RESNA
Working To Restore Nature

3315 Almaden Expressway, Suite 34
San Jose, CA 95118
Phone: (408) 264-7723
FAX: (408) 264-2435

# TRANSMITTAL

TO: Mr. Barney Chan
ACHCSA
Dept. of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

DATE: March 9, 1993
PROJECT NUMBER: 69038.11
SUBJECT: ARCO Station 4494, 566 Hegenberger Road, Oakland, California.

FROM: Robert Campbell
TITLE: Staff Geologist

WE ARE SENDING YOU:

| COPIES | DATED | NO. | DESCRIPTION |
|---|---|---|---|
| 1 | 03/09/93 | 69038.12 | Letter Report Quarterly Groundwater Monitoring Fourth Quarter 1992 at ARCO Station 4494, 566 Hegenberger Road, Oakland, California. |

THESE ARE TRANSMITTED as checked below:

[ ] For review and comment
[ ] Approved as submitted
[ ] Resubmit ___ copies for approval
[X] As requested
[ ] Approved as noted
[ ] Submit___ copies for distribution
[ ] For approval
[ ] Return for corrections
[ ] Return ___ corrected prints
[ ] For your files

REMARKS:
Per ARCO's request (Mr. Michael Whelan), this report has been forwarded to you for your files.

Copies: 1 to RESNA project file no. 69038.12

RESNA
Working To Restore Nature

3315 Almaden Expressway, Suite 34
San Jose, CA 95118
Phone: (408) 264-7723
FAX: (408) 264-2435

# LETTER REPORT
# QUARTERLY GROUNDWATER MONITORING
## Fourth Quarter 1992
## at
## ARCO Station 4494
## 566 Hegenberger Road
## Oakland, California

69038.12

RESNA
Working To Restore Nature

3315 Almaden Expressway, Suite 34
San Jose, CA 95118
Phone: (408) 264-7723
FAX: (408) 264-2435

March 9, 1993
0308MWHE
69038.12

Mr. Michael Whelan
ARCO Products Company
P.O. Box 5811
San Mateo, California 94402

Subject: Fourth Quarter 1992 Groundwater Monitoring Report for ARCO Station 4494 at 566 Hegenberger Road, Oakland, California.

Mr. Whelan:

As requested by ARCO Products Company (ARCO), RESNA Industries Inc. (RESNA) prepared this letter report which summarizes the results of fourth quarter 1992 groundwater monitoring performed by ARCO's contractor, EMCON Associates (EMCON) of San Jose, California, at the above-referenced site. The objectives of this quarterly groundwater monitoring are to evaluate changes in the groundwater flow direction and gradient, and evaluate changes in concentrations of petroleum hydrocarbons in the local groundwater associated with underground gasoline-storage tanks (USTs) at the site. The field work and laboratory analyses of groundwater samples during this quarter was performed under the direction of EMCON and included measuring depths to groundwater, subjectively analyzing groundwater for the presence of petroleum product, collecting groundwater samples from the wells for laboratory analyses, and directing a State-certified laboratory to analyze the groundwater samples. Field procedures and acquisition of field data and field protocols is beyond RESNA's scope of work. RESNA's scope of work was limited to interpretation of field and laboratory analytical data, which included evaluating trends in reported hydrocarbon concentrations in the local groundwater, the groundwater gradient, and direction of groundwater flow beneath the site.

The operating ARCO Station 4494 is located on the northeastern corner of the intersection of Edes Avenue and Hegenberger Road in Oakland, California as shown on the Site Vicinity Map, Plate 1.

Previous work associated with the subject site is listed in prior subsurface investigation reports in the references section.

**Groundwater Sampling and Gradient Evaluation**

Depth to water measurements (DTW) were performed by EMCON field personnel on October 29 and November 23, 1992. DTW measurements were not performed by EMCON field personnel during December 1992, because wells were inaccessible due to UST removal and replacement activities at the site. During tank removal, well MW-2 was decommissioned, due to its; immediate proximity to the USTs. Quarterly sampling was performed by EMCON field personnel on October 29, 1992. The results of EMCON's field work on the site, including DTW measurements and subjective analysis for the presence of product in the groundwater in MW-1 through MW-7, are presented on EMCON's Field Reports and EMCON's Summary of Groundwater Monitoring Data. These data are included in Appendix A.

The DTW levels, wellhead elevations, groundwater elevations, and subjective observations of product in the groundwater (if present) from MW-1 through MW-7 for this and previous quarters are summarized in Table 1, Cumulative Groundwater Monitoring Data. EMCON's DTW measurements were used to evaluate groundwater elevations. Floating product (0.01 of a foot) was detected in well MW-2 during October 29, 1992 monitoring and sampling, as shown on EMCON's Field Reports and Water Sample Field Data Sheets, Appendix A. During tank removal and replacement activities, this product was discovered to be migrating onto the ARCO site via the backfill material surrounding a storm drain which runs through the site. During the destruction of well MW-2, it was noted that the well was installed within the backfill material without adversely effecting the storm drain. The groundwater gradients interpreted from the October and November 1992 groundwater monitoring events are shown on Groundwater Gradient Maps, Plates 3 and 4. The groundwater gradients and flow directions interpreted from EMCON's DTW measurements are approximately 0.01 to 0.03 ft/ft toward the north-northwest beneath the southern portion of the site. The groundwater gradients for this quarter are generally consistent with previously interpreted data.

Groundwater monitoring wells MW-1 and MW-3 through MW-7 were purged and sampled by EMCON field personnel on October 29, 1992. EMCON's Water Sample Field Data Sheets, Field Reports and Summary of Groundwater Monitoring Data, are included in Appendix A. The purge water was removed from the site by a licensed hazardous waste hauler; the Monitoring Well Purge Water Disposal Form is also included in Appendix A.

## Laboratory Methods and Results

Under the direction of EMCON, water samples collected from the wells were analyzed by Columbia Analytical Services, Inc., located in San Jose, California (Hazardous Waste Testing Laboratory Certification No. 1426). The water samples from MW-1 and MW-3 through MW-7 were analyzed for total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) using Environmental Protection Agency (EPA) Methods 5030/8020/DHS LUFT Method.

The concentration of TPHg and BTEX have remained nondetectable in wells MW-1 and MW-3 through MW-7 since last quarter. The Chain of Custody Records and Laboratory Analysis Reports are included in Appendix A. Results of these and previous water analyses are summarized in Table 2, Cumulative Results of Laboratory Analyses of Water Samples--TPHg, TPHd, BTEX, and TOG and Table 3, Cumulative Results of Laboratory Analyses of Water Samples--BNAs, VOCs, and Metals. Concentrations of TPHg and benzene in the groundwater are shown on Plate 5, TPHg/Benzene Concentrations in Groundwater.

## Product Removal

Since monitoring began in June 1990, evidence of floating product or product sheen has been observed only in well MW-2 as discussed in groundwater gradient, this product appears to be migrating onto the ARCO site. Quantities of floating product and water removed during this and previous quarterly monitoring events are presented on Table 4, Approximate Cumulative Product Recovered.

## Conclusions

Petroleum hydrocarbons have impacted the groundwater in the recently decommissioned well (MW-2) immediately downgradient of the USTs (from offsite source), but have not impacted crossgradient wells MW-3, MW-4 and MW-7, upgradient well MW-1, or downgradient offsite wells MW-5 and MW-6. A more detailed description of the product encountered in MW-2 will be included in the forthcoming tank removal and replacement report.

**Distribution**

It is recommended that copies of this report be forwarded to:

Mr. Barney Chan
Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

Mr. Richard Hiett
Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

If you have any questions or comments, please call us at (408) 264-7723.

Sincerely,
RESNA Industries Inc.

Robert D. Campbell
Staff Geologist

REGISTERED GEOLOGIST
JAMES LEWIS NELSON
No. 1463
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

James L. Nelson
Certified Engineering Geologist No. 1463

Enclosures: References

Plate 1: Site Vicinity Map
Plate 2: Generalized Site Plan
Plate 3: Groundwater Gradient Map, October 29, 1992
Plate 4: Groundwater Gradient Map, November 23, 1992
Plate 5: TPHg/Benzene Concentrations in Groundwater, October 29,1992

Table 1: Cumulative Groundwater Monitoring Data
Table 2: Cumulative Results of Laboratory Analyses of Water Samples--TPHg, TPHd, BTEX, and TOG
Table 3: Cumulative Results of Laboratory Analyses of Water Samples--BNAs, VOCs, and Metals
Table 4: Approximate Cumulative Product Recovered

Appendix A: EMCON's Field Reports-Depth to Water/Floating Product Survey Results, Summary of Groundwater Monitoring Data, Certified Analytical Reports with Chain of Custody Record, and Water Sample Field Data Sheets
Monitoring Well Purge Water Disposal Form

## REFERENCES

Applied GeoSystems. October 1, 1990. Report on Site History and Limited Environmental Records Review at ARCO Station 4494, 566 Hegenberger Road, Oakland, California. AGS Report 69038-3.

Applied GeoSystems. February 8, 1991. Letter Report on Fourth Quarter 1990 Ground-Water Monitoring at ARCO Station 4494, 566 Hegenberger Road, Oakland, California. AGS Report 69038-4.

Applied GeoSystems. February 13, 1991. Limited Subsurface Environmental Investigation at ARCO Station 4494, 566 Hegenberger Road, Oakland, California. AGS Report 69038-2.

Applied GeoSystems. April 30, 1991. Letter Report on Quarterly Ground-Water Monitoring, First Quarter 1991, at ARCO Station 4494, 566 Hegenberger Road, Oakland, California. AGS Report 69038-4.

Department of Health Services, State of California. October 24, 1990. Summary of California Drinking Water Standards.

Pacific Environmental Group. May 3, 1989. Arco Station No. 4494, 566 Hegenberger Road, California. Project 330-41.

RESNA/Applied GeoSystems. September 12, 1991. Letter Report on Quarterly Ground-Water Monitoring, Second Quarter 1991, at ARCO Station 4494, 566 Hegenberger Road, Oakland, California. AGS Report 69038-4.

RESNA. November 22, 1992. Letter Report on Quarterly Groundwater Monitoring, Third Quarter 1991, at ARCO Station 4494, 566 Hegenberger Road, Oakland, California. RESNA Report 69038.04.

RESNA. April 8, 1992. Letter Report on Quarterly Groundwater Monitoring, Fourth Quarter 1991, at ARCO Station 4494, 566 Hegenberger Road, Oakland, California. RESNA Report 69038.04.

