

STB 3609

**Crown Metal**  
MANUFACTURING COMPANY INC.

765 SOUTH STATE ROUTE 83 • ELMHURST, ILLINOIS 60126-4700 • PHONE 708/279-9800 • FAX 708/279-9807

January 24, 1992

Alameda County  
Health Care Services Agency  
Department of Environmental Health  
80 Swan Way, Room 200  
Oakland, CA 94621-1439

Attention: Ms. Pamela Evans

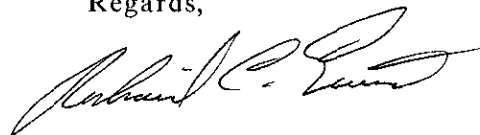
RE: 16525 Worthley Drive, San Lorenzo, CA

Dear Ms. Evans:

Our environmental consultant, Resna, has advised me to forward a report on our latest quarterly groundwater sampling for the above referenced site. Your copy of this report is enclosed for your reference and use.

Should you have any questions on this report please feel free to contact Resna directly.

Regards,



Richard C. Ernest  
President

RCE/mcb  
Enc.

cc: Mr. Britt Von Thaden

92 JAN 25 10:15 AM

# **RESNA**

*Jan 1992*

**NOVEMBER QUARTERLY  
GROUNDWATER MONITORING REPORT**

**FOR**

**CROWN METAL MANUFACTURING  
AT PACIFIC INTERNATIONAL  
STEEL FACILITY  
16525 WORTHLEY DRIVE  
SAN LORENZO, CALIFORNIA**

**Project No. 1587-2G  
January 1992**

41674 Christy Street  
Fremont, CA 94538  
Phone: (510) 659-0404  
Fax: (510) 651-4677

January 13, 1992  
Project No. 1587-2G

Crown Metal Manufacturing  
765 South State Route 83  
Elmhurst, IL 60126-4700

Attention: Mr. Richard C. Ernest

Subject: November Quarterly Groundwater Monitoring Report  
Pacific International Steel Facility  
16525 Worthley Drive, San Lorenzo, California

Dear Mr. Ernest:

RESNA Industries, Inc. has completed the November quarterly groundwater sampling and laboratory analysis at the subject site in the City of San Lorenzo, Alameda County, California (Figure 1). During this quarter, two groundwater sampling events were conducted at the site. First, groundwater samples were collected directly from recovery well RW-1 on October 25, 1991 when the pump for the remediation system was removed from the well for repair. Second, quarterly groundwater sampling was conducted on November 15, 1991 as part of the ongoing quarterly monitoring program. During quarterly monitoring, water level measurements were collected from all on-site wells except RW-1. A water level was not obtained nor was a sample collected directly from the recovery well because the pump for the remediation system was in place and limits access to the well. However, a sample was collected from the remediation system influent from well RW-1.

### **Groundwater Sampling**

On October 25, 1991 groundwater samples were collected from well RW-1. During the quarterly monitoring on November 15, 1991, groundwater samples were collected from wells MW-2 and MW-8 as well as the remediation system influent. Sample collection from wells MW-1, MW-4, MW-5, MW-6, and MW-7 was suspended as previously approved by the Alameda County Health Services Agency. However, groundwater level measurements were obtained from all on-site monitoring wells.

Before sampling, RESNA measured the depth to groundwater in the appropriate wells with an electric sounding tape and checked for the presence of free-phase hydrocarbons using a clear acrylic bailer. No free-phase hydrocarbons were detected. Groundwater samples were collected in accordance with RESNA's groundwater sampling protocol (Appendix A) and an equipment rinse water sample (bailer blank) was collected for quality control. Equipment rinse water and groundwater removed from the wells were placed in drums approved by the Department of Transportation and left at the site pending receipt of the analytical results.

## Hydrogeology

The groundwater surface contour map, developed from the depth to groundwater measurements at the site, (Figure 2) reveals a shallow groundwater gradient in the area of investigation for November 15, 1991. The contours indicate that variable flow directions were present on the day of sampling and the apparent gradient ranged from 0.005 to 0.006.

## Laboratory Analyses and Results

The groundwater and bailer blank samples were analyzed by Sequoia Analytical, a state-certified laboratory located in Redwood City, California. Sequoia analyzed the samples for the presence of total petroleum hydrocarbons as gasoline (TPHG), as well as benzene, toluene, ethyl benzene, and total xylenes (BTEX) using Environmental Protection Agency Methods 5030/8015/8020.

Sequoia reported that petroleum hydrocarbons were detected in wells MW-2, RW-1, and the remediation system influent. The concentrations reported by Sequoia were as follows:

| Compound      | RW-1<br>(10/25/91) | MW-2<br>(11/15/91) | RW-1 Influent<br>(11/15/91) |
|---------------|--------------------|--------------------|-----------------------------|
| TPHG          | 420                | 630                | 140                         |
| Benzene       | 79                 | 2.3                | 41                          |
| Toluene       | 1.8                | <0.60              | <0.30                       |
| Ethyl Benzene | 2.5                | 3.1                | 1.3                         |
| Total Xylenes | 14                 | 0.86               | 0.44                        |

<0.30 Not detected at or above laboratory detection limit. Results in micrograms per liter (parts per billion).

## Reporting Requirements

A copy of this report should be forwarded by Crown Metal Manufacturing to the following agencies in a timely manner:

California Regional Water Quality Control Board  
San Francisco Bay Region  
1800 Harrison Street, Suite 700  
Oakland, California 94612-3429  
Attention: Mr. Richard Hiatt

Alameda County  
Health Care Services Agency  
Department of Environmental Health  
80 Swan Way, Room 200  
Oakland, California 94621-1439  
Attention: Ms. Pamela Evans

### Limitations

The discussion and recommendations presented in this report are based on the following:

1. The observations by field personnel.
2. The results of laboratory analyses performed by a state-certified laboratory.
3. Our understanding of the regulations of the State of California and Alameda County and/or the City of San Lorenzo.

It is possible that variations in the soil or groundwater conditions could exist beyond the points explored in this investigation. Also, changes in the groundwater conditions could occur at some time in the future due to variations in rainfall, temperature, regional water usage, or other factors.

The service performed by RESNA has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the San Lorenzo area. Please note that contamination of soil and groundwater must be reported to the appropriate agencies in a timely manner. No other warranty, expressed or implied, is made.

RESNA includes in this report chemical analytical data from a state-certified laboratory. The analytical tests are performed according to procedures suggested by the U.S. EPA and State of California. RESNA is not responsible for laboratory errors in procedure or result reporting.

The next quarterly sampling is scheduled for February 1992. If you have any questions, please call.

Sincerely,  
RESNA Industries, Inc.

