RO184

Alameda County

NOV 05 2002

Environmental Health

October 18, 2002
Via Federal Express

Mr. Patrick G. Murray
McMorgan & Company, LLC
One Bush Street, Suite 800
San Francisco, California 94104

Subject: **Tier 2 Risk-Based Corrective Action Evaluation, October 2002**
McMorgan & Company
444 Hegenberger Loop, Oakland, California
Tetra Tech EM Inc. Project No. P1389-01
Alameda County Health Care Services StID #5814

Dear Mr. Murray:

Tetra Tech EM Inc. (Tetra Tech) is pleased to submit to McMorgan & Company, LLC. (McMorgan) the results of a Tier 2 Risk-Based Corrective Action (RBCA) evaluation for the subject site (Figures 1 and 2) using the "Oakland Urban Land Redevelopment Program Guidance Document" (Guidance) issued by the City of Oakland Public Works Agency (PWA) (PWA 2000). The evaluation was conducted pursuant to a meeting on April 27, 2001, between McMorgan, Tetra Tech and Mr. Barney Chan of the Alameda County Health Care Services Agency (ACHCSA) to determine whether McMorgan should petition the ACHCSA for closure of the subject site (Attachment 1).

SITE BACKGROUND

The subject site is located in northwestern Alameda County, approximately ¼ mile south of the Interstate 880-Hegenberger Road interchange and approximately 1 mile northeast of the Oakland International Airport (Figure 1). The unpaved site occupies a rectangular-shaped parcel (Assessor's Parcel Number 044-5076-007-02) that is situated in the northeast corner of the intersection of Hegenberger Road and Hegenberger Loop (Figure 2). The southwest portion of the subject site was previously occupied by a retail gasoline service station.

PREVIOUS INVESTIGATIONS

Tetra Tech is not aware of information documenting the number, capacities, or types of underground storage tanks (USTs) that were present at the former service station or a record of their removal. However, as discussed below, there is no indication that USTs remain on site. It is presumed that the

UST(s) were used to store gasoline products for the retail service station and were removed prior to the removal of a 550-gallon waste-oil tank in 1996. Tables 1 and 2 summarize, respectively, the available soil and groundwater analytical results collected at the site since 1996.

Soil Samples

On June 10, 1996, the 550-gallon waste-oil UST and one oil/water separator were removed under the supervision of the ACHCSA and Oakland Fire Department (Northwest Envirocon Inc. [NWEI] 1997a). One soil sample was collected at the bottom of the waste-oil UST excavation (sample "WOT" collected 8 feet below ground surface) and one sample was collected from beneath the oil/water separator (sample "OWS" collected 5 feet below ground surface). Analysis of both soil samples indicated that concentrations of benzene, toluene, ethylbenzene, and total xylenes (BTEX), total petroleum hydrocarbons (TPH) as gasoline (TPH-g) and total oil and grease (TOG) were detected in both samples. Neither TPH as diesel (TPH-d) nor volatile halocarbons were detected in either sample. Of the semi-volatile organic compounds (SVOCs), only naphthalene was detected, at a concentration of 1.7 milligrams per kilogram (mg/kg). Lead, chromium, nickel, and zinc were detected at concentrations consistent with ambient levels and cadmium was not detected at or above the laboratory reporting limit (Table 1).

On April 4, 1997, NWEI advanced one soil boring (SB-1) through the location of the former oil/water separator and three soil borings (SB-2, SB-3, and SB-4) through the location of the former waste-oil UST (NWEI 1997b; NWEI Plate 3). Analysis of the soil samples collected indicated that concentrations of BTEX, TPH-g, TPH-d, and TOG were detected. Methyl-Tertiary-Butyl Ether (MTBE) was not detected in the soil samples at or above the laboratory reporting limit (Table 1).

On July 24, 1997, a subsurface geophysical survey was performed and on October 8, 1997, exploratory trenching was conducted at the site to investigate if USTs were still present (NWEI Plate 3). The geophysical survey and the trenching identified metal debris (discarded piping, auto parts, and scrap metal) beneath the surface at the site, but did not indicate the presence of USTs (NWEI 1998).

On October 6, 7, and 8, 1998, 12 soil borings (SB-5 through SB-16) were drilled at various locations at the site and sampled to depths of 10 to 12 feet below ground surface (bgs) (NWEI Plate 3). Analysis of soil samples indicated that concentrations of BTEX, TPH-g, and TOG were detected in SB-6 through SB-14. Analysis of soil samples collected from borings SB-5, SB-15, and SB-16 did not indicate concentrations of BTEX, TPH-g, TPH-d, or MTBE (Table 1).

On November 23 and 24, 1998, five soil borings were drilled to approximately 20 feet bgs and converted to monitoring wells MW-1 through MW-5 (NWEI Plate 3). Analysis of soil samples collected from the borings indicated that BTEX and TPH-g were detected in the 10.0-foot bgs portion of the borings for wells MW-2, MW-3, MW-4, and MW-5. In addition, concentrations of BTEX and TPH-g were detected in the sample collected at 15 feet bgs in the boring for MW-4 (Table 1).

Monitoring well MW-1 was destroyed in December 1999 in accordance with ACHCSA guidelines (E_2C 2000a). In addition, on March 30, 2000, monitoring well MW-6 was installed to a depth of 20 feet bgs in accordance with an ACHCSA request that the portion of the site inferred to be downgradient of the former waste-oil tank be monitored (Figure 2). Analysis of the soil samples collected at 11 feet bgs in the boring for MW-6 indicated that BTEX, TPH-g, TPH-d, TPH as motor oil (TPH-mo), halogenated VOCs, SVOCs, cadmium, chromium, lead, nickel, and zinc (Table 1) were not detected at or above the laboratory reporting limit (E_2C 2000a).

On December 12, 2000, Tetra Tech supervised the drilling and installation of off-site groundwater monitoring wells MW-7 and MW-8 (Tetra Tech 2001a) (Figure 2). Soil samples from the borings for these wells were collected at five-foot intervals to a total depth of 20 feet bgs. Analysis of the soil samples indicated that BTEX, TPH-g, TPH-d, MTBE, di-isopropyl ether (DIPE), ethyl tertiary butyl ether (ETBE), tertiary amyl methyl ether (TAME), and tertiary butyl alcohol (TBA) were not detected at or above laboratory reporting limits (Table 1).

Soil cuttings from the installation of monitoring wells MW-7 and MW-8 were placed into DOT-approved, 55-gallon drums and stored on site. Upon receipt of the analytical data, indicating that concentrations of the tested constituents were not detected at or above laboratory reporting limits, the soil cuttings were removed from the drums and spread on the property.

Groundwater Samples

On April 4, 1997, groundwater "grab" samples were collected from soil borings SB-1, SB-2, SB-3, and SB-4 via Hydropunch®. Analytical results indicated that concentrations of BTEX, TPH-g, TPH-d, and TOG were detected. However, MTBE was not detected in the groundwater samples (Table 2).

On October 6, 7, and 8, 1998, groundwater grab samples were collected from soil borings SB-5 through SB-16 via Hydropunch®. Analytical results indicated that concentrations of BTEX and TPH-g were detected in samples from SB-5 through SB-14. A concentration of TPH-d was detected in the sample collected from SB-6 and TPH-mo was detected in samples from SB-6, SB-8, SB-9, SB-10, SB-12, SB-13, and SB-14. Analysis of groundwater samples collected from SB-15 and SB-16 indicated

concentrations of BTEX, TPH-g, and TPH-d were not detected at or above reporting limits. Concentrations of MTBE were not found in the groundwater samples (Table 2).

Quarterly groundwater monitoring began at the subject site in December 1998, after the installation of wells MW-1 through MW-5. Monitoring has included collecting depth-to-groundwater (DTW) measurements and groundwater samples from each of the site's active wells, including off-site wells MW-7 and MW-8. Historic DTW measurements are summarized in Table 3.

Analysis of fuel additives, MTBE, DIPE, ETBE, TAME, and TBA, were discontinued per the guidance of the ACHCSA after its review of the fourth quarter 2000 sampling event (Attachment 1).

The most recent quarterly groundwater monitoring took place on October 4, 2001 (Tetra Tech 2001c). Analysis of the groundwater samples collected from the seven wells indicated that a concentration of TPH-d was detected in the sample collected from MW-2 and that BTEX and TPH-g were detected in the samples collected from MW-2, MW-3, MW-4, and MW-5. Neither BTEX nor TPH-g were detected in the samples collected from MW-6, MW-7 and MW-8. Tetra Tech Figure 4 from May 2001 and Figure 4 from October 2001 groundwater monitoring events are provided to show the most current interpretation of benzene concentrations on site. Historic groundwater sample analytical results are summarized in Table 2.

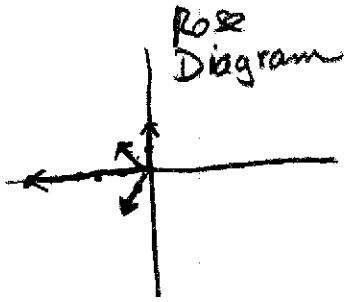
The following conclusions were included in the October 2001 quarterly groundwater monitoring report (Tetra Tech 2001c):

- Petroleum hydrocarbons have not migrated to the locations of the wells across Hegenberger Loop or Hegenberger Road (MW-7 and MW-8).
- A plume of hydrocarbons, including TPH-d, TPH-g and BTEX, remains beneath the northwest corner of the site.
- The plume continues to impact MW-2, MW-3, MW-4, and MW-5. However, the impact to MW-5 appears limited to benzene.
- The concentration of benzene has decreased in MW-2, MW-3, MW-4, MW-5, and MW-6.
- The concentration of TPH-g has decreased in MW-2, MW-3, MW-4, and MW-5.

GROUNDWATER FLOW

Groundwater is encountered approximately 5 feet bgs. Listed below are historic inferred groundwater flow directions, as summarized in the latest groundwater monitoring report (Tetra Tech 2001c):

Date	Inferred Groundwater Flow Direction
12/98	W
03/99	SW
07/99	SW
08/99	W
09/99	N
12/99	W
03/00	NW
06/00	N
12/00	NW
05/01	W
08/01	W



Tetra Tech Figure 3, dated May 7, 2001, and Tetra Tech Figure 3, dated October 4, 2001, from different groundwater monitoring reports (Tetra Tech 2001b and 2001c), are potentiometric surface maps from the last two quarters of groundwater monitoring. Both quarters of groundwater monitoring show the inferred direction of groundwater flow is to the west.

Based on the above information and the table, the direction of groundwater flow beneath the site has been mainly to the west and northwest (i.e., toward San Francisco Bay or an arm of the Bay), infrequently to the southwest, but has consistently never had an eastward component (toward the East Bay Hills). In particular, during the period of December 2002 to August 2001, the period of time covered by the three rounds of quarterly groundwater monitoring conducted by Tetra Tech, the inferred direction of groundwater flow was mainly to the west, toward wells MW-7 and MW-8. Given the location of the site, this pattern of groundwater flow is to be expected, even during the changes in seasons. The placement of monitoring wells MW-7 and MW-8 was based on this pattern of groundwater flow and intended to assess whether constituents migrated off site. Based on both soil and groundwater analytical results for MW-7 and MW-8, it appears that migration of constituents off the site has not occurred.

SENSITIVE RECEPTOR SURVEY

As part of the fourth quarter 2000 groundwater monitoring report, Tetra Tech reported the results of a sensitive receptor survey (SRS) of the area surrounding the subject site (Tetra Tech 2001a) to a radius of 2,000 feet. The SRS concluded the following:

- Potential exposure to constituents of concern (COCs) should be considered during construction scenarios and such potential activities should be conducted under the provisions of an approved Health and Safety Plan.
- One irrigation well (cross gradient southeast) and 4 monitoring wells not associated with the site are located within the 2,000 foot SRS radius (Tetra Tech Figure 5). The SRS did not indicate domestic wells near the site.
- The nearest body of surface water is San Leandro Creek, located approximately 800 feet southwest (cross-gradient) of the site.

The SRS included contacting a number of utility companies and agencies to request utility location plans (Tetra Tech Figure 6). Based on the plans received by Tetra Tech, utilities at and near the subject site are typically installed between 3.0 and 3.5 feet below grade.

Since wells MW-2, MW-3, MW-4, MW-5, and MW-6 were installed, the measured depths to groundwater in these wells, located within or adjacent to the plume of petroleum hydrocarbons in groundwater beneath the site (Tetra Tech 2001c), have averaged 5.4, 5.2, 4.6, 5.4, and 5.6 feet, respectively, below the tops of the well casings (appreciably close to surface grade). For each of these five wells, the depths to groundwater have ranged, respectively, from 4.61 to 5.91 feet, 4.24 to 5.81 feet, 2.2 (considered anomalous) to 5.39 feet, 4.59 to 6.02 feet, and 5.13 to 5.89 feet. Since at least July 1999, groundwater beneath the portion of the subject site occupied by wells MW-2 through MW-5 has not risen above approximately four feet below grade. Thus, these levels of groundwater would not have intersected the known utility trenches and petroleum hydrocarbon constituents present in the groundwater would not have migrated along these pathways.

Moreover, in December 2000, off-site groundwater monitoring wells MW-7 and MW-8 were installed to assess possible preferential migration of constituents away from the site along suspected subsurface utility corridors. During the three quarters of monitoring conducted since these two new wells were installed, there have been no detections of petroleum hydrocarbons in the samples collected from either MW-7 or MW-8.

TIER 1 RISK-BASED CORRECTIVE ACTION EVALUATION

A Tier 1 RBCA evaluation was previously conducted to evaluate the impact to the health of on-site workers resulting from petroleum hydrocarbon constituents detected beneath the subject site (E_2C 2000a). Four COCs were detected in the groundwater and include the following:

- Benzene
- Toluene
- Ethylbenzene
- Total Xylenes

Three exposure pathways were identified in the Tier 1 RBCA as follows:

- Ingestion of groundwater
- Volatilization to outdoor air from groundwater
- Volatilization to indoor air from groundwater

The COCs were compared to Tier 1 Commercial Risk-Based Screening Levels (RBSLs) for each identified exposure pathway. Concentrations of the identified COCs exceeded the RBSLs and a Tier 2 RBCA was recommended (E_2C 2000a).

TIER 2 RISK-BASED CORRECTIVE ACTION EVALUATION

Based on the recommendations resulting from the Tier 1 RBCA evaluation, the October 2001 groundwater monitoring report (Tetra Tech 2001c), and the PWA Guidance, Tetra Tech completed the Oakland RBCA Eligibility Checklist (Attachment 2). No exceptions applicable to the site were found in the eligibility checklist. Based on the completion of the checklist, Tetra Tech conducted an Oakland Tier 2 RBCA evaluation. During the Oakland Tier 2 RBCA, Tetra Tech identified site-specific information such as COCs, underlying soil type, and exposure pathways. Based on the site-specific information, the Oakland Tier 2 RBCA worksheet was run using the default values for the local soil type (Attachment 3). This produced a table of Site-Specific Target Levels (SSTLs) for each COC and exposure pathway (Table 4). The historic soil and groundwater analytical data were compared against the SSTL for each COC under the assumed "Commercial/Industrial" land-use scenario that is appropriate for the subject site.

RESULTS OF TIER 2 RBCA EVALUATION

Constituents of Concern

Based on the analytical results of previous investigations, benzene, toluene, ethylbenzene, and total xylenes were identified as the COCs for the Oakland RBCA Tier 2 evaluation.

Soil Type

The PWA Guidance classifies the following three possible subsurface soil categories for sites in its jurisdiction: (1) Merritt Sands, (2) Sandy Silts, or (3) Clayey Silts. In an Oakland RBCA Tier 2 evaluation, subsurface soil conditions are evaluated and placed into one of these three categories.

To approximately 20 feet bgs, the subsurface at the subject site generally consists of clay, gravelly clay, silty clay, and gravelly sand, interpreted as artificial fill. Based on a review of available boring logs (Variance) (Appendix A), the subsurface at the subject site was placed into the "Clayey Silts" category.

Exposure Pathways

Two groundwater exposure pathways were identified for the Oakland RBCA Tier 2 evaluation: (1) volatilization of constituents to outdoor air from groundwater; and (2) volatilization of constituents to indoor air from groundwater. Ingestion of groundwater was not considered in the Oakland RBCA Tier 2 evaluation because (1) the close proximity of the site to the San Francisco Bay likely precludes the use of the site's groundwater as a potable water source, (2) the shallow water-bearing zone beneath the site (the zone impacted by constituents) is not considered a viable source of water (low yield), and (3) all water needs related to future use of the subject site will be from the municipal water supply, not from wells on site.

None of the analytical results for BTEX, particularly benzene, detected in groundwater samples (Table 3) exceed the reported risk-based SSTLs under the assumed land-use scenario (Table 4). does not eval. grab GW

The Tier 1 RBCA assessment (E_2C 2000a) identified three exposure pathways under an assumed "on-site worker" exposure scenario that included incomplete soils pathways. The identified pathways are: (1) ingestion of groundwater, (2) inhalation of indoor vapors from groundwater, and (3) inhalation of outdoor vapors from groundwater.

Tetra Tech agrees with the conclusions of the Tier 1 RBCA, including the incomplete soils exposure pathways at the site. However, for completeness, Tetra Tech examined the SSTLs for the local soil type (i.e., clayey silts) and the following two soil-exposure pathways: (1) inhalation of indoor vapors from soil

and (2) inhalation of outdoor vapors from soil, under the assumed "Commercial/Industrial" land-use scenario that is appropriate for the subject site. None of the analytical results for BTEX, particularly benzene, detected in soil samples (Table 2) exceed the reported risk-based SSTLs under the assumed land-use scenario (Table 4).

CONCLUSIONS

The Oakland RBCA Tier 2 evaluation indicates that there are no exceedances of SSTLs for soil or groundwater at the subject site.

Tetra Tech considers the subject site sufficiently characterized for the following reasons:

- 16 soil borings (NWEI Plate 4) and eight borings for groundwater monitoring wells (Tetra Tech Figure 3, dated October 4, 2001) have been drilled across and off the site with the resulting soil samples collected from 3 to 20 feet bgs (NWEI Plates 4, 5a, and 5b).
- Since December 1999, six quarters of groundwater monitoring have been conducted and the results of the monitoring indicate that the plume of hydrocarbons in groundwater has not moved to any significant degree and remains mainly beneath the limits of the site.

Together, this site characterization data and information and the results of the sensitive receptor survey and risk evaluations discussed above support a finding of no further action and closure of the site.

RECOMMENDATIONS

Based on the results of the Oakland RBCA Tier 2 evaluation and pursuant to the April 27, 2001, meeting with the ACHCSA, Tetra Tech recommends the following:

- Quarterly groundwater monitoring at the subject site should be discontinued.
- McMorgan should petition the ACHCSA and the State Water Resources Control Board (SWRCB) for site closure.
- Additional conditions, as may be applicable, stemming from the April 27, 2001 meeting with the ACHCSA (Attachment 1) should be observed.
- Upon the granting of site closure by the SWRCB, the seven active groundwater monitoring wells at the project site should be destroyed in accordance with ACHCSA guidelines.

This report is based on available information and was prepared in accordance with currently accepted geologic, hydrogeologic, and engineering practices. No other warranty is implied or intended. This report has been prepared for the sole use of McMorgan & Company and applies only to the subject site.

Use of this report by third parties shall be at their sole risk. This report was prepared under the direct supervision of the California Registered Geologist whose signature appears below.

We appreciate the opportunity to provide McMorgan & Company with geologic, engineering, and environmental consulting services and trust that this letter report meets your needs. If you have any questions or concerns, please call Mr. Walter Kim at (916) 853-4505.

Sincerely,

TETRA TECH EM INC.

Robert Schumann
Staff Geologist

Signature of Reg. Professional required

Douglas I. Sheeks, R.G.
Senior Geologist
CRG No. 5211

(916) 853-4515

Attachments

cc: B. M. Chan, ACHCSA
W. H. Kim, Tetra Tech

REFERENCES

E_2C. 2000a. *Risk-Based Corrective Action Evaluation.* May.

E_2C. 2000b. *Quarterly Groundwater Monitoring First Quarter 2000.* May.

E_2C. 2000c. *Quarterly Groundwater Monitoring Second Quarter 2000.* August.