RESNA. May 8, 1992. Letter Report on Quarterly Groundwater Monitoring, First Quarter 1992 at ARCO Station 4494, 566 Hegenberger Road, Oakland, California. RESNA Report 69038.11

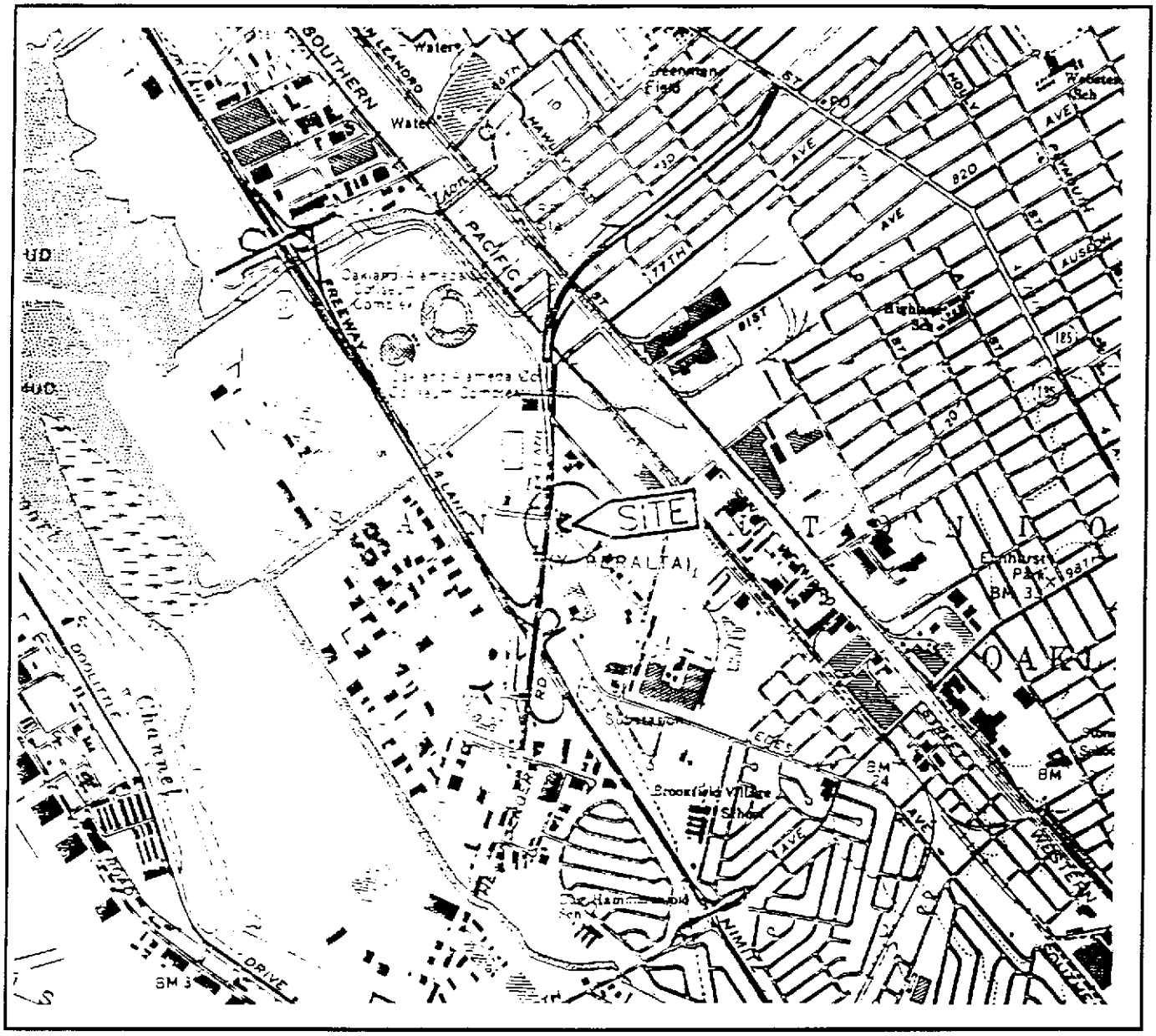
**REFERENCES**
(continued)

RESNA. September 3, 1992. Letter Report on Quarterly Groundwater Monitoring, Second Quarter 1992 at ARCO Station 4494, 566 Hegenberger Road, Oakland, California. RESNA Report 69038.11.

RESNA. October 29, 1992. Additional Subsurface Investigation at ARCO Station 4494, 566 Hegenberger Road in Oakland, California. RESNA Report 69038.10.

RESNA. November 30, 1992. Letter Report on Quarterly Groundwater Monitoring, Third Quarter 1992 at ARCO Station 4494, 566 Hegenberger Road in Oakland, California. RESNA Report 69038.11.

RESNA. December 31, 1992. Addendum to Work Plan to Construct an Interim Slurry Wall at ARCO Station 4494, 566 Hegenberger Road in Oakland, California. RESNA Report 69038.13.




Base: U.S. Geological Survey
7.5-Minute Quadrangles
Oakland East/San Leandro, California.
Photorevised 1980

N

LEGEND

⊙ = Site Location

Approximate Scale

2000 1000 0 2000 4000

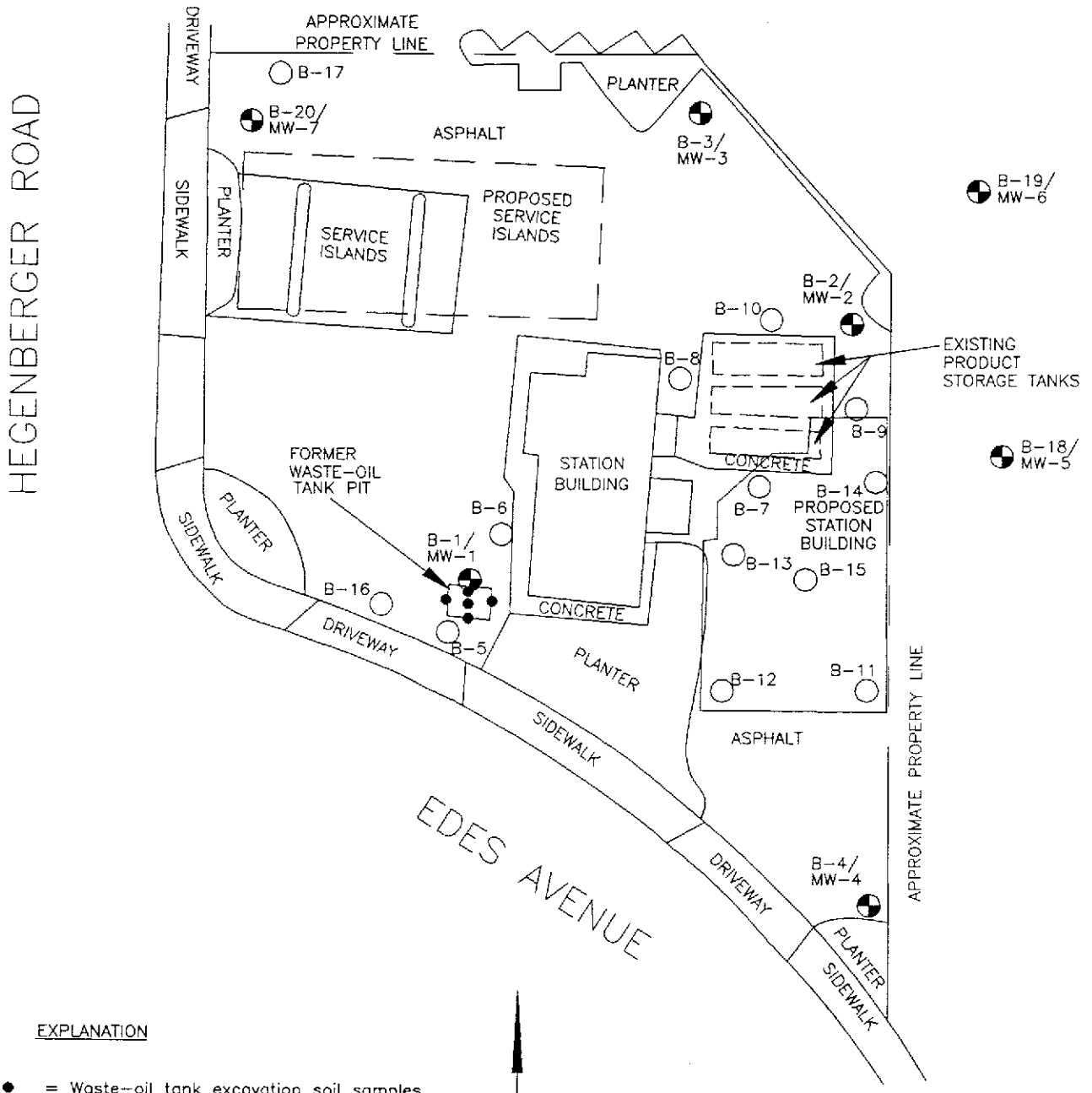
feet

RESNA
Working to Restore Nature

PROJECT 69038.12

**SITE VICINITY MAP**
**ARCO SERVICE STATION 4494**
**566 HEGENBERGER ROAD**
**OAKLAND, CALIFORNIA**

**PLATE**
**1**




EXPLANATION

- ● = Waste-oil tank excavation soil samples (Pacific Environmental Group, January 1989)
- B-20/MW-7 ◓ = Monitoring wells (Applied GeoSystems/RESNA, October 1989 August 1990 and July 1992)
- B-10 ○ = Soil boring (Applied GeoSystems/RESNA, August 1990 and March 1991)

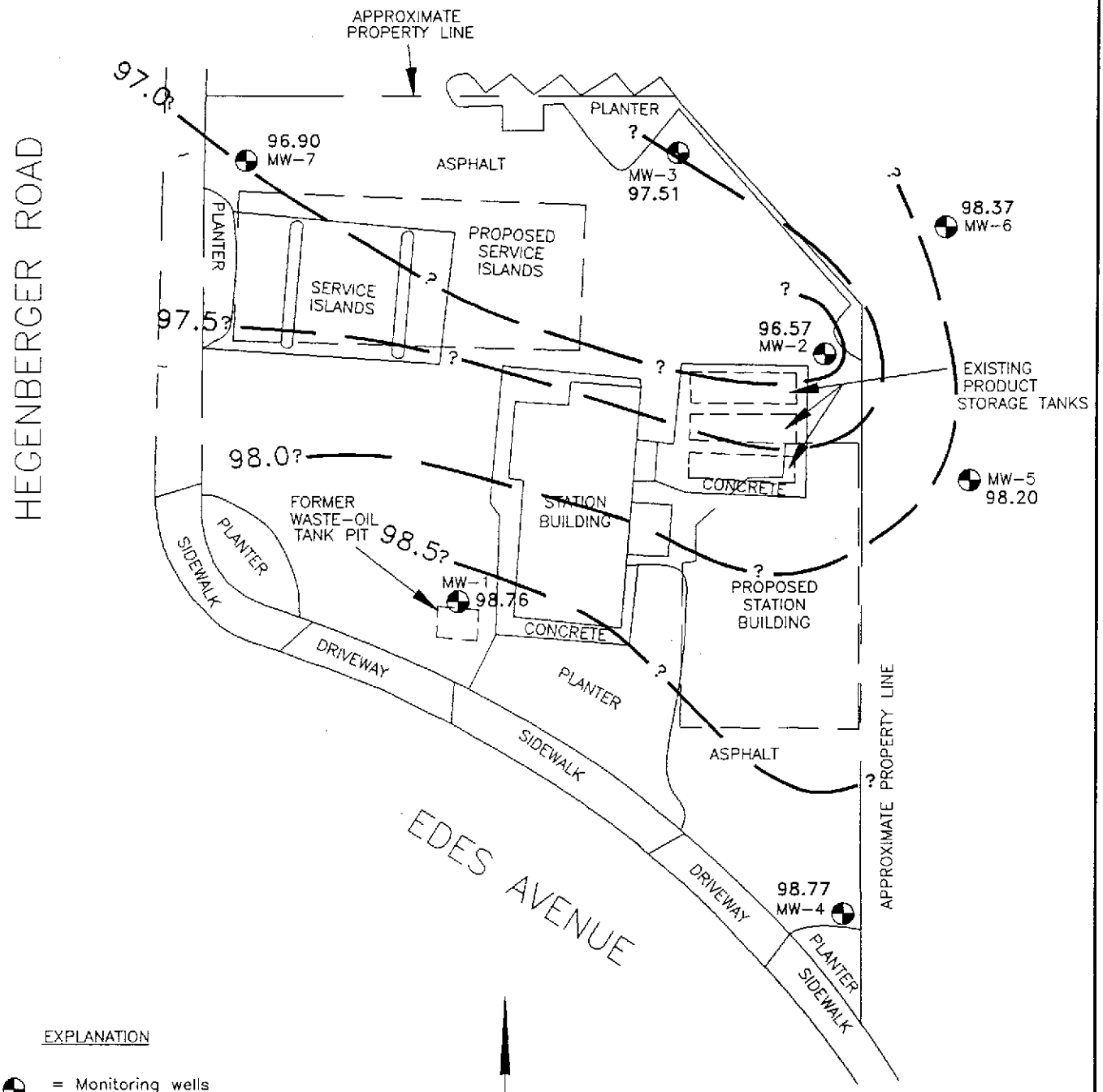
Source: Modified from plans supplied by ARCO Products Co. (dated August 12, 1982) and City of Oakland Dept. of Public Works (dated December 19, 1961).