*Britt Von Thaden*  
Britt Von Thaden  
Project Geologist

*Lawrence D. Pavlak*  
Lawrence D. Pavlak, C.E.G. 1187  
Senior Program Geologist

BVT/LDP/sw

cc: Mr. James Lewis, Pacific International Steel

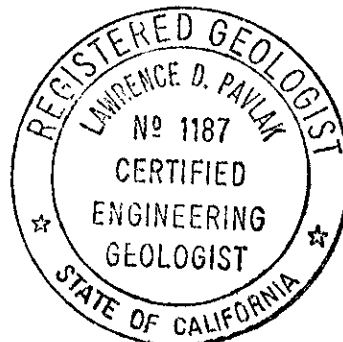


TABLE 1

SUMMARY OF GROUNDWATER ANALYSES DATA

| Well     | Date Sampled | TPHG (µg/l) | Benzene (µg/l) | Toluene (µg/l) | Ethyl Benzene (µg/l) | Total Xylenes (µg/l) | Well Elevation (ft) | Depth to Water (ft) | Floating Product (ft) |
|----------|--------------|-------------|----------------|----------------|----------------------|----------------------|---------------------|---------------------|-----------------------|
| MW-1     | 7/14/87      | BDL         | BDL            | BDL            | —                    | BDL                  | 8.86                | 7.56                | —                     |
|          | 11/24/87     | BDL         | BDL            | BDL            | —                    | 9.0                  |                     | 7.51                | —                     |
|          | 2/29/88      | BDL         | BDL            | BDL            | —                    | BDL                  |                     | 7.18                | —                     |
|          | 5/25/88      | BDL         | BDL            | BDL            | —                    | BDL                  |                     | 7.40                | —                     |
|          | 8/10/88      | ND          | ND             | ND             | ND                   | ND                   |                     | 7.85                | —                     |
|          | 11/29/88     | ND          | ND             | ND             | ND                   | ND                   |                     | 7.86                | —                     |
|          | 2/7/89       | ND          | ND             | ND             | ND                   | ND                   |                     | 7.43                | —                     |
|          | 5/12/89      | ND          | 1.4            | ND             | ND                   | ND                   |                     | 7.23                | —                     |
|          | 8/4/89       | ND          | ND             | ND             | ND                   | ND                   |                     | 8.17                | —                     |
|          | 11/14/89     | ND          | ND             | ND             | —                    | —                    |                     | 7.93                | —                     |
|          | 1/3/90       | —           | —              | —              | —                    | —                    |                     | 7.77                | —                     |
|          | 2/22/90      | ND          | ND             | ND             | ND                   | ND                   |                     | 7.28                | —                     |
|          | 5/17/90      | —           | —              | —              | —                    | —                    |                     | 7.62                | —                     |
|          | 8/17/90      | —           | —              | —              | —                    | —                    |                     | 7.91                | —                     |
|          | 11/6/90      | —           | —              | —              | —                    | —                    |                     | 8.01                | —                     |
|          | 2/1/91       | ND          | ND             | ND             | ND                   | ND                   |                     | 8.00                | —                     |
|          | 5/1/91       | —           | —              | —              | —                    | —                    |                     | 7.36                | —                     |
| 8/8/91   | —            | —           | —              | —              | —                    | 8.17                 | —                   |                     |                       |
| 11/15/91 | —            | —           | —              | —              | —                    | 8.17                 | —                   |                     |                       |
| MW-2     | 7/14/87      | 110         | 1.2            | 1.9            | —                    | 2.0                  | 9.17                | 7.79                | —                     |
|          | 11/24/87     | 3,600       | 82             | 47             | —                    | 13                   |                     | 7.73                | —                     |
|          | 2/29/88      | 800         | BDL            | BDL            | —                    | BDL                  |                     | 7.26                | —                     |
|          | 5/25/88      | 250         | ND             | ND             | —                    | ND                   |                     | 7.45                | —                     |
|          | 8/10/88      | 260         | ND             | ND             | ND                   | ND                   |                     | 7.90                | —                     |
|          | 11/29/88     | 870         | 9.0            | ND             | 1.0                  | 1.0                  |                     | 8.20                | —                     |
|          | 2/7/89       | 710         | 16             | ND             | ND                   | ND                   |                     | 7.47                | —                     |

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SUMMARY OF GROUNDWATER ANALYSES DATA

| Well  | Date Sampled | TPHG (µg/l)              | Benzene (µg/l) | Toluene (µg/l) | Ethyl Benzene (µg/l) | Total Xylenes (µg/l) | Well Elevation (ft) | Depth to Water (ft) | Floating Product (ft) |
|-------|--------------|--------------------------|----------------|----------------|----------------------|----------------------|---------------------|---------------------|-----------------------|
| MW-2  | 5/12/89      | 260                      | 2.8            | 0.76           | 1.3                  | 3.0                  |                     | 7.27                | —                     |
| Con't | 8/4/89       | 360                      | N D            | N D            | N D                  | 0.48                 |                     | 8.23                | —                     |
|       | 11/14/89     | 85                       | N D            | 3.5            | 0.36                 | 2.5                  |                     | 8.08                | —                     |
|       | 1/3/90       | —                        | —              | —              | —                    | —                    |                     | 7.95                | —                     |
|       | 2/22/90      | 120                      | N D            | N D            | 1.5                  | 0.55                 |                     | 7.47                | —                     |
|       | 5/17/90      | 240                      | N D            | N D            | N D                  | N D                  |                     | 7.70                | —                     |
|       | 8/17/90      | 130                      | N D            | 2.9            | 1.2                  | 0.68                 |                     | 8.00                | —                     |
|       | 11/6/90      | 170                      | 0.37           | 1.2            | 2.0                  | 1.5                  |                     | 8.30                | —                     |
|       | 2/1/91       | 57                       | N D            | N D            | N D                  | 0.73                 |                     | 8.15                | —                     |
|       | 5/1/91       | 220                      | 1.5            | 0.42           | 0.53                 | 0.54                 |                     | 7.56                | —                     |
|       | 8/8/91       | 710                      | 4.1            | 0.84           | N D                  | 0.71                 |                     | 8.95                | —                     |
|       | 11/15/91     | 630                      | 2.3            | N D            | 3.1                  | 0.86                 |                     | 8.26                | —                     |
| MW-3  | 7/14/87      | 260                      | BDL            | 1.0            | —                    | 2.0                  | 8.54                | 7.09                | —                     |
|       | 11/24/87     | 8,900                    | 1,700          | 3.0            | —                    | 12                   |                     | 7.11                | —                     |
|       | 2/29/88      | 9,300                    | 1,600          | 93             | —                    | 99                   |                     | 6.57                | —                     |
|       | 5/25/88      | 11,000                   | 140            | 16             | —                    | 34                   |                     | 6.80                | —                     |
|       | 8/10/88      | 4,600                    | 23             | 4.8            | 140                  | 3.0                  |                     | 7.20                | —                     |
|       | 11/29/88     | 16,000                   | 3,900          | 11             | 600                  | 40                   |                     | 7.41                | —                     |
|       | 2/7/89       | —                        | —              | —              | —                    | —                    |                     | N A                 | —                     |
|       | 5/12/89      | 2,500                    | N D            | 5.6            | N D                  | 2.7                  |                     | 6.64                | —                     |
|       | 8/4/89       | 2,900                    | 800            | 7.5            | 96                   | N D                  |                     | 7.38                | —                     |
|       | 11/14/89     | Destroyed in August 1989 |                |                |                      |                      |                     |                     |                       |
| MW-4  | 7/14/87      | BDL                      | BDL            | BDL            | —                    | BDL                  | 8.48                | 7.25                | —                     |
|       | 11/24/87     | 60                       | BDL            | 0.65           | —                    | 7.6                  |                     | 6.97                | —                     |