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PWA. 2000. *Oakland Urban Land Redevelopment Program Guidance Document.* City of Oakland Public Works Agency (PWA). January.

Tetra Tech. 2001a. *Fourth Quarter Groundwater Monitoring Report, December 2001.* March.

Tetra Tech. 2001b. Second *Quarter Groundwater Monitoring Report May 2001.* June.

Tetra Tech. 2001c. *Third Quarter Groundwater Monitoring Report October 2001.* December.

FIGURE 1

SITE LOCATION MAP

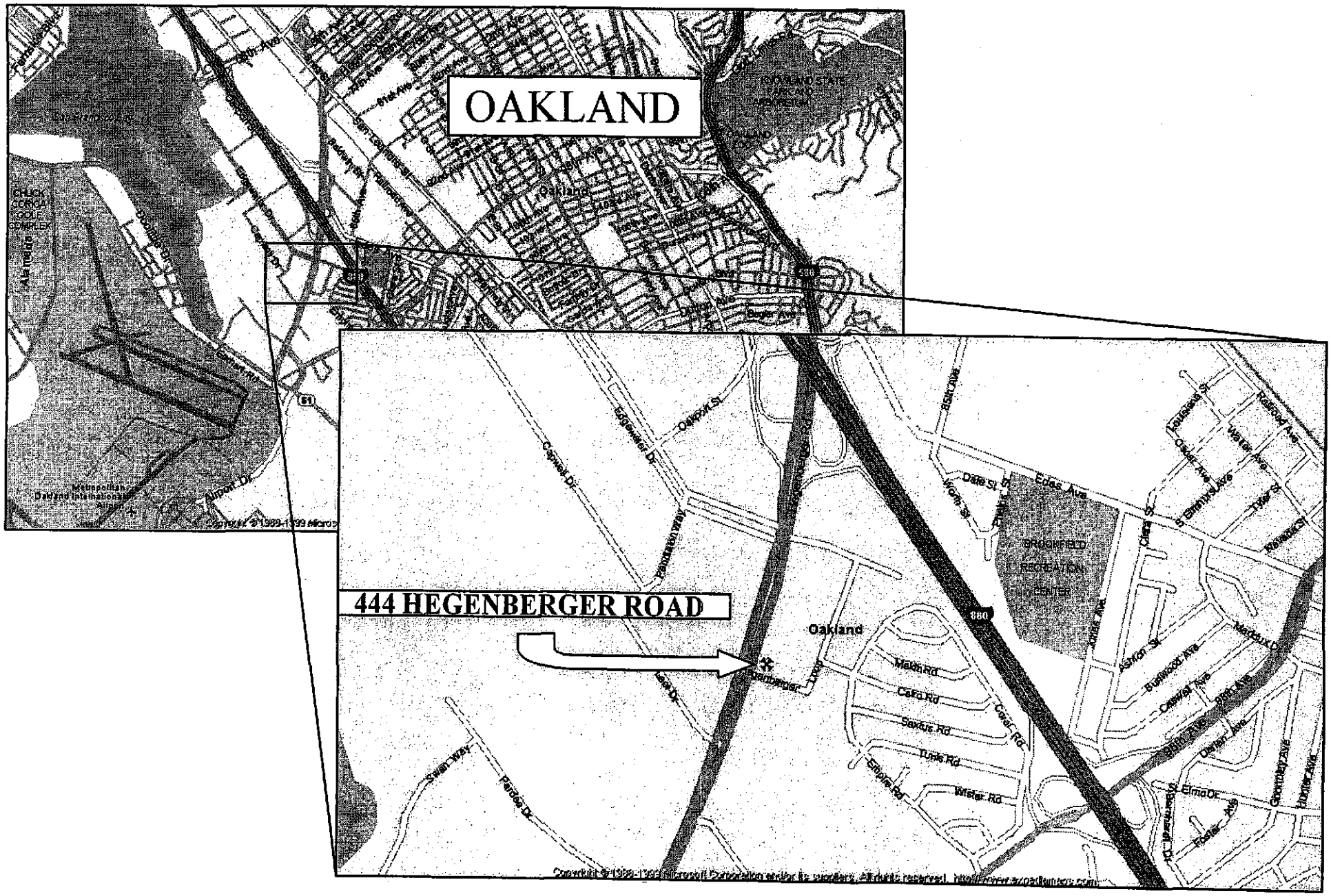
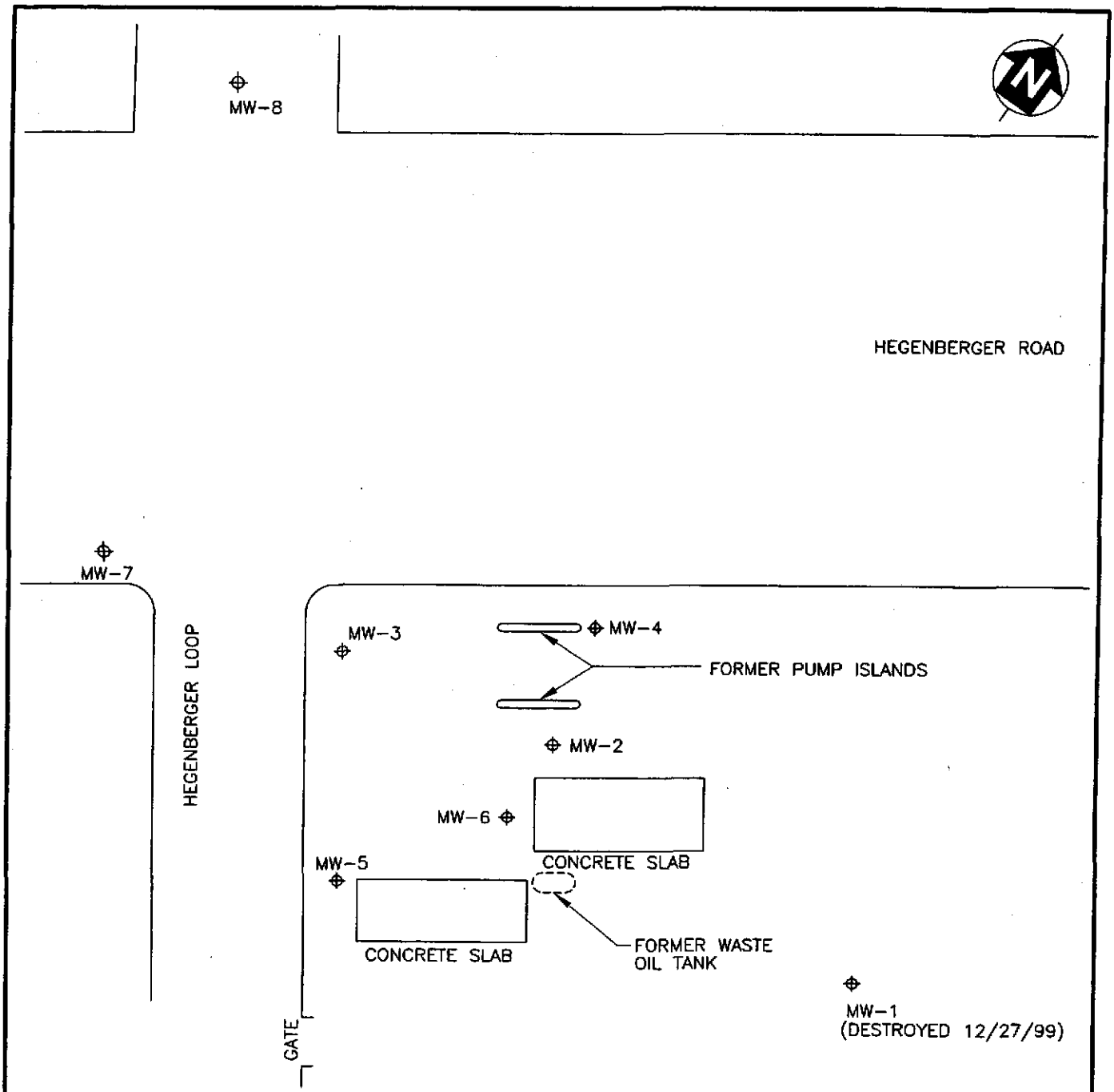


FIGURE 1
444 HEGENBERGER ROAD
OAKLAND, CALIFORNIA



444 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

FIGURE 2
SITE MAP

Tetra Tech EM Inc.

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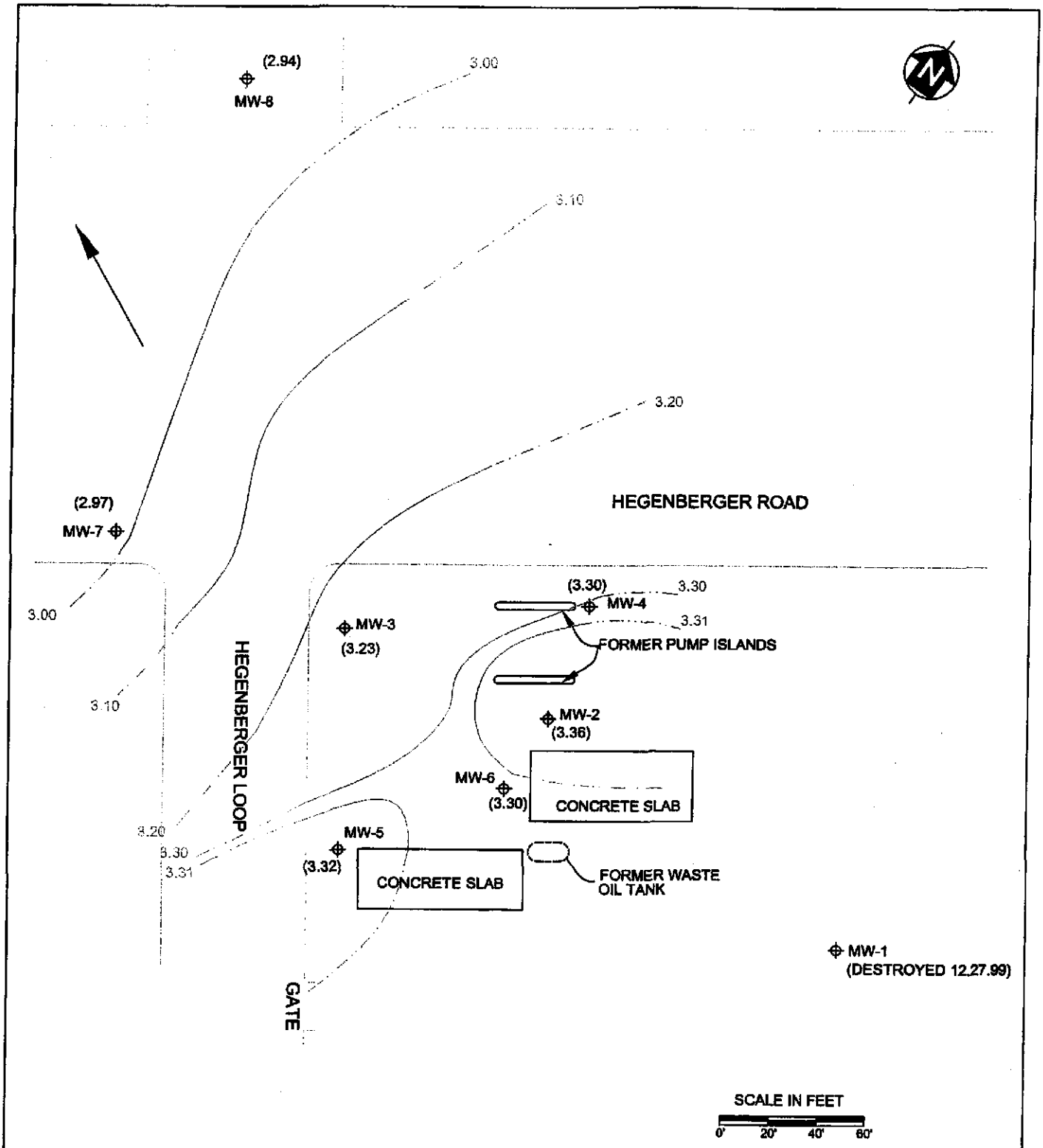
FIGURE 3

POTENTIOMETRIC SURFACE MAPS

MAY 7, 2001
OCTOBER 4, 2001



EXPLANATION

MW-5 — GROUNDWATER MONITORING WELL LOCATION

— 3.30 — GROUNDWATER CONTOUR, CONTOUR INTERVAL = 0.1 FOOT (DASHED WHERE INFERRED, QUERIED WHERE UNKNOWN)

(3.31) GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)

INFERRED GROUNDWATER FLOW DIRECTION

NOTE: ALL LOCATIONS ARE APPROXIMATE

POTENTIOMETRIC SURFACE MAP
MAY 7, 2001

444 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

FIGURE 3

Tetra Tech EM Inc.

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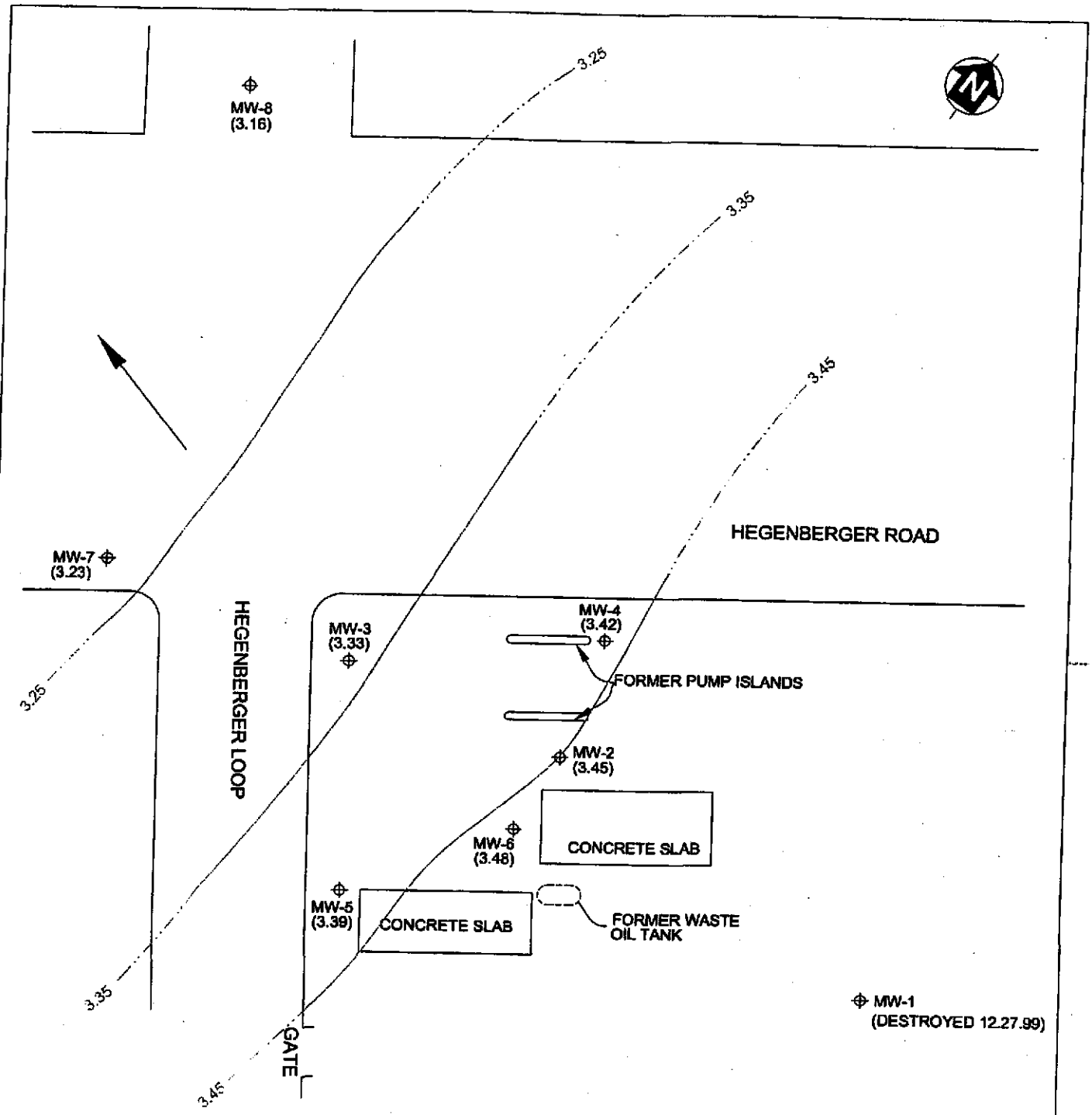

EXPLANATION

- MW-5 — GROUNDWATER MONITORING WELL LOCATION
- 3.35 — GROUNDWATER CONTOUR, CONTOUR INTERVAL = 0.1 FOOT (DASHED WHERE INFERRED)
- (3.39) — GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE: ALL LOCATIONS ARE APPROXIMATE

POTENTIOMETRIC SURFACE MAP
OCTOBER 4, 2001

444 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

FIGURE 3

Tetra Tech EM Inc.

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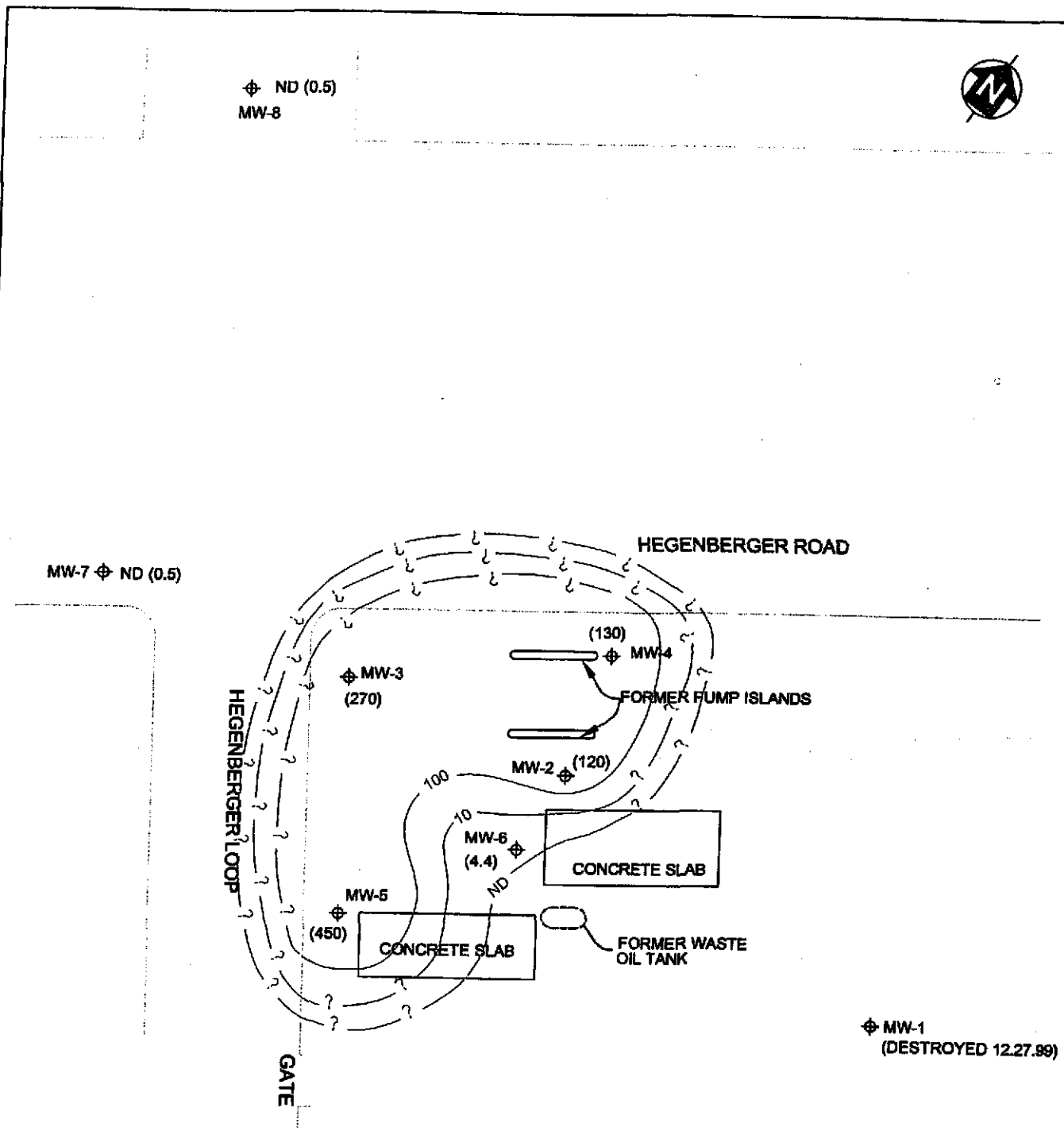
FIGURE 4

BENZENE ISOCONCENTRATION CONTOURS

MAY 7, 2001
OCTOBER 2, 2001



EXPLANATION

MW-5	GROUNDWATER MONITORING WELL LOCATION
———	ISOCONCENTRATION CONTOUR (QUERIED WHERE UNKNOWN)
(450)	DETECTED CONCENTRATION OF BENZENE (IN MICROGRAMS PER LITER)
ND (0.5)	NOT DECTECTED AT OR ABOVE INDICATED LABORATORY REPORTING LIMIT

NOTE: ALL LOCATIONS ARE APPROXIMATE

ISOCONCENTRATION CONTOUR MAP OF BENZENE IN GROUNDWATER MAY 7, 2001
444 HEGENBERGER ROAD OAKLAND, CALIFORNIA
FIGURE 4
Tetra Tech EM Inc.