RESNA
Working to Restore Nature

**PROJECT** 69038.12

# GENERALIZED SITE PLAN
## ARCO Service Station 4494
## 566 Hegenberger Road
## Oakland, California

**PLATE** 2




EXPLANATION

MW-7 = Monitoring wells (Applied GeoSystems/RESNA, October 1989 August 1990 and July 1992)

98.5 = Line of equal elevation of groundwater in feet above mean sea level (MSL)

98.77 = Groundwater elevation in feet above MSL, October 29, 1992

N

Approximate Scale

40 20 0 40 80

feet

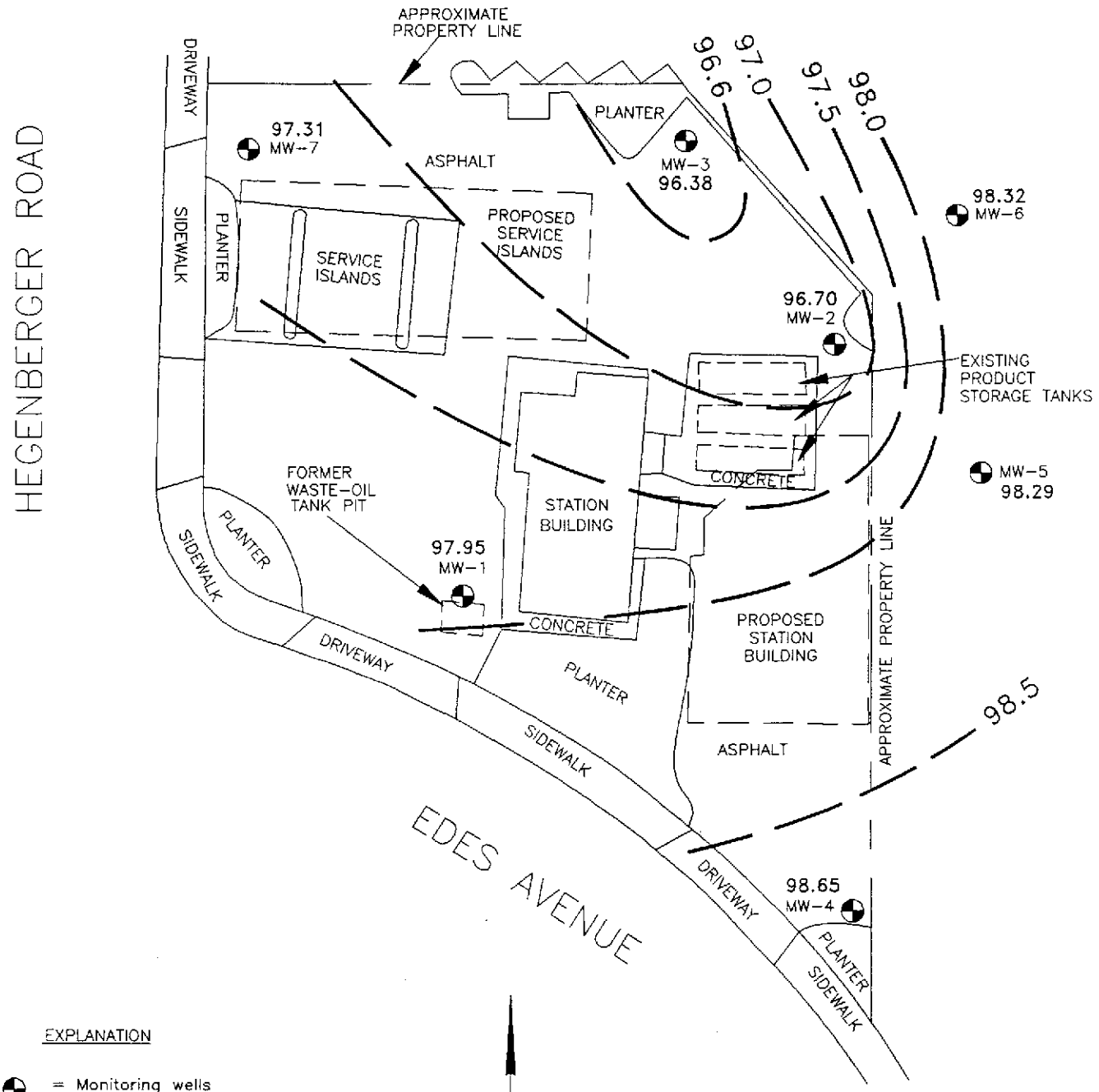
Source: Modified from plans supplied by ARCO Products Co. (dated August 12, 1982) and City of Oakland Dept. of Public Works (dated December 19, 1961).

RESNA
Working to Restore Nature

PROJECT 69038.12

**GROUNDWATER GRADIENT MAP**
**ARCO Service Station 4494**
**566 Hegenberger Road**
**Oakland, California**

**PLATE**
**3**




EXPLANATION

MW-7 = Monitoring wells (Applied GeoSystems/RESNA, October 1989 August 1990 and July 1992)

98.5 = Line of equal elevation of groundwater in feet above mean sea level (MSL)

98.65 = Groundwater elevation in feet above MSL, November 23, 1992

Approximate Scale

40 20 0 40 80

feet

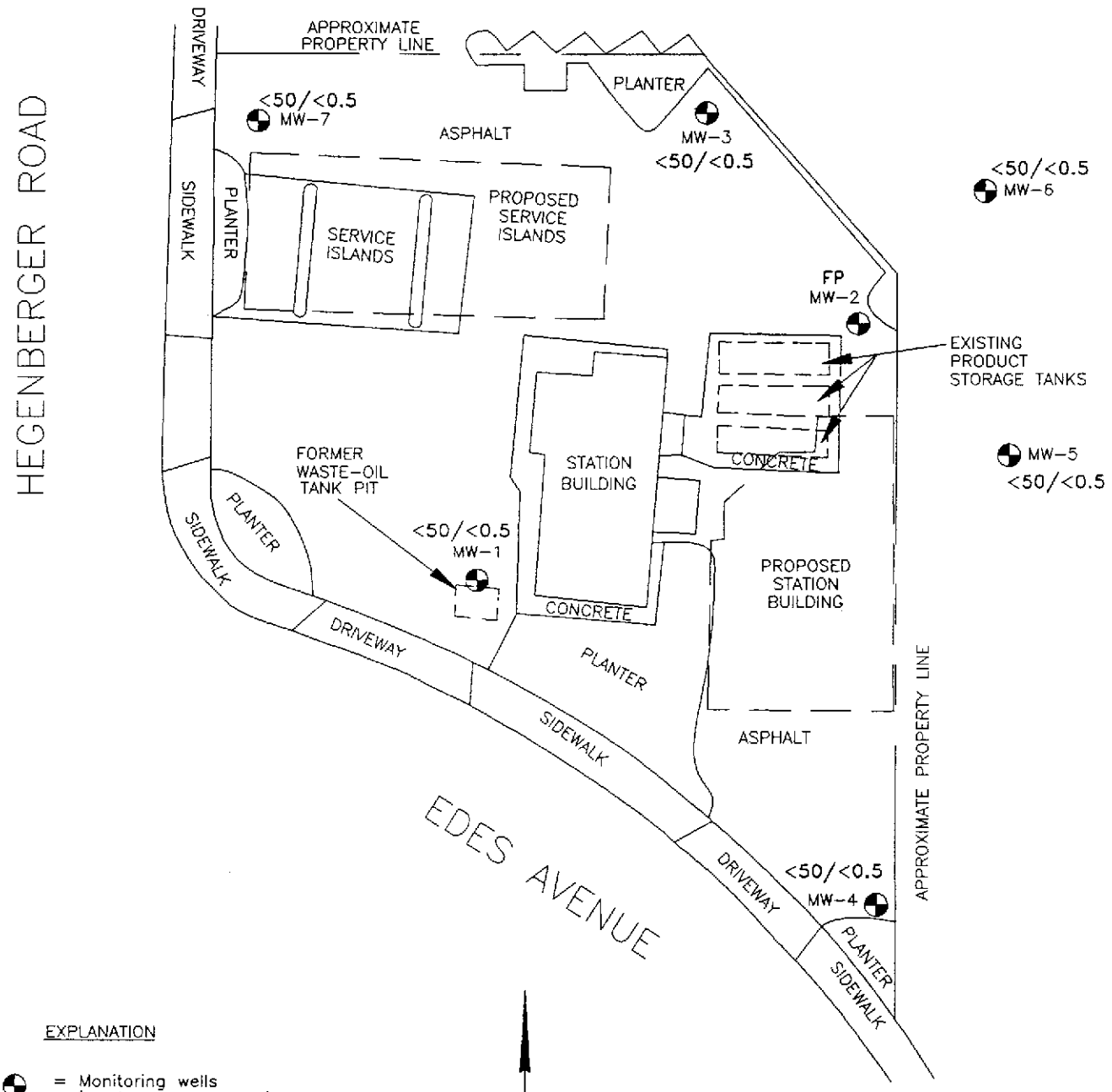
Source: Modified from plans supplied by ARCO Products Co. (dated August 12, 1982) and City of Oakland Dept. of Public Works (dated December 19, 1961).

RESNA
Working to Restore Nature

PROJECT 69038.12

**GROUNDWATER GRADIENT MAP**
**ARCO Service Station 4494**
**566 Hegenberger Road**
**Oakland, California**

**PLATE**
**4**




EXPLANATION

MW-7 = Monitoring wells (Applied GeoSystems/RESNA, October 1989 August 1990 and July 1992)

<50/<0.5 = Concentration of Total Petroleum Hydrocarbons as gasoline Tphg/benzene in groundwater, October 29, 1992

FP = Floating product/Black hydrocarbon product observed migrating onto ARCO site from adjacent property

N

Approximate Scale

40 20 0 40 80

feet

Source: Modified from plans supplied by ARCO Products Co. (dated August 12, 1982) and City of Oakland Dept. of Public Works (dated December 19, 1961).

RESNA
Working to Restore Nature

PROJECT 69038.12

**TPHG/BENZENE CONCENTRATIONS IN GROUNDWATER**
**ARCO Service Station 4494**
**566 Hegenberger Road**
**Oakland, California**

**PLATE 5**

RESNA
Working To Restore Nature

Quarterly Groundwater Monitoring
ARCO Station 4494, Oakland, California

March 9, 1993
69038.12

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 4494
Oakland, California
(Page 1 of 4)

| Well / Date | Elevation of Wellhead | Depth to Water | Water Elevation | Floating Product |
|---|---|---|---|---|
| MW-1 | | | | |
| 06/06/90 | 105.31 | 6.65 | 98.66 | None |
| 08/16/90 | | 7.00 | 98.31 | None |
| 08/21/90 | | 7.05 | 98.26 | None |
| 09/07/90 | | 7.24 | 98.07 | None |
| 11/20/90 | | 7.46 | 97.85 | None |
| 11/29/90 | | 7.40 | 97.91 | None |
| 12/19/90 | | 6.99 | 98.32 | None |
| 01/29/91 | | 7.23 | 98.08 | None |
| 02/27/91 | | 7.45 | 97.86 | None |
| 03/07/91 | | 6.96 | 98.35 | None |
| 03/26/91 | | 6.02 | 99.29 | None |
| 05/02/91 | | 7.04 | 98.27 | None |
| 06/27/91 | | 6.71 | 98.60 | None |
| 07/24/91 | | 6.91 | 98.40 | None |
| 08/22/91 | | 6.85 | 98.46 | None |
| 09/30/91 | | 7.04 | 98.27 | None |
| 10/17/91 | | 7.22 | 98.09 | None |
| 11/21/91 | | 7.17 | 98.14 | None |
| 12/18/91 | | 7.46 | 97.85 | None |
| 01/19/92 | | 7.44 | 97.87 | None |
| 02/20/92 | | 6.25 | 99.06 | None |
| 03/20/92 | | 6.40 | 98.91 | None |
| 04/20/92 | | 6.88 | 98.43 | None |
| 05/19/92 | | 7.10 | 98.21 | None |
| 06/08/92 | | 7.22 | 98.09 | None |
| 07/15/92 | | 7.92 | 97.39 | None |
| 08/06/92 | 106.10 | 7.29 | 98.81 | None |
| 10/29/92 | | 7.34 | 98.76 | None |
| 11/23/92 | | 8.15 | 97.95 | None |
| MW-2 | | | | |
| 06/06/90 | 105.78 | 9.00* | 96.78* | 0.92 Black Product |
| 08/16/90 | | NM | NM | 0.17 Black Product |
| 08/21/90 | | NM | NM | 0.17 Black Product |
| 09/07/90 | | 9.17* | 96.61* | 0.17 Black Product |
| 11/20/90 | | 9.20* | 96.58* | Heavy Sheen |
| 11/29/90 | | 9.92* | 95.86* | Heavy Sheen |
| 12/19/90 | | 8.95 | 96.83 | None |
| 01/29/91 | | 9.01 | 96.77 | Sheen |
| 02/27/91 | | 9.14 | 96.64 | Sheen |
| 03/07/91 | | 8.94 | 96.84 | Sheen |
| 03/26/91 | | 8.11 | 97.67 | Sheen |
| 05/02/91 | | 8.72 | 97.06 | None |