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| Well            | Date Sampled | TPHG (µg/l) | Benzene (µg/l) | Toluene (µg/l) | Ethyl Benzene (µg/l) | Total Xylenes (µg/l) | Well Elevation (ft) | Depth to Water (ft) | Floating Product (ft) |
|-----------------|--------------|-------------|----------------|----------------|----------------------|----------------------|---------------------|---------------------|-----------------------|
| MW-4<br>(Con't) | 2/29/88      | BDL         | BDL            | BDL            | —                    | BDL                  |                     | 6.54                | —                     |
|                 | 5/25/88      | BDL         | BDL            | BDL            | —                    | BDL                  |                     | 6.36                | —                     |
|                 | 8/10/88      | —           | —              | —              | —                    | —                    |                     | N A                 | —                     |
|                 | 11/29/88     | N D         | 0.87           | N D            | N D                  | N D                  |                     | 6.85                | —                     |
|                 | 2/7/89       | N D         | N D            | N D            | N D                  | N D                  |                     | 6.26                | —                     |
|                 | 5/12/89      | N D         | N D            | N D            | N D                  | 0.76                 |                     | 6.55                | —                     |
|                 | 8/4/89       | —           | —              | —              | —                    | —                    |                     | N A                 | —                     |
|                 | 11/14/89     | —           | —              | —              | —                    | —                    |                     | —                   | —                     |
|                 | 2/22/90      | —           | N D            | N D            | N D                  | N D                  |                     | 6.67                | —                     |
|                 | 5/17/90      | N D         | —              | —              | —                    | —                    |                     | —                   | —                     |
|                 | 8/17/90      | —           | —              | —              | —                    | —                    |                     | 7.30                | —                     |
|                 | 11/6/90      | —           | —              | —              | —                    | —                    |                     | 7.15                | —                     |
|                 | 2/1/91       | N D         | N D            | N D            | N D                  | N D                  |                     | 6.85                | —                     |
|                 | 5/1/91       | —           | —              | —              | —                    | —                    |                     | 6.73                | —                     |
|                 | 8/8/91       | —           | —              | —              | —                    | —                    |                     | —                   | —                     |
| 11/15/91        | —            | —           | —              | —              | —                    |                      | 7.45                | —                   |                       |
| MW-5            | 7/14/87      |             | BDL            | BDL            | —                    | BDL                  | 9.11                | 7.06                | —                     |
|                 | 11/24/87     | BDL         | BDL            | BDL            | —                    | 7.2                  |                     | 7.24                | —                     |
|                 | 2/29/88      | BDL         | BDL            | BDL            | —                    | BDL                  |                     | 6.75                | —                     |
|                 | 5/25/88      | BDL         | —              | —              | —                    | —                    |                     | —                   | —                     |
|                 | 8/10/88      | —           | N D            | N D            | N D                  | N D                  |                     | 7.35                | —                     |
|                 | 11/29/88     | N D         | N D            | N D            | N D                  | N D                  |                     | —                   | —                     |
|                 | 2/7/89       | N D         | N D            | N D            | N D                  | N D                  |                     | 7.02                | —                     |
|                 | 5/12/89      | N D         | N D            | N D            | N D                  | 0.84                 |                     | 6.69                | —                     |
|                 | 8/4/89       | N D         | N D            | N D            | N D                  | N D                  |                     | 7.52                | —                     |



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SUMMARY OF GROUNDWATER ANALYSES DATA

| Well            | Date Sampled | TPHG (µg/l) | Benzene (µg/l) | Toluene (µg/l) | Ethyl Benzene (µg/l) | Total Xylenes (µg/l) | Well Elevation (ft) | Depth to Water (ft) | Floating Product (ft) |
|-----------------|--------------|-------------|----------------|----------------|----------------------|----------------------|---------------------|---------------------|-----------------------|
| MW-5<br>(Con't) | 11/14/89     | ND          | ND             | ND             | ND                   | ND                   |                     | 7.51                | —                     |
|                 | 1/3/90       | ND          | —              | —              | —                    | —                    |                     | 7.42                | —                     |
|                 | 2/21/90      | —           | ND             | ND             | ND                   | ND                   |                     | 6.85                | —                     |
|                 | 5/17/90      | ND          | —              | —              | —                    | —                    |                     | 7.09                | —                     |
|                 | 8/17/90      | —           | —              | —              | —                    | —                    |                     | 7.36                | —                     |
|                 | 11/6/90      | —           | —              | —              | —                    | —                    |                     | 7.65                | —                     |
|                 | 2/1/91       | ND          | ND             | ND             | ND                   | ND                   |                     | 7.63                | —                     |
|                 | 5/1/91       | —           | —              | —              | —                    | —                    |                     | 6.68                | —                     |
|                 | 8/8/91       | —           | —              | —              | —                    | —                    |                     | 7.65                | —                     |
|                 | 11/15/91     | —           | —              | —              | —                    | —                    |                     | 7.52                | —                     |
|                 | MW-6         | 7/14/87     | BDL            | BDL            | BDL                  | —                    | BDL                 | 9.19                | —                     |
| 11/24/87        |              | —           | —              | —              | —                    | —                    |                     | —                   | —                     |
| 1/5/88          |              | BDL         | BDL            | BDL            | —                    | BDL                  |                     | —                   | —                     |
| 2/29/88         |              | BDL         | BDL            | BDL            | —                    | BDL                  |                     | 7.19                | —                     |
| 5/25/88         |              | BDL         | BDL            | BDL            | ND                   | BDL                  |                     | 7.33                | —                     |
| 8/10/88         |              | BDL         | ND             | ND             | ND                   | ND                   |                     | 7.50                | —                     |
| 11/29/88        |              | ND          | ND             | ND             | ND                   | ND                   |                     | 7.93                | —                     |
| 2/7/89          |              | ND          | ND             | ND             | ND                   | ND                   |                     | 7.56                | —                     |
| 5/12/89         |              | ND          | ND             | ND             | ND                   | ND                   |                     | 7.16                | —                     |
| 8/4/89          |              | ND          | ND             | ND             | ND                   | ND                   |                     | 7.94                | —                     |
| 11/14/89        |              | ND          | ND             | ND             | ND                   | ND                   |                     | 8.92                | —                     |
| 1/3/90          |              | ND          | —              | —              | —                    | —                    |                     | 7.89                | —                     |
| 2/21/90         |              | —           | ND             | ND             | ND                   | ND                   |                     | 7.28                | —                     |
| 5/17/90         |              | ND          | —              | —              | —                    | —                    |                     | 8.62                | —                     |
| 8/17/90         | —            | —           | —              | —              | —                    |                      | 7.68                | —                   |                       |

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SUMMARY OF GROUNDWATER ANALYSES DATA

