed groundwater remediation can be divided into the following tasks.

TASK-1 Permitting

Because the proposed remediation system will be a temporary installation, only two permits and one approval letter are required.

- An Electrical permit is required from the Alameda County Building Department.
- A permit to discharge the treated groundwater into the sanitary sewer (POTW permit) is required from the Oro Loma Sanitary District.

- Approval of this *Work Plan for Groundwater Remediation* is required from the Alameda County Department of Health Services.

If the Oro Loma Sanitary District refuses to issue a POTW permit, the treated groundwater will be discharged into the storm sewer. If this is the case, the following additional permits will be required:

- A National Pollution Discharge Elimination System (NPDES) Permit will be required from the California Regional Water Control Board, San Francisco Bay Region
- A Street Opening permit will be required from the County of Alameda
- An Encroachment permit will be required from the County of Alameda

TASK-2 Detail Design of Remediation System

Once the Alameda County Department of Health Services approves this *Work Plan for Groundwater Remediation*, production of detailed design drawings will begin. The following design drawings will be produced:

- Site Plan
- Piping and Instrumentation Diagram
- Sanitary Sewer Lateral Connection

TASK-3 Equipment Procurement

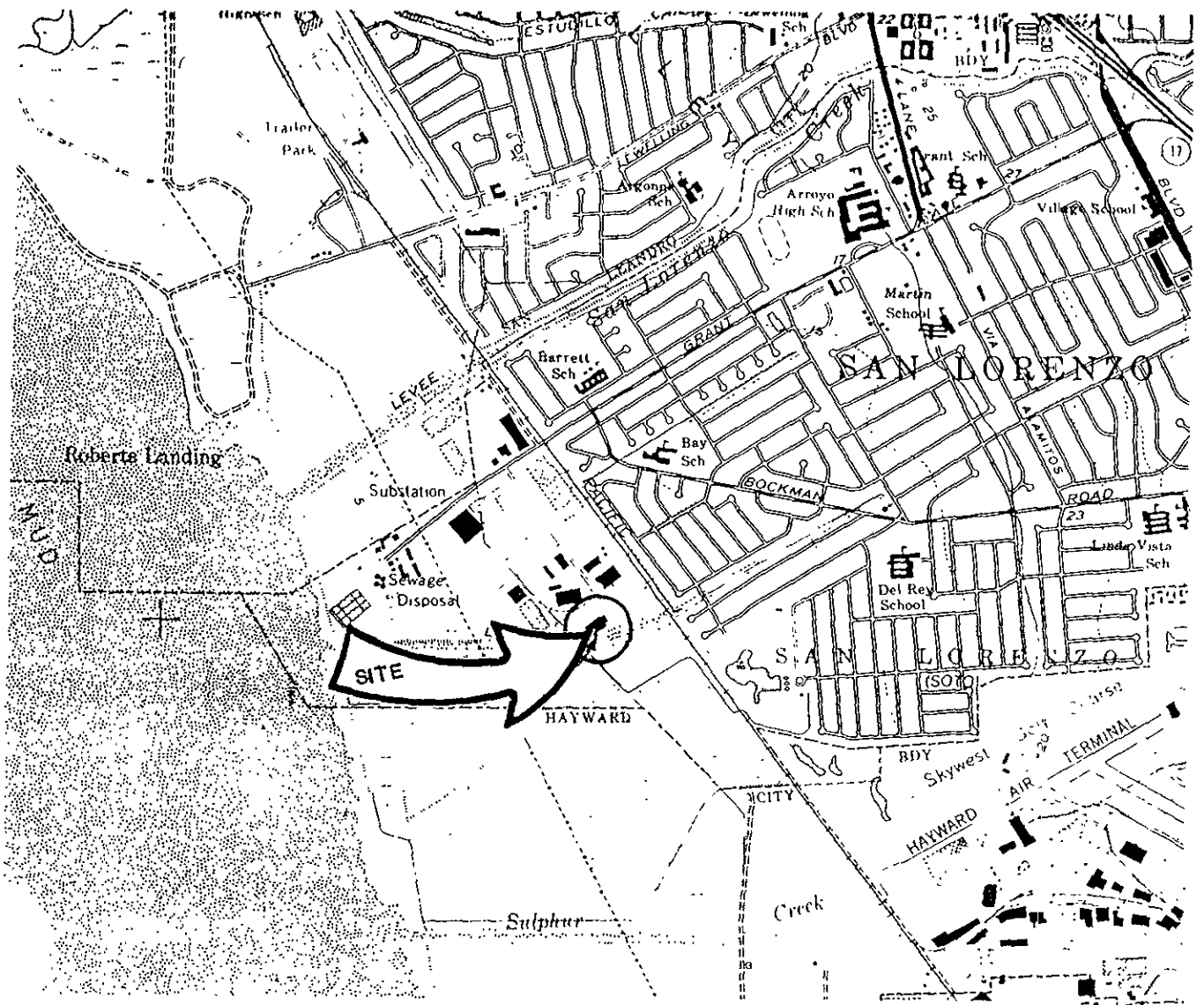
Once permits for the remediation system have been issued by the appropriate agencies, the individual components of the remediation system will be purchased, and housed in the Exceltech warehouse. Because the remediation system is composed of "off the shelf items", components are readily available.

