

**SCS ENGINEERS**

July 28, 2003  
File No.: 01203087.00

Ms. Eva Chu  
Alameda County Health  
Care Services Agency  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502-9335

**Subject: Second Quarter 2003 Groundwater Monitoring Report  
Friesman Ranch Property, Livermore, California**

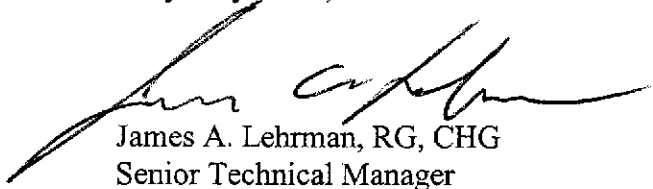
Dear Ms. Chu:

Attached is the Second Quarter 2003 Groundwater Monitoring Report for the Friesman Ranch Property, 1 600 Friesman Road, Livermore, California (Site). The results of this report are consistent with the results of the previous groundwater monitoring events that have been performed at the Site, with chemicals of concern only being detected in monitoring wells KMW-6 and KMW-7. No chemicals of concern were detected in the other monitoring wells sampled (KMW-1 and KMW-8).

SCS Engineers is planning to perform the next groundwater monitoring event by the end of July, 2003. During this upcoming event, we plan to collect samples from monitoring wells KMW-1, KMW-6, KMW-7 and KMW-8, and analyze them for chemicals of concern.

We trust that the attached submittal meets your requirements. Should you require any additional information and/or clarification, please call.

Very truly yours,



James A. Lehrman, RG, CHG  
Senior Technical Manager

Attachment

cc: Ms. Lorraine Del Prado, Children's Hospital Medical Foundation  
Ms. Leah Goldberg, Hansen, Bridgett, Marcus, Vlahos and Rudy, LLP



RO-2484

— SCS ENGINEERS —

**Alameda County**  
**JUL 31 2003**  
**Environmental Health**

**QUARTERLY  
GROUNDWATER MONITORING REPORT  
SECOND QUARTER 2003  
FRIESMAN RANCH PROPERTY  
LIVERMORE, CALIFORNIA**

Prepared for:

Children's Hospital and Research Center Foundation  
5225 Dover Street  
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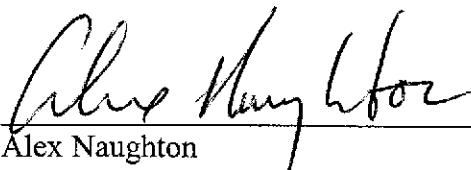
July 28, 2003  
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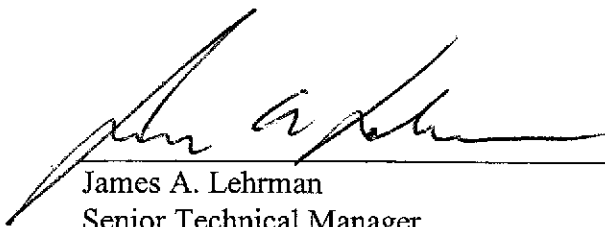
This Quarterly Monitoring Report for the Second Quarter of 2003 for the Friesman Ranch Property, Livermore, California, dated July 28, 2003 is based on data provided by personnel working for ATC Associates of Pleasanton, California. This report has been prepared and reviewed by the following:



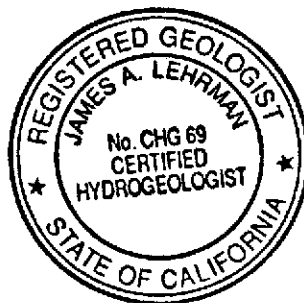
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Field Purge/Sampling Worksheets – April 15, 2003

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**DISCLAIMER**

This report has been prepared for the Children's Hospital and Research Center Foundation with specific application to a Quarterly Monitoring report for property located at 1600 Friesman Road, Livermore, California. The report has been prepared using data provided through fieldwork and sampling conducted by personnel from ATC Associates, Inc. of Pleasanton, California. It is assumed field activities and sampling was conducted in accordance with the care and skill generally exercised by reputable professionals, under similar circumstances, in this or similar localities. No other warranty, either expressed or implied, is made as to the professional advice presented herein.

