Tetra Tech EM Inc.

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#5814

July 21, 2000

Via Facsimile and U.S. Mail

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Alameda County Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Attn: Mr. Barney M. Chan

Re: Work Plan for Additional Environmental Investigation
444 Hegenberger Loop, Oakland, California
Tetra Tech EM Inc. Project No. P1389.04

Dear Mr. Chan:

At the request of McMorgan and Company (McMorgan), Tetra Tech EM Inc. (TtEMI) has prepared this Work Plan in response to your letter, dated May 18, 2000, for the above-referenced site (Site). The Site Location Map is included as Figure 1 (attached). The scope of work proposed herein is to further assess hydrocarbon impacts to groundwater and to perform a sensitive receptor survey for the Site.

BACKGROUND

The Site is located in northwest Alameda County, approximately ¼ mile south of the Interstate 80 and Hegenberger Road interchange, and approximately 1 mile east of Oakland International Airport. Figure 1 illustrates the location of the Site. The Site is a rectangular shaped parcel situated at the southeast corner of the intersection of Hegenberger Road and Hegenberger Loop. Figure 2, attached, illustrates the configuration of the Site. The western portion of the Site was previously occupied by a retail gasoline service station.

April 1997 Soil and Groundwater Assessment

In April 1997, four soil borings were drilled at the Site to collect soil and groundwater "grab" samples. Figure 2 illustrates the locations of the soil borings (SB-1 through SB-4). Soil sample analytical results indicated total petroleum hydrocarbons as gasoline (TPHg) at concentrations ranging from 1.7 to 260 milligrams per kilogram (mg/kg), total petroleum hydrocarbons as diesel (TPHd) at concentrations ranging from 2.1 to 120 mg/kg, and oil and grease at concentrations ranging from 93 to 220 mg/kg. Groundwater grab sample analytical results detected benzene at concentrations ranging from 35 to 1,600 micrograms per liter (µg/L). Methyl tertiary butyl ether (MTBE) concentrations were not detected in soil or groundwater grab samples at or greater than the analytical detection limit.

July through October 1997 Soil and Groundwater Assessment

An additional investigation was performed at the Site in July and October 1997, including a subsurface geophysical survey (July 24, 1997), exploratory trenching (October 8, 1997) in the northwestern corner of the Site, and drilling of soil borings to collect soil and groundwater grab samples (October 6, 7, and 8, 1997). The results of the geophysical survey and exploratory trenching identified metal debris (discarded piping, automobile parts, and scrap metal) beneath the surface at the Site but did not indicate the presence of underground storage tanks.

Twelve soil borings were drilled and sampled to depths of 10 to 12 feet below ground surface (bgs). Soil sample analytical results detected TPHg at concentrations ranging from 1.1 to 930 mg/kg and oil and grease at concentrations ranging from 13 to 780 mg/kg. TPHd was not detected at concentrations at or greater than the analytical reporting limit. Groundwater grab sample analytical results indicated TPHg at concentrations ranging from 0.190 to 52 milligrams per liter (mg/L); benzene concentrations ranging from 4.5 to 12,000 µg/L; toluene concentrations ranging from 1.1 to 1,800 µg/L; ethylbenzene concentrations ranging from 40 to 6,000 µg/L; and total xylenes concentrations ranging from 1.4 to 7,400 µg/L. Volatile organic compounds (solvents) were not detected in any of the four groundwater samples at or greater than their respective analytical reporting limits. TPHd was detected in one groundwater sample at 0.130 mg/L. Total petroleum hydrocarbons as motor oil concentrations ranged from 0.130 to 0.890 mg/L. MTBE concentrations were not detected in the soil or groundwater grab samples at or greater than the analytical detection limit.

November 1998 Supplemental Soil and Groundwater Assessment

In November 1998, five soil borings at the Site were converted into groundwater monitoring wells (MW1, MW-2, MW-3, MW-4 and MW-5). These wells were constructed of 2-inch-diameter, Schedule 40 polyvinyl chloride (PVC) casing. All five wells were constructed with perforations from 5 to 20 feet bgs. Saturated soils, inferring the presence of groundwater, were encountered during borehole drilling between about 15 and 17 feet bgs in granular material (gravels and sands). Relative elevations of the five groundwater monitoring wells were survey-controlled using the top of casing (TOC) for MW-4 (assumed 100.00 feet) as a bench mark. The TOC elevation of the remaining monitoring wells was surveyed to the bench mark. Depth to groundwater was measured in the developed wells between 2.20 and 4.61 feet below TOC. The groundwater gradient beneath the Site was determined to be approximately 0.00091 feet per feet, with a groundwater flow direction slightly southwest across the Site.