See notes on page 4 of 4.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 4494
Oakland, California
(Page 2 of 4)

| Well / Date | Elevation of Wellhead | Depth to Water | Water Elevation | Floating Product |
|---|---|---|---|---|
| MW-2 (Cont.) | | | | |
| 06/27/91 | | 9.20 | 96.58 | Sheen |
| 07/24/91 | | 9.25 | 96.53 | None |
| 08/22/91 | | 9.20 | 96.58 | None |
| 09/30/91 | | 9.31 | 96.47 | Sheen |
| 10/17/91 | | 9.39 | 96.39 | Sheen |
| 11/21/91 | | 9.20 | 96.58 | None |
| 12/18/91 | | 9.23 | 96.55 | Sheen |
| 01/19/92 | | 9.96** | 95.82 | Skimmer |
| 02/20/92 | | 9.13** | 96.65 | Skimmer |
| 03/20/92 | 105.78 | 9.31** | 96.47 | Skimmer |
| 04/20/92 | | 9.69 | 96.09 | Skimmer |
| 05/15/92 | | 9.92 | 95.86 | Skimmer |
| 06/08/92 | | 9.84 | 95.94 | Skimmer |
| 07/15/92 | | 10.19 | 95.59 | Skimmer |
| 08/06/92 | 106.57 | 10.05 | 96.52 | Skimmer |
| 10/29/92 | | 10.00 | 96.57 | Skimmer |
| 11/23/92 | | 9.87 | 96.70 | 0.01 |
| MW-3 | | | | |
| 08/16/90 | 105.51 | 8.87 | 96.64 | None |
| 08/21/90 | | 8.85 | 96.66 | None |
| 09/07/90 | | 8.98 | 96.53 | None |
| 11/20/90 | | 9.10 | 96.41 | None |
| 11/29/90 | | 9.05 | 96.46 | None |
| 12/19/90 | | 8.67 | 96.84 | None |
| 01/29/91 | | 8.96 | 96.55 | None |
| 02/27/91 | | 8.71 | 96.80 | None |
| 03/07/91 | | 8.49 | 97.02 | None |
| 03/26/91 | | 7.65 | 97.86 | None |
| 05/02/91 | | 8.62 | 96.89 | None |
| 06/27/91 | | 8.94 | 96.57 | None |
| 07/24/91 | | 8.96 | 96.55 | None |
| 08/22/91 | | 8.92 | 96.59 | None |
| 09/30/91 | | 9.04 | 96.47 | None |
| 10/17/91 | | 9.12 | 96.39 | None |
| 11/21/91 | | 8.92 | 96.59 | None |
| 12/18/91 | | 8.97 | 96.54 | None |
| 01/19/92 | | 8.69 | 96.82 | None |
| 02/20/92 | | 7.78 | 97.73 | None |
| 03/20/92 | | 8.15 | 97.36 | None |
| 04/20/92 | | 8.57 | 96.94 | None |
| 05/15/92 | | 8.76 | 96.75 | None |
| 06/08/92 | | 8.74 | 96.77 | None |

See notes on page 4 of 4.

Quarterly Groundwater Monitoring
ARCO Station 4494, Oakland, California

March 9, 1993
69038.12

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 4494
Oakland, California
(Page 3 of 4)

| Well<br>Date | Elevation<br>of Wellhead | Depth<br>to Water | Water<br>Elevation | Floating<br>Product |
|---|---|---|---|---|
| MW-3 (Cont.) | | | | |
| 07/15/92 | | 9.12 | 96.39 | None |
| 08/06/92 | 106.29 | 8.95 | 97.34 | None |
| 10/29/92 | | 8.78 | 97.51 | None |
| 11/23/92 | | 9.91 | 96.38 | None |
| MW-4 | | | | |
| 08/16/90 | 106.61 | 8.16 | 98.45 | None |
| 08/21/90 | | 8.22 | 98.39 | None |
| 09/07/90 | | 8.39 | 98.22 | None |
| 11/20/90 | | 8.57 | 98.04 | None |
| 11/29/90 | | 8.53 | 98.08 | None |
| 12/19/90 | | 8.13 | 98.48 | None |
| 01/29/91 | | 8.66 | 97.95 | None |
| 02/27/91 | | 8.44 | 98.17 | None |
| 03/07/91 | | 8.18 | 98.43 | None |
| 03/26/91 | | 7.56 | 99.05 | None |
| 05/02/91 | | 8.25 | 98.36 | None |
| 06/27/91 | | 7.75 | 98.86 | None |
| 07/24/91 | 106.61 | 8.12 | 98.49 | None |
| 08/22/91 | | 7.98 | 98.63 | None |
| 09/30/91 | | 8.26 | 98.35 | None |
| 10/17/91 | | 8.42 | 98.19 | None |
| 11/21/91 | | 8.65 | 97.96 | None |
| 12/18/91 | | 8.77 | 97.84 | None |
| 01/19/92 | | 8.42 | 98.19 | None |
| 02/20/92 | | 7.60 | 99.01 | None |
| 03/20/92 | | 7.61 | 99.00 | None |
| 04/20/92 | | 8.15 | 98.46 | None |
| 05/15/92 | | 8.34 | 98.27 | None |
| 06/08/92 | | 8.40 | 98.21 | None |
| 07/15/92 | | 8.72 | 97.89 | None |
| 08/06/92 | 107.40 | 8.52 | 98.09 | None |
| 10/29/92 | | 8.63 | 98.77 | None |
| 11/23/92 | | 8.75 | 98.65 | None |
| MW-5 | | | | |
| 08/06/92 | 105.19 | 7.19 | 98.00 | None |
| 10/29/92 | | 6.99 | 98.20 | None |
| 11/23/92 | | 6.90 | 98.29 | None |
| MW-6 | | | | |
| 08/06/92 | 105.07 | 7.01 | 98.06 | None |
| 10/29/92 | | 6.70 | 98.37 | None |

See notes on page 4 of 4.

Quarterly Groundwater Monitoring
ARCO Station 4494, Oakland, California

March 9, 1993
69038.12

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 4494
Oakland, California
(Page 4 of 4)

| Well<br>Date | Elevation of Wellhead | Depth to Water | Water Elevation | Floating Product |
|---|---|---|---|---|
| MW-6 (Cont.) | | | | |
| 11/23/92 | | 6.75 | 98.32 | None |
| MW-7 | | | | |
| 08/06/92 | 105.52 | 8.28 | 97.24 | None |
| 10/29/92 | | 8.62 | 96.90 | None |
| 11/23/92 | | 8.21 | 97.31 | None |

Depth measurements in feet.
* : Floating Product present in well.
** : Skimmer Installed (12/24/91)
NM : Not measured.

Elevations in feet above mean sea level (plus one hundred feet to avoid negative ground-water elevations).

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF WATER SAMPLES–TPHg, TPHd, BTEX, and TOG
ARCO Station 4494
Oakland, California
(Page 1 of 2)

| Well / Date | TPHg (ppb) | TPHd (ppb) | Benzene (ppb) | Toluene (ppb) | Ethyl-benzene (ppb) | Total Xylenes (ppb) | TOG (ppm) |
|---|---|---|---|---|---|---|---|
| MW-1 | | | | | | | |
| 06/19/90 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5,000 |
| 08/16/90 | <20 | NA | <0.50 | <0.50 | <0.50 | <0.50 | NA |
| 09/07/90 | NA | NA | NA | NA | NA | NA | <5,000 |
| 11/29/90 | <50 | NA | <0.50 | 0.7 | <0.50 | <0.50 | NA |
| 03/07/91 | <50 | NA | <0.30 | <0.30 | <0.30 | <0.50 | NA |
| 06/27/91 | <30 | NA | <0.30 | <0.30 | <0.30 | <0.30 | NA |
| 09/30/91 | <30 | NA | <0.30 | <0.30 | <0.30 | <0.30 | NA |
| 12/18/91 | <30 | NA | <0.30 | <0.30 | <0.30 | <0.30 | NA |
| 03/20/92 | <50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | NA |
| 06/08/92 | <50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | NA |
| 08/06/92 | <50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | NA |
| 10/29/92 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | NA |
| MW-2 | | | | | | | |
| 06/19/90 | | | Not sampled--product | | | | |
| 08/16/90 | | | Not sampled--product | | | | |
| 09/07/90 | | | Not sampled--product | | | | |
| 11/29/90 | | | Not sampled--sheen | | | | |
| 03/07/91 | | | Not sampled--sheen | | | | |
| 06/27/91 | | | Not sampled--sheen | | | | |
| 09/30/91 | | | Not sampled--sheen | | | | |
| 12/18/91 | | | Not sampled--sheen | | | | |
| 03/20/92 | 48,000 | NA | 2,000 | 580 | 2,300 | 7,000 | NA |
| 06/08/92 | 43,000 | NA | 2,900 | 940 | 2,400 | 5,100 | NA |
| 08/06/92 | 78,000 | NA | 2,500 | 6,700 | 2,900 | 16,000 | NA |
| 10/29/92 | | | Not sampled--product | | | | |
| MW-3 | | | | | | | |
| 08/16/90 | <20 | NA | <0.50 | <0.50 | <0.50 | <0.50 | NA |
| 09/07/90 | NA | NA | NA | NA | NA | NA | <5,000 |
| 11/29/90 | <50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | NA |
| 03/07/91 | <50 | NA | <0.30 | <0.30 | <0.30 | <0.50 | NA |
| 06/27/91 | <30 | NA | <0.30 | <0.30 | <0.30 | <0.30 | NA |
| 09/30/91 | <30 | NA | <0.30 | <0.30 | <0.30 | <0.30 | NA |
| 12/18/91 | <30 | NA | <0.30 | <0.30 | <0.30 | <0.30 | NA |
| 03/20/92 | <50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | NA |
| 06/08/92 | <50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | NA |
| 08/06/92 | <50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | NA |
| 10/29/92 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | NA |
| MW-4 | | | | | | | |
| 08/16/90 | <20 | NA | <0.50 | <0.50 | <0.50 | <0.50 | NA |

See notes on page 2 of 2.

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF WATER SAMPLES--TPHg, TPHd, BTEX, and TOG
ARCO Station 4494
Oakland, California
(Page 2 of 2)

| Well / Date | TPHg (ppb) | TPHd (ppb) | Benzene (ppb) | Toluene (ppb) | Ethyl-benzene (ppb) | Total Xylenes (ppb) | TOG (ppm) |
|---|---|---|---|---|---|---|---|
| MW-4 (Cont.) | | | | | | | |
| 09/07/90 | NA | NA | NA | NA | NA | NA | <5,000 |
| 11/29/90 | <50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | NA |
| 03/07/91 | <50 | NA | <0.30 | <0.30 | <0.30 | <0.50 | NA |
| 06/27/91 | <30 | NA | 0.75 | 1.1 | <0.30 | 1.6 | NA |
| 09/30/91 | <30 | NA | <0.30 | <0.30 | <0.30 | <0.30 | NA |
| 12/18/91 | <30 | NA | 0.83 | 1.2 | <0.30 | 0.58 | NA |
| 03/20/92 | <50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | NA |
| 06/08/92 | <50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | NA |
| 08/06/92 | <50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | NA |
| 10/29/92 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | NA |
| MW-5 | | | | | | | |
| 08/06/92 | <50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | NA |
| 10/29/92 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | NA |
| MW-6 | | | | | | | |
| 08/06/92 | <50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | NA |
| 10/29/92 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | NA |
| MW-7 | | | | | | | |
| 08/06/92 | <50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | NA |
| 10/29/92 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | NA |
| Jan. 1990 | | | | | | | |
| MCLs | — | — | 1.0 | — | 680 | 1,750 | — |
| DWAL | — | — | — | 100 | — | — | — |

TPHg : Total petroleum hydrocarbons as gasoline using EPA Methods 5030 and 8015.
TPHd : Total petroleum hydrocarbons as diesel using EPA Methods 3550 and 8015.
BTEX : Benzene, toluene, ethylbenzene, and total xylene isomers using EPA Method 5030 and 8020.
TOG : Total oil and grease using EPA Standard Method 503E.
NA : Not Analyzed.
MCL : State Maximum Contaminant Level (October 1990).
DWAL : State Drinking Water Action Level (October 1990).