Changes in site use and conditions may occur due to variations in rainfall, temperature, water usage, or other factors. Additional information which was not available to the consultant at the time of this investigation or changes which may occur on the site or in the surrounding area may result in modification to the site that would impact the summary presented herein. This report is not a legal opinion.

## 1. INTRODUCTION

This report describes the results of the Second Quarter 2003 Groundwater Monitoring Event at the Friesman Ranch Property, Livermore, California (Site) (Figure 1). Field work was performed by personnel from ATC Associates, Inc. (ATC) of Pleasanton, California. Data was provided to SCS Engineers (SCS), who used it to prepare this report.

### 1.1 OBJECTIVES AND SCOPE OF WORK

The objectives of the activities performed were to:

- Continue a regularly scheduled groundwater monitoring program to track spatial and temporal variations in groundwater conditions; and
- Assess current Site groundwater conditions.

To meet these objectives, the following scope of work was implemented:

- Implementation of the scheduled groundwater monitoring event by ATC. Groundwater monitoring included water-level measurements, an evaluation of free-product thickness (if any); and collection of water quality samples for chemicals-of-concern (COCs) and biological attenuation (bio-attenuation) parameters including biological and chemical oxygen demand of select samples.
- Evaluation of bio-attenuation parameters by SCS; and
- Preparation of this quarterly groundwater monitoring report by SCS.

## 2. FIELD ACTIVITIES

### 2.1 INTRODUCTION

This section summarizes the field activities performed for the quarterly groundwater monitoring program. Field activities were performed by ATC on April 15, 2003. Figure 2 shows the locations of the existing groundwater monitoring wells.

### 2.2 GROUNDWATER MONITORING ACTIVITIES

The eight Site wells (KMW-1 through KMW-8) were monitored for depth to groundwater during this event. Wells KMW-1, KMW-6, KMW-7 and KMW-8 were sampled during this event. The goal of these activities was to measure water levels, assess free-product thickness (if any) and collect water quality samples that accurately represent stabilized aquifer conditions.



Prior to sampling, field instrumentation was calibrated and/or checked before opening the monitoring wells. All instruments were successfully calibrated and checked. Logs of field activities are provided in Appendix A.

### 2.2.1 Water Level Measurement

The wells were opened and ventilated for a minimum of 0.5 hour. Prior to purging, the depth to water was measured in the wells to the nearest 0.01-foot using a clean, calibrated electronic water-level indicator. Water-level data were used to calculate the required purge volumes for sampling. Measurements were recorded on Water-Level Measurement Records (Appendix A).

### 2.2.2 Groundwater Sample Collection

Upon completion of the water-level measurements, ATC purged the monitoring wells by using a Honda pump and dedicated disposable tubing. During purging, aquifer parameters (hydrogen ion index [pH], temperature, and electrical conductivity) were measured to evaluate whether the water in each well had stabilized prior to sampling (Appendix A). The wells were purged until a minimum of three casing volumes of water were removed, aquifer parameters appeared to stabilize, and water levels were allowed to recover to near static levels before sampling.

Water from each well was collected using disposable polyvinyl chloride (PVC) bailers. Groundwater monitoring well samples were placed in appropriate containers (40-milliliter [ml] glass volatile organic analysis [VOA] vials, 1-liter amber glass bottles and/or 500-ml or 250-ml polyethylene bottles), labeled, and the containers were then placed in Ziploc™ plastic bags. The samples were stored in an ice chest packed with loose water-based ice maintained at 4 +/- 2 degrees Celsius (°C) for delivery to the laboratory.

Water from the on-site water supply well was collected from a spigot in front of the dairy building and sampled (TAP sample) during the Second Quarter 2003 event. Prior to sample collection, the tap was run for approximately 2 to 3 minutes. The sample was then collected from the spigot by holding appropriate labeled containers (as listed above) beneath the water flow. Containers were then placed into Ziploc™ plastic bags and stored in an ice chest packed with loose water-based ice maintained at 4 +/- 2 degrees Celsius (°C) for delivery to the laboratory.