TASK-4 Construction and Installation of Remediation System

The groundwater filter, flow totalizer, and control panel will be mounted on a skid, for ease of system installation and removal. The skid mounted equipment will be assembled in the Exceltech shop. All remaining equipment will be field assembled. Once the system has been installed, pertinent agencies will be notified before the system begins operation.

TASK-5 Monitoring and Disposal

When the first carbon bed (V-1) becomes saturated with hydrocarbons, as determined by chemical analysis, it will be replaced by the second carbon bed (V-2), and a new carbon bed will be placed in the second position. At the present hydrocarbon concentrations in the groundwater, it is expected that the first carbon bed will have to be replaced every two weeks. Replacement carbon beds will contain only virgin carbon. Spent carbon beds will be sampled, and removed for disposal.



LEGEND



USGS 7.5 MINUTE SAN LEANDRO QUADRANGLE 1980




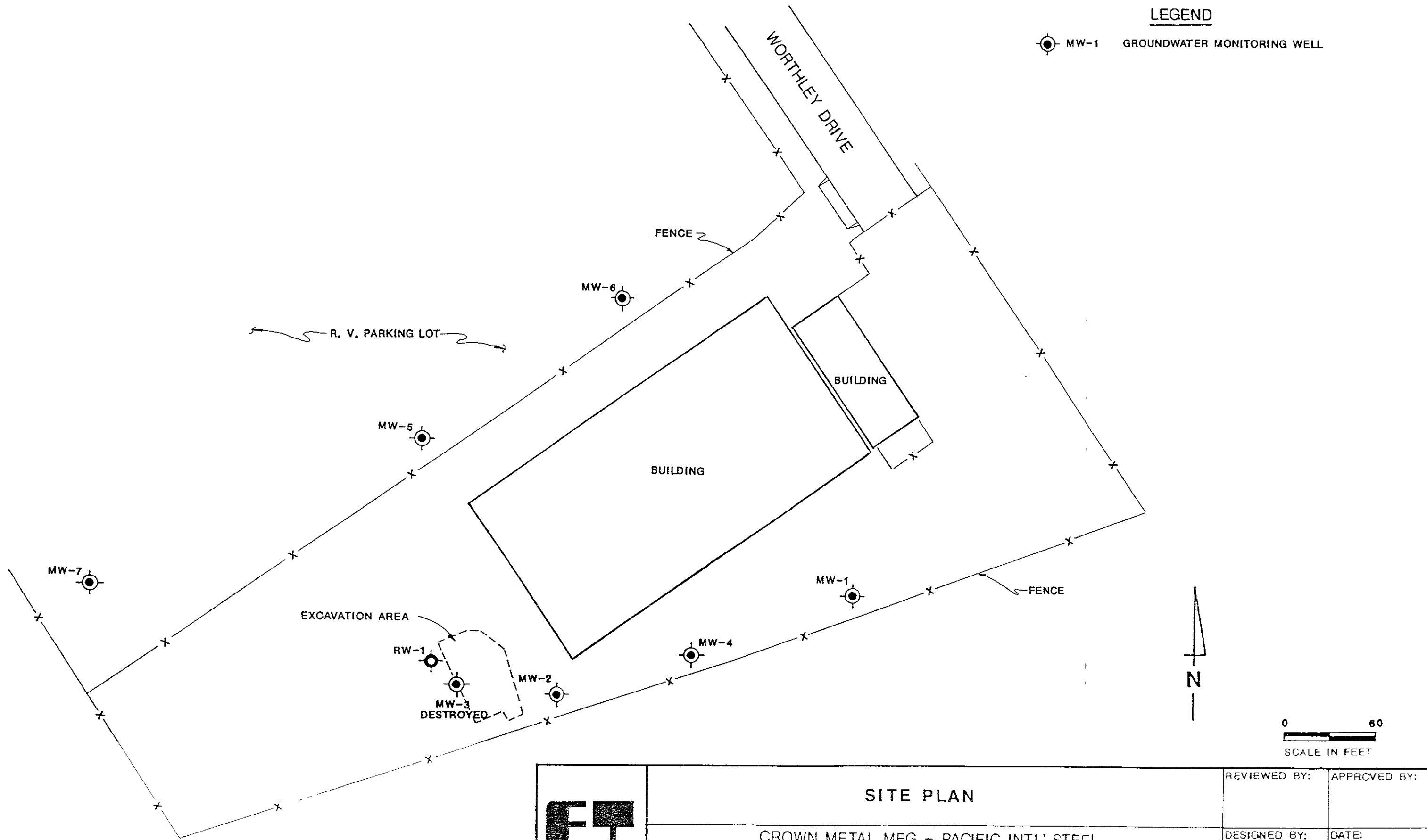
SITE LOCATION MAP

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

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 MW-1 GROUNDWATER MONITORING WELL