TABLE 3
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF WATER SAMPLES–BNAs, VOCs, and Metals
ARCO Station 4494
Oakland, California
(Page 1 of 2)

| Well<br>Date | BNAs<br>(ppm) | VOCs<br>(ppb) | Total<br>Cadmium<br>(ppm) | Chromium<br>(ppm) | Lead<br>(ppm) | Nickel<br>(ppm) | Zinc<br>(ppm) |
|---|---|---|---|---|---|---|---|
| MW-1 | | | | | | | |
| 06/19/90 | <0.05 | <0.05 | 0.024 | <0.02 | 0.10 | NA | 0.049 |
| 08/16/90 | NA | NA | NA | NA | NA | NA | NA |
| 11/29/90 | NA | NA | NA | NA | NA | NA | NA |
| 03/07/91 | NA | NA | NA | NA | NA | NA | NA |
| 06/27/91 | NA | NA | NA | NA | NA | NA | NA |
| 09/30/91 | NA | NA | NA | NA | NA | NA | NA |
| 12/18/91 | NA | NA | NA | NA | NA | NA | NA |
| 03/20/92 | NA | NA | NA | NA | NA | NA | NA |
| 06/08/92 | NA | NA | 0.003 | <0.005 | <0.002 | <0.02 | 0.018 |
| 08/06/92 | NA | NA | NA | NA | NA | NA | NA |
| 10/29/92 | NA | NA | NA | NA | NA | NA | NA |
| MW-2 | | | | | | | |
| 06/08/92 | NA | NA | 0.214 | 0.402 | 0.658 | 0.434 | 252 |
| 08/06/92 | NA | NA | 0.005 | 0.018 | 0.088 | 0.041 | 4.7 |
| 10/29/92 | NA | NA | NA | NA | NA | NA | NA |
| MW-3 | | | | | | | |
| 08/16/90 | <0.05 | <0.05 | <0.01 | 0.06 | 0.07 | NA | 0.07 |
| 11/29/90 | NA | NA | NA | NA | NA | NA | NA |
| 03/07/91 | NA | NA | NA | NA | NA | NA | NA |
| 06/27/91 | NA | NA | NA | NA | NA | NA | NA |
| 09/30/91 | NA | NA | NA | NA | NA | NA | NA |
| 12/18/91 | NA | NA | NA | NA | NA | NA | NA |
| 03/20/92 | NA | NA | NA | NA | NA | NA | NA |
| 06/08/92 | NA | NA | <0.003 | 0.012 | 0.016 | <0.02 | 0.038 |
| 08/06/92 | NA | NA | NA | NA | NA | NA | NA |
| 10/29/92 | NA | NA | NA | NA | NA | NA | NA |
| MW-4 | | | | | | | |
| 08/16/90 | <0.05 | <0.05 | <0.01 | <0.02 | <0.02 | NA | 0.03 |
| 03/07/91 | NA | NA | NA | NA | NA | NA | NA |
| 11/29/90 | NA | NA | NA | NA | NA | NA | NA |
| 03/07/91 | NA | NA | NA | NA | NA | NA | NA |
| 06/27/91 | NA | NA | NA | NA | NA | NA | NA |
| 09/30/91 | NA | NA | NA | NA | NA | NA | NA |
| 12/18/91 | NA | NA | NA | NA | NA | NA | NA |
| 03/20/92 | NA | NA | NA | NA | NA | NA | NA |
| 06/08/92 | NA | NA | <0.003 | <0.005 | <0.002 | <0.02 | 0.013 |
| 08/06/92 | NA | NA | NA | NA | NA | NA | NA |
| 10/29/92 | NA | NA | NA | NA | NA | NA | NA |

See notes on page 2 of 2.

TABLE 3
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF WATER SAMPLES–BNAs, VOCs, and Metals
ARCO Station 4494
Oakland, California
(Page 2 of 2)

| Well<br>Date | BNAs<br>(ppm) | VOCs<br>(ppb) | Total<br>Cadmium<br>(ppm) | Chromium<br>(ppm) | Lead<br>(ppm) | Nickel<br>(ppm) | Zinc<br>(ppm) |
|---|---|---|---|---|---|---|---|
| MW-5 | | | | | | | |
| 08/06/92 | NA | NA | NA | NA | NA | NA | NA |
| 10/29/92 | NA | NA | NA | NA | NA | NA | NA |
| MW-6 | | | | | | | |
| 08/06/92 | NA | NA | NA | NA | NA | NA | NA |
| 10/29/92 | NA | NA | NA | NA | NA | NA | NA |
| MW-7 | | | | | | | |
| 08/06/92 | NA | NA | NA | NA | NA | NA | NA |
| 10/29/92 | NA | NA | NA | NA | NA | NA | NA |
| DWALs/MCLs | — | — | 0.010 | 0.05 | 0.05 | NE | 5.0 |

NA : Not Analyzed.
BNA : Base neutral and acid extractables including polynuclear aromatics concentrations are below laboratory reporting limits for respectable compounds except as indicated. ([a] = naphthalene, [b] = 2-methylnaphthalene)
DWALs : Drinking Water Action Levels (California Department of Health Services, Office of Drinking Water, October 1990).
MCLs : Maximum Contaminant Levels (California Department of Health Services, Office of Drinking Water, October 1990).
NE : No established DWAL or MCL.

TABLE 4
APPROXIMATE CUMULATIVE PRODUCT RECOVERED
ARCO Station 4494
Oakland, California

| Date | Floating Product Removed (gallons) | Water Removed (gallons) |
|---|---|---|
| MW-2 | | |
| 06/19/90 | 2 | – |
| 08/21/90 | 0.3 | 3.5 |
| 09/07/90 | 0.1 | 4 |
| 11/20/90 | 2 | 3 |
| 11/29/90 | 2 | |
| 01/29/91 | Sheen | 3.4 |
| 02/27/91 | Sheen | 7 |
| 03/07/91 | Sheen | 7 |
| 06/27/91 | Sheen | 7 |
| 09/30/91 | Sheen | 7 |
| 12/18/91 | Sheen | 7 |
| 01/30/92 | None present | 0 |
| 02/28/92 | None present | 0 |
| 03/25/92 | None present | 0 |
| 04/15/92 | None Present | 0 |
| 05/14/92 | None Present | 0 |
| 06/30/92 | None Present | 0 |
| 07/31/92 | None Present | 0 |
| 08/26/92 | None Present | 0 |
| 10/26/92 | Sheen | 0 |
| 11/23/92 | None Present | 0 |
| Total: | 6.41 Gallons | 48.9 Gallons |

# APPENDIX A

## EMCON'S FIELD REPORTS DEPTH TO WATER/FLOATING PRODUCT SURVEY RESULTS, SUMMARY OF GROUNDWATER MONITORING DATA,CERTIFIED ANALYTICAL REPORTS WITH CHAIN OF CUSTODY RECORD, AND WATER SAMPLE FIELD DATA SHEETS MONITORING WELL PURGE WATER DISPOSAL FORM

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

JAN 1993

Date December 18, 1992
Project 0G70-031.01
69034.12

To:
Mr. Joel Coffman
RESNA/ Applied Geosystems
3315 Almaden Expressway, Suite 34
San Jose, California 95118

We are enclosing:

| Copies | Description |
|---|---|
| 1 | Depth To Water/Floating Product Survey Results |
| | December 1992 monthly water level survey, ARCO |
| | station 4494, 566 Hegenberger Road, Oakland, CA |

For your: X Information Sent by: X Mail

Comments:
Monthly water level data for the above mentioned site were not taken due to site construction. Please call if you have any questions: (408) 453-2266.

Reviewed by:

REGISTERED PROFESSIONAL ENGINEER ROBERT CURTIS PORTER No: 4094 Exp. 6/30/96 INDUSTRIAL STATE OF CALIFORNIA

Jim Butera JB

Robert Porter

Robert Porter, Senior Project Engineer.

1938 Junction Avenue, San Jose, California 95131-2102, (408) 453-0719, Fax (408) 453-0452

# FIELD REPORT
## DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-031.01 STATION ADDRESS : 566 Hegenberger Road, Oakland DATE : 12-16-92

ARCO STATION # : 4494 FIELD TECHNICIAN : IAN GRAHAM DAY : WEDNESDAY

| DTW Order | WELL ID | Well Box Seal | Well Lid Secure | Gasket | Lock | Locking Well Cap | FIRST DEPTH TO WATER (feet) | SECOND DEPTH TO WATER (feet) | DEPTH TO FLOATING PRODUCT (feet) | FLOATING PRODUCT THICKNESS (feet) | WELL TOTAL DEPTH (feet) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-1 | | | | | | | | | | | |
| 2 | MW-3 | | | | | | | | | | | |
| 3 | MW-4 | | | | | | | | | | | |
| 4 | MW-2 | | | | | | | | | | | |
| 5 | MW-5 | | | | | | | | | | | |
| 6 | MW-6 | | | | | | | | | | | |
| 7 | MW-7 | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | 12-16-92 STATION UNDER MAJOR OVERHAUL - NO WELL ACCESSED | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

**SURVEY POINTS ARE TOP OF WELL CASINGS**

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control



Date December 3, 1992
Project 0G70-031.01

To:
Mr. Joel Coffman
RESNA/ Applied Geosystems
3315 Almaden Expressway, Suite 34
San Jose, California 95118

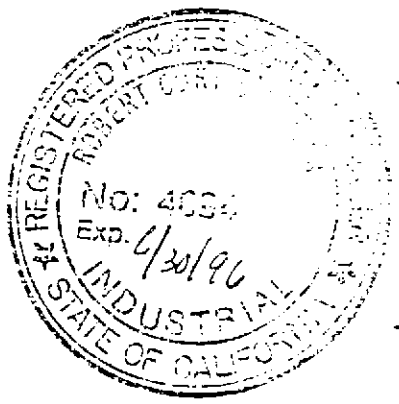
We are enclosing:

| Copies | Description |
|---|---|
| 1 | Depth To Water/Floating Product Survey Results |
| | November 1992 monthly water level survey, ARCO |
| | station 4494, 566 Hegenberger Road, Oakland, CA |

For your: X Information Sent by: X Mail

Comments:
Monthly water level data for the above mentioned site are attached. Please call if you have any questions: (408) 453-2266.

Reviewed by:




Jim Butera JB

Robert Porter, Senior Project Engineer.

1938 Junction Avenue, San Jose, California 95131-2102, (408) 453-0719, Fax (408) 453-0452

# FIELD REPORT
## DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-031.01 STATION ADDRESS : 566 Hegenberger Road, Oakland DATE : 11/23/92

ARCO STATION # : 4494 FIELD TECHNICIAN : TG / MG DAY : MONDAY

| DTW Order | WELL ID | Well Box Seal | Well Lid Secure | Gasket | Lock | Locking Well Cap | FIRST DEPTH TO WATER (feet) | SECOND DEPTH TO WATER (feet) | DEPTH TO FLOATING PRODUCT (feet) | FLOATING PRODUCT THICKNESS (feet) | WELL TOTAL DEPTH (feet) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-1 | OK | YES | NO | 3259 | OK | 8.15 | 8.15 | ND | NR | 23.2 | NEEDS THREADS CLEANED |
| 2 | MW-3 | OK | YES | NO | 3259 | OK | 9.91 | 9.91 | ND | NR | 18.0 | NEEDS THREDS CLEANED |
| 3 | MW-4 | OK | YES | NO | 3259 | OK | 8.75 | 8.75 | ND | NR | 18.1 | |
| 4 | MW-2 | OK | YES | NO | 3259 | OK | 9.87 | 9.87 | ND | NR | 17.5 | |
| 5 | MW-5 | OK | YES | NO | 3259 | OK | 6.90 | 6.90 | ND | NR | 16.9 | — |
| 6 | MW-6 | OK | YES | NO | 3259 | OK | 6.75 | 6.75 | ND | NR | 18.1 | — |
| 7 | MW-7 | OK | YES | NO | DOLPHIN | OK | 8.21 | 8.21 | ND | NR | 14.4 | — |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

**SURVEY POINTS ARE TOP OF WELL CASINGS**

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

RECEIVED
DEC 4 - 1992
RESNA

Date December 3, 1992
Project 0G70-031.01

To:
Mr. Joel Coffman
RESNA/ Applied Geosystems
3315 Almaden Expressway, Suite 34
San Jose, California 95118

We are enclosing:

| Copies | Description |
|---|---|
| 1 | Depth To Water / Floating Product Survey Results |
| 1 | Summary of Groundwater Monitoring Data |
| 1 | Certified Analytical Reports with Chain-of-Custody |
| 7 | Water Sample Field Data Sheets |

For your: X Information Sent by: X Mail

Comments:

Enclosed are the data from the fourth quarter 1992 monitoring event at ARCO service station 4494, 566 Hegenberger Road, Oakland, California. Groundwater monitoring is conducted consistent with applicable regulatory guidelines. Please call if you have any questions: (408) 453-2266.