## 2.3 ANALYTICAL LABORATORY PARAMETERS

Groundwater monitoring well samples were analyzed for the following parameters:

- Total petroleum hydrocarbons as gasoline (TPH-g) using Modified United States Environmental Protection Agency (EPA) Method 8015C;
- Total petroleum hydrocarbons as diesel (TPH-d) using Modified EPA Method 8015C;



- Benzene, toluene, ethylbenzene and total xylenes (BTEX) using EPA Method 8021B;
- Methyl tertiary-butyl ether (MTBE) using EPA Method 8021B;
- Alkalinity using Standard Methods for Water and Wastewater (SM) 2320B;
- Ferrous Iron ( $\text{Fe}^{+2}$ ) using EPA Method 200.7;
- Sulfate ( $\text{SO}_4^{-2}$ ) and Nitrate ( $\text{NO}_3^-$ ) using EPA Method 300.1;
- Biological Oxygen Demand (BOD) using (SM) 5210B (wells KMW-1 and KMW-6 only); and
- Chemical Oxygen Demand (COD) using EPA Method 410.4 (wells KMW-1 and KMW-6 only).

## 2.4 QUALITY ASSURANCE/QUALITY CONTROL SAMPLE COLLECTION

Normal quality assurance/quality control (QA/QC) sampling includes the laboratory preparation and analysis of a trip blank that accompanies the ice chest to and from the laboratory, and the collection of a blind duplicate from one sampling location.

For this event, the following QA/QC samples were prepared or collected:

- One trip blank; and
- One blind duplicate collected from well KMW-6.

Because only dedicated and/or new equipment was used to purge the wells and collect the samples, no equipment blank was collected.

## 2.5 INVESTIGATION-DERIVED WASTE HANDLING PROCEDURES

Investigation-derived wastes (IDW – purge water and decontamination rinsate liquids) were containerized on-site in labeled, United States Department of Transportation (DOT)-approved 55-gallon drums.

Drums were inspected prior to use for physical integrity and condition. Each drum was labeled to identify the waste source location, physical contents, date of collection and generator's name. A total of three drums (containing monitoring well purge water and decontamination rinsate liquids) of IDW were generated during this quarter's monitoring activities. The drums will be disposed of at an appropriate licensed facility.

## 2.6 SITE RESTORATION

Following completion of monitoring activities, the work area was left in a presentable and workable condition as near as practicable to original conditions.

## 3. SUMMARY OF RESULTS

### 3.1 INTRODUCTION

Water-level measurements were recorded on April 15, 2003. Groundwater samples were also collected from four of the eight monitoring wells and the water supply well on the Site and submitted for analysis. The samples were analyzed at McCampbell Analytical, Inc., a laboratory certified by the California Department of Health Services (DHS) Environmental Laboratory Accreditation Program (ELAP) for the specific analyses performed.

Appendix B contains certified analytical laboratory reports and chain-of-custody records. Table 1 contains historical water level and free-product thickness measurements. Groundwater analytical results for the COCs are summarized in Table 2.

### 3.2 WATER LEVELS

As part of the groundwater monitoring event, water levels were measured in monitoring wells KMW-1 through KMW-8 on April 15, 2003. Depths to water ranged from 10.16 to 12.76 feet below ground surface (bgs) in wells KMW-3 and KMW-5 respectively (Table 1). In April 2003, groundwater flow was to the northwest with a hydraulic gradient of approximately 0.01 feet per foot (ft/ft). These results are generally consistent with the previous groundwater monitoring event in January 2003.

### 3.3 FREE-PRODUCT THICKNESS

No sheen was observed on any of the samples; however, a hydrocarbon odor was noted in wells KMW-6 and KMW-7. No free product was observed or detected in the wells. Historically, no free product has been detected in any of the wells.