Elevated concentrations of TPHg and benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected in soil samples collected from MW-2, MW-4, and MW-5, between 8.5 and 10 feet bgs. The highest TPHg and BTEX concentrations were detected in soil samples collected from MW-1, between 8.5 and 10 feet bgs. Low TPHg concentrations were detected in soil samples collected from MW-3, between 8.5 and 10 feet bgs, and MW-4, between 10 and 13.5 feet bgs. The lowest TPHg and BTEX concentrations were detected in soil samples collected from MW-4, between 13.5 and 15 feet bgs. TPHg and BTEX concentrations were not detected in soil samples collected from MW-1 above the analytical reporting limit. In general, TPHg and BTEX concentrations in soil decreased with increasing depth. Soil samples were not analyzed for MTBE.

The highest concentrations of TPHg were detected in groundwater samples collected from MW-3. Low concentrations of TPHg were detected in the groundwater sample collected from Well MW-4. Remaining groundwater samples collected from MW-1, MW-2, and MW-5 did not contain concentrations of TPHg at or above the analytical reporting limit. Low concentrations of TPHd were detected in samples collected from MW-2, MW-3, MW-4 and MW-5. Elevated concentrations of BTEX were detected in groundwater samples collected from MW-3 and MW-4. The highest concentrations were detected in groundwater samples collected from MW-3. Low BTEX concentrations were detected in groundwater samples collected from MW-2 and MW-5. BTEX concentrations were not detected in groundwater samples collected from MW-1. MTBE concentrations were not detected in groundwater samples at or greater than the analytical detection limit.

PROPOSED SCOPE OF WORK

Field activities in this work plan are proposed to assess the lateral extents of hydrocarbons downgradient from the Site and to identify any sensitive receptors that may be located near the Site. To accomplish this, TtEMI will conduct an additional subsurface investigation, which includes installation of two off-site groundwater monitoring wells.

Task 1 - Sensitive Receptor Survey

To assist in determining whether nearby sites may be pumping groundwater, which might influence the flow direction of on-site groundwater, a sensitive receptor survey will be conducted. This survey will be used to identify potential receptors that could be impacted from groundwater contamination migrating away from the Site. The purpose of the survey is also to identify nearby wells, surface water bodies, and other potential sensitive receptors.

Domestic, industrial, agricultural, and municipal wells and surface water bodies will be located within a 2,000-foot radius of the Site. In addition, a field survey will be performed encompassing a 500-foot radius to identify any nonregistered wells near the Site.

An additional part of the survey is designed to identify possible preferential pathways for impacted groundwater to migrate offsite. This portion of the survey includes locating underground utilities and identifying their locations in the adjacent streets and sidewalks and pinpointing where these utilities intersect the Site. Depths of these located utility trenches will also be documented, where possible.

Task 2 - Installation of Groundwater Monitoring Wells

Upon work plan approval being granted from Alameda County Health Care Services Agency, applicable permits for installation of monitoring wells will be obtained from Alameda County, Zone 7, and the City of Oakland. This will include permits for access to public right of way, where necessary, for well installation and future sampling of the off-site wells.

Using a licensed drilling subcontractor, two soil borings (MW-7 and MW-8) will be drilled at the proposed locations shown in Figure 2. The borings will be advanced to a depth of about 20 feet below grade (or 10 feet below the water table). Soil samples will be collected at 5-foot depth intervals and will

be properly preserved for possible laboratory analysis. Some analysis may include physical parameters, which may be used in a possible future Tier 2 Risk-Based Corrective Action (RBCA) evaluation for the Site.

Soil samples will be screened in the field for the presence of organic vapors with a portable photoionization device. Selected soil samples will be transported to a California-certified laboratory for analysis under proper chain-of-custody procedures. These samples will include the sample collected from immediately above first-encountered groundwater (capillary fringe) and the sample collected at the bottom of each boring. Selected soil samples will be submitted for laboratory analysis for TPHg and BTEX using U.S. Environmental Protection Agency (EPA) Methods 8015B and 8020B to provide information for additional plume definition. Additionally, these samples will be analyzed using Method 8260B for MTBE and other oxygenates.