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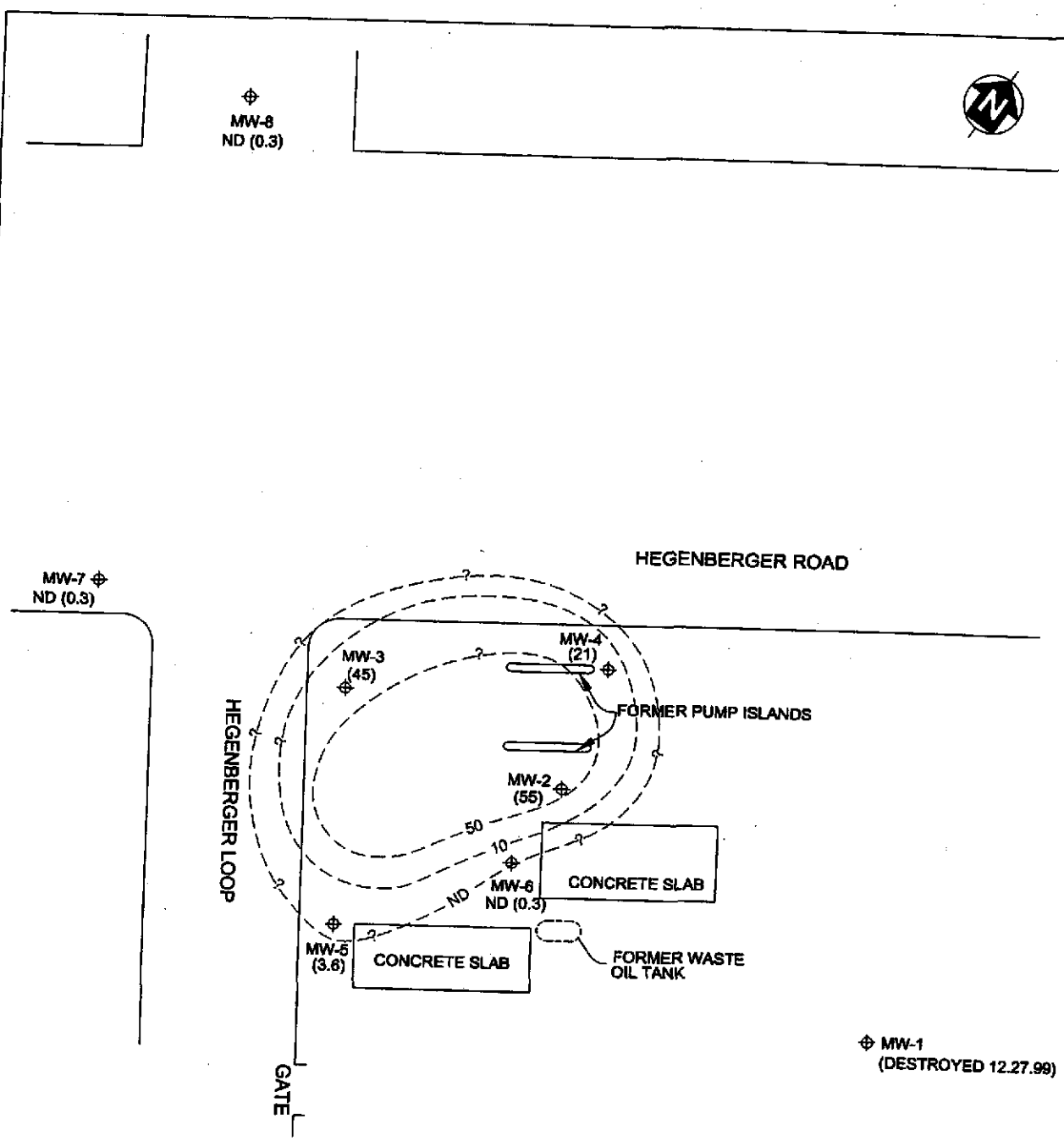

EXPLANATION

- MW-5 — GROUNDWATER MONITORING WELL LOCATION
- ISOCONCENTRATION CONTOUR (QUERIED WHERE UNKNOWN)
- (450) — DETECTED CONCENTRATION OF BENZENE (IN MICROGRAMS PER LITER)
- ND (0.3) — NOT DECTECTED AT OR ABOVE INDICATED LABORATORY REPORTING LIMIT

NOTE: ALL LOCATIONS ARE APPROXIMATE

ISOCONCENTRATION CONTOUR MAP OF BENZENE IN GROUNDWATER OCTOBER 4, 2001

444 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

FIGURE 4

Tetra Tech EM Inc.

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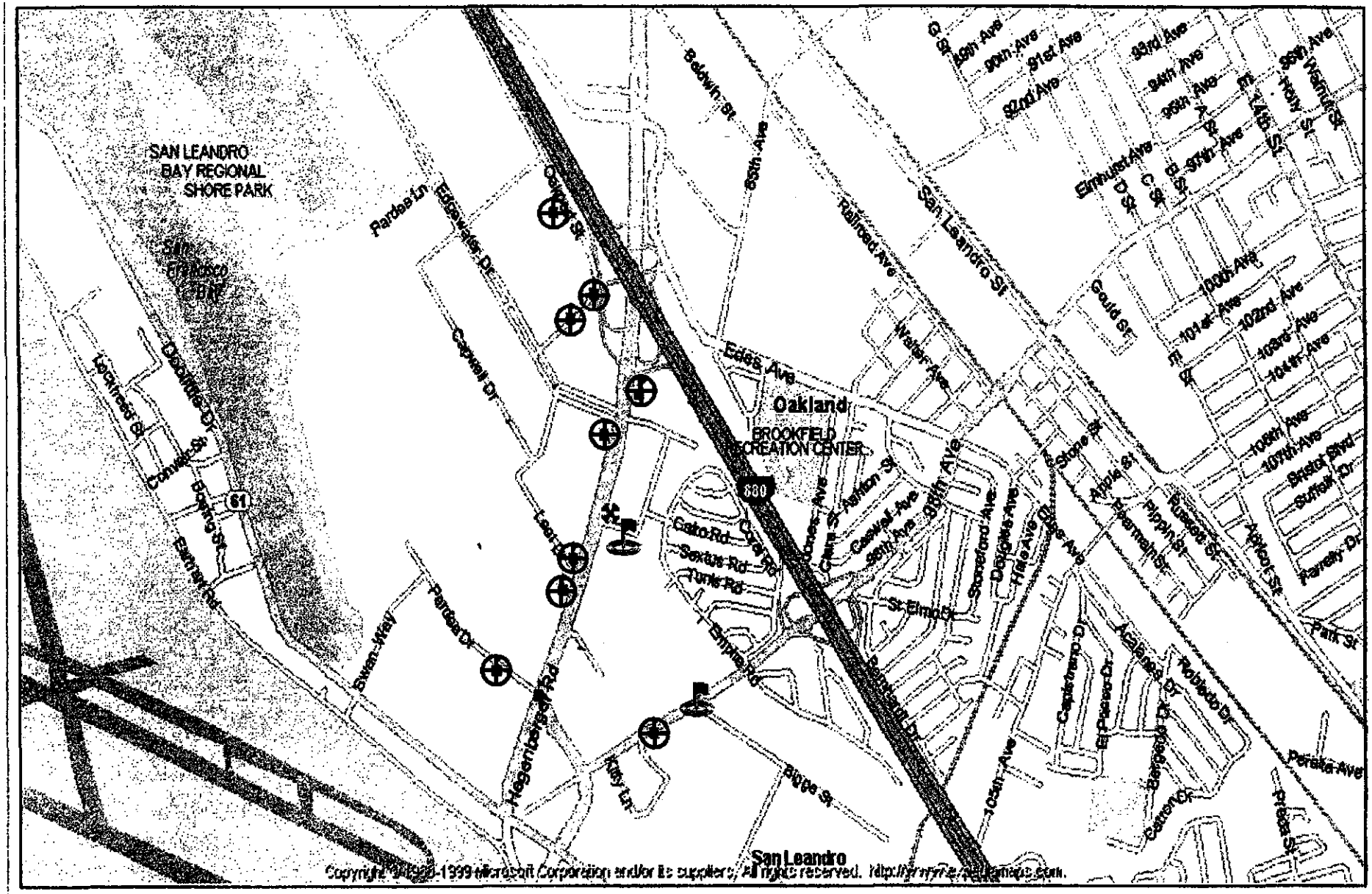
FIGURE 5

SENSITIVE RECEPTORS



LEGEND

- 444 Hegenberger Road
- Monitoring Well Site
- Irrigation Well Site

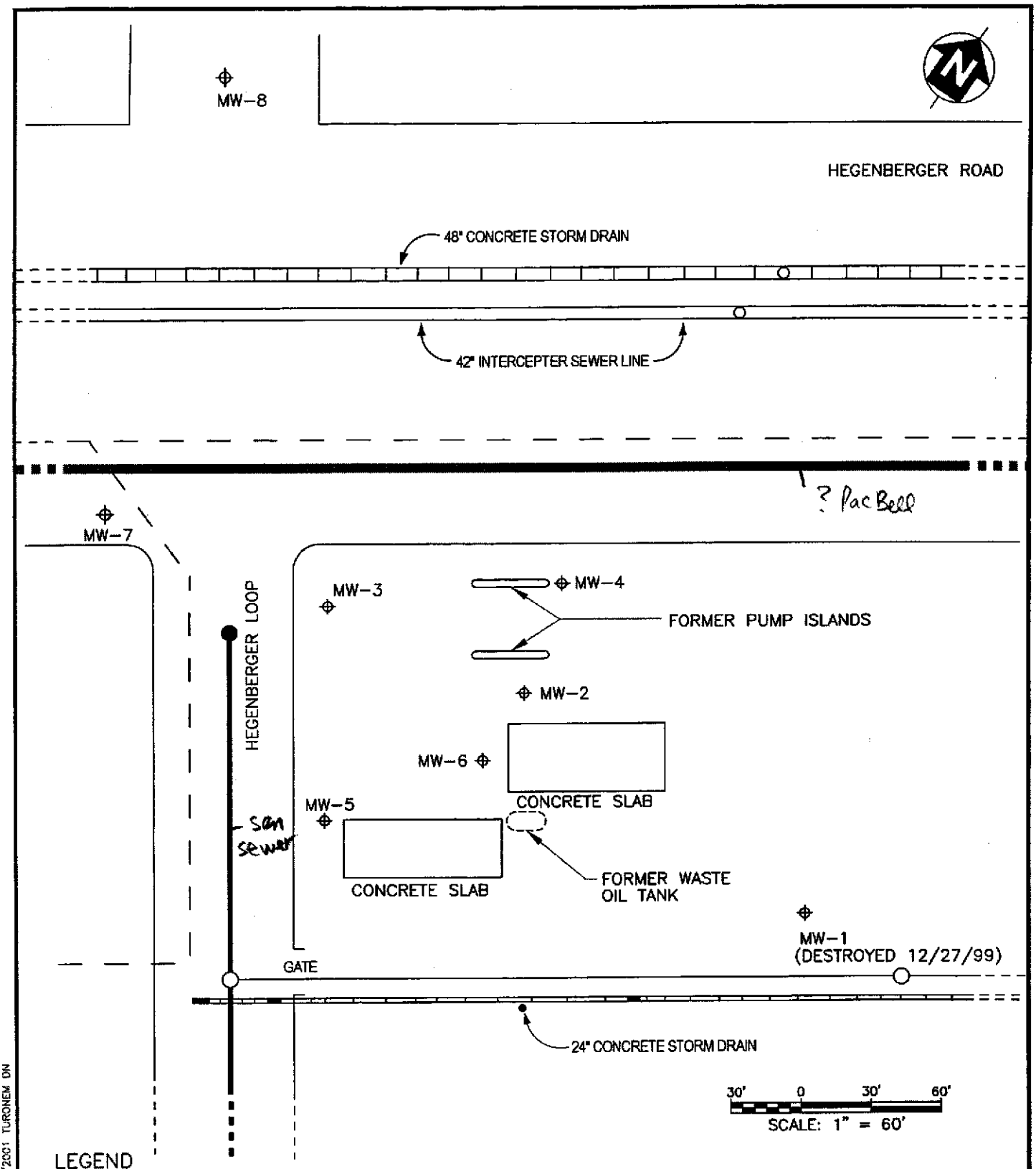
Scale (feet)

0 2000

FIGURE 5
SENSITIVE RECEPTORS
444 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

FIGURE 6

SUBSURFACE UTILITIES



NOTE: ALL LOCATIONS ARE APPROXIMATE

444 HEGENBERGER LOOP OAKLAND, CALIFORNIA
FIGURE 6 UTILITY MAP
Tetra Tech EM Inc.

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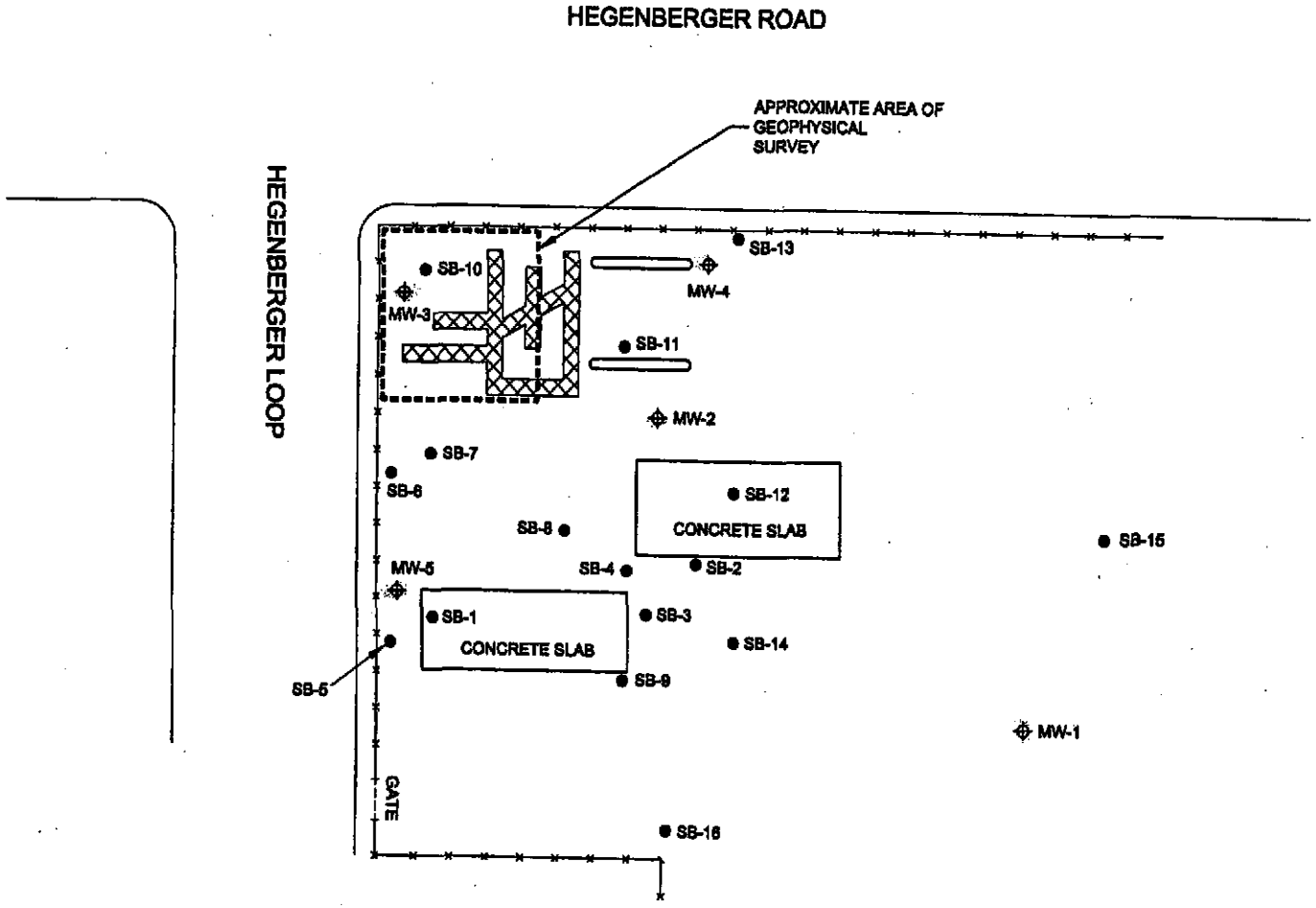
NORTHWEST ENVIROCON PLATE 3



EXPLANATION

- ⌖ = MONITORING WELL LOCATION
- ● = SOIL BORING LOCATION
- ▨ = TRENCHING AREAS
- -x-x-x- = FENCE

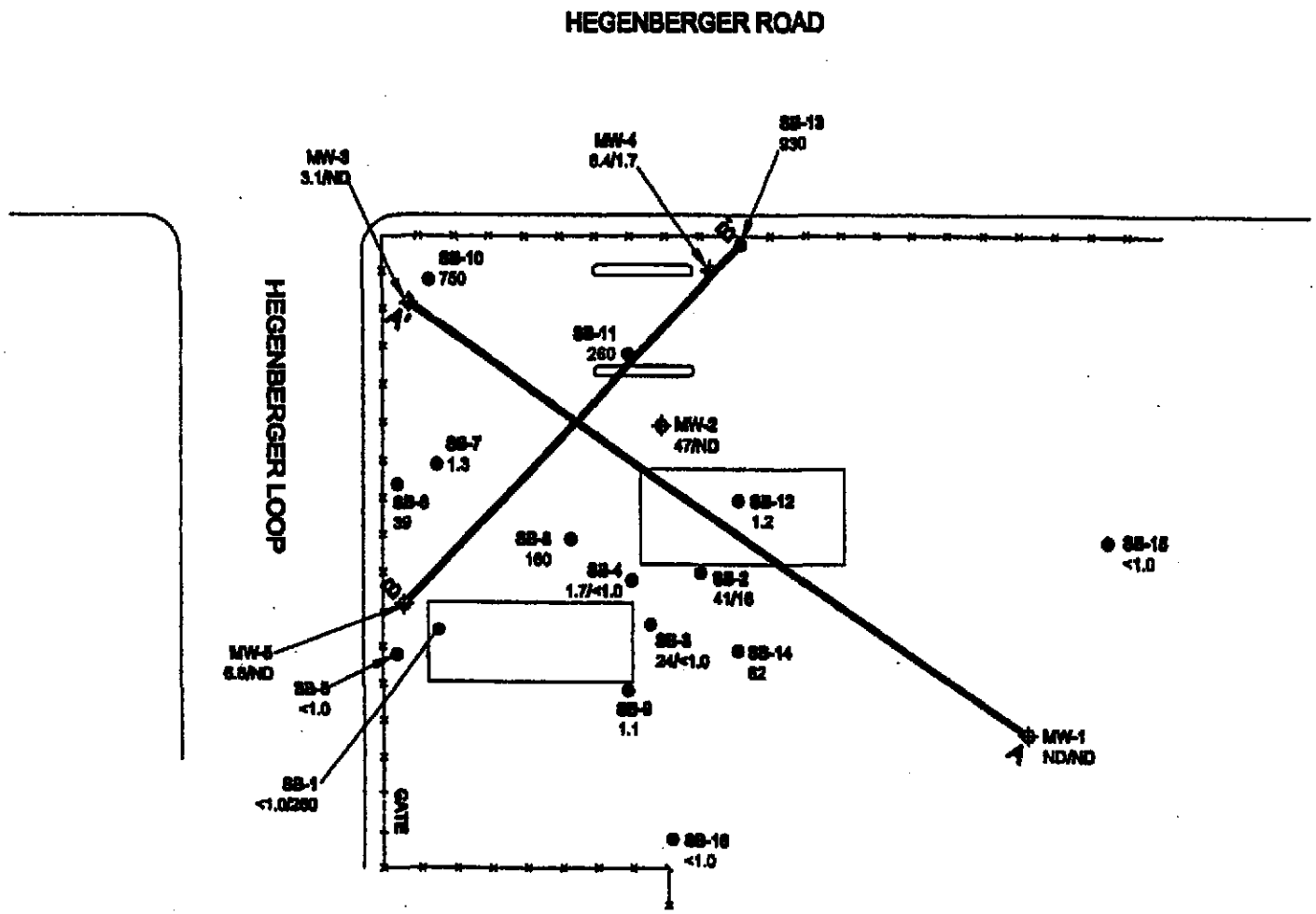
SCALE IN FEET
0 10' 20' 30' 40' 50' 60'