### 3.4 GROUNDWATER SAMPLES

A total of four monitoring wells (KMW-1 and KMW-6 through KMW-8) were sampled and analyzed for TPH-g, TPH-d, BTEX, MTBE and bio-parameters. The water supply well was sampled and analyzed for TPH-g, BTEX and MTBE. Analytical results are summarized in Tables 2 and 4. Certified analytical laboratory reports are included in Appendix B.

### 3.4.1 Chemicals of Concern

#### 3.4.1.1 Total Petroleum Hydrocarbons as Gasoline

TPH-g was detected at concentrations of 390 micrograms per liter ( $\mu\text{g/L}$ ) in KMW-6 and 880  $\mu\text{g/L}$  in KMW-7, but was not detected in any of the other wells. The TPH-g concentration in the sample from KMW-6 is at least one order of magnitude lower than previous concentrations detected (Table 2). The concentration detected in the sample from KMW-7 is consistent with historical concentrations detected at the same location (Table 2).

#### 3.4.1.2 Total Petroleum Hydrocarbons as Diesel

TPH-d was detected at concentrations of 110  $\mu\text{g/L}$  in KMW-6 and 350  $\mu\text{g/L}$  in KMW-7, but was not detected in any of the other wells. The TPH-d concentration detected in the sample from KMW-6 is one order of magnitude lower than previous concentrations detected (Table 2). The concentration detected in the sample from KMW-7 is lower than historical concentrations detected at the same location (Table 2).

#### 3.4.1.3 Aromatic Hydrocarbons

Aromatic hydrocarbons were detected in monitoring wells KMW-6 and KMW-7, but were not detected in the other wells. Benzene was detected in excess of its drinking water maximum contaminant level (MCL), which is 1  $\mu\text{g/L}$ , at concentrations of 7.4  $\mu\text{g/L}$  in KMW-6 and 7.1  $\mu\text{g/L}$  in KMW-7. Toluene was detected below its MCL (150  $\mu\text{g/L}$ ) at concentrations of 0.58  $\mu\text{g/L}$  in KMW-6 and 0.69  $\mu\text{g/L}$  in KMW-7. Ethylbenzene was detected below its MCL (700  $\mu\text{g/L}$ ) at concentrations of 8.5  $\mu\text{g/L}$  in KMW-6 and 4.4  $\mu\text{g/L}$  in KMW-7. Total xylenes were detected below the MCL (1,750  $\mu\text{g/L}$ ) at concentrations of 6.1  $\mu\text{g/L}$  in KMW-6 and 52  $\mu\text{g/L}$  in KMW-7. These results are consistent with historical concentrations detected, with exception of benzene, toluene, ethylbenzene, and total xylenes detections in the sample from KMW-6; these are at least one order of magnitude lower than previous concentrations detected at this location (Table 2).

#### 3.4.1.4 Methyl Tertiary-Butyl Ether

MTBE was not detected in any of the sampled wells. These results are consistent with historical findings (Table 2).

### 3.4.2 Bio-Parameters

#### 3.4.2.1 Dissolved Oxygen

Dissolved Oxygen (DO) is the most thermodynamically favored electron acceptor used in the biodegradation of fuel hydrocarbons. During aerobic biodegradation, DO concentrations decrease.

DO was measured in the field at 0.51 milligrams per liter (mg/L) in well KMW-7 (Table 4). This well represents dissolved oxygen conditions inside the hydrocarbon plume. DO measurements in wells KMW-1 and KMW-8 (wells outside the plume) were 0.56 and 0.51, respectively.

#### 3.4.2.2 Oxidation-Reduction Potential

The Oxidation-Reduction Potential (ORP) of groundwater is a measure of electron activity and is an indicator of the relative tendency of a solution to accept or transfer electrons. It influences and is influenced by the nature of biologically mediated degradation of COCs.

ORP ranged from less than -100 millivolts (mV) to 145 mV in wells in which COCs were detected (KMW-6 and KMW-7) (Table 4). ORP ranged from 55 mV to 120 mV in wells in which COCs were not detected (KMW-1 and KMW-8). These values generally indicate oxidizing conditions outside the COC plume and reducing conditions inside the plume.