| Well            | Date Sampled | TPHG (µg/l) | Benzene (µg/l) | Toluene (µg/l) | Ethyl Benzene (µg/l) | Total Xylenes (µg/l) | Well Elevation (ft) | Depth to Water (ft) | Floating Product (ft) |
|-----------------|--------------|-------------|----------------|----------------|----------------------|----------------------|---------------------|---------------------|-----------------------|
| MW-6<br>(Con't) | 11/6/90      | —           | —              | —              | —                    | —                    |                     | 8.05                | —                     |
|                 | 2/1/91       | ND          | ND             | ND             | ND                   | ND                   |                     | 7.87                | —                     |
|                 | 5/1/91       | —           | —              | —              | —                    | —                    |                     | 6.95                | —                     |
|                 | 8/8/91       | —           | —              | —              | —                    | —                    |                     | 7.97                | —                     |
|                 | 11/15/91     | —           | —              | —              | —                    | —                    |                     | 7.92                | —                     |
| MW-7            | 1/3/90       | —           | —              | —              | —                    | —                    | 8.41                | 8.06                | —                     |
|                 | 1/9/90       | ND          | ND             | ND             | ND                   | ND                   |                     | 8.42                | —                     |
|                 | 2/21/90      | ND          | ND             | ND             | ND                   | ND                   |                     | 6.63                | —                     |
|                 | 5/17/90      | ND          | ND             | ND             | ND                   | ND                   |                     | 6.81                | —                     |
|                 | 8/17/90      | 48          | ND             | ND             | ND                   | ND                   |                     | 7.13                | —                     |
|                 | 11/6/90      | ND          | ND             | 0.55           | ND                   | 0.32                 |                     | 7.29                | —                     |
|                 | 2/1/91       | ND          | ND             | ND             | ND                   | ND                   |                     | 7.20                | —                     |
|                 | 5/1/91       | —           | —              | —              | —                    | —                    |                     | 6.80                | —                     |
|                 | 8/8/91       | —           | —              | —              | —                    | —                    |                     | 7.15                | —                     |
|                 | 11/15/91     | —           | —              | —              | —                    | —                    |                     | 7.20                | —                     |
| MW-8            | 5/1/91       | ND          | ND             | ND             | ND                   | ND                   | 8.52                | 7.67                | —                     |
|                 | 8/8/91       | ND          | ND             | ND             | ND                   | ND                   |                     | 8.15                | —                     |
|                 | 11/15/91     | ND          | ND             | ND             | ND                   | ND                   |                     | 7.94                | —                     |
| RW-1            | 1/3/90       | —           | —              | —              | —                    | —                    | 11.02               | 9.81                | —                     |
|                 | 1/9/90       | 1,300       | 150            | 15             | 100                  | 170                  |                     | 9.75                | —                     |
|                 | 3/1/90       | 440         | 9.4            | 1.3            | 16                   | 25                   |                     | 9.34                | —                     |
|                 | 5/17/90      | 1,400       | 52             | 1.0            | 20                   | 12                   |                     | 9.55                | —                     |
|                 | 8/17/90      | 1,800       | 410            | 7.8            | 160                  | 65                   |                     | 9.84                | —                     |
|                 | 11/6/90      | —           | —              | —              | —                    | —                    |                     | 10.15               | —                     |
|                 | 10/25/91     | 420         | 79             | 1.8            | 2.5                  | 14                   |                     | 10.20               | —                     |

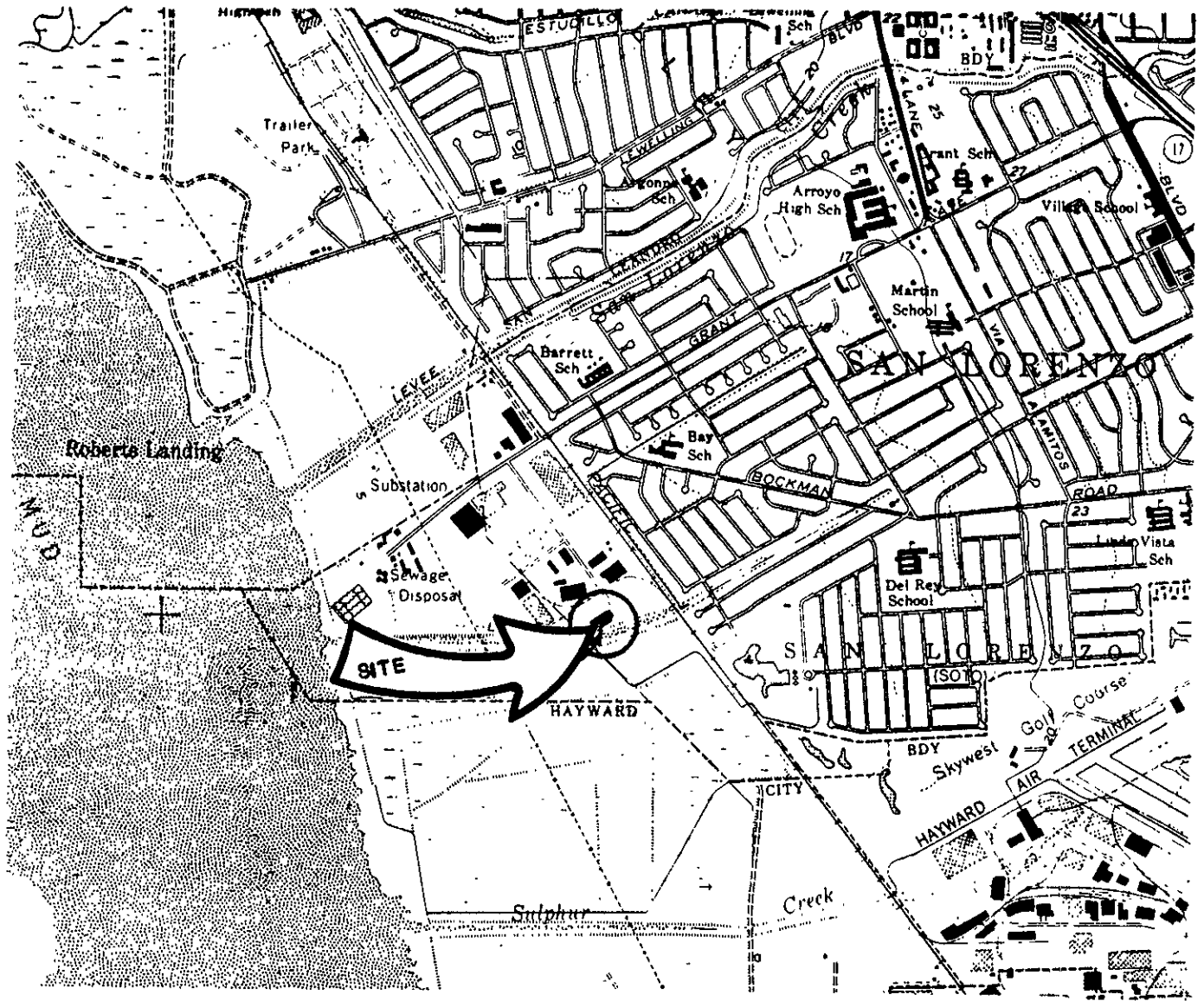
**TABLE 1**

**SUMMARY OF GROUNDWATER ANALYSES DATA**

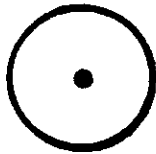
| Well                 | Date Sampled | TPHG (µg/l) | Benzene (µg/l) | Toluene (µg/l) | Ethyl Benzene (µg/l) | Total Xylenes (µg/l) | Well Elevation (ft) | Depth to Water (ft) | Floating Product (ft) |
|----------------------|--------------|-------------|----------------|----------------|----------------------|----------------------|---------------------|---------------------|-----------------------|
| RW-1 System Influent | 1/16/91      | 78          | 17             | 2.7            | 7.7                  | 1.3                  | —                   | —                   | —                     |
|                      | 5/1/91       | 160         | 40             | 0.79           | 14                   | 6.1                  | —                   | —                   | —                     |
|                      | 8/8/91       | 89          | 41             | 0.31           | 4.6                  | 0.73                 | —                   | —                   | —                     |
|                      | 11/15/91     | 140         | 41             | ND             | 1.3                  | 0.44                 | —                   | —                   | —                     |
| BB-1                 | 1/9/90       | ND          | ND             | ND             | ND                   | ND                   | —                   | —                   | —                     |
|                      | 5/17/90      | ND          | ND             | ND             | ND                   | ND                   | —                   | —                   | —                     |
|                      | 11/6/90      | ND          | ND             | ND             | ND                   | ND                   | —                   | —                   | —                     |
|                      | 2/1/91       | ND          | ND             | ND             | ND                   | ND                   | —                   | —                   | —                     |
|                      | 5/1/91       | ND          | ND             | ND             | ND                   | ND                   | —                   | —                   | —                     |
|                      | 8/8/91       | ND          | ND             | ND             | ND                   | ND                   | —                   | —                   | —                     |
|                      | 11/15/91     | ND          | ND             | ND             | ND                   | ND                   | —                   | —                   | —                     |