NORTH

NORTHWEST ENVIROCON, INC.
1828 TRIBUTE ROAD, SUITE A, SACRAMENTO, CA 95815
(916) 649-3570 FAX: (916) 649-3819

SITE: 444 HEGENBERGER LOOP OAKLAND, CALIFORNIA				PROJECT#: 05-001594	REVISIONS
				DATE: DECEMBER 18, 1998	
DRAWN: CEB	APPROVED: MHS	CLIENT: McMORGAN AND COMPANY	TITLE: SB/MW LOCATIONS	PLATE: 3	SCALE: 1"=60'

NORTHWEST ENVIROCON PLATE 4



EXPLANATION

- ⌖ = MONITORING WELL LOCATION
- ● = SOIL BORING LOCATION

TPHg CONCENTRATION

160 = 3'-6' FBGS

8.6 = 6'-15' FBGS

A ——— A' = CROSS-SECTION

—×—×—×— = FENCE

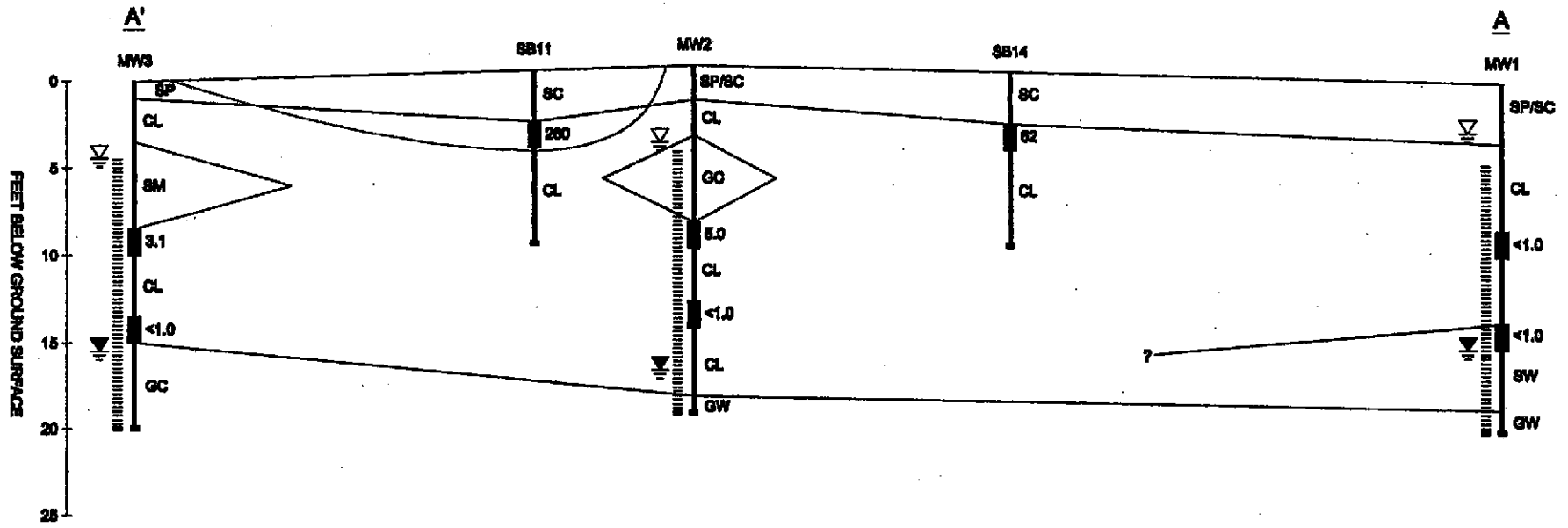
SCALE IN FEET

0 10' 20' 30' 40' 60' 80'

NORTH

NORTHWEST ENVIROCON, INC. 1628 TRIBUTE ROAD, SUITE A, SACRAMENTO, CA 95815 (916) 649-3570 FAX: (916) 649-3819	SITE: 444 HEGENBERGER LOOP OAKLAND, CALIFORNIA			PROJECT#: 05-001694 DATE: DECEMBER 18, 1996	REVISIONS
DRAWN: CEB	APPROVED: MHS	CLIENT: McMORGAN AND COMPANY	TITLE: TPHg CONCENTRATIONS IN SOIL	PLATE: 4	SCALE: 1"=60'

NORTHWEST ENVIROCON PLATE 5A



EXPLANATION

50 = SOIL SAMPLE INTERVAL-TPHg CONCENTRATION (mg/kg)

= GROUND WATER ENCOUNTERED DURING DRILLING (11/23-11/24, 1998)

= GROUNDWATER LEVEL MEASURED IN WELL (12/2/98)

= WELL SCREEN INTERVAL

= APPROXIMATE VERTICAL EXTENT OF TPHg CONCENTRATIONS >100mg/kg

0 10' 20' 30'

HORIZONTAL SCALE IN FEET
VERTICAL EXAGERATION = 3X

NORTHWEST ENVIROCON, INC.
1828 TRIBUTE ROAD, SUITE A, SACRAMENTO, CA 95815
(916) 649-3570 FAX: (916) 649-3819

SITE: 444 HEGENBERGER LOOP
OAKLAND, CALIFORNIA

PROJECT#: 05-001594

DATE: DECEMBER 18, 1998

REVISIONS

DRAWN: CEB

APPROVED: MHS

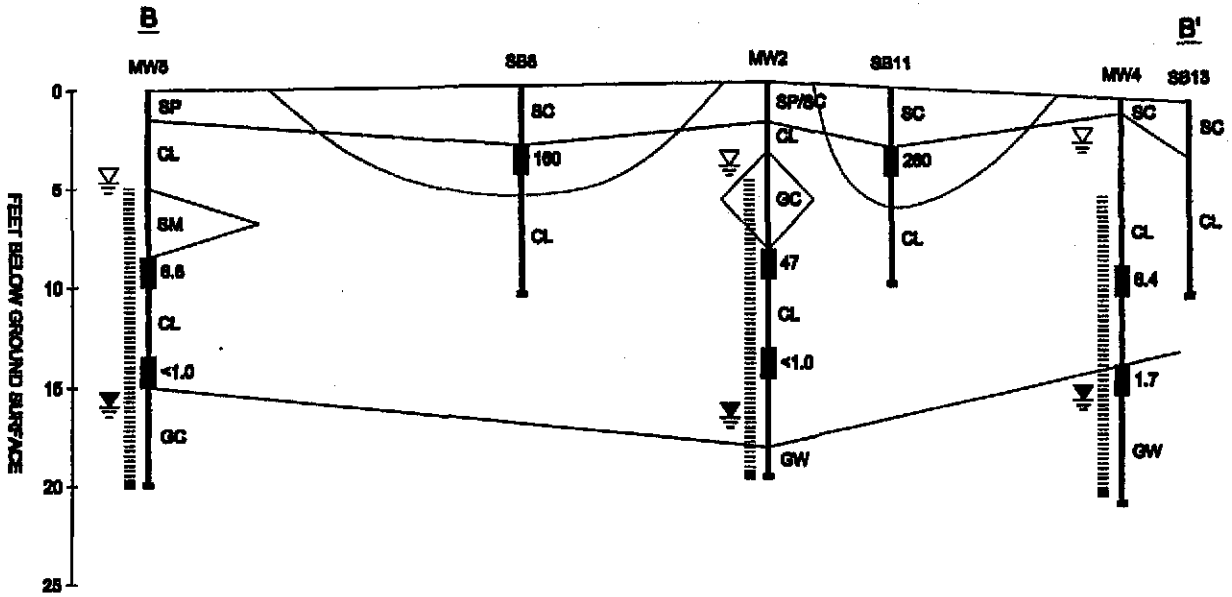
CLIENT: McMORGAN AND COMPANY

TITLE: GEOLOGIC CROSS-SECTION

PLATE: 5a

SCALE: AS NOTED

NORTHWEST ENVIROCON PLATE 5B



EXPLANATION

- 50 = SOIL SAMPLE INTERVAL-TPHg CONCENTRATION (mg/kg)
- = GROUND WATER ENCOUNTERED DURING DRILLING (11/23-11/24, 1996)
- = GROUNDWATER LEVEL MEASURED IN WELL (12/2/96)
- = WELL SCREEN INTERVAL
- = APPROXIMATE VERTICAL EXTENT OF TPHg CONCENTRATIONS >100mg/kg

0 10' 20' 30'
HORIZONTAL SCALE IN FEET
VERTICAL EXAGERATION = 3X

NORTHWEST ENVIROCON, INC.
1828 TRIBUTE ROAD, SUITE A, SACRAMENTO, CA 95815
(916) 649-3570 FAX: (916) 649-3619

SITE: 444 HEGENBERGER LOOP
OAKLAND, CALIFORNIA

PROJECT#: 05-001594
DATE: DECEMBER 18, 1996

REVISIONS

DRAWN:	APPROVED:	CLIENT:	TITLE:	PLATE:	SCALE:
CEB	MHS	McMORGAN AND COMPANY	GEOLOGIC CROSS-SECTION	5b	AS NOTED

TABLE 1
HISTORIC SOIL ANALYTICAL DATA
444 HEGENBERGER LOOP
OAKLAND, CALIFORNIA
Results In Milligrams Per Kilogram
(Page 1 of 2)

Sample ID	Depth (ft bgs)	Date	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	TPH-g	TPH-d	TPH-mo	Oil & Grease
WOT@8'	8	6/10/1996	6.7	0.68	8.1	7.6	NA	560	<200	NA	360
OWS@5'	5	6/10/1996	1.0	0.24	0.17	0.68	NA	65	<350	NA	1800
SB1A	5	4/4/1997	0.037	ND	ND	ND	ND	ND	ND	NA	ND
SB1B	10	4/4/1997	1.1	0.54	5.1	2.4	ND	260	120	NA	93
SB2A	5	4/4/1997	0.33	0.065	0.13	0.18	ND	41	19	NA	220
SB2B	10	4/4/1997	0.34	ND	0.87	0.24	ND	16	2.1	NA	ND
SB3A	5	4/4/1997	0.18	ND	0.31	0.062	ND	24	7.8	NA	ND
SB3B	10	4/4/1997	ND	ND	ND	ND	ND	ND	ND	NA	ND
SB4A	5	4/4/1997	0.019	ND	0.052	ND	ND	1.7	ND	NA	ND
SB4B	10	4/4/1997	ND	ND	ND	ND	ND	ND	ND	NA	ND
SB05-3	3	10/6/1997	ND	ND	ND	ND	ND	ND	ND	NA	ND
SB06-3	3	10/6/1997	0.055	0.053	0.11	0.11	ND	39	ND	NA	61
SB07-3	3	10/6/1997	0.015	0.011	ND	ND	ND	1.3	ND	NA	130
SB08-3	3	10/7/1997	1.1	ND	2.2	7.6	ND	160	ND	NA	20
SB09-3	3	10/7/1997	0.017	ND	ND	0.015	ND	1.1	ND	NA	120
SB10-3	3	10/6/1977	4.7	ND	2.8	2.5	ND	750	ND	NA	25
SB11-3	3	10/7/1997	2.3	0.73	6.1	11	ND	260	ND	NA	37
SB12-3	3	10/7/1997	0.036	0.007	ND	0.025	ND	1.2	ND	NA	42
SB13-3	3	10/7/1997	13	0.85	5.8	4.2	ND	930	ND	NA	780
SB14-3	3	10/7/1997	0.81	0.36	0.087	0.38	ND	62	ND	NA	61
SB15-3	3	10/8/1998	ND	ND	ND	ND	ND	ND	ND	ND	ND
SB15-6	6	10/8/1998	ND	ND	ND	ND	ND	ND	ND	ND	ND
SB16-3	3	10/8/1998	ND	ND	ND	ND	ND	ND	ND	ND	ND
SB16-6	6	10/8/1998	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-1	10	11/23/1998	ND	ND	ND	ND	NA	ND	ND	ND	NA
MW-1	15	11/23/1998	ND	ND	ND	ND	NA	ND	ND	ND	NA
MW-2	10	11/23/1998	1.5	1.7	3.0	5.2	NA	47	ND	4.8	NA
MW-2	15	11/23/1998	ND	ND	ND	ND	NA	ND	ND	ND	NA
MW-3	10	11/24/1998	0.18	0.032	0.078	0.062	NA	3.1	ND	ND	NA
MW-3	15	11/24/1998	ND	ND	ND	ND	NA	ND	ND	ND	NA
MW-4	10	11/23/1998	0.0064	0.16	0.077	0.096	NA	6.4	ND	6.7	NA
MW-4	15	11/23/1998	0.013	0.039	0.013	0.026	NA	1.7	ND	2.1	NA
MW-5	10	11/24/1998	0.51	0.15	0.50	0.12	NA	6.8	ND	ND	NA
MW-5	15	11/24/1998	ND	ND	ND	ND	NA	ND	ND	ND	NA

TABLE 1
HISTORIC SOIL ANALYTICAL DATA
444 HEGENBERGER LOOP
OAKLAND, CALIFORNIA
Results In Milligrams Per Kilogram
(Page 2 of 2)

Sample ID	Depth (ft bgs)	Date	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	TPH-g	TPH-d	TPH-mo	TPH-Gasoline
MW-6	11	3/30/2000	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-7	5	12/12/2000	ND	ND	ND	ND	ND	ND	ND	NA	NA
MW-7	10	12/12/2000	ND	ND	ND	ND	ND	ND	ND	NA	NA
MW-7	15	12/12/2000	ND	ND	ND	ND	ND	ND	ND	NA	NA
MW-7	20	12/12/2000	ND	ND	ND	ND	ND	ND	ND	NA	NA
MW-8	5	12/12/2000	ND	ND	ND	ND	ND	ND	ND	NA	NA
MW-8	10	12/12/2000	ND	ND	ND	ND	ND	ND	ND	NA	NA
MW-8	15	12/12/2000	ND	ND	ND	ND	ND	ND	ND	NA	NA
MW-8	20	12/12/2000	ND	ND	ND	ND	ND	ND	ND	NA	NA

TABLE 1a
HISTORIC SOIL SVOC METAL ANALYTICAL DATA
444 HEGENBERGER LOOP
OAKLAND, CALIFORNIA
Results In Milligrams Per Kilogram

Sample ID	WC-8	OWS@5'
Depth (Ft bgs)	8	5
Date	6/10/1996	6/10/1996
Napthalene	1.7	0.36
Fluoranthene	ND	0.68
Pyrene	ND	0.99
Benzo(a)anthracene	ND	0.88
Chrysene	ND	1.11
Benzo(b)fluoranthene	ND	1.7
Benzo(k)fluoranthene	ND	0.46
Benzo(a)pyrene	ND	1.1
Indeno(1,2,3-c,d)pyrene	ND	0.97
Dibenz(a,h)anthracene	ND	0.41
Benzo(g,h,i)perylene	ND	1.1
Lead	11	96
Chromium	46	41
Cadmium	ND	ND
Nickel	61	51
Zinc	54	150

TABLE 2
HISTORIC GROUNDWATER ANALYTICAL DATA
444 HEGENBERGER LOOP
OAKLAND, CALIFORNIA
Results In Micrograms Per Liter
(Page 1 of 2)

WELL I.D.	DATE	TPH-d	TPH-g	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	FUEL ADDITIVES
MW-1	12/02/98(a)	ND(50)	ND(50)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	---
	03/08/99	190	ND(50)	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.3)	---
	07/01/99	ND(50)	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	---
	09/15/99	ND(50)	3,100	ND(0.5)	9.6	7.8	12	---
	12/27/99	ND(50)	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	---
	12/27/99	WELL DESTROYED						
MW-2	12/02/98(a)	99	ND(50)	**4.6**	0.85	0.57	5	---
	03/08/99	210	180	**200(a)**	0.74	1.3	2.3	---
	07/01/99	ND(50)	1,100	**190**	13	33	36	---
	09/15/99	100*	990	**330**	9.7	11	19	---
	12/27/99	ND(50)	1,000	**260**	7.2	1.3	10	---
	03/29/00	31,000	1,900	**110**	4.8	9.5	12	---
	06/09/00	NOT SAMPLED: WELL CONTAINED FLOATING HYDROCARBONS						
	12/14/00	470	1,600	**450**	18	61	26	ND(2/20)
	05/08/01	300	950	**120**	5.8	8.5	32	---
	10/04/01	170*	370	**55**	2.8	17	4.2	---
MW-3	12/02/98(a)	300	970	**160**	6.5	16	9	---
	03/08/99	1,400	2,600	**1,800(b)**	30(c)	67(c)	26(c)	---
	07/01/99	150*	3,000	**1**	ND(0.5)	32	36	---
	09/15/99	110*	1,100	**350**	8.3	5.4	10	---
	12/27/99	70	560	**170**	2.1	7.6	3.1	---
	03/24/00	1,000	8,400	**4,100**	71	190	75	---
	06/09/00	320	2,700	**1,100**	17	18	ND(10)	---
	14/14/00	ND(100)	710	**140**	2.2	3.3	1.2	ND(0.5/5)
	05/08/01	ND(400)	1,500	**270**	7.9	11	5.6	---
	10/04/01	ND(50)	140	**45**	ND(0.3)	1.3	ND(0.6)	---
MW-4	12/02/98(a)	620	ND(50)	**1.1**	0.37	<0.3	2	---
	03/08/99	ND(50)	1,300	**1,900(b)**	9.4	1.2	11	---
	07/01/99	ND(50)	610**	**120**	ND(0.5)	<0.5	<0.5	---
	09/15/99	59*	830	**320**	6.5	1.7	<2.0	---
	12/27/99	ND(50)	55	**5.8**	ND(0.5)	<0.5	<0.5	---
	03/24/00	77	430	**240**	3.3	0.98	1.5	---
	06/09/00	ND(50)	220	**91**	0.93	ND(0.5)	ND(0.5)	---
	14/14/00	ND(50)	96	**15**	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
	05/07/01	ND(100)	380	**130**	2.5	1.7	2.5	---
	10/04/01	ND(50)	76	**21**	ND(0.3)	ND(0.3)	ND(0.6)	---

TABLE 2
HISTORIC GROUNDWATER ANALYTICAL DATA
444 HEGENBERGER LOOP
OAKLAND, CALIFORNIA
Results In Micrograms Per Liter
(Page 2 of 2)