#### 3.4.2.3 Hydrogen-ion Index (pH) and Temperature

The pH and temperature of the shallow groundwater were at levels conducive for the metabolic activity of bacteria capable of degrading fuel hydrocarbons (Table 4).

#### 3.4.2.4 Ferrous Iron

In some cases, Ferric Iron ( $\text{Fe}^{+3}$ ) acts as an electron acceptor during anaerobic biodegradation of petroleum hydrocarbons. During this process,  $\text{Fe}^{+3}$  is reduced to Ferrous Iron ( $\text{Fe}^{+2}$ ). Ferrous Iron can thus be used as an indicator of anaerobic degradation of petroleum compounds.

Ferrous Iron ( $\text{Fe}^{+2}$ ) was detected in KMW-1 and KMW-6 at respective concentrations of 0.071 mg/L and 2.4 mg/L. (Table 4). It was not detected in KMW-7 or KMW-8.

#### 3.4.2.5 Alkalinity

In general, areas impacted by petroleum hydrocarbons exhibit a total alkalinity higher than that seen in background areas. This is expected because microbially mediated reactions causing biodegradation of these compounds will cause an increase in total alkalinity of the system.

Alkalinity was reported at levels ranging from 384 mg/L in KMW-1 to 577 mg/L in KMW-7 (Table 4). In the impacted areas (i.e., wells KMW-6 and KMW-7), the average alkalinity was 551.5 mg/L. In areas outside the petroleum hydrocarbon plume, the average alkalinity was 404.5 mg/L.

#### 3.4.2.6 Nitrate

After DO has been depleted in the petroleum hydrocarbon impacted areas, nitrate may be used as an electron acceptor for anaerobic biodegradation via denitrification. Nitrate concentrations are used to estimate the mass of petroleum hydrocarbons that can be degraded by this process.

Nitrate was reported at levels of 1.8 mg/L, 15 mg/L, and 2.4 mg/L in KMW-1, KMW-7, and KMW-8, respectively (Table 4).

#### 3.4.2.7 Sulfate

After DO, nitrate and  $\text{Fe}^{+3}$  have been depleted in the impacted area, sulfate may be used as an electron acceptor for anaerobic degradation. The process is termed sulfate reduction and results in the production of sulfide.

Sulfate concentrations ranged from 12 mg/L in well KMW-6 to 97 mg/L in well KMW-7 (Table 4). The lowest and greatest sulfate concentrations were both found within the impacted area (i.e., wells KMW-6 and KMW-7); thus, it cannot be determined whether or not sulfate reduction is occurring in the impacted area.

#### 3.4.2.8 Biological Oxygen Demand

BOD is a measure of the demand for oxygen in the subsurface by biological processes.

BOD levels ranged from <2.0 mg/L in well KMW-1 (outside the plume) to 6.4 mg/L in well KMW-6 (inside the plume).

#### 3.4.2.9 Chemical Oxygen Demand

COD is a measure of the demand for oxygen in the subsurface by chemical processes.

COD was not detected above the reporting limit of 20 mg/L in either of the two samples (KMW-1 and KMW-6) analyzed for COD. This indicates that except for biological demands, there are no significant demands for oxygen in this environment.

### 3.5 QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

The QA/QC samples collected and analyzed during this groundwater monitoring event included one trip blank and one blind duplicate sample. The results for these QA/QC samples are summarized on Table 3 and certified analytical laboratory reports are contained in Appendix B.

#### 3.5.1 Trip Blank

One trip blank was prepared and analyzed for the April 2003 groundwater monitoring event. The trip blank contained no detectable concentrations of TPH-d, TPH-g, MTBE or BTEX.