TPHG Total petroleum hydrocarbons as gasoline  
 ND Not detected at or above the method detection limit  
 — No data obtained

µg/l Micrograms per liter (parts-per-billion)  
 BB-1 Bailer blank



**LEGEND**



**SITE LOCATION**



USGS 7.5 MINUTE SAN LEANDRO QUADRANGLE 1980

**SITE LOCATION MAP**

**RESNA**

**CROWN METAL MFG-PACIFIC INT'L STEEL**

**16525 WORTHLEY DRIVE**

**SAN LORENZO, CALIFORNIA**

**JOB #: 1587-2G**

**SCALE: 1:24000**

**DATE 1/13/92**

**DRAWN BY:**

**DRAWING #: FIG. 1**

**LEGEND**



**MW-1** GROUNDWATER MONITORING WELL

(1.59)

GROUNDWATER SURFACE ELEVATION IN FEET (DATUM: M.S.L.)

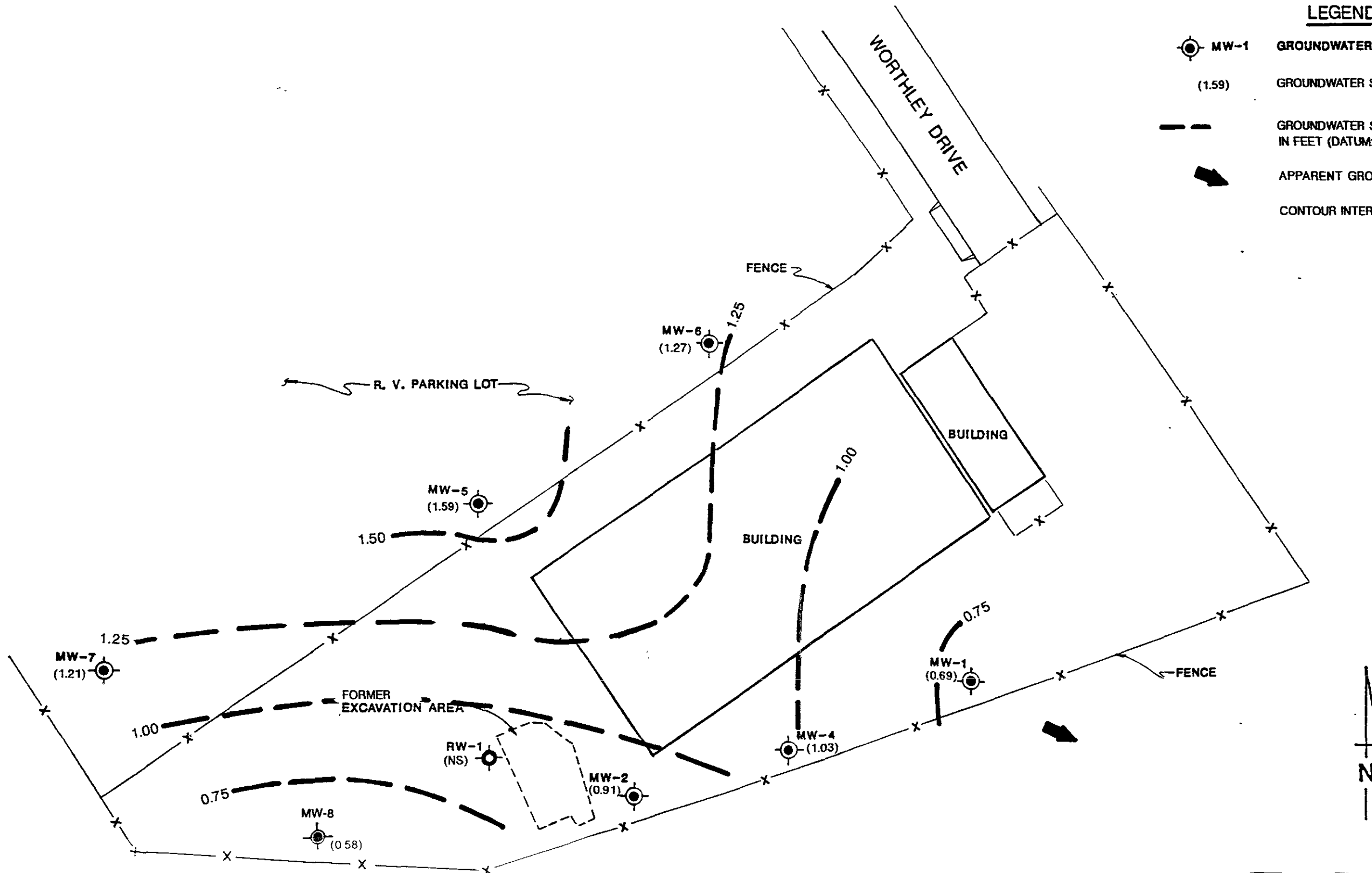


GROUNDWATER SURFACE ELEVATION CONTOUR LINE IN FEET (DATUM: M.S.L.)



APPARENT GROUNDWATER FLOW DIRECTION

CONTOUR INTERVAL = 0.25 FEET



|                                       |  |  |                   |                      |
|---------------------------------------|--|--|-------------------|----------------------|
| REVIEWED BY<br><br>BVT                | GROUNDWATER SURFACE CONTOUR MAP (11/15/91) |  | <b>RESNA</b>      |                      |
|                                       | CROWN METAL MFG - PACIFIC INTL' STEEL      |  |                   |                      |
| APPROVED BY<br><br><i>[Signature]</i> | 16525 WORTHLEY DRIVE                       |  | JOB #:<br>1587-2G | DRAWN BY:<br>SLS     |
|                                       | SAN LORENZO, CALIFORNIA                    |  | DATE:<br>1/13/92  | DRAWING #:<br>FIG. 2 |

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**APPENDIX A**

**GROUNDWATER SAMPLING PROTOCOL**

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# ***RESNA***

## **Groundwater Sampling Protocol**

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# GROUNDWATER SAMPLING PROTOCOL

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Sampling of groundwater is performed by RESNA Industries, Inc. sampling technicians. Summarized field sampling procedures are as follows:

1. Proceed to first well ~~with clean and decontaminated~~ equipment.
2. Measurements of liquid surface(s) in the well, and total depth of monitoring well. Note presence of silt accumulation.
3. Field check for presence of floating product; measure apparent thickness.
4. Purge well prior to collecting samples; purge volume (casing volumes) calculated prior to removal.
5. Monitor groundwater for temperature, pH, and specific conductance during purging. Allow well to recover.
6. Collect samples using Environmental Protection Agency (EPA) approved sample collection devices, i.e., teflon or stainless steel bailers or pumps.
7. Transfer samples into laboratory-supplied EPA-approved containers.
8. Label samples and log onto chain-of-custody form.
9. Store samples in a chilled ice chest for shipment to a state-certified analytical laboratory.
10. Decontaminate equipment prior to sampling next well.



---

## **Equipment Cleaning and Decontamination**

All water samples are placed in precleaned laboratory-supplied bottles. Sample bottles and caps remain sealed until actual usage at the site. All equipment which comes in contact with the well or groundwater is thoroughly cleaned with a trisodium phosphate (TSP) solution and rinsed with deionized or distilled water before use at the site. This cleaning procedure is followed between each well sampled. Wells are sampled in approximate order of increasing contamination. If a teflon cord is used, the cord is cleaned. If a nylon or cotton cord is used, a new cord is used in each well. All equipment blanks are collected prior to sampling. The blanks are analyzed periodically to ensure proper cleaning procedures are used.