WELL I.D.	DATE	TPH-d	TPH-g	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	FUEL ADDITIVES
MW-5	12/02/98(a)	620	ND(50)	**1.1**	0.37	ND(0.3)	2	---
	03/08/99	ND(50)	58	**23**	0.31	ND(0.3)	1.8	---
	07/01/99	64*	1,900	**160**	10	13	22	---
	09/15/99	ND(50)	410	**64**	2.1	1.3	2.7	---
	12/27/99	ND(50)	130	**15**	0.73	ND(0.5)	ND(0.5)	---
	03/24/00	460	2,500	**560**	57	18	87	---
	06/09/00	140	2,600	**770**	63	15	71	---
	12/14/00	ND(50)	220	**17**	0.63	1.7	1.1	ND(0.5/5)
	05/07/01	ND(200)	3,200	**450**	44	54	66	---
	10/04/01	ND(50)	ND(50)	**3.6**	ND(0.3)	ND(0.3)	ND(0.6)	---
MW-6	03/24/00	470	2,400	**430**	16	340	73	---
	06/09/00	ND(50)	540	**190**	1.2	3.7	4.5	---
	12/14/00	ND(50)	ND(50)	0.51	ND(0.5)	ND(0.5)	0.94	ND(0.5/5)
	05/07/01	ND(50)	ND(50)	**4.4**	ND(0.5)	ND(0.5)	ND(0.5)	---
	10/04/01	ND(50)	ND(50)	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.6)	---
MW-7	12/14/00	ND(50)	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5/5)
	05/07/01	ND(50)	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	---
	10/04/01	ND(50)	ND(50)	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.6)	---
MW-8	12/14/00	ND(50)	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	0.52 MTBE***
	05/07/01	ND(50)	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	---
	10/04/01	ND(50)	ND(50)	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.6)	---
	MCLs	NE	NE	1	100	680	1750	MTBE - 5 ALL OTHER - NE

Notes:
Bold values exceed MCLs
(a) Reporting limit for this monitoring event are elevated 10 times due to matrix interference.
(b) Reporting limit is elevated 100 times due to matrix interference.
(c) Reporting limit is elevated 5 times due to matrix interference.
* Analytical results within quantitation range for diesel; however, chromatographic pattern not typical of fuel
** Analytical results within quantitation range for gasoline; however, chromatographic pattern not typical of fuel
*** Remaining fuel additives were not detected at or above respective laboratory reporting limits
--- Not available/not analyzed
MCL Maximum Contaminant Levels per State Office of Drinking Water Standards
ND Not detected at or above indicated laboratory reporting limit
NE No MCL or Action Level has been established.
TPH-d Total petroleum hydrocarbons as diesel
TPH-g Total petroleum hydrocarbons as gasoline
Fuel Additives include methyl tertiary butyl ether (MTBE), di-isopropyl ether, ethyl tertiary butyl ether, tertiary amyl methyl ether, and tertiary butyl alcohol

TABLE 3

HISTORIC DEPTH
TO WATER
444 HEGENBERGER LOOP
OAKLAND, CALIFORNIA

WELL I.D.	DATE	INSTALLED WELL DEPTH (feet bgs)	SCREEN INTERVAL (feet bgs)	WELL DEPTH (feet BTOC)	TOC ELEVATION (feet)	DEPTH TO GROUNDWATER (feet BTOC)	GROUNDWATER ELEVATION (feet)	COMMENTS
MW-1	12/02/98	20	5 - 20	19.60	100.74*	2.90	97.84	hard bottom
	03/08/99			19.35		3.43	97.31	soft bottom
	07/01/99			19.53		3.81	96.93	
	08/18/99			19.53		3.62	97.12	
	09/15/99			19.30		3.69	97.05	
	12/27/99			19.45		3.81	96.93	well destroyed
MW-2	12/02/98	20	5 - 20	19.79	102.44*	4.61	97.83	soft bottom
	03/08/99			19.32		5.16	97.28	soft bottom
	07/01/99			19.43		5.91	96.53	
	08/18/99			19.43		5.53	96.91	
	09/15/99			19.43		5.55	96.89	
	12/27/99			19.52		5.55	96.89	
	03/29/00			19.57		5.44	97.00	
	06/09/00			?		?	?	NM -- FLH
	12/14/00			19.50	9.05**	5.00	4.05	Resurveyed
	05/07/01			19.30		5.69	3.36	
	10/04/01			19.30		5.60	3.45	
MW-3	12/02/98	20	5 - 20	19.85	102.00*	4.24	97.76	soft bottom
	03/08/99			19.24		4.90	97.10	soft bottom
	07/01/99			19.54		5.35	96.65	
	08/18/99			19.54		5.21	96.79	
	09/15/99			19.56		5.26	96.74	
	12/27/99			19.60		5.42	96.58	
	03/24/00			19.63		5.81	96.19	
	06/09/00			19.59		5.43	96.57	
	12/14/00			16.55	8.60**	4.85	3.75	Resurveyed
	05/07/01			16.32		5.37	3.23	
	10/04/01			16.31		5.27	3.33	
MW-4	12/02/98	20	5 - 20	19.15	100.00*	2.20	97.80	soft bottom
	03/08/99			19.44		2.80	97.20	hard bottom
	07/01/99			19.48		5.23	94.77	
	08/18/99			19.48		5.00	95.00	
	09/15/99			19.42		4.99	95.01	
	12/27/99			19.58		5.23	94.77	
	03/24/00			19.63		5.39	94.61	
	06/09/00			19.67		5.24	94.76	
	12/14/00			19.55	8.50**	4.60	3.90	Resurveyed
	05/07/01			19.31		5.20	3.30	
	10/04/01			19.31		5.08	3.42	

TABLE 3

HISTORIC DEPTH
TO WATER
444 HEGENBERGER LOOP
OAKLAND, CALIFORNIA

WELL I.D.	DATE	INSTALLED WELL DEPTH (feet bgs)	SCREEN INTERVAL (feet bgs)	WELL DEPTH (feet BTOC)	TOC ELEVATION (feet)	DEPTH TO GROUNDWATER (feet BTOC)	GROUNDWATER ELEVATION (feet)	COMMENTS
MW-5	12/02/98	20	5 - 20	19.72	102.22*	4.59	97.63	soft bottom
	03/08/99			19.72		5.20	97.02	hard bottom
	07/01/99			19.61		5.59	96.63	
	08/18/99			19.61		5.37	96.85	
	09/15/99			19.55		5.55	96.67	
	12/27/99			19.54		5.48	96.74	
	03/24/00			19.57		6.02	96.20	
	06/09/00			19.52		5.59	96.63	
	12/14/00			19.75	8.84**	5.10	3.74	Resurveyed
	05/07/01			19.46		5.52	3.32	
	10/04/01			19.46		5.45	3.39	
MW-6	03/24/00	20	10 - 20	18.39	102.58*	5.49	97.09	
	06/09/00			18.44		5.87	96.71	
	12/14/00			14.25	9.19**	5.13	4.06	Resurveyed
	05/07/01			15.71		5.89	3.30	
	10/04/01			15.67		5.71	3.48	
MW-7	12/14/00	20	5 - 20	18.75	8.10**	3.48	4.62	
	05/07/01			18.03		5.13	2.97	
	10/04/01			19.74		4.87	3.23	
MW-8	12/14/00	20	5 - 20	20.15	8.68**	5.10	3.58	
	05/07/01			20.31		5.74	2.94	
	10/04/01			20.32		5.52	3.16	

Notes:
bgs = Below ground surface
TOC = Top of casing
BTOC = Below top of casing
NM = Not measured
FLH = Floating product
* = Elevation relative to arbitrary benchmark of 100 feet established at MW-4
** = Elevation relative to established City of Oakland benchmark (feet above mean sea level)

Table 4 Oakland Tier 2 SSTLs
Clayey Silt Defaults

Medium	Exposure Pathway	Land Use	Type of Risk	Benz(a)-anthracene	Benzene	Benzo(a)-pyrene	Benzo(b)-fluoranthene	Benzo(g,h,i)-perylene	Benzo(k)-fluoranthene	Cadmium	Chrysene
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	1.7E+00	1.9E+01	1.7E-01	1.7E+00		1.7E+00	2.1E+04	1.7E+01
			Hazard		6.3E+01			1.6E+02		3.6E+01	
		Commercial/ Industrial	Carcinogenic	4.3E+00	4.9E+01	4.3E-01	4.3E+00		4.3E+00	7.9E+04	4.3E+01
			Hazard		3.0E+02			7.4E+02		5.1E+02	
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	SAT	1.9E+00	SAT	SAT		SAT		SAT
			Hazard		6.2E+00			SAT			
		Commercial/ Industrial	Carcinogenic	SAT	3.0E+01	SAT	SAT		SAT		SAT
			Hazard		1.8E+02			SAT			
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	SAT	1.6E+02	SAT	SAT		SAT		SAT
			Hazard		6.5E+02			SAT			
		Commercial/ Industrial	Carcinogenic	SAT	6.2E+02	SAT	SAT		SAT		SAT
			Hazard		SAT			SAT			
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	1.4E+01	*4.5E-03*	*1.2E+01*	SAT		SAT	*1.1E+00*	SAT
			Hazard		*4.5E-03*	*1.2E+01*		SAT		*1.1E+00*	
		Commercial/ Industrial	Carcinogenic	5.8E+01	*4.5E-03*	*1.2E+01*	SAT		SAT	*1.1E+00*	SAT
			Hazard		*4.5E-03*	*1.2E+01*		SAT		*1.1E+00*	
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	>SOL	5.6E+00	>SOL	>SOL		>SOL		>SOL
			Hazard		1.9E+01			>SOL			
		Commercial/ Industrial	Carcinogenic	>SOL	8.9E+01	>SOL	>SOL		>SOL		>SOL
			Hazard		5.4E+02			>SOL			
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	>SOL	>SOL	>SOL	>SOL		>SOL		>SOL
			Hazard		>SOL			>SOL			
		Commercial/ Industrial	Carcinogenic	>SOL	>SOL	>SOL	>SOL		>SOL		>SOL
			Hazard		>SOL			>SOL			
	Ingestion of Groundwater	Residential	Carcinogenic	5.6E-04	*1.0E-03*	*2.0E-04*	5.6E-04		5.6E-04	*5.0E-03*	>SOL
			Hazard		*1.0E-03*	*2.0E-04*		>SOL		*5.0E-03*	
		Commercial/ Industrial	Carcinogenic	2.4E-03	*1.0E-03*	*2.0E-04*	>SOL		>SOL	*5.0E-03*	>SOL
			Hazard		*1.0E-03*	*2.0E-04*		>SOL		*5.0E-03*	
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic	1.6E-04	6.3E-02	1.1E-05	1.1E-04		1.2E-04		>SOL
			Hazard		1.8E-01			>SOL		2.0E-01	

*Italicized concentrations based on California MCLs
SAT = RBSL exceeds saturated soil concentration of chemical
>SOL = RBSL exceeds solubility of chemical in water

ATTACHMENT 1

ACHCSA CORRESPONDANCE
April 3, 2001
May 3, 2001

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

April 3, 2001
StID # 5814

Mr. Patrick Murray
McMorgan & Company
One Bush St., Suite 800
San Francisco, CA 94104

Re: Site Investigation at 444 Hegenberger Loop, Oakland CA 94621

Dear Mr. Murray:

Our office has received and reviewed the March 9, 2001 Fouth Quarter Groundwater Monitoring Report for the above site as prepared by Tetra Tech EM Inc. (TTEMI), your consultant. This report also includes the results of a sensitive receptor survey and the installation of two off-site wells, MW-7 and MW-8.

The results of the sensitive receptor survey did not identify any down-gradient drinking water wells from this site. The nearest surface water body is approximately 800' southwest of the site and would not likely be impacted given the gradient and current observed concentrations. There was a potential risk of preferential migration of dissolved contaminants via the utilities identified ie water, sanitary sewer, etc lines. The initial results from the off-site wells does not indicate that the contaminant plume has migrated off-site absent the presence of preferential migration through the utilities.

Our office has the following comments to the recommendations made in this report:

- We agree that quarterly groundwater monitoring of the wells should continue. This data will be used to support your verification of this site's release being stable and of "low risk".
- The additional groundwater data should ultimately be used to revise the original risk evaluation. You may recall that the original evaluation concluded potential human health risk via the pathway groundwater volatilization to indoor air. Additional data should be used to revise this evaluation when site closure is recommended.
- The analysis of the fuel additives MTBE, DIPE et al may be discontinued given the absence of these contaminants in past monitoring events.
- In regards to testing for natural attenuation factors, this information has seldom been shown to be consistent with anticipated theoretical results and therefore, may not always be useful. You may do this testing as you choose, however, please run dissolved oxygen and oxidation-reduction potential on your groundwater samples during your quarterly events since oxygen is the most common and favorable electron pair acceptor.
- At this time, our office does not see the need for an additional monitoring well.

You may contact me at (510) 567-6765 if you have any questions.

Sincerely,

Barney M Chan

Barney M. Chan
Hazardous Materials Specialist

C: B. Chan, files
Mr. W. Kim, Tetra Tech EM Inc., 10670 White Rock Road, Suite 100, Rancho Cordova, CA 95670

Com444HegLoop

Tetra Tech EM Inc.

10670 White Rock Road, Suite 100 ♦ Rancho Cordova, CA 95670 ♦ (916) 852-8300 ♦ FAX (916) 852-0307

May 3, 2001
Via Facsimile and US Mail

Mr. Barney M. Chan
Alameda County, Health Care Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: 444 Hegenberger Loop, Oakland, CA
Tetra Tech EM Inc. Project Number P1389

Dear Mr. Chan:

Thank you for taking the time to meet with me and the representatives of McMorgan & Company, Mr. Patrick Murray and Ms. Mary Schroeder. We appreciated your comments and recommendations concerning the ongoing site investigation and proposed sale and development of the referenced property. Based on our meeting of Friday, April 27, 2001 we came away with the understanding that one or two additional quarterly groundwater monitoring of all existing wells should be conducted and that based on trends associated with target contaminants, a Risk-Based Corrective Action analyses should be conducted using the American Society for Testing and Materials standards.

You mentioned that based on current information from site investigations, the lack of beneficial use of the underlying aquifer, lack of nearby sensitive receptors, and the proposed likely use as a hotel that closure would be likely and eminent. You further commented that although your office will be the initial reviewer of any closure request, that the California Regional Water Quality Control Board has the final authorization for site closure. We understand that as a condition of closure, a risk management plan may be required for the site and should the site be developed, a site health and safety plan and engineering controls may also be required.

As I informed you at our meeting, I have scheduled the next quarterly groundwater monitoring to take place on Monday, May 7, 2001. Should you have any questions or if I can be of further assistance, please do not hesitate to contact me at 916.853.4505.

Sincerely,

Walter H. Kim
Program Manager

WHK:mak/Meeting Minutes of 042701

cc: Mr. Patrick Murray, McMorgan & Company

ATTACHMENT 2

OAKLAND RBCA ELIGIBILITY CHECKLIST

ATTACHMENT 2

Oakland RBCA Eligibility Checklist

The Oakland Tier 1 RBSLs and Tier 2 SSTLs are intended to address human health concerns at the majority of sites in Oakland where commonly-found contaminants are present. Complicated sites—especially those with continuing releases, ecological concerns or unusual subsurface conditions—will likely require a Tier 3 analysis. The following checklist is designed to assist you in determining your site's eligibility for the Oakland RBCA levels.

CRITERIA	YES	NO
1. Is there a continuing, *primary* source of a chemical of concern, such as a leaking container, tank or pipe? (This does *not* include residual sources.)	☐	☒
2. Is there any mobile or potentially-mobile free product?	☐	☒
3. Are there more than five chemicals of concern at the site at a concentration greater than the lowest applicable Oakland RBCA level?	☐	☒
4. Are there any preferential vapor migration pathways—such as gravel channels or utility corridors—that are potential conduits for the migration, on-site or off-site, of a volatilized chemical of concern?	☐	☒
5. Do both of the following conditions exist? (a) Groundwater is at depths less than 300 cm (10 feet) (b) Inhalation of volatilized chemicals of concern from groundwater in indoor or outdoor air is a pathway of concern but groundwater ingestion is *not**	☐	☒
6. Are there any existing on-site or off-site structures intended for future use where exposure to indoor air vapors from either soil or groundwater is of concern *and* one of the following three conditions is present? (a) A slab-on-grade foundation that is less than 15 cm (6 inches) thick (b) An enclosed, below-grade space (e.g., a basement) that has floors or walls less than 15 cm (6 inches) thick (c) A crawl space that is not ventilated	☐	☒
7. Are there any immediate, acute health risks to humans associated with contamination at the site, including explosive levels of a chemical?	☐	☒
8. Are there any complete exposure pathways to nearby ecological receptors, such as endangered species, wildlife refuge areas, wetlands, surface water bodies or other protected areas?	☐	☒

*If groundwater ingestion *is* a pathway of concern, the associated Oakland RBCA levels will be more stringent than those for any groundwater-related inhalation scenario, rendering depth to groundwater irrelevant in the risk analysis.

If you answer "no" to all questions, your site is eligible for the Oakland RBCA levels. If you answer "yes" to any of the questions, your site is *not* eligible for the Oakland RBCA levels at this time.

ATTACHMENT 3

OAKLAND RBCA WORKSHEET INPUTS

OAKLAND RBCA TIER 2 CLAYEY SILT INPUTS

		Residential		Commercial/ Industrial
Input Parameters	**Units**	**Child**	**Adult**	**Worker**
Soil-Specific Parameters				
Capillary fringe thickness	cm	=adult residential	152	=adult residential
Capillary fringe air content	cm^3/cm^3		0.010	
Capillary fringe water content	cm^3/cm^3		0.49	
Fraction organic carbon (FOC*)	g oc/g soil		0.02	
Groundwater Darcy velocity	cm/yr		6	
Groundwater mixing zone thickness	cm		1524	
Infiltration rate through the vadose zone	cm/yr		3	
Soil bulk density	g/cm^3		1.33	
Soil to skin adherence factor	mg/cm^2	1	1	1
Total soil porosity	cm^3/cm^3	=adult residential	0.5	=adult residential
Vadose zone air content	cm^3/cm^3		0.1	
Vadose zone water content	cm^3/cm^3		0.4	
Vadose zone thickness	cm		148	
Structural and Climatic Parameters				
Areal fraction of cracks in building foundation	cm^2/cm^2	=adult residential	0.001	0.001
Foundation air content	cm^3/cm^3		0.26	=adult residential
Foundation water content	cm^3/cm^3		0.12	
Foundation thickness	cm		15	15
Lower depth of surficial soil zone	cm		100.0	=adult residential
Depth to subsurface soil sources	cm		100	
Depth to groundwater	cm		300	
Width of source area parallel to wind or groundwater flow direction	cm		1500	
Outdoor air mixing zone height	cm		200	
Particulate emission rate	g/cm^2-s		1.38E-11	1.38E-11
Wind speed above ground surface in outdoor air mixing zone	cm/s		322	=adult residential

OAKLAND RBCA TIER 2 CLAYEY SILT INPUTS

		Residential		Commercial/ Industrial
Input Parameters	**Units**	**Child**	**Adult**	**Worker**
Exposure Parameters				
Averaging time for carcinogens	yr	=adult residential	70	=adult residential
Averaging time for non-carcinogens	yr	6	24	25
Averaging time for vapor flux	s	=adult residential	9.46E+08	7.88E+08
Body weight	kg	15	70	70
Building air volume/floor area	cm^3/cm^2	=adult residential	229	305
Exposure duration	yr	6	24	25
Exposure frequency	d/yr	350	350	250
Exposure frequency to water used for recreation	d/yr	120	120	0
Exposure time to indoor air	hr/d	24	24	9
Exposure time to outdoor air	hr/d	16	16	9
Exposure time to water used for recreation	hr/d	2	1.0	0
Groundwater ingestion rate	L/d	1	2	1
Indoor air exchange rate	1/s	=adult residential	5.60E-04	1.40E-03
Indoor inhalation rate	m^3/d	10	15	20
Ingestion rate of water used for recreation	L/hr	0.05	0.05	0
Outdoor inhalation rate	m^3/d	10	20	20
Skin surface area exposed to soil	cm^2	2000	5000	5000
Skin surface area exposed to water used for recreation	cm^2	8000	20000	0
Soil ingestion rate	mg/d	200	100	50
TARGET RISK LEVELS				
Individual Excess Lifetime Cancer Risk	unitless	=adult residential	1.0E-05	1.0E-05
Hazard quotient	unitless		1.0	1.0