Jim Butera JB

Reviewed by:

REGISTERED PROFESSIONAL ENGINEER ROBERT CURTIS PORTER No: 4094 Exp 6/30/96 INDUSTRIAL STATE OF CALIFORNIA

Robert C. Porter

Robert Porter, Senior Project Engineer.

1938 Junction Avenue, San Jose, California 95131-2102. (408) 453-0719. Fax (408) 453-0452

# FIELD REPORT
## DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-031.01 STATION ADDRESS : 566 Hegenberger Road, Oakland DATE : 10-29-92

ARCO STATION # : 4494 FIELD TECHNICIAN : I.G. / K.R. DAY : THURSDAY

| DTW Order | WELL ID | Well Box Seal | Well Lid Secure | Gasket | Lock | Locking Well Cap | FIRST DEPTH TO WATER (feet) | SECOND DEPTH TO WATER (feet) | DEPTH TO FLOATING PRODUCT (feet) | FLOATING PRODUCT THICKNESS (feet) | WELL TOTAL DEPTH (feet) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-1 | OK | YES | NO | 3259 | OK | 7.34 | 7.34 | ND | NR | 23.3 | |
| 2 | MW-3 | OK | YES | NO | 3259 | OK | 8.78 | 8.78 | ND | NR | 18.0 | |
| 3 | MW-4 | OK | YES | NO | 3259 | OK | 8.63 | 8.63 | ND | NR | 18.1 | |
| 4 | MW-2 | OK | YES | ND | 3259 | OK | 10.00 | 10.00 | ND | NR | 17.5 | CHECKED W BAILER HAD .01' PRODUCT |
| 5 | MW-5 | OK | YES | NO | 3259 | OK | 6.99 | 6.99 | ND | NR | 16.1 | |
| 6 | MW-6 | OK | YES | NO | 3259 | OK | 6.70 | 6.70 | ND | NR | 18.1 | |
| 7 | MW-7 | OK | YES | NO | 3259 | OK | 8.62 | 8.62 | ND | NR | 14.4 | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | WELL MW-2 HAS A BROKEN SKIMMER (GLUE WASN'T SECURE |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

**SURVEY POINTS ARE TOP OF WELL CASINGS**

Summary of Groundwater Monitoring Data
Fourth Quarter 1992
ARCO Service Station 4494
566 Hegenberger Road, Oakland, California
micrograms per liter (µg/l) or parts per billion (ppb)

| Well ID and Sample Depth | Sampling Date | Depth To Water (feet) | Floating Product Thickness (feet) | TPH[1] as Gasoline (ppb) | Benzene (ppb) | Toluene (ppb) | Ethyl-benzene (ppb) | Total Xylenes (ppb) |
|---|---|---|---|---|---|---|---|---|
| MW-1(22) | 10/29/92 | 7.34 | ND.[2] | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| MW-2 | 10/29/92 | 10.00 | 0.01 | FP.[3] | FP. | FP. | FP. | FP. |
| MW-3(17) | 10/29/92 | 8.78 | ND. | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| MW-4(17) | 10/29/92 | 8.63 | ND. | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| MW-5(15) | 10/29/92 | 6.99 | ND. | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| MW-6(18) | 10/29/92 | 6.70 | ND. | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| MW-7(13) | 10/29/92 | 8.62 | ND. | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| FB-1[4] | 10/29/92 | NA.[5] | NA. | <50 | <0.5 | <0.5 | <0.5 | <0.5 |

1. TPH. = Total petroleum hydrocarbons
2. ND. = Not detected
3. FP. = Floating product detected in well , no sample was taken
4. FB. = Field blank
5. NA. = Not applicable

Columbia Analytical Services INC.

November 12, 1992

Jim Butera
EMCON Associates
1921 Ringwood Avenue
San Jose, CA 95131

Re: EMCON Project No. 0G70-031.01
Arco Facility No. 4494

Dear Mr. Butera:

Enclosed are the results of the water samples submitted to our lab on October 29, 1992. For your reference, our service request number for this work is SJ92-1346.

All analyses were performed in accordance with the laboratory's quality assurance program.

Please call if you have any questions.

Respectfully submitted:

COLUMBIA ANALYTICAL SERVICES, INC.

Carol J Klein for

Keoni A. Murphy
Laboratory Manager

Annelise Jadi Bazar

Annelise J. Bazar
Regional QA Coordinator

KAM/ajb

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | EMCON Associates | **Date Received:** | 10/29/92 |
| **Project:** | EMCON Project No. 0G70-031.01 | **Work Order No.:** | SJ92-1346 |
| | ARCO Facility No. 4494 | **Sample Matrix:** | Water |

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
µg/L (ppb)

| Sample Name: | | MW-1 (22) | M-3 (17) | MW-4 (17) |
|---|---|---|---|---|
| Date Analyzed: | | 11/05/92 | 11/05/92 | 11/05/92 |
| **Analyte** | **MRL** | | | |
| Benzene | 0.5 | ND | ND | ND |
| Toluene | 0.5 | ND | ND | ND |
| Ethylbenzene | 0.5 | ND | ND | ND |
| Total Xylenes | 0.5 | ND | ND | ND |
| TPH as Gasoline | 50 | ND | ND | ND |

**TPH** Total Petroleum Hydrocarbons
**MRL** Method Reporting Limit
**ND** None Detected at or above the method reporting limit

Approved by: Carol Klein Date: 11-12-92

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | EMCON Associates | **Date Received:** | 10/29/92 |
| **Project:** | EMCON Project No. 0G70-031.01 | **Work Order No.:** | SJ92-1346 |
| | ARCO Facility No. 4494 | **Sample Matrix:** | Water |

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
µg/L (ppb)

| Sample Name: | | MW-5 (15) | MW-6 (18) | MW-7 (13) |
|---|---|---|---|---|
| Date Analyzed: | | 11/05/92 | 11/05/92 | 11/05/92 |
| **Analyte** | **MRL** | | | |
| Benzene | 0.5 | ND | ND | ND |
| Toluene | 0.5 | ND | ND | ND |
| Ethylbenzene | 0.5 | ND | ND | ND |
| Total Xylenes | 0.5 | ND | ND | ND |
| TPH as Gasoline | 50 | ND | ND | ND |

**TPH** Total Petroleum Hydrocarbons
**MRL** Method Reporting Limit
**ND** None Detected at or above the method reporting limit

Approved by: Carol Klein Date: 11-12-92

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | EMCON Associates | **Date Received:** | 10/29/92 |
| **Project:** | EMCON Project No. 0G70-031.01 | **Work Order No.:** | SJ92-1346 |
| | ARCO Facility No. 4494 | **Sample Matrix:** | Water |

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
µg/L (ppb)

| Sample Name: | | FB-1 | Method Blank |
|---|---|---|---|
| Date Analyzed: | | 11/05/92 | 11/05/92 |
| **Analyte** | **MRL** | | |
| Benzene | 0.5 | ND | ND |
| Toluene | 0.5 | ND | ND |
| Ethylbenzene | 0.5 | ND | ND |
| Total Xylenes | 0.5 | ND | ND |
| TPH as Gasoline | 50 | ND | ND |

**TPH** Total Petroleum Hydrocarbons
**MRL** Method Reporting Limit
**ND** None Detected at or above the method reporting limit

Approved by: Carol Klein Date: 11-12-92

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-031.01
ARCO Facility No. 4494

Date Received: 10/29/92
Work Order No.: SJ92-1346

Initial Calibration Verification
BTEX and TPH as Gasoline
EPA Methods 5030/8020/DHS LUFT Method
Nanograms

Date Analyzed: 11/05/92

| Analyte | True Value | Result | Percent Recovery | CAS Percent Recovery Acceptance Criteria |
|---|---|---|---|---|
| Benzene | 250. | 267. | 107. | 85-115 |
| Toluene | 250. | 275. | 110. | 85-115 |
| Ethylbenzene | 250. | 272. | 109. | 85-115 |
| Total Xylenes | 750. | 796. | 106. | 85-115 |
| TPH as Gasoline | 2,500. | 2,393. | 96. | 90-110 |

TPH Total Petroleum Hydrocarbons

Approved by: Carol Klein Date: 11-12-92

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | EMCON Associates | **Date Received:** | 10/29/92 |
| **Project:** | EMCON Project No. 0G70-031.01 | **Work Order No.:** | SJ92-1346 |
| | ARCO Facility No. 4494 | **Sample Matrix:** | Water |

Surrogate Recovery Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method

| Sample Name | Date Analyzed | Percent Recovery $\alpha,\alpha,\alpha$-Trifluorotoluene |
|---|---|---|
| MW-1 (22) | 11/05/92 | 86. |
| MW-3 (17) | 11/05/92 | 84. |
| MW-4 (17) | 11/05/92 | 84. |
| MW-5 (15) | 11/05/92 | 83. |
| MW-6 (18) | 11/05/92 | 85. |
| MW-7 (13) | 11/05/92 | 83. |
| FB-1 | 11/05/92 | 84. |
| MS | 11/05/92 | 108. |
| DMS | 11/05/92 | 110. |
| Method Blank | 11/05/92 | 106. |
| | CAS Acceptance Criteria | 70-130 |

TPH Total Petroleum Hydrocarbons

Approved by: Carol Klein Date: 11-12-92

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | EMCON Associates | **Date Received:** | 10/29/92 |
| **Project:** | EMCON Project No. 0G70-031.01 | **Work Order No.:** | SJ92-1346 |
| | ARCO Facility No. 4494 | **Sample Matrix:** | Water |

Matrix Spike/Duplicate Matrix Spike Summary
TPH as Gasoline
EPA Methods 5030/California DHS LUFT Method
µg/L (ppb)

Date Analyzed: 11/05/92

| | | | Spike Result | | Percent Recovery | | CAS Acceptance |
|---|---|---|---|---|---|---|---|
| Analyte | Spike Level | Sample Result | MS | DMS | MS | DMS | Criteria |
| TPH as Gasoline | 2,500. | 2,300. | 4,790. | 4,900. | 100. | 104. | 70-130 |