#### 3.5.2 Blind Duplicate Sample

One blind duplicate sample (KMW-16) was collected from monitoring well KMW-6 on April 15, 2003. This duplicate sample was analyzed for TPH-g, TPH-d, BTEX, and MTBE. The Relative Percent Differences (RPDs) for TPH-d, TPH-g, benzene, toluene, ethylbenzene and total xylenes (the analytes detected) were 9.5, 36.4, 55.2, 12.8, 41.1 and 68.1 percent, respectively (Table 3). The RPDs for TPH-g, benzene, ethylbenzene, and total xylenes for Second Quarter 2003 were generally greater than RPDs associated with duplicate data from past sampling events. However, KMW-6 sample concentrations of all detected constituents in the Second Quarter 2003

are significantly reduced with respect to concentrations detected in previous quarters. The absolute differences between KMW-6 sample results and duplicate sample results in the Second Quarter 2003 are small, and do not appear to be significant.

#### 4. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The summary and conclusions presented in this section are based on research implemented, information collected, and interpretations developed during this and previous investigations performed at the property. The data evaluated in this report was collected by ATC during April 2003. The summary and conclusions that follow are presented in the categories of field activities and groundwater chemistry.

##### 4.1 FIELD ACTIVITIES

- Field activities performed consisted of the Second Quarter 2003 groundwater monitoring event.
- Water level measurements and the collection of water quality samples were conducted. The samples collected were analyzed for COCs (TPH-g, TPH-d, BTEX, and MTBE), bio-attenuation parameters (DO, ORP, alkalinity, Ferrous Iron, nitrate, sulfate, BOD and COD).
- Prior to the initiation of field activities, and between sampling locations, all equipment was decontaminated.
- Purge water and decontamination rinsate liquids were containerized and stored on-site in DOT-approved 55-gallon drums. They will be disposed of at a licensed facility.
- Following completion of field activities, the work area was left in a presentable and workable condition, as nearly as practicable to original conditions.

##### 4.2 GROUNDWATER CHEMISTRY

- Only two groundwater monitoring well samples (KMW-6 and KMW-7) contained detectable concentrations of petroleum hydrocarbon compounds. Groundwater samples collected from monitoring wells KMW-1 and KMW-8 and the water supply well (TAP sample) did not contain detectable concentrations of petroleum hydrocarbon compounds.
- The plume is confined to the Site and is stable. Concentrations of COCs continue to decrease with time, indicating that natural processes are working to remediate the plume.
- The subsurface environment appears to be poorly oxygenated. It appears that anaerobic processes (such as iron reduction from  $\text{Fe}^{+3}$  to  $\text{Fe}^{+2}$ ) are operating to decrease the concentrations of COCs in the groundwater.

- The BOD and COD concentrations indicate that the injection of ORC (oxygen releasing compound) into the plume would primarily facilitate Site cleanup by enhancing microbial activity.

#### 4.3 RECOMMENDATIONS

SCS makes the following recommendations concerning further investigations and remedial actions at the property:

- The regularly scheduled groundwater monitoring program should be continued, with the next event being implemented by the end of July 2003.
- Water levels and free-product thickness should be measured and groundwater quality samples should be collected from monitoring wells KMW-1, KMW-6, KMW-7 and KMW-8.
- Groundwater quality samples collected from the four monitoring wells should be analyzed for TPH-g, TPH-d, BTEX and MTBE, as well as bio-attenuation parameters. The water supply well should be analyzed for TPH-g, BTEX and MTBE.
- Implementation of the Workplan for Soil Vapor Survey which was prepared by ATC Associates (April 22, 2003), and approved by Alameda County Health in a letter to Ms. Lorraine Del Prado (June 2, 2003).