NORTHWEST ENVIROCON INC.
Field Log of Test Pit or Auger Hole

Site Location 444 HEGENBERGER	Boring # ~~GP~~SB05
Project # 05-428 Date 10/6/97	Sheet 1 of 1
Drilling Contractor ALL TERRAIN DRILLING	
Driller RICHARD Logger DAVID COPP	
Start Finish	Boring Diameter 8"
Drilling Method ~~[illegible]~~ HOLLOW STEM	
Sampling Method SPLIT-SPOON SLEEVE - ~~DIRECT PUSH~~	
n/s est. water depth 10' elev	

Depth	Cas.	Annu.	Well Legend	Screening Results (ppm)	Sample #	# Rec.	Blow Ct.	USCS	Description of Material
1								SC	Reddish brown coarse ~~clayey sand~~ Sandy clay ~/ medium gravels - dry no stains or odors
2									
3									
4				>2,000	SB05-3		3,2,3	CL	black fine sandy clay ~/ small gravels - dry medium hydrocarbon odors
5									
6								CL	dark gray fine sandy clay ~~dry~~ moist medium odor
7				>2,000	SB05-6		1,2,2		
8									
9					SB05-W				H_2O - odor
10									~~H2O~~
11					~~SB05-W~~			OH	dark gray heavy plastic clay ~/ organic matter - staining but no odor
12									

NORTHWEST ENVIROCON INC.
Field Log of Test Pit or Auger Hole

Site Location 444 HEGENBERGER | Boring # ~~GP~~ SB 06

Project # 05-428 | Date 10/6/97 | Sheet 1 of 1

Drilling Contractor ALL TERRAIN DRILLING

Driller RICHARD | Logger DAVID COPP

Start | Finish | Boring Diameter 8"

Drilling Method ~~GEOPROBE~~ HOLLOW STEM

Sampling Method SPLIT SPOON SLEEVE ~~DIRECT PUSH~~

n/s | est. water depth 10' | elev

Depth	Cas.	Annu.	Well Legend	Screening Results (ppm)	Sample #	# Rec.	Blow Ct.	USCS	Description of Material
1								SC	Reddish brown clayey sand
2									Coarse sandy clay w/ medium gravels
3									no stains or odors
4				723	SB06-3			CL	black fine sandy clay w/ small gravels
5									med. hydrocarbon odor - dry
6								CL	dark gray fine sandy clay - moist
7				275	SB06-6				med. odor
8					SB06-W			▽	H2O has odor
9									
10									
11								OH	dark gray heavy plastic clay w/ organic matter - staining & slight odor
12									

NORTHWEST ENVIROCON INC.
Field Log of Test Pit or Auger Hole

Site Location 444 HEGENBERGER	Boring # SB07
Project # 05-428 Date 10/6/97	Sheet 1 of 1
Drilling Contractor ALL TERRAIN DRILLING	
Driller RICHARD Logger DAVID COPP	
Start Finish	Boring Diameter 8"
Drilling Method ~~GEOPROBE~~ HOLLOW STEM AUGER	
Sampling Method SPLITSPOON W/ SLEEVE - ~~DIRECT PUSH~~	
n/s	est. water depth 10' elev

Depth	Cas.	Annu.	Well Legend	Screening Results (ppm)	Sample #	# Rec.	Blow Ct.	USCS	Description of Material
1								SC	Reddish brown coarse clayey sand w/ med. gravels - dry no stains or odors
2									
3									
4				68	SB07-3		16	CL	black fine sandy clay w/ sm. gravels med. odor
5									
6								CL	dark gray fine sandy clay - moist & strong odor
7				1186	SB07-6		5		
8								OH	black, heavy, wet clay
9									
10					SB07-W				moderate odor in H2O
11									
12									

NORTHWEST ENVIROCON INC.
Field Log of Test Pit or Auger Hole

Site Location	444 HEGENBERGER	Boring #	SB08
Project #	05-428	Date	10/7/97
Sheet	1 of 1		
Drilling Contractor	ALL TERRAIN DRILLING		
Driller	RICHARD	Logger	DAVID COPP
Start		Finish	
Boring Diameter	8"		
Drilling Method	HOLLOW STEM AUGER		
Sampling Method	SPLIT SPOON SLEEVE - DIRECT PUSH		
n/s		est. water depth	10' elev

Depth	Cas.	Annu.	Well Legend	Screening Results (ppm)	Sample #	# Rec.	Blow Ct.	USCS	Description of Material
1								SC	Reddish-brown coarse clayey sand w/ med. to large gravels, no odor
2									
3									
4				1,041	SB08-3		17	CL	Dark gray sandy gravelly clay - dry strong odor
5									
6									
7				>2,000	SB08-6		5	OH	dark gray heavy plastic clay - moist moderate odor
8									
9									
10					SB08-W			▽	H2O - moderate odor
11									
12									

NORTHWEST ENVIROCON INC.
Field Log of Test Pit or Auger Hole

Site Location	444 HEGENBERGER	Boring #	SB09
Project #	05-428	Date	10/8/97
Sheet	1 of 1		
Drilling Contractor	ALL TERRAIN DRILLING		
Driller	RICHARD	Logger	DAVID COPP
Start	Finish	Boring Diameter	8"
Drilling Method	HOLLOW STEM AUGER		
Sampling Method	SPLIT SPOON w/ SLEEVES		
n/s	est. water depth	10'	elev

Depth	Cas.	Annu.	Well Legend	Screening Results (ppm)	Sample #	# Rec.	Blow Ct.	USCS	Description of Material
1								SC	Reddish brown coarse clayey sand w/ large gravels, No odors
2									
3									
4				610	SB09-3		11	CL	black sandy clay w/ med. gravels strong odor
5									
6									
7				34	SB09-6		5	DH	dark gray heavy, plastic clay low odor
8									
9									
10					SB09-W			▽	moderate odor in H2O
11									
12									

NORTHWEST ENVIROCON INC.
Field Log of Test Pit or Auger Hole

Site Location	444 HEGENBERGER	Boring #	SB10
Project #	05-428	Date	10/6/07
Sheet	1 of 1		
Drilling Contractor	ALL TERRAIN DRILLING		
Driller	RICHARD	Logger	DAVID COPP
Start		Finish	
Boring Diameter	8"		
Drilling Method	HOLLOW STEM AUGER		
Sampling Method	SPLIT SPOON w/ SLEEVE		
n/s		est. water depth	10' elev

Depth	Cas.	Annu.	Well Legend	Screening Results (ppm)	Sample #	# Rec.	Blow Ct.	USCS	Description of Material
1								SC	Reddish brown coarse clayey sand w/med. gravels dry. no odors
2									
3									
4				>2,000	SB10-3		8	CL	dark gray fine sandy clay w/ sm. gravels moist, medium odor
5									
6								CL	black fine sandy clay w/ sm. gravels
7				1,171	SB10-6		4	OH	dark gray heavy plastic clay - strong odor - moist
8									
9									
10					SB10-W			▽	moderate odor in H2O
11									
12									

NORTHWEST ENVIROCON INC.
Field Log of Test Pit or Auger Hole

Site Location 444 HEGENBERGER	Boring # ~~SB~~ SB11
Project # 05-428 Date 10/7/97	Sheet 1 of 1
Drilling Contractor ALL TERRAIN DRILLING	
Driller RICHARD Logger DAVID COPP	
Start Finish	Boring Diameter ~~8~~ "
Drilling Method ~~GEOPROBE~~ HOLLOW STEM AUGER	
Sampling Method ~~DRIVE PUSH~~ SPLIT SPOON SLEEVE -	
n/s est. water depth 10' elev	

Depth	Cas.	Annu.	Well Legend	Screening Results (ppm)	Sample #	# Rec.	Blow Ct.	USCS	Description of Material
1								SC	~~Reddish~~ brown coarse ~~sand~~ layer sand w/ med. gravels no odors
2									
3									
4				308	SB11-3		10	CL	dark gray to black medium grained sandy clay - slight moi moderate odor
5									
6					no sample at 6' possible				
7								OH	dark gray heavy plastic clay w/ organi moderate odor
8				42	SB11-8		4		
9									
10								▽	moderate gasoline odor in H_2O
11									
12									

NORTHWEST ENVIROCON INC.
Field Log of Test Pit or Auger Hole

Site Location 444 HEGENBERGER | Boring # ~~SB1~~ SB12

Project # 05-428 Date 10/7/97 | Sheet 1 of 1

Drilling Contractor ALL TERRAIN DRILLING

Driller RICHARD | Logger DAVID COPP

Start | Finish | Boring Diameter 8"

Drilling Method ~~GEOPROBE~~ HOLLOW STEM AUGER

Sampling Method ~~DIRECT PUSH~~ SPLIT SPOON SLEEVE

n/s | est. water depth 10' | elev

Depth	Cas.	Annu.	Well Legend	Screening Results (ppm)	Sample #	# Rec.	Blow Ct.	USCS	Description of Material
1								SC	Reddish-brown coarse clayey sand w/ med. gravels no odors
2									
3									
4				396	SB12-3		8	CL	dark gray to black fine sandy clay w/ med. gravels moderate odor
5									
6									
7				939	SB12-6		5	CH	dark gray heavy plastic clay - moist moderate odor
8									
9									
10								▽	H2O has mod. odor
11									
12									

NORTHWEST ENVIROCON INC.
Field Log of Test Pit or Auger Hole

Site Location 444 HEGENBERGER	Boring # ~~SB~~ SB13
Project # 05-428 Date 10/7/97	Sheet 1 of 1
Drilling Contractor ALL TERRAIN DRILLING	
Driller RICHARD Logger DAVID COPP	
Start Finish	Boring Diameter 8"
Drilling Method ~~GEOPROBE~~ HOLLOW STEM AUGER	
Sampling Method SPLIT SPOON w/ SLEEVE - ~~DIRECT PUSH~~	
n/s	est. water depth 10' elev

Depth	Cas.	Annu.	Well Legend	Screening Results (ppm)	Sample #	# Rec.	Blow Ct.	USCS	Description of Material
1								SC	Reddish-brown Coarse ~~clayey~~ sand w/ med. gravels. No odors
2									
3									
4				1,145	SB13-3		10	CL	dark gray medium-grained sandy, gravelly clay wet & sheen noted strong odor
5									
6									
7				143	SB13-6		3	OH	dark gray heavy plastic clay - slightly wet - moderate odor
8									
9									
10					SB13-W			▽	H_2O has ~~odor~~ moderate odor
11									
12									

NORTHWEST ENVIROCON INC.
Field Log of Test Pit or Auger Hole

Site Location 444 HEGENBERGER	Boring # ~~SB14~~
Project # 05-428 Dale 10/7/97	Sheet 1 of 1
Drilling Contractor ALL TERRAIN DRILLING	
Driller RICHARD Logger DAVID COPP	
Start Finish	Boring Diameter 8"
Drilling Method ~~CLEAN PROBE~~ HOLLAW STEM AUGER	
Sampling Method ~~DIRECT PUSH~~ SPLIT SPOON SLEEVE	
n/s	esl. water depth 10' elev

Depth	Cas.	Annu.	Well Legend	Screening Results (ppm)	Sample #	# Rec.	Blow Ct.	USCS	Description of Material
									Reddish brown
1								SC	clayey sand w/
									large gravels
2									no odors
3									
4				1,125	SB14-3		12		dark gray medium-d
								CL	sandy clay with
5									sm. gravels.
									medium ~~dense~~ odor
6									
7				373	SB14-6		4		dark gray heavy
									plastic clay
8								CH	moderate odor
9									
10					SB14-W			▽	H2O has moderate o
11									
12									

NORTHWEST ENVIROCON INC.
Field Log of Test Pit or Auger Hole

Site Location 444 HEGENBERGER	Boring # SB15
Project # 05-428 Date 10/8/97	Sheet 1 of 1
Drilling Contractor ALL TERRAIN DRILLING	
Driller RICHARD Logger DAVID COPP	
Start Finish	Boring Diameter 8"
Drilling Method HOLLOW STEM AUGER	
Sampling Method 6" SPLIT SPOON w/ SLEEVES	
n/s	est. water depth 10' elev

Depth	Cas.	Annu.	Well Legend	Screening Results (ppm)	Sample #	# Rec.	Blow Ct.	USCS	Description of Material
1								SC	Reddish brown clayey Sandy w/ lg. gravels No odors
2									
3									
4				1.2	SB15-3		10	CL	gray sandy clay w/ sm. gravels No odors
5									
6									
7				2	SB15-6		4	OH	heavy black plastic clay No odor
8									
9									
10					SB15-W			▽	No odor in H2O
11									
12									

NORTHWEST ENVIROCON INC.
Field Log of Test Pit or Auger Hole

Site Location 444 HEGENBERGER | Boring # SB16

Project # 05-428 | Date 10/8/97 | Sheet 1 of 1

Drilling Contractor ALL TERRAIN DRILLING

Driller RICHARD | Logger DAVID COPP

Start | Finish | Boring Diameter 8"

Drilling Method ~~GEOPROBE~~ HOLLOW STEM AUGER

Sampling Method ~~DIRECT PUSH~~ SPLIT SPOON SLEEVE

n/s | est. water depth 10' | elev

Depth	Cas.	Annu.	Well Legend	Screening Results (ppm)	Sample #	# Rec.	Blow Ct.	USCS	Description of Material
1								SC	Reddish brown clayey sand w/ lg. gravels No odor
2									
3									
4				17.5	SB16-3		9	CL	gray sandy clay w/ sm. gravels No odors
5									
6									
7				20.7	SB16-6		6	OH	Heavy black plastic clay No odor
8									
9									
10					SB16W			▽	No odor in H2O
11									
12									

NORTHWEST ENVIROCON, INC.
1826 TRIBUTE ROAD, SUITE A
SACRAMENTO, CA. 95815
(916) 649-3570 FAX: (916) 649-3819

BORING LOG

BORING NC MW

PROJECT NAME: 444 HEGENBERGER LOOP
PROJECT NUMBER: 05-001594
SOIL BORING ☐ MONITORING WELL ☒ ☐ SHEET 1 of

PROJECT LOCATION: 444 HEGENBERGER LOOP OAKLAND, CA		START DATE: 11/23/98	COMPLETION DATE: 11/23/98
		COMPLETED DEPTH (FEET): 20	GROUNDWATER DEPTH (FEET): 15-ENCOUNTERED
DRILLING CONTRACTOR: WEEKS DRILLING/PUMP	DRILLER: RICHARD LARSEN	WELL CONSTRUCTION	
DRILLING EQUIPMENT: HSA-MOBILE	BORING DIAMETER: 8"Ø	TYPE AND DIAMETER OF WELL CASING: 2-INCH Ø SCHEDULE 40 PVC/FLUSH-THREADED	
SAMPLING METHOD: California Modified ☒ Hand Auger ☐ Geoprobe ☐		SLOT SIZE: 0.020-INCH	FILTER MATERIAL: MONTEREY 2/12
LOGGED BY: MHS	BACKFILL MATERIAL:	WELL DEPTH: 20FT	PERFORATED INTERVAL: 5-20FT

TIME	DESCRIPTION	BLOW COUNTS	DEPTH (FEET)	SAMPLE	UCSC SOIL TYPE	LITHOLOGY	WELL	PID/FID OVA (ppm)	REMARKS
1010	0.3'A/C **0.3'-3.5' SAND W/CLAY.** SP/SC. 7.5YR4/6. POORLY GRADED, MED/SUBROUNDED, PLASTIC CLAY/MED. STIFF, MOIST, NO ODOR.		0		SP/SC			0.1	AGGREGATE BASE
1030	**3.5' - 13.5' CLAY.** CL. 2.5Y2/0, MOIST, MOD. PLASTIC, STIFF, NO ODOR	3 4 3	5		CL CL			0.1	MW1 3.5'-5.0'
1040	**CLAY.** CL 2.5Y2/0, MOIST, MOD. PLASTIC, STIFF. NO ODOR	1 4 1	10		CL CL			0.3	MW1 8.5'-10.0'
1047	**13.5' - 18.5' SAND W/CLAY.** SW. 2.5Y6/6, MED. TO COARSE/SUBROUNDED, PLASTIC CLAY/MOD. STIFF, WET, NO ODOR	3 8 5	15		SW			0.0	MW1 13.5'-15.0' SATURATED @ 15'
1052 1100	**18.5' - 20.0' GRAVELLY SAND.** GW. 2.5Y6/6, FINE GRAIN/ROUNDED, MED-COARSE SAND/SUBROUNDED, SATURATED, NO CEMENTATION, NO ODOR, 3% GRAVEL 40% MED. SAND/57% COARSE SAND	8 15 25	20	NS	GW			0.0	NO SAMPLE-BARREL EMPTY TD@20FT
			25						

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ENVIROCON, INC.
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BORING LOG

PROJECT NAME: 444 HEGENBERGER LOOP
PROJECT NUMBER: 05-001594
SOIL BORING ☐ MONITORING WELL ☒ _____ ☐

BORING NO: MW1
SHEET 1 of 1

PROJECT LOCATION: 444 HEGENBERGER LOOP, OAKLAND, CA
START DATE: 11/23/98
COMPLETION DATE: 11/23/98
COMPLETED DEPTH (FEET): 20
GROUNDWATER DEPTH (FEET): 17-ENCOUNTERED
DRILLING CONTRACTOR: WEEKS DRILLING/PUMP
DRILLER: RICHARD LARSEN
DRILLING EQUIPMENT: HSA-MOBILE
BORING DIAMETER: 8"Ø
SAMPLING METHOD: California Modified ☒ Hand Auger ☐ Geoprobe ☐
LOGGED BY: MHS
BACKFILL MATERIAL:

WELL CONSTRUCTION
TYPE AND DIAMETER OF WELL CASING: 2-INCH Ø SCHEDULE 40 PVC/FLUSH-THREADED
SLOT SIZE: 0.020-INCH
FILTER MATERIAL: MONTEREY 2/12
WELL DEPTH: 20FT
PERFORATED INTERVAL: 5-20FT

TIME	DESCRIPTION	BLOW COUNTS	DEPTH (FEET)	SAMPLE	UCSC SOIL TYPE	LITHOLOGY	WELL	PID/FID READINGS OVA (ppm)	REMARKS
	0.3' A/C 0.3' - 2.0' SAND W/CLAY. SP/SC. 7.5YR4/6. POORLY GRADED, MED/SUBROUNDED, PLASTIC CLAY/SOFT, MOIST, SL. ODOR. 2.0' - 3.5' CLAY. CL. 5Y4/2. MOIST/PLASTIC/SOFT, ODOR		0		SP/SC CL			4.4	AGGREGATE BASE
1306	3.5' - 8.5' GRAVELLY CLAY. GC. 5Y4/2. FINE/SUBROUNDED, PLASTIC CLAY/SOFT, STRONG ODOR	3 7 5	5		GC GC			321	MW1 3.5'-5.0'
1315	8.5' - 13.5' CLAY. CL. 2.5Y2/0, MOIST, PLASTIC, SOFT, ODOR	1 2 1	10		CL CL			626	MW1 8.5'-10.0'
1324	13.5' - 18.5' SILTY CLAY. CL. 5B4/1, MOIST, MOD. PLASTIC, STIFF, NO ODOR	3 7 5	15		CL CL			0.2	MW1 13.5'-15.0' SATURATED @ 17'
1334	18.5' - 20.0' GRAVELLY SAND. GW. 2.5Y/6, FINE GRAIN/SUBROUNDED, MED-COARSE SAND/SUBROUNDED, SATURATED, NO CEMENTATION, NO ODOR. 3-5% GRAVEL, 40-50% SAND, 40-50% COARSE SAND		20	NS	GW			0.0	NO SAMPLE- BARREL EMPTY
1350			25						TD@20FT