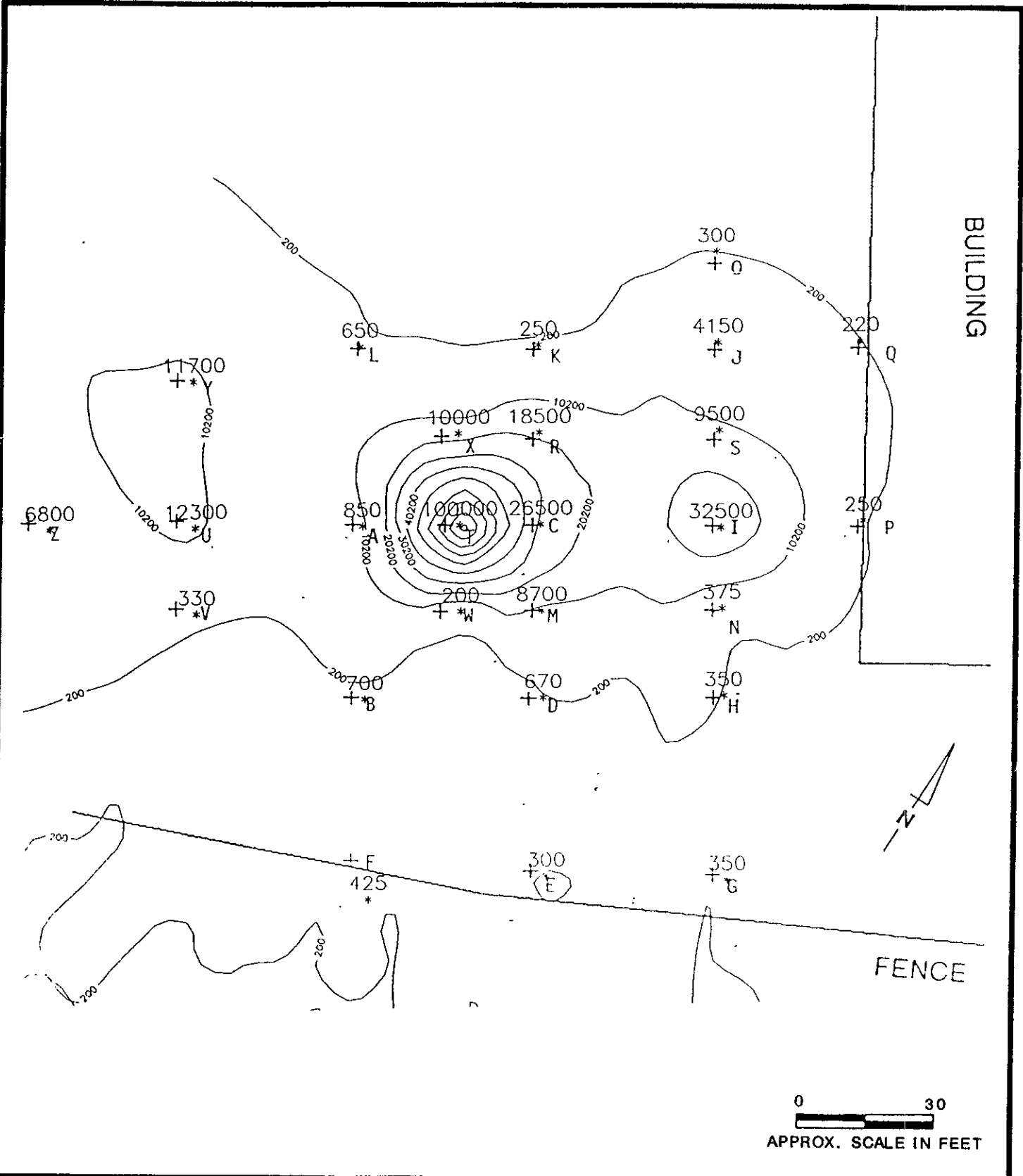
SITE PLAN


CROWN METAL MFG - PACIFIC INTL' STEEL

16525 WORTHLEY DRIVE



SAN LORENZO, CALIFORNIA