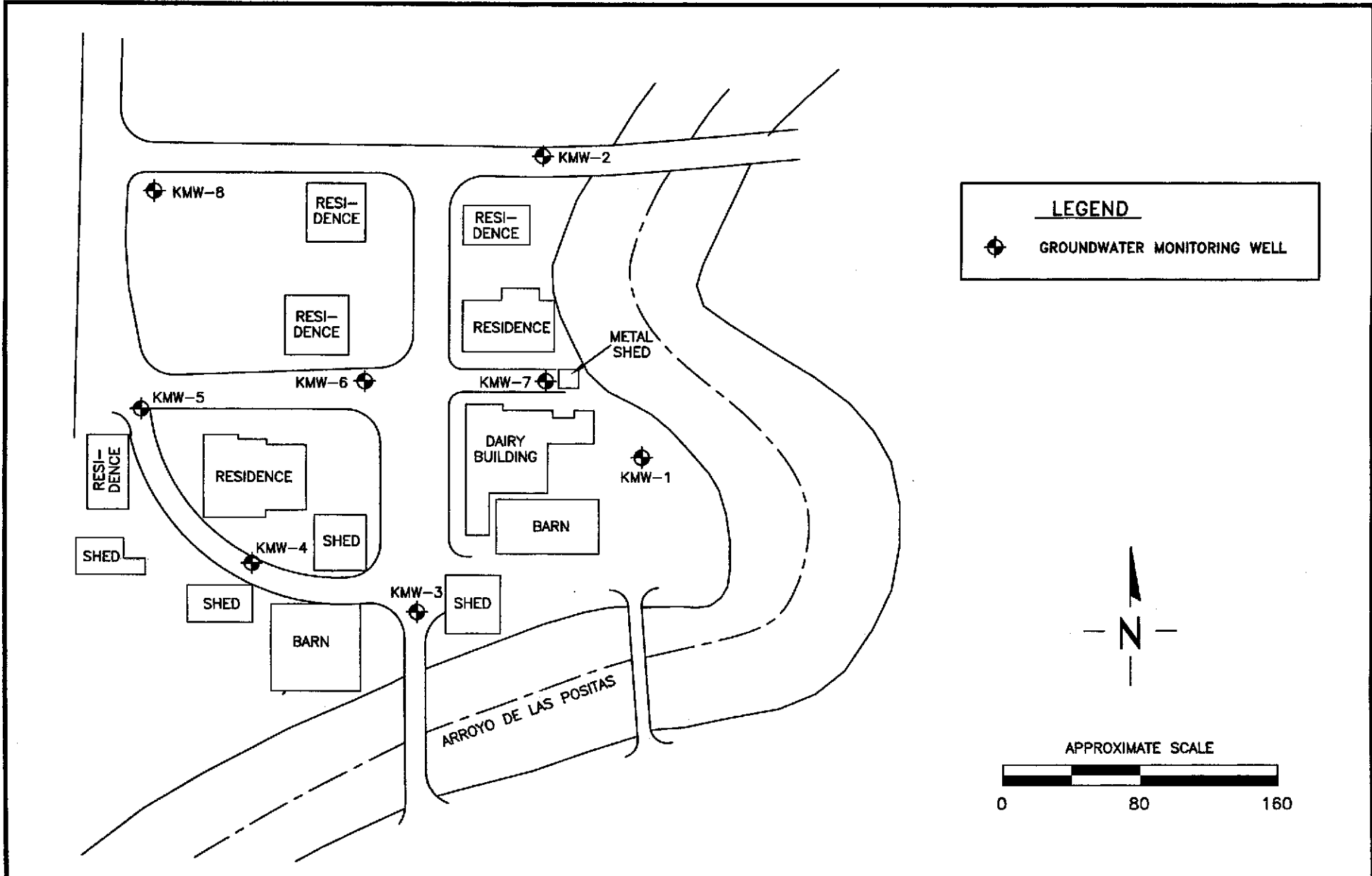


(Source: Thomas Bros. Maps, Bay Area pg. 694)