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BORING LOG

PROJECT NAME: 444 HEGENBERGER LOOP
PROJECT NUMBER: 05-001594
SOIL BORING ☐ MONITORING WELL ☒ ☐

BORING NO: MW3
SHEET 1 of 1

PROJECT LOCATION: 444 HEGENBERGER LOOP, OAKLAND, CA		START DATE: 11/24/98	COMPLETION DATE: 11/24/98
		COMPLETED DEPTH (FEET): 20	GROUNDWATER DEPTH (FEET): 15-16 ENCOUNTERE
DRILLING CONTRACTOR: WEEKS DRILLING/PUMP	DRILLER: RICHARD LARSEN	WELL CONSTRUCTION	
DRILLING EQUIPMENT: HSA-MOBILE	BORING DIAMETER: 8"Ø	TYPE AND DIAMETER OF WELL CASING: 2-INCH Ø SCHEDULE 40 PVC/FLUSH-THREADED	
SAMPLING METHOD: California Modified ☒ Hand Auger ☐ Geoprobe ☐		SLOT SIZE: 0.020-INCH	FILTER MATERIAL: MONTEREY 2/12
LOGGED BY: MHS	BACKFILL MATERIAL:	WELL DEPTH: 20FT	PERFORATED INTERVAL: 5-20FT

TIME	DESCRIPTION	BLOW COUNTS	DEPTH (FEET)	SAMPLE	UCSC SOIL TYPE	LITHOLOGY	WELL	PID/FID OVA READINGS (ppm)	REMARKS
0903	0.3' A/C								
0910	0.3'-1.0' GRAVELLY SAND. SP. 7.5YR4/6. POORLY SORTED MED/SUBROUNDED, MOIST, NO ODOR		0		SP				AGGREGATE BASE
	1.0' - 3.5' CLAY. CL. 7.5YR3/0. PLASTIC, MOIST, NO ODOR				CL			1.0	
0916	3.5'- 8.5' SILTY SAND. SM. 7.5YR3/0. MOIST, NONPLASTIC, FINEGRAINED, SUBROUNDED, ODOR, NO CEMENTATION	2 3 2	5		SM			872	MW3 3.5'-5.0'
					SM				
0930	8.5' - 13.5' CLAY. CL. 2.5YR2/0. MOIST, PLASTIC, SOFT, ODOR	2 3 4	10		CL			3.0	MW3 8.5'-10.0'
	13.5'-15.0' CLAYEY SANDY GRAVEL. GC. 5B4/1. WET, SAND IS WELL SORTED, MEDIUM TO COARSE/SUBROUNDED. GRAVEL IS POORLY				CL				
0937	SORTED/SUBANGULAR. CLAY IS PLASTIC, SOFT, NO ODOR	3 7 5	15		GC			0.0	MW3 13.5'-15.0'
	15.0'-20.0' AS ABOVE. 10YR6/6. SATURATED				GC				SATURATED @ 15' - 16'
0950		6 20 9	20	NS	GC			0.0	NO SAMPLE- BARREL EMPTY
0955									TD@20FT
			25						

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BORING LOG

PROJECT NAME: 444 HEGENBERGER LOOP
PROJECT NUMBER: 05-001594
SOIL BORING ☐ MONITORING WELL ☒ ☐

BORING NO: MW4
SHEET 1 of

PROJECT LOCATION: 444 HEGENBERGER LOOP, OAKLAND, CA		START DATE: 11/24/98	COMPLETION DATE: 11/24/98
		COMPLETED DEPTH (FEET): 20	GROUNDWATER DEPTH (FEET): 16'-17' ENCOUNTE
DRILLING CONTRACTOR: WEEKS DRILLING/PUMP	DRILLER: RICHARD LARSEN	WELL CONSTRUCTION	
DRILLING EQUIPMENT: HSA-MOBILE	BORING DIAMETER: 8"Ø	TYPE AND DIAMETER OF WELL CASING: 2-INCH Ø SCHEDULE 40 PVC/FLUSH-THREADED	
SAMPLING METHOD: California Modified ☒ Hand Auger ☐ Geoprobe ☐		SLOT SIZE: 0.020-INCH	FILTER MATERIAL: MONTEREY 2/12
LOGGED BY: MHS	BACKFILL MATERIAL:	WELL DEPTH: 20FT	PERFORATED INTERVAL: 5-20FT

TIME	DESCRIPTION	BLOW COUNTS	DEPTH (FEET)	SAMPLE	USCS SOIL TYPE	LITHOLOGY	WELL	PID/FID OVA (ppm)	REMARKS
1144	0.3'-0.5' A/C **0.5'-1.5' GRAVELLY SAND.** SP. 7.5YR4/6. POORLY SORTED MED-COARSE/ SUBROUNDED, GRAVEL IS FINE/SUBANGULAR, MOIST, NO ODOR		0		SP				AGGREGATE BASE
					CL				
1200	**1.5'-5.0' CLAY.** CL. 7.5YR3/0. PLASTIC, SLIGHTLY MOIST, SOFT, ODOR	4 8 5			CL			40.8	MW5 3.5'-5.0'
	5.0' - 8.5' SILTY SAND W/GRAVEL. SM. 7.5YR3/0 GRADING TO 5B4/1. MOIST, NONPLASTIC, SAND IS POORLY SORTED, FINE-GRAINED/SUBANGULAR. GRAVEL IS FINE GRAINED/SUBROUNDED. NO		5		SM				
1208	CEMENTATION. ODOR	2 4 3			CL			259	MW5 8.5'-10.0'
	8.5'-10.0' CLAY. CL. 2.5Y2/0. PLASTIC, MEDIUM STIFF, MOIST, ODOR		10		CL				
1227	**10.0' - 15.0'** AS ABOVE	6 6 4			CL			20.0	MW5 13.5'-15.0'
	15.0' - 20.0' CLAYEY SANDY GRAVEL. GC. 2.5Y/6. WET, CLAY IS PLASTIC, SOFT. SAND IS WELL SORTED, MED-COARSE/ SUBANGULAR, GRAVEL IS FINE/ SUBANGULAR, NO ODOR		15		GC				SATURATED 16'-17'
1600		8 27 13		NS	GC			0.0	NO SAMPLE-BARREL EMPTY
1600			20						TD@20FT
			25						

ENVIRONMENTAL / ENGINEERING CONSULTANTS
382 MARTIN AVENUE
SANTA CLARA, CA 95050-3112
TEL: 408.327.5700 FAX: 408.327.5707

BORING LOG

BORING / WEL NUMBER: MW-6

SHEET OF

PROJECT: McMorgan	PROJECT NUMBER: 1124SC01	START DATE: 3/20/00	COMPLETION DATE: 3/20/00
PROJECT LOCATION: 444 Hegenberger Rd. OAKLAND, CA		BORING DEPTH: 20'	STATIC GROUNDWATER DEPTH: 8'
DRILLING CONTRACTOR: WEERS DRILLING	DRILLER:	WELL CONSTRUCTION	
DRILLING EQUIPMENT:	BORING DIAMETER: 8"	TYPE AND DIAMETER OF WELL CASING: 2" Sch 40 PVC	SANITARY SEAL MATERIAL AND INTERVAL: GROUT
SAMPLING METHOD: CAL MOD SPLIT-SPOON	BACKFILL MATERIAL:	SLOT SIZE AND INTERVAL: 0.02"	FILTER MATERIAL AND INTERVAL: Lonestar #2/12
LOGGED BY: W. LAWSON	SUPERVISED BY: D. J. Hidalgo	PERFORATED INTERVAL: 10'-20'	WELL DEPTH: 20'
	RG/CEG/CHG NO.		

DESCRIPTION	DEPTH (FEET)	USCS SOIL TYPE	BLOW COUNTS	SAMPLE INTERVAL	SAMPLE I.D.	PID/FID OVA READINGS (ppm)	WELL	REMARK
0-1' BASEROCK 1'-2' GRAVELLY CLAY (GC/CL): moist; brn; low plastic fines; probably f-g; some non-plastic fines (silt) 2'-4' GRAVELLY CLAY (GC/CL): moist; gray; fuel odor 4'-5' GRAVEL/COBBLES (GP): heavy odor 5'-8' CLAY (CH): dk. gray; damp; heavy odor 8' odor change to light gray; moist; low to medium plasticity 11' - Heavy odor (fuel?) 16'-20'(?) GRAVELLY SAND/SANDY GRAVEL (SP/GP): Wet.	0 5 10 15 20	GP GC/CL GC/CL GP CH CL SP/GP	2 4 6		MW-6-11			WELL CONSTRUCTION 0-12" Christy Box Toc - locking rubber plug 0-10' 2" blank Sch 40 PVC 10'-20' 0.02" slotted Sch 40 PVC bot - slip cap SAND & SEAL 0-1' Quikcrete 1-6 Grout 6-8 Bentonite Chips 8-20 Lonestar #2/12 11.5'-20' straight drill ▽ Initial Water
20' - Terminate Boring	25							

DATE: 12/12/00

PRC LITHOLOGIC BORING LOG

SHEET

SITE ID: 444 Hagenberger Rd BORING ID: MW-7

CHARGE NO.: P1389004

LOGGED BY: M. Buchalski

SYMBOLS: ≡ Well Screen Int. ⊻ Static water level ● Staining / Odor

CONTACTS: — Distinct --- Inferred \ Gradational

SAMPLE ID	SAMPLE TIME	SAMPLE DEPTH	PID-SAMPLE (ppm)	BLOW COUNT / 6-IN	Inches Recovered	DEPTH (ft bgs)	GRAPHIC	USCS SOIL TYPE	Well Screen Detail	
										Asphalt Gravel (Base Rock), dark yellowish brown (10 moist, gravel up to 2 inch, few clay, dense, n odor
			0	1		5		CH		
121200001	1105			1						Clay (CH), Black (2.5/N), moist, very plastic, very soft, no odor
				2						
			0	4		10		CL		
121200-02	1110			8						Silty clay (CL), dark greenish gray (10Y 4/1), to moist, medium plasticity, medium stiff, no od
				11						
						15		GP		
			0	14						Sandy gravel (GP), olive brown (2.5Y 4/4), saturated, some clay, sand coarse to fine grained, gravel u to 1.5 inch, loose, no odor
121200-03	1115			18						
				20						
								SP		
						20				Poorly graded sand (SP), olive brown (2.5Y 4/4), saturated, some gravel up to 3/4 inch, loose, no odor
121200-04	1130		0	0						
										Bottom of boring

DATE: 12/12/00

PRC LITHOLOGIC BORING LOG

SHEET 1 C

SITE ID: 449 Hagenberger Rd BORING ID: MW-8

CHARGE NO.:

LOGGED BY: M. Buchalski

SYMBOLS: ≡ Well Screen Int. ⏚ Static water level * Staining / Odor

CONTACTS: —— Distinct ---- Inferred \ Gradational

SAMPLE ID	SAMPLE TIME	SAMPLE DEPTH	PID-SAMPLE (ppm)	BLOW COUNT / 6-IN	Inches Recovered	DEPTH (ft bgs)	GRAPHIC	USCS SOIL TYPE	Well Screen Detail	
										Asphalt Fill material, clay with sand and gravel, very dark grayish brown (10YR 3/2), moist, gravel up to 1.5 inch
				2		5		CL		Silty clay (CL), dark greenish gray (10Y 3/1), saturated, extremely soft, low plasticity, no odor, Bay Mud
			0	1						
121200-05	1345			1						
				2		10		CH		Clay (CH), black (2.5/N), moist, few silt, some organic material, stiff, medium plasticity, hackly fracture, no odor
			0	3						
121200-06	1352			6						
			0	10		15		GP		Sandy gravel (GP), olive brown (2.5Y4/4), saturated, some clay, sand coarse to fine grained, gravel up to 2 inch, loose, no odor
121200-07	1405			20						
										Poorly graded sand (SP), olive brown (2.5Y4/4), saturated, trace gravel, loose, no odor
121200-08	1415		0	16		20		SP		
										Bottom of boring

NORTHWEST ENVIROCON, INC.
1828 TRIBUTE ROAD, SUITE A
SACRAMENTO, CA 95815
(916) 649-3570 FAX: (916) 649-3819

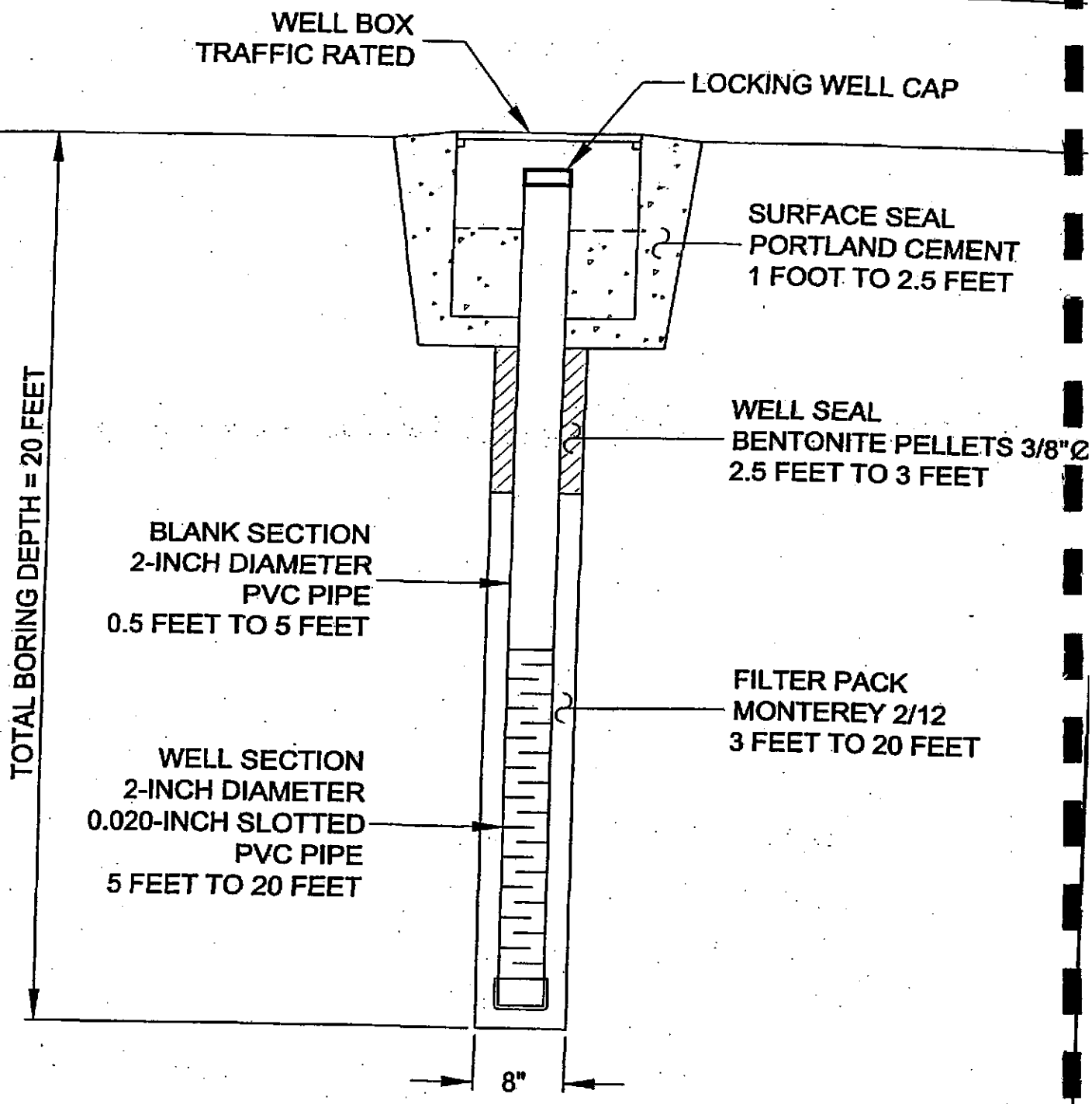
WELL CONSTRUCTION DETAIL

WELL NO.: MW

PROJECT: 05-001594

INSTALLATION DATE: 11/23/98

ADDRESS: 444 HEGENBERGER LOOP
OAKLAND, CA



SCALE:	DATE:	VERSION:
NTS	11/25/98	

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NORTHWEST ENVIROCON, INC.
1828 TRIBUTE ROAD, SUITE A
SACRAMENTO, CA 95815
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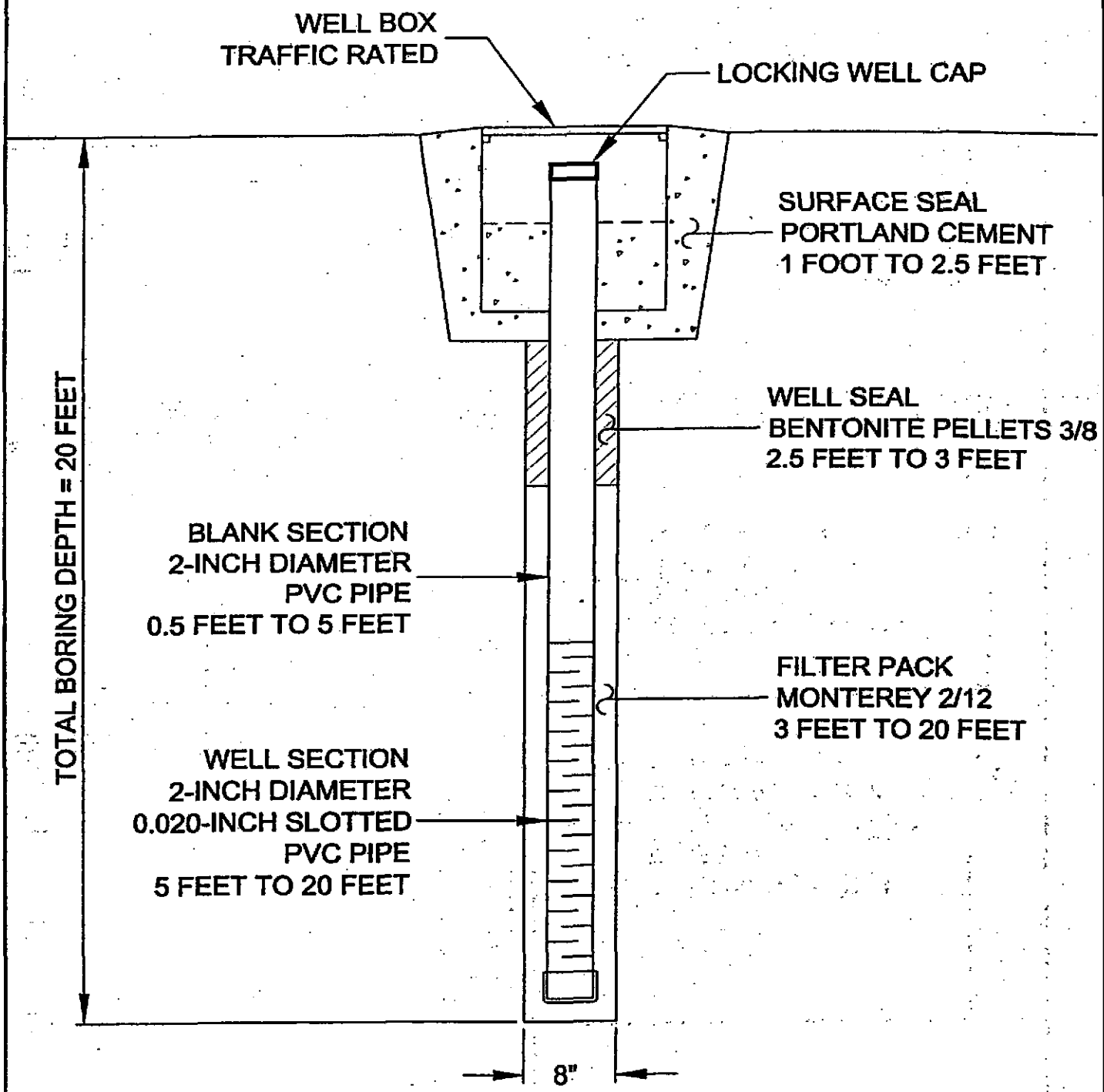
WELL CONSTRUCTION DETAIL