Soil borings will be completed as 2-inch-diameter monitoring wells. Each monitoring well will be completed with 15 feet of factory-slotted, PVC well screen and 5 feet of blank well casing. The well screen in each well will be completed with 10-feet of screen below the water table and 5 feet of screen above the water table, if possible. Because the water table at the Site is very shallow, to allow for a proper surface seal, less screen may be used above the water table. The annular space of the screened portion of each monitoring well will be backfilled with gravel pack, extending 1 to 2 feet above the well screen. Above the gravel pack, a 1- to 2-foot-thick well seal will be installed to prevent percolation of surface water into the annular space. Well construction will be completed at the surface with a traffic-rated well box and a locking expandable cap. After installation, the top of each monitoring well will be surveyed relative to a local bench mark to the nearest hundredth of a foot.

Soil cuttings and decontamination and development water will be stored on site in U.S. Department of Transportation (DOT)-approved 55-gallon drums, and properly labeled and sealed. Upon receipt of analytical results and characterization, TtEMI will contract for the proper disposal of soil cuttings and water.

Task 3 - Groundwater Sampling and Monitoring

Groundwater Elevation Measurement

The water table depth in all seven of the groundwater monitoring wells (five existing and two newly installed wells) will be measured relative to the elevations of the monitoring well casing rims using a Solinst water level indicator. Groundwater elevations will be determined by subtracting the water table depth from the casing rim elevations. The previously surveyed elevations of the well casing rims will be used as the reference point for determining groundwater elevations. The groundwater gradient and flow direction will be evaluated using these water table elevations.

Well Purging

Following groundwater elevation measurements, groundwater will be purged from each well using a purge pump. Newly installed wells MW-7 and MW-8 will be properly developed prior to purging and sampling. Groundwater will be removed until a minimum of 3 casing volumes of water have been removed from each well and after the pH, temperature, and conductivity parameters have stabilized. Groundwater parameters will be recorded on a hydrologic data sheet. The purge pump will be cleaned with a liquinox phosphate-free wash, followed by rinsing in tap water. Purged groundwater will be collected in 55-gallon, DOT-approved drums and stored on site. Upon receipt of analytical results and characterization, TtEMI will contract for the proper disposal of soil cuttings and water.

Groundwater Sample Collection

Groundwater samples will be obtained after the static water table has recovered to at least 80 percent of the original level. Groundwater samples will be collected using a new, disposable PVC bailer dedicated for each well. Samples will be transferred into glass vials, sealed with Teflon®-lined caps, labeled, placed on ice in a portable cooler, and transported to a California State-certified laboratory for analysis. Each sample will be recorded on a chain-of-custody record, identifying the sampler, couriers, responsible laboratory personnel, and requested analysis.

Chemical Analysis

Groundwater samples will be transported to the laboratory within 24 hours of sampling. All applicable sample preservation protocols will be followed, and practical quantitation detection limits will be met for the samples analyzed. Chain-of-custody protocol will be observed.

One groundwater sample from each well will be analyzed for TPHg, TPHd, and BTEX. Additionally, these samples will be analyzed using EPA Method 8260B for MTBE and other oxygenates. Laboratory analyses will be performed on a standard 2-week turnaround.

Task 4 - Report Preparation

TtEMI will prepare a detailed report presenting assessment results. The report will include the following items:

- Summary of procedures implemented during the assessment
- Summary of assessment findings
- Soil and groundwater analytical results, including copies of analytical reports
- Boring logs
- Geologic cross sections depicting subsurface conditions
- Tabulated groundwater elevation and analytical data
- Groundwater elevation contour and contaminant isoconcentrations map
- Recommendations for further action in conjunction with future groundwater monitoring events

SCHEDULE

TtEMI will begin work within 14 days (2 weeks) of receiving approval of this work plan. Initial work will include securing boring and encroachment permits.

Should you have any questions, or if we can be of further assistance, please do not hesitate to contact us.