## **Water Level Measurements**

Depth to groundwater is measured in each well using a sealed sampling tape or scaled electric sounder prior to purging or sampling. If the well is known or suspected of containing free-phase petroleum hydrocarbons, an optical interface probe is used to measure the hydrocarbon thickness and groundwater level. Measurements are collected and recorded to the nearest 0.01 foot. Each monitoring well's total depth will be measured; this will allow a relative judgement of well siltation to be made and need for redevelopment.

## **Bailer Sheen Check**

If no measurable free-phase petroleum hydrocarbons are detected, a clear acrylic bailer is used to determine the presence of a sheen. Any observed film as well as odor and color of the water is recorded.

## **Groundwater Sampling**

Prior to groundwater sampling, each well is purged of "standing" groundwater. Either a bailer, hand pump, or submersible pump is used to purge the well. The amount of purging is dependent on the well yield. In a high yield formation, samples will be collected when normal field measurement, including temperature, pH, and specific conductance stabilize, provided a minimum of three well-casing volumes of water have been removed. Field measurements will be taken after purging each well volume. Physical parameter measurements (temperature, pH, and specific conductance) are closely monitored throughout the well purging process and are used as indicators for

---

assessing sufficient purging. Purging is continued until all three physical parameters have stabilized. Specific conductance (conductivity) meters are read to the nearest  $\pm 10$  umhos/cm and are calibrated daily. pH meters are read to the nearest  $\pm 0.1$  pH units and are calibrated daily. Temperature is read to the nearest  $0.1$  °F. Calibration of physical parameter meters will follow manufacturer's specifications. Collected field data during purging activities will be entered on the Well Sampling Field Data Sheet.

In low yield formations, the well is purged such that the "standing" water is removed and the well is allowed to recharge. (Normal field measurements will be periodically recorded during the purging process.) In situations where recovery to 80% of static water level is estimated, or observed to exceed a two hour duration, a sample will be collected when sufficient volume is available for a sample for each parameter. Attempts will be made so the well is not purged dry such that the recharge rate causes the formation water to cascade into the well.

In wells where free-phase hydrocarbons are detected, the free-phase portion will be bailed from the well and the estimated volume removed recorded. A groundwater sample will be collected if bailing reduces the amount of free-phase hydrocarbons to the point where they are not present in the well. Well sampling will be conducted using one of the aforementioned methods depending on the formation yield. However, if free-phase hydrocarbons persist throughout bailing, then a groundwater sample will not be collected.

Volatile organic groundwater samples are collected so that air passage through the sample does not occur or is minimal (to prevent volatiles from being stripped from the samples): sample bottles are filled by slowly running the sample down the side of the bottle until there is a positive convex meniscus over the neck of the bottle; the teflon side of the septum (in cap) is positioned against the meniscus, and the cap screwed on tightly; the sample is inverted and the bottle lightly tapped. The absence of an air bubble indicates a successful seal; if a bubble is evident, the cap is removed, more sample is added, and the bottle is resealed.

### **Chain-of-Custody**

Groundwater sample containers are labeled with a unique sample number, location, and date of collection. All samples are logged into a chain-of-custody form and placed in a chilled ice chest for shipment to a laboratory certified by the State of California Department of Health Services.

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## **Sample Storage**

Groundwater samples collected in the field are stored in an ice chest cooled to 4 °C while in transit to the office or analytical laboratory. Samples are stored in a refrigerator overnight and during weekends and holidays. The refrigerator is set to 4 °C and is locked with access controlled by a designated sample custodian.

## **Quality Assurance/Quality Control Objectives**

The sampling and analysis procedures employed by RESNA for groundwater sampling and monitoring follow quality assurance/quality control (QA/QC) guidelines. Quality assurance objectives have been established to develop and implement procedures for obtaining and evaluating water quality and field data in an accurate, precise, and complete manner. In this way, sampling procedures and field measurements provide information that is comparable and representative of actual field conditions. Quality control (QC) is maintained by site-specific field protocols and requiring the analytical laboratory to perform internal and external QC checks. The goal is to provide data that are accurate, precise, complete, comparable, and representative. The definitions as developed by overseeing federal, state, and local agency guidance documents for accuracy, precision, completeness, comparability, and representativeness are:

- **Accuracy** — the degree of agreement of a measurement with an accepted reference or true value.
- **Precision** — a measure of agreement among individual measurements under similar conditions. Usually expressed in terms of the standard deviation.
- **Completeness** — the amount of valid data obtained from a measurement system compared to the amount that was expected to meet the project data goals.
- **Comparability** — express the confidence with which one data set can be compared to another.
- **Representativeness** — a sample or group of samples that reflect the characteristics of the media at the sampling point. It also includes how well the sampling point represents the actual parameter variations which are under study.

---

Laboratory and field handling procedures of samples are monitored by including QC samples for analysis with every submitted sample lot from a project site. QC samples may include any combination of the following:

- **Trip Blanks:** Used for purgeable organic compounds only; QC samples are collected in 40 milliliter (ml) sample vials filled in the analytical laboratory with organic-free water. Trip blanks are sent to the project site, and travel with project site samples. Trip blanks are not opened, and are returned from a project site with the project site samples for analysis.
- **Field Blank:** Prepared in the field using organic-free water. These QC samples accompany project site samples to the laboratory and are analyzed for specific chemical parameters unique to the project site where they were prepared.
- **Duplicates:** Duplicated samples are collected "second samples" from a selected well and project site. They are collected as either split samples or second-run samples collected from the same well.
- **Equipment Blank:** Periodic QC samples collected from field equipment rinseate to verify decontamination procedures.

The number and types of QC samples are determined and analyzed on a project-specific basis.

### **Shallow Groundwater Survey**

A shallow groundwater survey employs reconnaissance field sampling and chemical analysis for rapid plume mapping. Occasionally, a state-certified laboratory subcontractor may be used. The subcontractor would sample for analysis at locations marked by the RESNA field geologist. The thin-diameter probes from which groundwater is collected are advanced to the water bearing stratum, sample is withdrawn to the surface, and analyzed immediately thereafter. Probe holes are backfilled with a grout slurry or as the local permitting agency requires. The shallow survey contractor will supply sampling, purging, and field chemical analysis to RESNA in their report. RESNA considers this type of shallow probe mapping (together with shallow groundwater sampling) to be a reconnaissance technique only.