**TPH** Total Petroleum Hydrocarbons

Approved by: Carol Klein Date: 11-12-92

**ARCO Products Company**
Division of AtlanticRichfieldCompany

**Task Order No.** EMCGC-92-1

**Chain of Custody**

| | | | |
|---|---|---|---|
| ARCO Facility no. 4494 | City (Facility) OAKland | Project manager (Consultant) JIM BUTERA | Laboratory name CAS |
| ARCO engineer Kyle Christie | Telephone no. (ARCO) 571-2434 | Telephone no. (Consultant) 453-0719 | Fax no. (Consultant) 453-0452 |
| Consultant name EMCON Associates | Address (Consultant) 1938 JUNCTION Ave San Jose | | Contract number 07077 |

| Sample I.D. | Lab no. | Container no. | Matrix: Soil | Matrix: Water | Matrix: Other | Preservation: Ice | Preservation: Acid | Sampling date | Sampling time | BTEX 602/EPA 8020 | BTEX/TPH EPA M602/8020/8015 GAS | TPH Modified 8015 Gas ☐ Diesel ☐ | Oil and Grease 413.1 ☐ 413.2 ☐ | TPH EPA 418.1/SM503E | EPA 601/8010 | EPA 624/8240 | EPA 625/8270 | TCLP Metals ☐ Semi VOA ☐ VOA ☐ | CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐ | Lead Org./DHS ☐ Lead EPA 7420/7421 ☐ | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 (22) | 1-2 | 2 | | X | | X | HCl | 10-29-92 | 12:30 | | X | | | | | | | | | | | |
| MW-2 ( ) | | 2 | | | | | | | | | X | | NO SAMPLE - PRODUCT IN WELL | | | | | | | | | |
| MW-3 (17) | 3-4 | 2 | | | | | | | 12:55 | | X | | | | | | | | | | | |
| MW-4 (17) | 5-6 | 2 | | | | | | | 13:35 | | X | | | | | | | | | | | |
| MW-5 (15) | 7-8 | 2 | | | | | | | 13:55 | | X | | | | | | | | | | | |
| MW-6 (18) | 9-10 | 2 | | | | | | | 14:20 | | X | | | | | | | | | | | |
| MW-7 (13) | 11-12 | 2 | | | | | | | 15:00 | | X | | | | | | | | | | | |
| FB-1 | 13-14 | 2 | | | | | | | 12:55 | | X | | | | | | | | | | | |

Special detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks: 2-40 ml VOA's

0670031.01

Lab number: SJ92-1346

Method of shipment: sampler will deliver

Turnaround time
- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☒

| | | | |
|---|---|---|---|
| Condition of sample: OK | | Temperature received: cool | |
| Relinquished by sampler: Kevin Reichhelfer | Date: 10-29-92 Time: 16:00 | Received by | |
| Relinquished by | Date / Time | Received by | |
| Relinquished by | Date / Time | Received by laboratory | Date: 10-29-92 Time: 16:00 |

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

Rev. 2, 5/91

# WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-031.01 | SAMPLE ID: MW-1 (22)

PURGED BY: IAN GRAHAM | CLIENT NAME: ARCO #4494

SAMPLED BY: IAN GRAHAM | LOCATION: 566 HAGENBERGER RD. OAKLAND, CA.

TYPE: Ground Water X | Surface Water ___ | Treatment Effluent ___ | Other ___

CASING DIAMETER (inches): 2 ___ 3 ___ 4 X 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL): NR | VOLUME IN CASING (gal.): 10.46

DEPTH TO WATER (feet): 7.34 | CALCULATED PURGE (gal.): 52.34

DEPTH OF WELL (feet): 23.3 (15.96) | ACTUAL PURGE VOL. (gal.): 16.0

DATE PURGED: 10-29-92 | Start (2400 Hr) 1210 | End (2400 Hr) 1215

DATE SAMPLED: 10-29-92 | Start (2400 Hr) 1230 | End (2400 Hr) 1230

| TIME (2400 Hr) | VOLUME (gal.) | pH (units) | E.C. (µmhos/cm @ 25° C) | TEMPERATURE (°F) | COLOR (visual) | TURBIDITY (visual) |
|---|---|---|---|---|---|---|
| 1213 | 10.5 | 7.05 | 6490 | 70.5 | CLOUDY/CLR. | MODERATE |
| 1215 | WELL DRIED @ 16.0 GAL. | | | W/L 23.01 | | |
| | | | | | | |
| | | | | | | |
| 1230 | RECHARGE | 7.00 | 6480 | 71.0 | " | " |

D. O. (ppm): NR | ODOR: ND | COLOR: NR (COBALT 0 - 100) | TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

| PURGING EQUIPMENT | | SAMPLING EQUIPMENT | |
|---|---|---|---|
| ___ 2" Bladder Pump | ___ Bailer (Teflon®) | ___ 2" Bladder Pump | X Bailer (Teflon®) |
| X Centrifugal Pump | ___ Bailer (PVC) | ___ DDL Sampler | ___ Bailer (Stainless Steel) |
| ___ Submersible Pump | ___ Bailer (Stainless Steel) | ___ Dipper | ___ Submersible Pump |
| ___ Well Wizard™ | ___ Dedicated | ___ Well Wizard™ | ___ Dedicated |
| Other: ___ | | Other: ___ | |

WELL INTEGRITY: OK | LOCK #: 3259

REMARKS: WATER IN BOX, SHEEN IN THAT WATER IN BOX

Meter Calibration: Date: 10-29-92 Time: 1200 Meter Serial #: 9105 Temperature °F: 60.0

(EC 1000 1045 / 1000) (DI 35.00) (pH 7 7.00 / 7.00) (pH 10 10.25 / 10.00) (pH 4 3.91 / ___)

Location of previous calibration: ___

Signature: ___ Reviewed By: JD Page 1 of 7

Rev. 2, 5/91

# WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-031.01 SAMPLE ID: MW-2

PURGED BY: IAN GRAHAM CLIENT NAME: ARCO #4494

SAMPLED BY: IAN GRAHAM LOCATION: 566 HAGENBERGER RD, OAKLAND, CA.

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

CASING DIAMETER (inches): 2 ___ 3 ___ 4 ___ 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): NR

DEPTH TO WATER (feet): 10.00 CALCULATED PURGE (gal.): NR

DEPTH OF WELL (feet): 17.5 ACTUAL PURGE VOL. (gal.): NR

DATE PURGED: NO PURGE/10/29/92 Start (2400 Hr) NR End (2400 Hr) NR

DATE SAMPLED: NO SAMPLE Start (2400 Hr) NR End (2400 Hr) NR

| TIME (2400 Hr) | VOLUME (gal.) | pH (units) | E.C. (µmhos/cm @ 25° C) | TEMPERATURE (°F) | COLOR (visual) | TURBIDITY (visual) |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| * NO SAMPLE TAKEN DUE TO .01' OF PRODUCT IN WELL | | | | | | |
| | | | | | | |
| | | | | | | |

D. O. (ppm): NR ODOR: ___ COLOR: NR (COBALT 0 - 100) TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): ___

| PURGING EQUIPMENT | | SAMPLING EQUIPMENT | |
|---|---|---|---|
| ___ 2" Bladder Pump | ___ Bailer (Teflon®) | ___ 2" Bladder Pump | ___ Bailer (Teflon®) |
| ___ Centrifugal Pump | ___ Bailer (PVC) | ___ DDL Sampler | ___ Bailer (Stainless Steel) |
| ___ Submersible Pump | ___ Bailer (Stainless Steel) | ___ Dipper | ___ Submersible Pump |
| ___ Well Wizard™ | ___ Dedicated | ___ Well Wizard™ | ___ Dedicated |
| Other: ___ | | Other: ___ | |

WELL INTEGRITY: OK LOCK #: 3259

REMARKS: WELL HAS A BROKEN SKIMMER; GLUE CONNECTING THE TWO PIECES OF THE SKIMMER WAS NOT SECURE + RESULTED IN FAILURE

Meter Calibration: Date: 10-29-92 Time: 1200 Meter Serial #: 9105 Temperature °F: ___

( EC 1000 ___ / ___ ) ( DI ___ ) ( pH 7 ___ / ___ ) ( pH 10 ___ / ___ ) ( pH 4 ___ / ___ )

Location of previous calibration: MW-1

Signature: [signature] Reviewed By: JB Page 2 of 7

Rev. 2, 5/91

# WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-031.01 | SAMPLE ID: MW-3
PURGED BY: IAN GRAHAM | CLIENT NAME: ARCO #4494
SAMPLED BY: IAN GRAHAM | LOCATION: 566 HAGENBERGER RD, OAKLAND, CA.

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

CASING DIAMETER (inches): 2 ___ 3 ___ 4 X 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL): NR | VOLUME IN CASING (gal.): 6.05
DEPTH TO WATER (feet): 8.77 | CALCULATED PURGE (gal.): 30.27
DEPTH OF WELL (feet): 18.0 / 9.23 | ACTUAL PURGE VOL. (gal.): 11.5

DATE PURGED: 10-29-92 | Start (2400 Hr) 1240 | End (2400 Hr) 1245
DATE SAMPLED: 10-29-92 | Start (2400 Hr) 1255 | End (2400 Hr) 1255

| TIME (2400 Hr) | VOLUME (gal.) | pH (units) | E.C. (µmhos/cm @ 25° C) | TEMPERATURE (°F) | COLOR (visual) | TURBIDITY (visual) |
|---|---|---|---|---|---|---|
| 1243 | 6.5 | 7.27 | 3280 | 72.0 | LT. GREY | MODERATE |
| 1245 | WELL DRIED @ | 11.5 GAL | | W/L 17.80 | | |
| | | | | | | |
| | | | | | | |
| 1300 | RECHARGE | 7.26 | 3290 | 72.6 | " | " |

D. O. (ppm): NR | ODOR: STRONG | COLOR (COBALT 0 - 100): NR | TURBIDITY (NTU 0 - 200): NR

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): FB-1 (1255)

| PURGING EQUIPMENT | | SAMPLING EQUIPMENT | |
|---|---|---|---|
| ___ 2" Bladder Pump | ___ Bailer (Teflon®) | ___ 2" Bladder Pump | X Bailer (Teflon®) |
| X Centrifugal Pump | ___ Bailer (PVC) | ___ DDL Sampler | ___ Bailer (Stainless Steel) |
| ___ Submersible Pump | ___ Bailer (Stainless Steel) | ___ Dipper | ___ Submersible Pump |
| ___ Well Wizard™ | ___ Dedicated | ___ Well Wizard™ | ___ Dedicated |
| Other: ___ | | Other: ___ | |

WELL INTEGRITY: OK | LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 10-29-92 Time: 1200 Meter Serial #: 9105 Temperature °F: ___

( EC 1000 ___ / ___ ) ( DI ___ ) ( pH 7 ___ / ___ ) ( pH 10 ___ / ___ ) ( pH 4 ___ / ___ )

Location of previous calibration: MW-1

Signature: ___ Reviewed By: JB Page 3 of 7

Rev. 2, 5/91

# WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-031.01 | SAMPLE ID: MW-4 (17)

PURGED BY: IAN GRAHAM | CLIENT NAME: ARCO #4494

SAMPLED BY: IAN GRAHAM | LOCATION: 566 HAGENBERGER RD, OAKLAND, CA.

TYPE: Ground Water X | Surface Water ___ | Treatment Effluent ___ | Other ___

CASING DIAMETER (inches): 2 ___ 3 ___ 4 X 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL): NR | VOLUME IN CASING (gal.): 6.21

DEPTH TO WATER (feet): 8.63 | CALCULATED PURGE (gal.): 31.06

DEPTH OF WELL (feet): 18.1 / 9.47 | ACTUAL PURGE VOL. (gal.): 10.0

DATE PURGED: 10-29-92 | Start (2400 Hr) 1307 | End (2400 Hr) 1311

DATE SAMPLED: 10-29-92 | Start (2400 Hr) 1335 | End (2400 Hr) 1335

| TIME (2400 Hr) | VOLUME (gal.) | pH (units) | E.C. (µmhos/cm @ 25° C) | TEMPERATURE (°F) | COLOR (visual) | TURBIDITY (visual) |
|---|---|---|---|---|---|---|
| 1310 | 6.5 | 6.93 | 9050 | 72.3 | CLEAR | LIGHT |
| 1311 | WELL DRIED @ 10.0 GAL W/L | | | 18.00 | " | " |
| | | | | | | |
| | | | | | | |
| 1330 | RECHARGE | 6.90 | 9150 | 73.0 | LT. GREY | MODERATE |

D. O. (ppm): NR | ODOR: ND | COLOR: NR (COBALT 0 - 100) | TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

| PURGING EQUIPMENT | | SAMPLING EQUIPMENT | |
|---|---|---|---|
| ___ 2" Bladder Pump | ___ Bailer (Teflon®) | ___ 2" Bladder Pump | X Bailer (Teflon®) |
| X Centrifugal Pump | ___ Bailer (PVC) | ___ DDL Sampler | ___ Bailer (Stainless Steel) |
| ___ Submersible Pump | ___ Bailer (Stainless Steel) | ___ Dipper | ___ Submersible Pump |
| ___ Well Wizard™ | ___ Dedicated | ___ Well Wizard™ | ___ Dedicated |
| Other: ___ | | Other: ___ | |

WELL INTEGRITY: OK | LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 10-29-92 Time: 1200 Meter Serial #: 9105 Temperature °F: ___

( EC 1000 ___ / ___ ) ( DI ___ ) ( pH 7 ___ / ___ ) ( pH 10 ___ / ___ ) ( pH 4 ___ / ___ )

Location of previous calibration: MW-1

Signature: [signature] | Reviewed By: JB | Page 4 of 7

# WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-031.01 SAMPLE ID: MW-5 (15)

PURGED BY: I. GRAHAM CLIENT NAME: ARCO # 4494

SAMPLED BY: I. GRAHAM LOCATION: 566 HEGENBERGER RD. OAKLAND, CA.