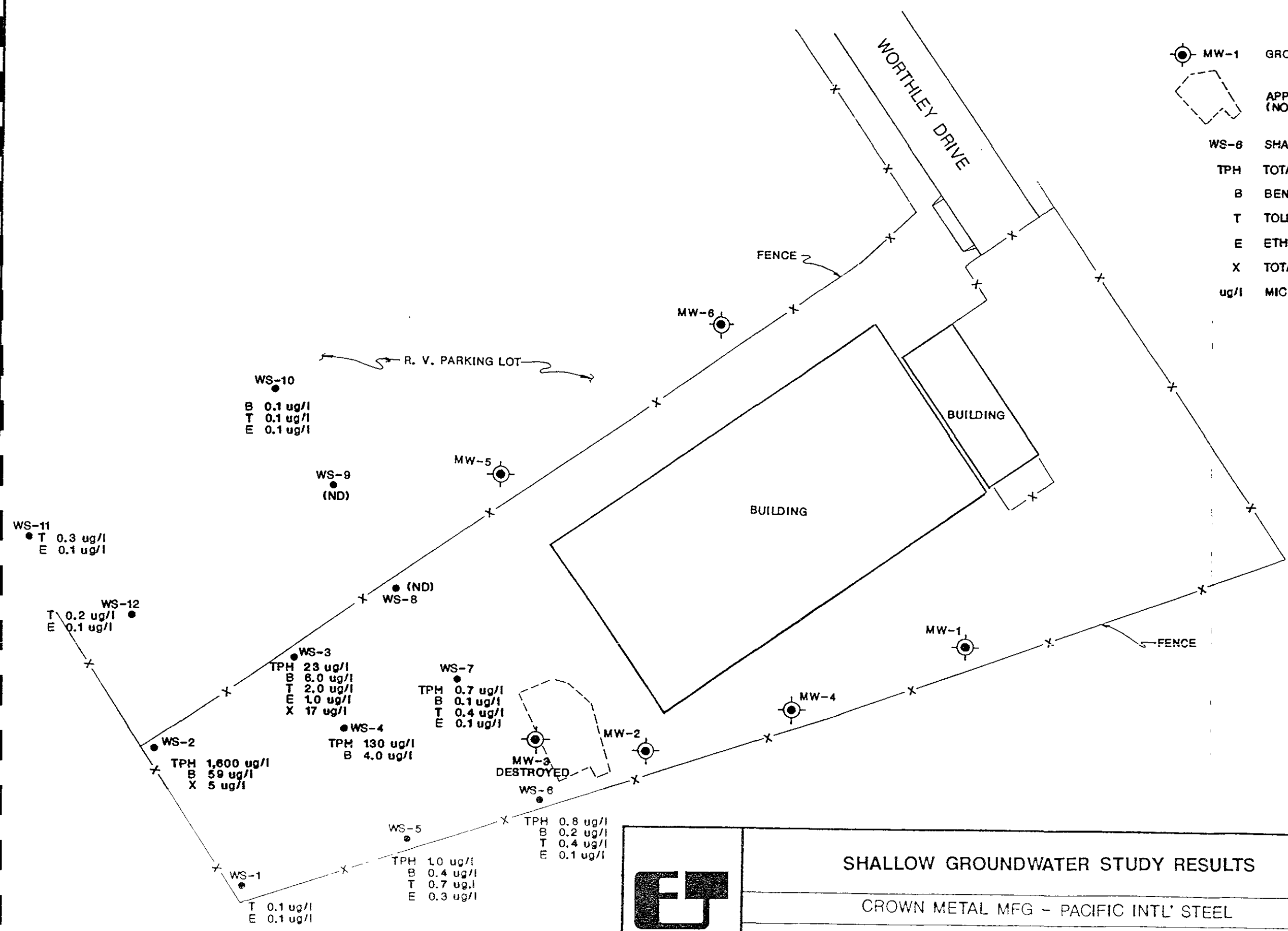
REVIEWED BY:	APPROVED BY:
DESIGNED BY:	DATE:
JOB #: 3462E	DRAWN BY: SLS
DATE: 4/4/90	DRAWING #: FIG. 2