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**APPENDIX B**

**LABORATORY RESULTS  
AND  
CHAIN-OF-CUSTODY DOCUMENTS**

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# SEQUOIA ANALYTICAL

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

Exceltech  
41674 Christy Street  
Fremont, CA 94538  
Attention: Britt Von Thaden

Client Project ID: 1587-2G, Crown Metals  
Sample Descript.: Water, RW-1  
Analysis Method: EPA 5030/ 8015/8020  
Lab Number: 110-4468

Sampled: Oct 25, 1991  
Received: Oct 28, 1991  
Analyzed: Oct 30, 1991  
Reported: Nov 4, 1991

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

| Analyte                                       | Detection Limit<br>µg/L (ppb) | Sample Results<br>µg/L (ppb) |
|---|-------------------------------|------------------------------|
| Low to Medium Boiling Point Hydrocarbons..... | 60                            | 420                          |
| Benzene.....                                  | 0.60                          | 79                           |
| Toluene.....                                  | 0.60                          | 1.8                          |
| Ethyl Benzene.....                            | 0.60                          | 2.5                          |
| Xylenes.....                                  | 0.60                          | 14                           |

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. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL

Vickie Tague  
Project Manager



# SEQUOIA ANALYTICAL

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

Exceltech  
41674 Christy Street  
Fremont, CA 94538  
Attention: Britt Von Thaden

Client Project ID: 1587-2G, Crown Metals

QC Sample Group: 110-4968

Reported: Nov 4, 1991

## QUALITY CONTROL DATA REPORT

| ANALYTE | Benzene | Toluene | Ethyl Benzene | Xylenes |
|---------|---------|---------|---------------|---------|
|---------|---------|---------|---------------|---------|

|                  |              |              |              |              |
|------------------|--------------|--------------|--------------|--------------|
| Method:          | EPA 8020     | EPA 8020     | EPA 8020     | EPA 8020     |
| Analyst:         | S. Gill      | S. Gill      | S. Gill      | S. Gill      |
| Reporting Units: | µg/L         | µg/L         | µg/L         | µg/L         |
| Date Analyzed:   | Oct 30, 1991 | Oct 30, 1991 | Oct 30, 1991 | Oct 30, 1991 |
| QC Sample #:     | GBLK103091   | GBLK103091   | GBLK103091   | GBLK103091   |

|                                    |      |      |      |      |
|------------------------------------|------|------|------|------|
| Sample Conc.:                      | N.D. | N.D. | N.D. | N.D. |
| Spike Conc. Added:                 | 10   | 10   | 10   | 30   |
| Conc. Matrix Spike:                | 9.4  | 9.4  | 9.3  | 28   |
| Matrix Spike % Recovery:           | 94   | 94   | 93   | 93   |
| Conc. Matrix Spike Dup.:           | 9.7  | 9.7  | 9.6  | 29   |
| Matrix Spike Duplicate % Recovery: | 97   | 97   | 96   | 97   |
| Relative % Difference:             | 3.1  | 3.1  | 3.2  | 3.5  |


SEQUOIA ANALYTICAL

*V. Tague*  
Vickie Tague  
Project Manager

|                        |  |
|------------------------|--|
| % Recovery:            | $\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$                            |
| Relative % Difference: | $\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$ |

# CHAIN OF CUSTODY RECORD

COPY

| PROJECT NO.                        |          | PROJECT NAME        |                    | TEST REQUESTED  |  |                   |  | P.O. #   |       |                   |  |                            |
|------------------------------------|----------|---------------------|--------------------|---|--|-------------------|--|----------|-------|-------------------|--|----------------------------|
| 1587-26                            |          | Crown Metal         |                    | <div style="display: flex; align-items: center; justify-content: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); border: 1px solid black; padding: 2px;">APPHS</div> <div style="border: 1px solid black; padding: 2px; margin: 0 5px;">STEX</div> </div> |  |                   |  | 24861    |       |                   |  |                            |
| SAMPLERS<br>(Signature)            |          | <i>Robt. Suther</i> |                    |   |  |                   |  |          |       |                   |  | LAB<br>Sequoia             |
|                                    |          |                     |                    |   |  |                   |  |          |       |                   |  | TURN AROUND TIME<br>Normal |
| NO.                                | DATE     | TIME                | SAMPLE DESCRIPTION |   |  |                   |  | REMARKS  |       |                   |  |                            |
| RW-1                               | 10-25-91 | 12:00               | 3 Pies VOAS        |   |  |                   |  | 1104968  |       |                   |  |                            |
|                                    |          |                     |                    |   |  |                   |  |          |       |                   |  |                            |
|                                    |          |                     |                    |   |  |                   |  |          |       |                   |  |                            |
|                                    |          |                     |                    |   |  |                   |  |          |       |                   |  |                            |
|                                    |          |                     |                    |   |  |                   |  |          |       |                   |  |                            |
|                                    |          |                     |                    |   |  |                   |  |          |       |                   |  |                            |
|                                    |          |                     |                    |   |  |                   |  |          |       |                   |  |                            |
|                                    |          |                     |                    |   |  |                   |  |          |       |                   |  |                            |
|                                    |          |                     |                    |   |  |                   |  |          |       |                   |  |                            |
|                                    |          |                     |                    |   |  |                   |  |          |       |                   |  |                            |
|                                    |          |                     |                    |   |  |                   |  |          |       |                   |  |                            |
|                                    |          |                     |                    |   |  |                   |  |          |       |                   |  |                            |
|                                    |          |                     |                    |   |  |                   |  |          |       |                   |  |                            |
|                                    |          |                     |                    |   |  |                   |  |          |       |                   |  |                            |
|                                    |          |                     |                    |   |  |                   |  |          |       |                   |  |                            |
|                                    |          |                     |                    |   |  |                   |  |          |       |                   |  |                            |
|                                    |          |                     |                    |   |  |                   |  |          |       |                   |  |                            |
| RELINQUISHED BY:                   |          | DATE:               | TIME:              | RECEIVED BY:  |  | RELINQUISHED BY:  |  | DATE:    | TIME: | RECEIVED BY:      |  |                            |
| <i>Robt. Suther</i>                |          | 10-25-91            | 14:05              | <i>Don George</i>   |  |                   |  |          |       |                   |  |                            |
| RELINQUISHED BY:                   |          | DATE:               | TIME:              | RECEIVED BY:  |  | RELINQUISHED BY:  |  | DATE:    | TIME: | RECEIVED BY:      |  |                            |
| <i>Theresa Mack</i>                |          | 10-29-91            | 10:55              | <i>Don George</i>   |  | <i>Don George</i> |  | 10-29-91 | 11:25 | <i>K. Walters</i> |  |                            |
| REMARKS:                           |          |                     |                    | <br><b>EXCELTECH</b><br>41674 Christy Street<br>Fremont, C.A. 94538-3114<br>(415) 659-0404<br>Fax (415) 651-4677<br>Contr. Lic. No. 550205   |  |                   |  |          |       |                   |  |                            |
| REPORT TO: <i>Britt Von Thaden</i> |          |                     |                    |   |  |                   |  |          |       |                   |  |                            |





# SEQUOIA ANALYTICAL

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

|                               |  |                        |
|-------------------------------|--|------------------------|
| RESNA                         | Client Project ID: 3462-2 Crown Metals | Sampled: Nov 15, 1991  |
| 3315 Almaden Expwy., Suite 34 | Matrix Descript: Water                 | Received: Nov 18, 1991 |
| San Jose, CA 95118            | Analysis Method: EPA 5030/8015/8020    | Analyzed: Nov 25, 1991 |
| Attention: Jim Rubin          | First Sample #: 111-3339               | Reported: Dec 3, 1991  |

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

| Sample Number | Sample Description | Low/Medium B.P. Hydrocarbons | Benzene                  | Toluene                  | Ethyl Benzene            | Xylenes                  |
|---------------|--------------------|------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|               |                    | $\mu\text{g/L}$<br>(ppb)     | $\mu\text{g/L}$<br>(ppb) | $\mu\text{g/L}$<br>(ppb) | $\mu\text{g/L}$<br>(ppb) | $\mu\text{g/L}$<br>(ppb) |
| 111-3339      | Influent           | 140                          | 41                       | N.D.                     | 1.3                      | 0.44                     |
| 111-3340      | Intermediate       | N.D.                         | N.D.                     | N.D.                     | N.D.                     | N.D.                     |
| 111-3341      | Effluent           | N.D.                         | N.D.                     | N.D.                     | N.D.                     | N.D.                     |

|                   |    |      |      |      |      |
|-------------------|----|------|------|------|------|
| Detection Limits: | 30 | 0.30 | 0.30 | 0.30 | 0.30 |
|-------------------|----|------|------|------|------|