Sincerely,

Joel Coffman, R.G. # 7002
Project Manager

JMC:mak/P1389.04 Work Plan

cc: Walter Kim, TtEMI
Patrick Murray, McMorgan
Mary Schroeder, McMorgan

Attachments (2)

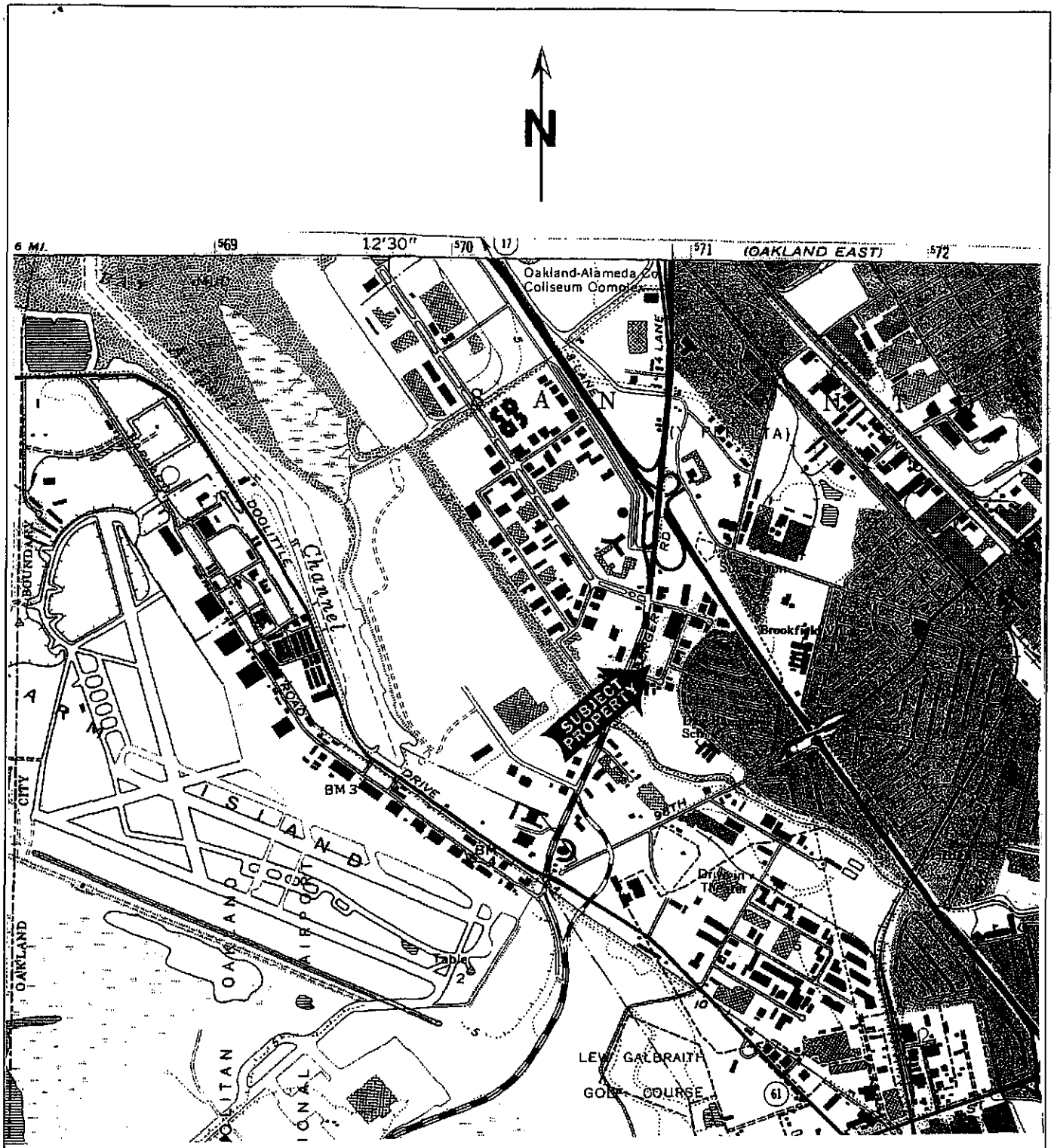


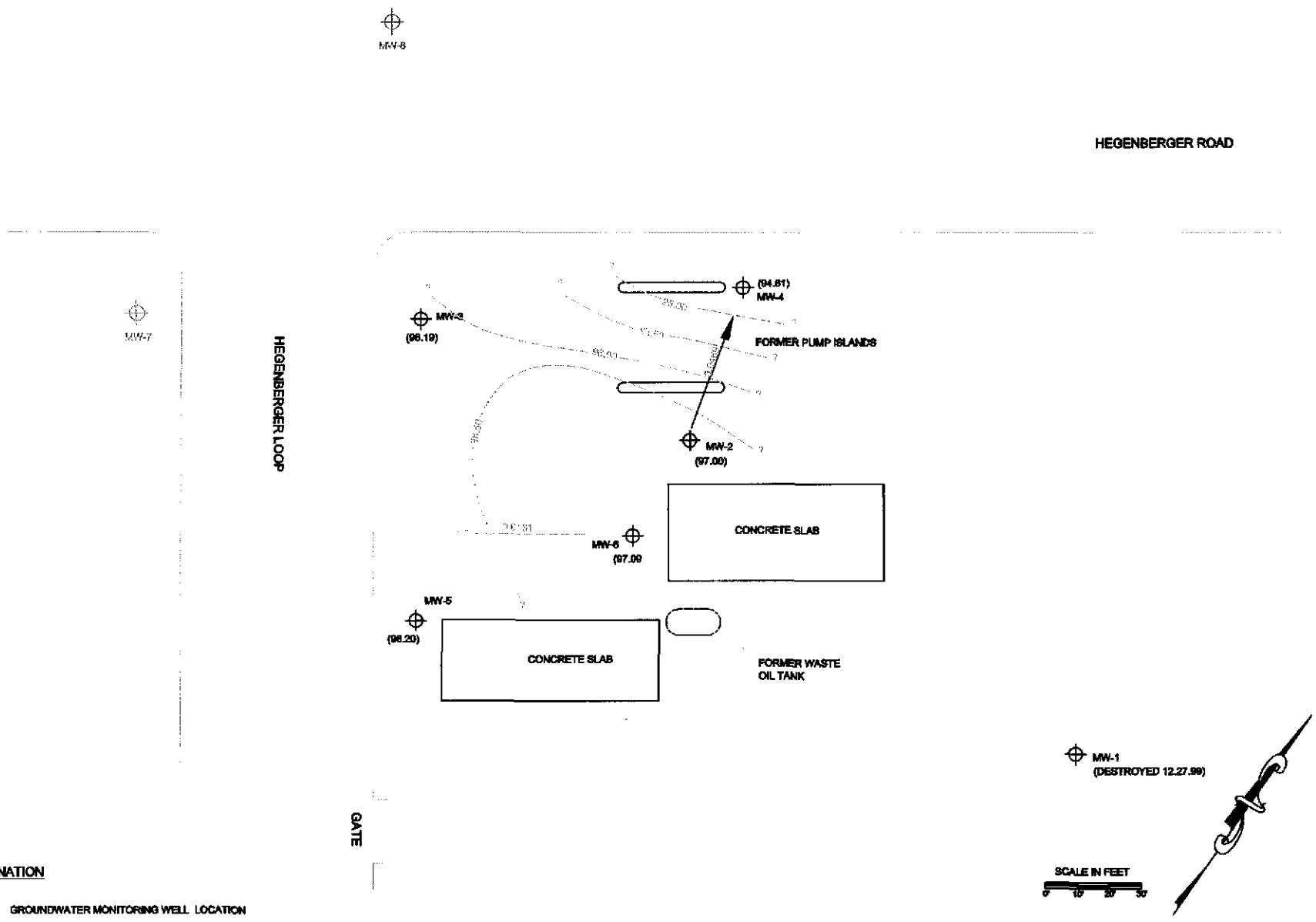
Figure 1 - SITE MAP

Tetra Tech EM Inc.
10870 White Rock Road, Suite 100
Rancho Cordova, California 95670
Tel: 916.853.4561

444 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

FILENAME:	13898M01A
DATE:	JULY 2000
REVISION:	
DRAWN:SKM	

Job Number:
P1389.04



EXPLANATION

- MW-5 — GROUNDWATER MONITORING WELL LOCATION
- — 98.5 — GROUNDWATER CONTOUR, CONTOUR INTERVAL = 0.5 FOOT; DASHED WHERE INFERRED, QUERIED WHERE UNKNOWN)
- (98.20) — GROUNDWATER ELEVATION (BASED ON ARBITRARY DATUM)
- 0.0131 — GROUNDWATER FLOW DIRECTION INDICATING GRADIENT (0.0131) AND DIRECTION
- MW-8 — PROPOSED GROUNDWATER MONITORING WELL LOCATION

Figure 2 - Proposed Monitoring Well Locations

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444 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

FILENAME	13899M01
DATE	July 2000
REVISION	
DRAWN	SKM

Job Number: P1389.04