	SOIL GAS SURVEY RESULTS		REVIEWED BY:	APPROVED BY:
	CROWN METAL MFG - PACIFIC INTL' STEEL			
	16525 WORTHLEY DRIVE		JOB #: 3462E	DRAWN BY J.C.
	SAN LORENZO, CALIFORNIA		DATE: 4/4/90	DRAWING #: FIG. 3

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-  MW-1 GROUNDWATER MONITORING WELL
-  APPROXIMATE BOUNDARY OF SOIL EXCAVATION (NOVEMBER 1988)
- WS-6 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



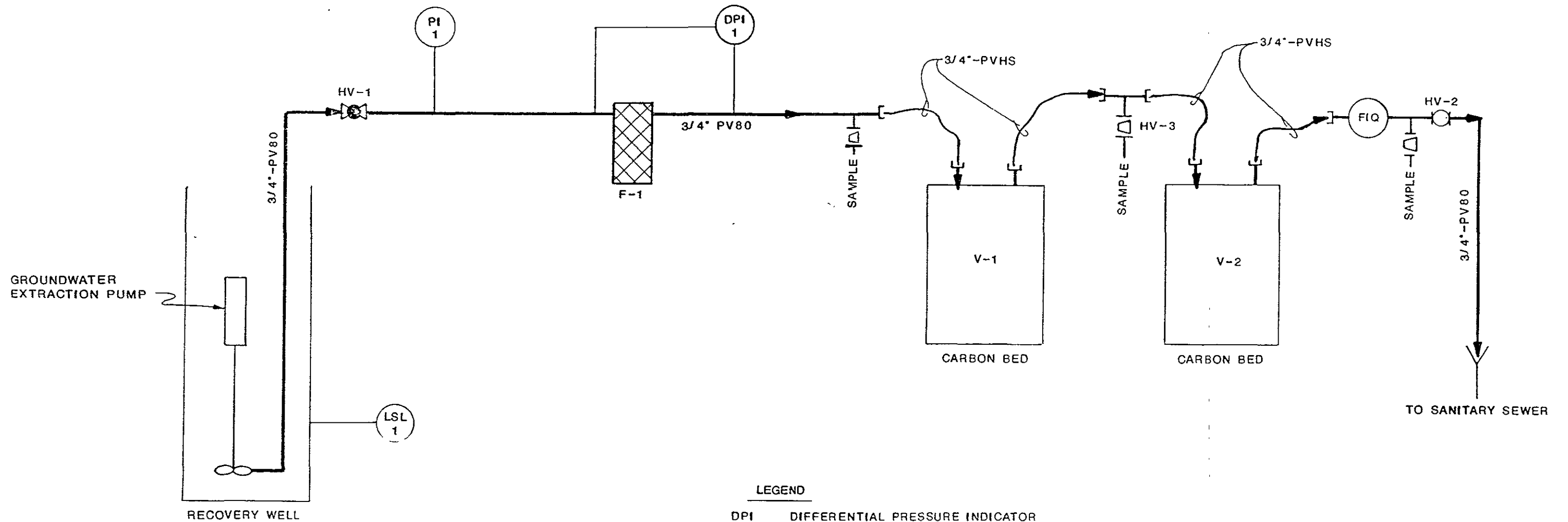
SHALLOW GROUNDWATER STUDY RESULTS

CROWN METAL MFG - PACIFIC INTL' STEEL

16525 WORTHLEY DRIVE

SAN LORENZO, CALIFORNIA


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DESIGNED BY:	DATE:
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DATE: 4/4/90	DRAWING #: FIG. 4



LEGEND

- DPI DIFFERENTIAL PRESSURE INDICATOR
- F-1 GROUNDWATER FILTER
- FIQ FLOW TOTALIZER
- LSL LOW LEVEL SWITCH
- PI PRESSURE INDICATOR
- PV80 PVC PIPE SCHEDULE 80
- PVHS PVC HOSE
- V-1, V-2 CARBON BEDS

NOT TO SCALE

REV	DESCRIPTION	DATE	BY	APPD	 EXCELTECH	PROCESS FLOW DIAGRAM		REVIEWED BY:	APPROVED BY:	
						CROWN METAL MFG - PACIFIC INTL' STEEL			DESIGNED BY:	DATE:
						16525 WORTHLEY DRIVE			JOB #:	DRAWN BY:
						SAN LORENZO, CALIFORNIA			3462E	SLS
									DATE:	DRAWING #:
								4/4/90	FIG. 5	