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

Vickie Tague  
Project Manager

1113339.RRR <1>



# SEQUOIA ANALYTICAL

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

|                             |   |                        |
|-----------------------------|---|------------------------|
| RESNA - Exceltech           | Client Project ID: 1587 - 2G Crown Metals | Sampled: Nov 15, 1991  |
| 41674 Christy Street        | Matrix Descript: Water                    | Received: Nov 18, 1991 |
| Fremont, CA 94538-3114      | Analysis Method: EPA 5030/8015/8020       | Analyzed: 11/25-26/91  |
| Attention: Britt Von Thaden | First Sample #: 111-3507                  | Reported: Dec 3, 1991  |

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

| Sample Number | Sample Description | Low/Medium B.P. Hydrocarbons | Benzene                  | Toluene                  | Ethyl Benzene            | Xylenes                  |
|---------------|--------------------|------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|               |                    | $\mu\text{g/L}$<br>(ppb)     | $\mu\text{g/L}$<br>(ppb) | $\mu\text{g/L}$<br>(ppb) | $\mu\text{g/L}$<br>(ppb) | $\mu\text{g/L}$<br>(ppb) |
| 111-3507      | MW2                | 630                          | 2.3                      | N.D.                     | 3.1                      | 0.86                     |

|                          |           |             |             |             |             |
|--------------------------|-----------|-------------|-------------|-------------|-------------|
| <b>Detection Limits:</b> | <b>60</b> | <b>0.60</b> | <b>0.60</b> | <b>0.60</b> | <b>0.60</b> |
|--------------------------|-----------|-------------|-------------|-------------|-------------|

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. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL

*Vickie Tague*  
Vickie Tague  
Project Manager

1113505.RRR <2>



# SEQUOIA ANALYTICAL

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

RESNA - Exceltech  
41674 Christy Street  
Fremont, CA 94538-3114  
Attention: Britt Von Thaden

Client Project ID: 1587 - 2G Crown Metals  
Matrix Descript: Water  
Analysis Method: EPA 5030/8015/8020  
First Sample #: 111-3505

Sampled: Nov 15, 1991  
Received: Nov 18, 1991  
Analyzed: 11/25-26/91  
Reported: Dec 3, 1991

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

| Sample Number | Sample Description | Low/Medium B.P.          | Benzene                  | Toluene                  | Ethyl Benzene            | Xylenes                  |
|---------------|--------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|               |                    | Hydrocarbons             |                          |                          |                          |                          |
|               |                    | $\mu\text{g/L}$<br>(ppb) | $\mu\text{g/L}$<br>(ppb) | $\mu\text{g/L}$<br>(ppb) | $\mu\text{g/L}$<br>(ppb) | $\mu\text{g/L}$<br>(ppb) |
| 111-3505      | BB 1               | N.D.                     | N.D.                     | N.D.                     | N.D.                     | N.D.                     |
| 111-3506      | MW 8               | N.D.                     | N.D.                     | N.D.                     | N.D.                     | N.D.                     |

|                          |           |             |             |             |             |
|--------------------------|-----------|-------------|-------------|-------------|-------------|
| <b>Detection Limits:</b> | <b>30</b> | <b>0.30</b> | <b>0.30</b> | <b>0.30</b> | <b>0.30</b> |
|--------------------------|-----------|-------------|-------------|-------------|-------------|

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

Vickie Tague  
Project Manager



# SEQUOIA ANALYTICAL

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(415) 364-9600 • FAX (415) 364-9233

RESNA - Exceltech  
41674 Christy Street  
Fremont, CA 94538-3114  
Attention: Britt Von Thaden

Client Project ID: 1587 - 2G Crown Metals

QC Sample Group: 1113505-6

Reported: Dec 3, 1991

## QUALITY CONTROL DATA REPORT

| ANALYTE                            | Benzene      | Toluene      | Ethyl-Benzene | Xylenes      |
|------------------------------------|--------------|--------------|---------------|--------------|
| Method:                            | EPA 8020     | EPA 8020     | EPA 8020      | EPA 8020     |
| Analyst:                           | L. Laikhtman | L. Laikhtman | L. Laikhtman  | L. Laikhtman |
| Reporting Units:                   | µg/L         | µg/L         | µg/L          | µg/L         |
| Date Analyzed:                     | Nov 25, 1991 | Nov 25, 1991 | Nov 25, 1991  | Nov 25, 1991 |
| QC Sample #:                       | GBLK112591   | GBLK112591   | GBLK112591    | GBLK112591   |
| Sample Conc.:                      | N.D.         | N.D.         | N.D.          | N.D.         |
| Spike Conc. Added:                 | 10           | 10           | 10            | 30           |
| Conc. Matrix Spike:                | 10           | 10           | 10            | 31           |
| Matrix Spike % Recovery:           | 100          | 100          | 100           | 103          |
| Conc. Matrix Spike Dup.:           | 11           | 11           | 11            | 33           |
| Matrix Spike Duplicate % Recovery: | 110          | 110          | 110           | 110          |
| Relative % Difference:             | 9.5          | 9.5          | 9.5           | 6.3          |

SEQUOIA ANALYTICAL

*V. Taglie*  
Vickie Taglie  
Project Manager

|                        |  |
|------------------------|--|
| % Recovery:            | $\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$                            |
| Relative % Difference: | $\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$ |



# SEQUOIA ANALYTICAL

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

RESNA - Exceltech  
41674 Christy Street  
Fremont, CA 94538-3114  
Attention: Britt Von Thaden

Client Project ID: 1587 - 2G Crown Metals

QC Sample Group: 111-3507

Reported: Dec 3, 1991

## QUALITY CONTROL DATA REPORT

| ANALYTE                            | Benzene      | Toluene      | Ethyl-Benzene | Xylenes      |
|------------------------------------|--------------|--------------|---------------|--------------|
| Method:                            | EPA 8020     | EPA 8020     | EPA 8020      | EPA 8020     |
| Analyst:                           | L. Laikhtman | L. Laikhtman | L. Laikhtman  | L. Laikhtman |
| Reporting Units:                   | µg/L         | µg/L         | µg/L          | µg/L         |
| Date Analyzed:                     | Nov 26, 1991 | Nov 26, 1991 | Nov 26, 1991  | Nov 26, 1991 |
| QC Sample #:                       | GBLK112691   | GBLK112691   | GBLK112691    | GBLK112691   |
| Sample Conc.:                      | N.D.         | N.D.         | N.D.          | N.D.         |
| Spike Conc. Added:                 | 10           | 10           | 10            | 30           |
| Conc. Matrix Spike:                | 10           | 10           | 10            | 31           |
| Matrix Spike % Recovery:           | 100          | 100          | 100           | 103          |
| Conc. Matrix Spike Dup.:           | 11           | 11           | 11            | 33           |
| Matrix Spike Duplicate % Recovery: | 110          | 110          | 110           | 110          |
| Relative % Difference:             | 9.5          | 9.5          | 9.5           | 6.3          |

SEQUOIA ANALYTICAL

Vickie Tague  
Project Manager

|                        |  |
|------------------------|--|
| % Recovery:            | $\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$                            |
| Relative % Difference: | $\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$ |