WELL NO. MW

PROJECT: 05-001594

INSTALLATION DATE: 11/23/98

ADDRESS: 444 HEGENBERGER LOOP
OAKLAND, CA



SCALE:	DATE:	VERSION:
NTS	11/25/98	

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NORTHWEST ENVIROCON, INC.
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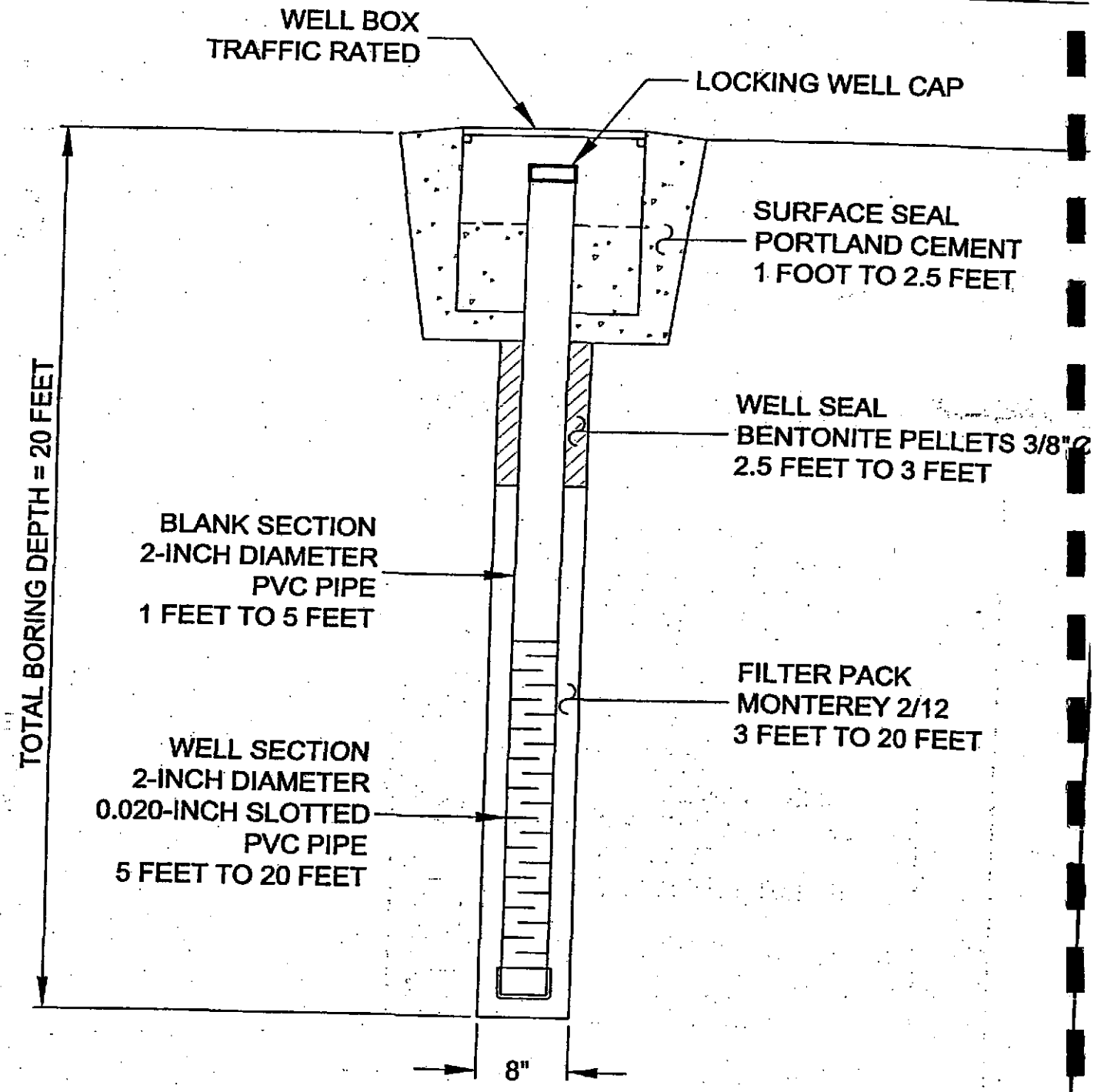
WELL CONSTRUCTION DETAIL

WELL NO: MW

PROJECT: 05-001594

INSTALLATION DATE: 11/23/98

ADDRESS: 444 HEGENBERGER LOOP
OAKLAND, CA



SCALE:	DATE:	VERSION:
NTS	11/25/98	

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TETRATECH EM INC

MONITORING WELL COMPLETION RECORD

MONITORING WELL
MONITORING WELL NO.: MW-8
PROJECT: McMorgan + Company
SITE: 444 Hegenberger Rd
BOREHOLE NO.: MW-8
WELL PERMIT NO.: W00-894
TOC TO BOTTOM OF WELL: _____

DRILLING INFORMATION
DRILLING BEGAN:
DATE: 12/12/00 TIME: 1335
WELL INSTALLATION BEGAN:
DATE: 12/12/00 TIME: 1415
WELL INSTALLATION FINISHED:
DATE: 12/12/00 TIME: _____
DRILLING CO.: Weeks Drilling and Pump Co.
DRILLER: Gary Mayer
LICENSE: C57 177681
DRILL RIG: _____
DRILLING METHOD:
- ☒ HOLLOW STEM AUGER
- ☐ AIR ROTARY
- ☐ OTHER: _____

DIAMETER OF AUGERS:
ID: _____ OD: 6 inch

WELL CASING
- ☒ SCHEDULE 40 PVC
- ☐ OTHER: _____

PRODUCT: _____
MFG. BY: Longyear
CASING DIAMETER:
ID: _____ OD: 2 inch
LENGTH OF CASING: 20 ft

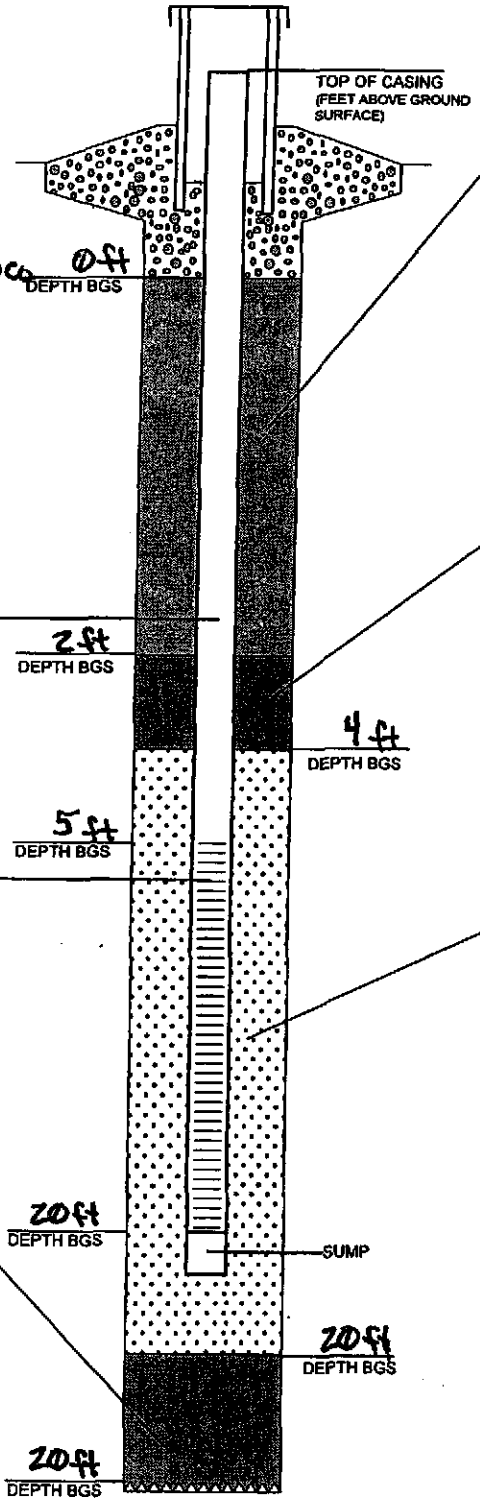
WELL SCREEN
- ☒ SCHEDULE 40 PVC
- ☐ OTHER: _____

PRODUCT: _____
MFG. BY: Longyear
CASING DIAMETER:
ID: _____ OD: 2 inch
SLOT SIZE: 0.01 inch
LENGTH OF SCREEN: 15 ft

BOREHOLE BACKFILL
AMOUNT CALCULATED: _____
AMOUNT USED: _____
- ☐ BENTONITE CHIPS, SIZE: _____
- ☐ BENTONITE PELLETS, SIZE: _____
- ☐ SLURRY: _____
- ☐ FORMATION COLLAPSE: _____
- ☐ OTHER: _____

PRODUCT: _____
MFG. BY: _____
METHOD INSTALLED:
- ☐ POURED ☐ TREMIE
- ☐ OTHER: _____

SURFACE COMPLETION
- ☒ FLUSH MOUNT
- ☐ ABOVE GROUND WITH BUMPER POST
- ☒ CONCRETE ☐ ASPHALT



SURVEY INFORMATION
TOC ELEVATION: _____
GROUND SURFACE ELEVATION: _____
NORTHING: _____
EASTING: _____
DATE SURVEYED: _____
SURVEY CO.: _____

ANNULAR SEAL
VOLUME CALCULATED: _____
AMOUNT USED: _____
- ☒ GROUT FORMULA (PERCENTAGES)
  - PORTLAND CEMENT: 1 100 lb bag
  - BENTONITE: _____
  - WATER: _____
- ☐ PREPARED MIX
  - PRODUCT: _____
  - MFG. BY: _____

METHOD INSTALLED:
- ☒ POURED ☐ TREMIE
- ☐ OTHER: _____

BENTONITE SEAL
VOLUME CALCULATED: _____
AMOUNT USED: 50 lbs
- ☐ PELLETS, SIZE: _____
- ☒ CHIPS, SIZE: _____
- ☐ OTHER: _____

PRODUCT: Hydro Plug 3/8
MFG. BY: _____
METHOD INSTALLED:
- ☒ POURED ☐ TREMIE
- ☐ OTHER: _____

AMOUNT OF WATER USED: _____

FILTER PACK
- ☐ PREPACKED FILTER

VOLUME CALCULATED: _____
AMOUNT USED: 4 100 lb bags
- ☒ SAND, SIZE: 2/12

PRODUCT: Lapis Lustre
MFG. BY: RMC Pacific Materials
METHOD INSTALLED:
- ☒ POURED ☐ TREMIE
- ☐ OTHER: _____

WATER LEVEL: _____
(BTOC AFTER WELL INSTALLATION)

CENTRALIZERS USED?
☐ YES ☒ NO;
CENTRALIZER DEPTHS: _____

LEGEND
BGS = BELOW GROUND SURFACE
BTOC = BELOW TOP OF CASING
N/A = NOT APPLICABLE
NR = NOT RECORDED
TOC = TOP OF CASING

Table 4 Oakland Tier 2 SSTLs
Clayey Silt Defaults

Medium	Exposure Pathway	Land Use	Type of Risk	Dibenz(a,h)-anthracene	Ethyl-benzene	Flouran-thene	MTBE	Naphthalene	Nickel	Pyrene	Toluene	Xylenes	Zinc
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	4.9E-01					3.4E+05				
			Hazard		3.9E+03	1.6E+03	2.0E+02	1.6E+03	1.4E+03	1.2E+03	7.1E+03	5.3E+04	2.1E+04
		Commercial/ Industrial	Carcinogenic	1.3E+00					1.3E+06				
			Hazard		1.8E+04	7.4E+03	9.3E+02	7.4E+03	2.0E+04	5.6E+03	3.4E+04	2.6E+05	3.1E+05
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	SAT									
			Hazard		SAT	SAT	1.4E+04	SAT		SAT	9.3E+02	SAT	
		Commercial/ Industrial	Carcinogenic	SAT									
			Hazard		SAT	SAT	SAT	SAT		SAT	SAT	SAT	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	SAT									
			Hazard		SAT	SAT	SAT	SAT		SAT	SAT	SAT	
		Commercial/ Industrial	Carcinogenic	SAT									
			Hazard		SAT	SAT	SAT	SAT		SAT	SAT	SAT	
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	3.8E+01	*1.6E+01*		*2.1E-02*	*2.4E+00*	*2.0E+01*		*1.8E+00*	*2.7E+01*	
			Hazard		*1.6E+01*	SAT	*2.1E-02*	*2.4E+00*	*2.0E+01*	SAT	*1.8E+00*	*2.7E+01*	8.9E+02
		Commercial/ Industrial	Carcinogenic	1.6E+02	*1.6E+01*		*2.1E-02*	*2.4E+00*	*2.0E+01*		*1.8E+00*	*2.7E+01*	
			Hazard		*1.6E+01*	SAT	*2.1E-02*	*2.4E+00*	*2.0E+01*	SAT	*1.8E+00*	*2.7E+01*	5.8E+03
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	>SOL									
			Hazard		>SOL	>SOL	3.6E+04	>SOL		>SOL	>SOL	>SOL	
		Commercial/ Industrial	Carcinogenic	>SOL									
			Hazard		>SOL	>SOL	>SOL	>SOL		>SOL	>SOL	>SOL	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	>SOL									
			Hazard		>SOL	>SOL	>SOL	>SOL		>SOL	>SOL	>SOL	
		Commercial/ Industrial	Carcinogenic	>SOL									
			Hazard		>SOL	>SOL	>SOL	>SOL		>SOL	>SOL	>SOL	
	Ingestion of Groundwater	Residential	Carcinogenic	1.6E-04	*7.0E-01*		*1.3E-02*	*2.0E-02*	*1.0E-01*		*1.5E-01*	*1.8E+00*	
			Hazard		*7.0E-01*	>SOL	*1.3E-02*	*2.0E-02*	*1.0E-01*	>SOL	*1.5E-01*	*1.8E+00*	4.7E+00
		Commercial/ Industrial	Carcinogenic	7.0E-04	*7.0E-01*		*1.3E-02*	*2.0E-02*	*1.0E-01*		*1.5E-01*	*1.8E+00*	
			Hazard		*7.0E-01*	>SOL	*1.3E-02*	*2.0E-02*	*1.0E-01*	>SOL	*1.5E-01*	*1.8E+00*	3.1E+01
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic	1.4E-05									
			Hazard		3.6E+00	>SOL	1.5E+00	1.5E+00	7.9E+00	>SOL	1.1E+01	6.6E+01	1.2E+02

*Italicized concentrations based on California MCLs
SAT = RBSL exceeds saturated soil concentration of chemical
>SOL = RBSL exceeds solubility of chemical in water

TETRATECH EM INC

MONITORING WELL COMPLETION RECORD

MONITORING WELL
MONITORING WELL NO.: MW-7
PROJECT: McMorgan + Company
SITE: 444 Hagenberger Rd
BOREHOLE NO.: MW-7
WELL PERMIT NO.: W00-893
TOC TO BOTTOM OF WELL: _____

DRILLING INFORMATION
DRILLING BEGAN:
DATE: 12/12/00 TIME: 1100
WELL INSTALLATION BEGAN:
DATE: 12/12/00 TIME: 1130
WELL INSTALLATION FINISHED:
DATE: 12/12/00 TIME: 1320
DRILLING CO.: Woodard Drilling + Pump Co.
DRILLER: Gary Meyers
LICENSE: C57177681
DRILL RIG: _____
DRILLING METHOD:
- ☒ HOLLOW STEM AUGER
- ☐ AIR ROTARY
- ☐ OTHER: _____

DIAMETER OF AUGERS:
ID: _____ OD: 6 inch

WELL CASING
- ☒ SCHEDULE 40 PVC
- ☐ OTHER: _____

PRODUCT: _____
MFG. BY: Long year
CASING DIAMETER:
ID: _____ OD: 2 inch
LENGTH OF CASING: 20 feet

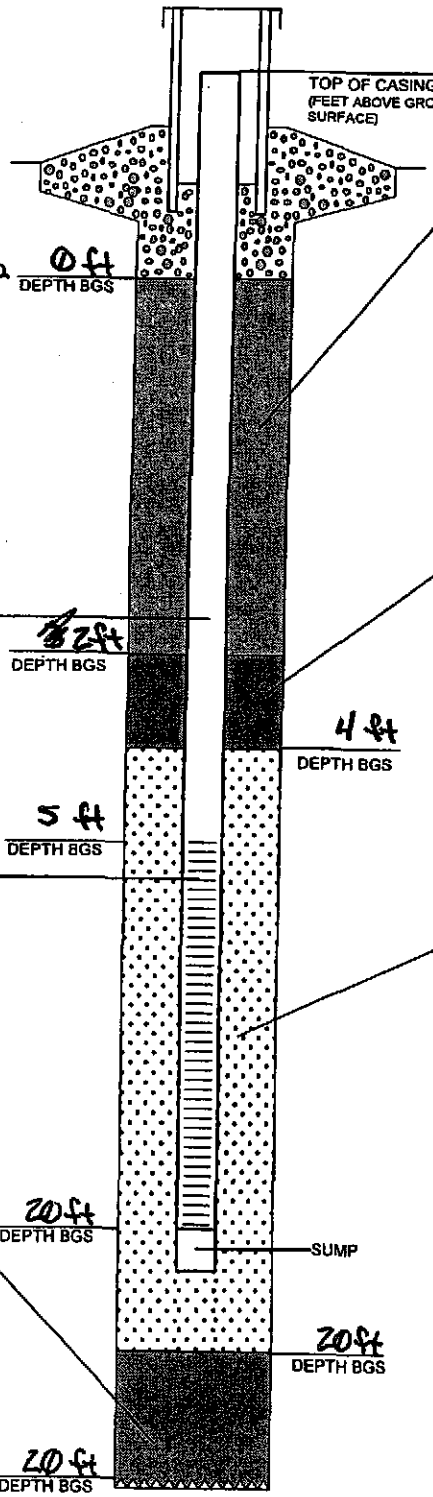
WELL SCREEN
- ☒ SCHEDULE 40 PVC
- ☐ OTHER: _____

PRODUCT: _____
MFG. BY: Long year
CASING DIAMETER:
ID: _____ OD: 2 inch
SLOT SIZE: 0.01 inch
LENGTH OF SCREEN: 15 feet

BOREHOLE BACKFILL
AMOUNT CALCULATED: _____
AMOUNT USED: _____
- ☐ BENTONITE CHIPS, SIZE: _____
- ☐ BENTONITE PELLETS, SIZE: _____
- ☐ SLURRY: _____
- ☐ FORMATION COLLAPSE: _____
- ☐ OTHER: _____

PRODUCT: _____
MFG. BY: _____
METHOD INSTALLED:
- ☐ POURED ☐ TREMIE
- ☐ OTHER: _____

SURFACE COMPLETION
- ☒ FLUSH MOUNT
- ☐ ABOVE GROUND WITH BUMPER POST
- ☒ CONCRETE ☐ ASPHALT



SURVEY INFORMATION
TOC ELEVATION: _____
GROUND SURFACE ELEVATION: _____
NORTHING: _____
EASTING: _____
DATE SURVEYED: _____
SURVEY CO.: _____

ANNULAR SEAL
VOLUME CALCULATED: _____
AMOUNT USED: _____
- ☒ GROUT FORMULA (PERCENTAGES)
  - PORTLAND CEMENT: 1 100 lb bag
  - BENTONITE: _____
  - WATER: _____
- ☐ PREPARED MIX
  - PRODUCT: _____
  - MFG. BY: _____

METHOD INSTALLED:
- ☒ POURED ☐ TREMIE
- ☐ OTHER: _____

BENTONITE SEAL
VOLUME CALCULATED: _____
AMOUNT USED: 50 lbs
- ☐ PELLETS, SIZE: _____
- ☒ CHIPS, SIZE: _____
- ☐ OTHER: _____

PRODUCT: Hydro Plug 3/8
MFG. BY: _____
METHOD INSTALLED:
- ☒ POURED ☐ TREMIE
- ☐ OTHER: _____

AMOUNT OF WATER USED: _____

FILTER PACK
- ☐ PREPACKED FILTER

VOLUME CALCULATED: _____
AMOUNT USED: 4 100 lb bags
- ☒ SAND, SIZE: 2/12

PRODUCT: Lapis Lustre
MFG. BY: RMC Pacific Materials
METHOD INSTALLED:
- ☒ POURED ☐ TREMIE
- ☐ OTHER: _____

WATER LEVEL: _____
(BTOC AFTER WELL INSTALLATION)

CENTRALIZERS USED?
☐ YES ☒ NO;
CENTRALIZER DEPTHS: _____

LEGEND
BGS = BELOW GROUND SURFACE
BTOC = BELOW TOP OF CASING
N/A = NOT APPLICABLE
NR = NOT RECORDED
TOC = TOP OF CASING