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

CASING DIAMETER (inches): 2 X 3 ___ 4 ___ 4.5 ___ 6 ___ Other ___

| | | | |
|---|---|---|---|
| CASING ELEVATION (feet/MSL): | NR | VOLUME IN CASING (gal.): | 1.6 |
| DEPTH TO WATER (feet): | 6.99 | CALCULATED PURGE (gal.): | 8.12 |
| DEPTH OF WELL (feet): | 16.9 (9.91) | ACTUAL PURGE VOL. (gal.): | 10.0 |

DATE PURGED: 10-29-92 Start (2400 Hr) 1340 End (2400 Hr) 1351

DATE SAMPLED: 10-29-92 Start (2400 Hr) 1355 End (2400 Hr) 1355

| TIME (2400 Hr) | VOLUME (gal.) | pH (units) | E.C. (µmhos/cm @ 25° C) | TEMPERATURE (°F) | COLOR (visual) | TURBIDITY (visual) |
|---|---|---|---|---|---|---|
| 1342 | 2.0 | 6.99 | 1340 | 73.5 | GREY | HEAVY |
| 1344 | 4.0 | 6.98 | 1154 | 73.1 | " | " |
| 1346 | 6.0 | 6.96 | 1206 | 72.4 | " | " |
| 1348 | 8.0 | 6.98 | 1005 | 71.9 | " | " |
| 1351 | 10.0 | 6.98 | 914 | 71.4 | " | " |

D. O. (ppm): NR ODOR: MODERATE NR (COBALT 0 - 100) NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

| PURGING EQUIPMENT | | SAMPLING EQUIPMENT | |
|---|---|---|---|
| ___ 2" Bladder Pump | ___ Bailer (Teflon®) | ___ 2" Bladder Pump | X Bailer (Teflon®) |
| X Centrifugal Pump | ___ Bailer (PVC) | ___ DDL Sampler | ___ Bailer (Stainless Steel) |
| ___ Submersible Pump | ___ Bailer (Stainless Steel) | ___ Dipper | ___ Submersible Pump |
| ___ Well Wizard™ | ___ Dedicated | ___ Well Wizard™ | ___ Dedicated |
| Other: ___ | | Other: ___ | |

WELL INTEGRITY: OK LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 10-29-92 Time: 1200 Meter Serial #: 9105 Temperature °F: ___

( EC 1000 ___ / ___ ) ( DI ___ ) ( pH 7 ___ / ___ ) ( pH 10 ___ / ___ ) ( pH 4 ___ / ___ )

Location of previous calibration: MW-1

Signature: ___ Reviewed By: JB Page 5 of 7

# WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-031.01 | SAMPLE ID: MW-6
PURGED BY: IAN GRAHAM | CLIENT NAME: ARCO #4494
SAMPLED BY: IAN GRAHAM | LOCATION: 566 HEGENBERGER RD. OAKLAND, CA.

TYPE: Ground Water X | Surface Water ___ | Treatment Effluent ___ | Other ___

CASING DIAMETER (inches): 2 X | 3 ___ | 4 ___ | 4.5 ___ | 6 ___ | Other ___

CASING ELEVATION (feet/MSL): NR
DEPTH TO WATER (feet): 6.70
DEPTH OF WELL (feet): 18.1 / 11.4

VOLUME IN CASING (gal.): 1.86
CALCULATED PURGE (gal.): 9.34
ACTUAL PURGE VOL. (gal.): 10.0

DATE PURGED: 10-29-92 | Start (2400 Hr) 1405 | End (2400 Hr) 1418
DATE SAMPLED: 10-29-92 | Start (2400 Hr) 1420 | End (2400 Hr) 1420

| TIME (2400 Hr) | VOLUME (gal.) | pH (units) | E.C. (µmhos/cm @ 25° C) | TEMPERATURE (°F) | COLOR (visual) | TURBIDITY (visual) |
|---|---|---|---|---|---|---|
| 1407 | 2.0 | 6.93 | 7410 | 72.7 | GREY | HEAVY |
| 1410 | 4.0 | 6.85 | 5800 | 72.6 | " | " |
| 1412 | 6.0 | 6.84 | 5630 | 72.4 | " | " |
| 1415 | 8.0 | 6.81 | 5590 | 72.3 | " | " |
| 1418 | 10.0 | 6.85 | 5570 | 71.7 | " | " |

D. O. (ppm): NR | ODOR: ND | COLOR: NR (COBALT 0 - 100) | TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

| PURGING EQUIPMENT | | SAMPLING EQUIPMENT | |
|---|---|---|---|
| ___ 2" Bladder Pump | ___ Bailer (Teflon®) | ___ 2" Bladder Pump | X Bailer (Teflon®) |
| X Centrifugal Pump | ___ Bailer (PVC) | ___ DDL Sampler | ___ Bailer (Stainless Steel) |
| ___ Submersible Pump | ___ Bailer (Stainless Steel) | ___ Dipper | ___ Submersible Pump |
| ___ Well Wizard™ | ___ Dedicated | ___ Well Wizard™ | ___ Dedicated |
| Other: ___ | | Other: ___ | |

WELL INTEGRITY: OK | LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 10-29-92 | Time: 1200 | Meter Serial #: 9105 | Temperature °F: ___

( EC 1000 ___ / ___ ) ( DI ___ ) ( pH 7 ___ / ___ ) ( pH 10 ___ / ___ ) ( pH 4 ___ / ___ )

Location of previous calibration: MW-1

Signature: [signature] | Reviewed By: JTB | Page 6 of 7

Rev. 2, 5/91

# WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-031-01 SAMPLE ID: MW-7

PURGED BY: IAN GRAHAM CLIENT NAME: ARCO # 4494

SAMPLED BY: IAN GRAHAM LOCATION: 566 HEGENBERGER RD, OAKLAND, CA,

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

CASING DIAMETER (inches): 2 ___ 3 ___ 4 X 4.5 ___ 6 ___ Other ___

| | | | |
|---|---|---|---|
| CASING ELEVATION (feet/MSL): | NR | VOLUME IN CASING (gal.): | 3.79 |
| DEPTH TO WATER (feet): | 8.61 | CALCULATED PURGE (gal.): | 18.99 |
| DEPTH OF WELL (feet): | 14.4 / 5.79 | ACTUAL PURGE VOL. (gal.): | 8.5 |

DATE PURGED: 10-29-92 Start (2400 Hr) 1430 End (2400 Hr) 1491

DATE SAMPLED: 10-29-92 Start (2400 Hr) 1500 End (2400 Hr) 1500

| TIME (2400 Hr) | VOLUME (gal.) | pH (units) | E.C. (µmhos/cm @ 25° C) | TEMPERATURE (°F) | COLOR (visual) | TURBIDITY (visual) |
|---|---|---|---|---|---|---|
| 1435 | 4.0 | 6.82 | 6.86 | 74.5 | YELLOW | MODERATE |
| 1440 | 8.0 | 6.96 | 1183 | 75.5 | GREY | HEAVY |
| 1441 | WELL DRIED @ 8.5 W/L 14.21 | | | | | |
| 1505 | RECHARGE | 6.82 | 1138 | 74.7 | YELLOW | MODERATE |

D. O. (ppm): NR ODOR: NO

COLOR (COBALT 0 - 100): NR

TURBIDITY (NTU 0 - 200): NR

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

| PURGING EQUIPMENT | | SAMPLING EQUIPMENT | |
|---|---|---|---|
| ___ 2" Bladder Pump | ___ Bailer (Teflon®) | ___ 2" Bladder Pump | X Bailer (Teflon®) |
| V Centrifugal Pump | ___ Bailer (PVC) | ___ DDL Sampler | ___ Bailer (Stainless Steel) |
| ___ Submersible Pump | ___ Bailer (Stainless Steel) | ___ Dipper | ___ Submersible Pump |
| ___ Well Wizard™ | ___ Dedicated | ___ Well Wizard™ | ___ Dedicated |
| Other: ___ | | Other: ___ | |

WELL INTEGRITY: OK LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 10-29-92 Time: 1200 Meter Serial #: 9105 Temperature °F: ___

( EC 1000 ___ / ___ ) ( DI ___ ) ( pH 7 ___ / ___ ) ( pH 10 ___ / ___ ) ( pH 4 ___ / ___ )

Location of previous calibration: MW-1

Signature: [signature] Reviewed By: JB Page 7 of 7

{TF1088-1} 67058.12 TF NUMBER: 1088-1 GIB-92-086

# MONITORING WELL PURGE WATER TRANSPORT FORM

## GENERATOR INFORMATION

NAME: ARCO PRODUCTS

ADDRESS: P.O. BOX 5811

CITY,STATE,ZIP: SAN MATEO, CA 94402 PHONE #: (415) 571-2434

DESCRIPTION OF WATER: PURGE WATER GENERATED DURING SAMPLING OR DEVELOPMENT OF MONITORING WELLS LOCATED AT VARIOUS SITES. AUGER RINSATE GENERATED DURING THE INSTALLATION OF MONITORING WELLS AT VARIOUS SITES. THE WATER MAY CONTAIN DISSOLVED HYDROCARBONS.

THE GENERATOR CERTIFIES THAT THIS WATER AS DESCRIBED IS NON-HAZARDOUS

KYLE CHRISTIE Kyle Christie 12/09/92
(Typed or printed full name & signature) (Date)

## SITE INFORMATION

| | STA # | JOB # | ADDRESS | GALS |
|---|---|---|---|---|
| 1 | A-6159 | 21390-PW | 6140 GREENBACK LANE, CITRUS HEIGHTS, CA | 75 |
| 2 | A-5335 | 21395-PW | 1500 CANYON RD., MORAGA, CA | 77 |
| 3 | A-6135 | 21321-PW | 3969 CAMERON PARK DR., CAMERON PARK, CA | 95 |
| 4 | A-6059 | 21396-PW | 2686 PLEASANT HILL RD., PLEASANT HILL, CA | 23 |
| 5 | A-428 | 21397-PW | 12890 SAN PABLO AVE., RICHMOND, CA | 185 |
| 6 | A-1318 | 21347-PW | 1745 SANTA ROSA BLVD., SANTA ROSA, CA | 120 |
| 7 | A-2035 | 21439-DW | 1001 SAN PABLO AVE., ALBANY, CA | 218 |
| 8 | A-606 | 21334-PW | 2320 EL CAMINO REAL, SANTA CLARA, CA | 101 |
| 9 | A-4494 | 21183-PW | 566 HEGENBERGER RD., OAKLAND, CA | 70 |
| 10 | A-6041 | 21327-PW | 7249 VILLAGE PKWY., DUBLIN, CA | 110 |
| 11 | A-5387 | 21379-DW | 20200 HESPERIAN BLVD., SAN LORENZO, CA | 167 |
| | | | | 1,241 |

## TRANSPORTER INFORMATION

NAME: BALCH PETROLEUM

ADDRESS: 930 AMES AVE.

CITY,STATE,ZIP: MILPITAS, CA 95035 PHONE #: (408) 942-8686

TRUCK ID #: 102-PTRBLT HURSCHEL WARD Hurschel Ward 12-10-92
(Typed or printed full name & signature) (Date)

## TSD FACILITY INFORMATION

NAME: GIBSON ENVIRONMENTAL

ADDRESS: 475 SEAPORT BLVD

CITY,STATE,ZIP: REDWOOD CITY, CA 94063 PHONE #: (415) 368-5511

RELEASE #: 11320 BILL (EDIN) Bill Lee 12-10-92
(Typed or printed full name & signature) (Date)