**Site Vicinity Map  
Friesman Ranch Property  
Livermore, California**

**Figure 1.**





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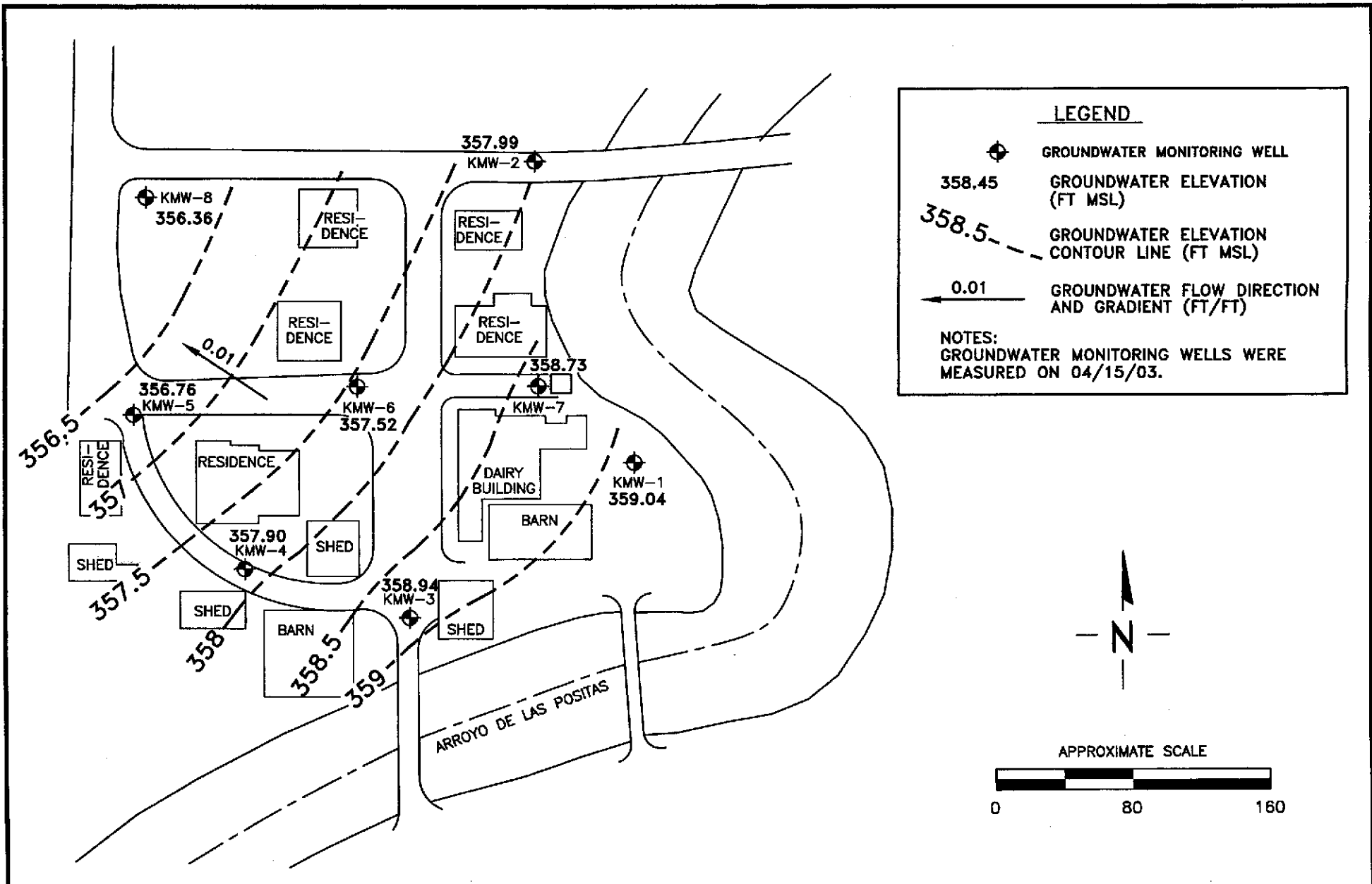
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PROJECT TITLE: **FRIESMAN RANCH PROPERTY  
 1600 FRIESMAN ROAD  
 LIVERMORE, CALIFORNIA**

SCALE: **1" = 80'**

FIGURE: **2**

BASE:  
 ATC ASSOCIATES INC. MARCH 28, 2003. QUARTERLY GROUNDWATER  
 MONITORING REPORT, FIRST QUARTER 2003, FRIESMAN RANCH  
 PROPERTY, LIVERMORE, CALIFORNIA



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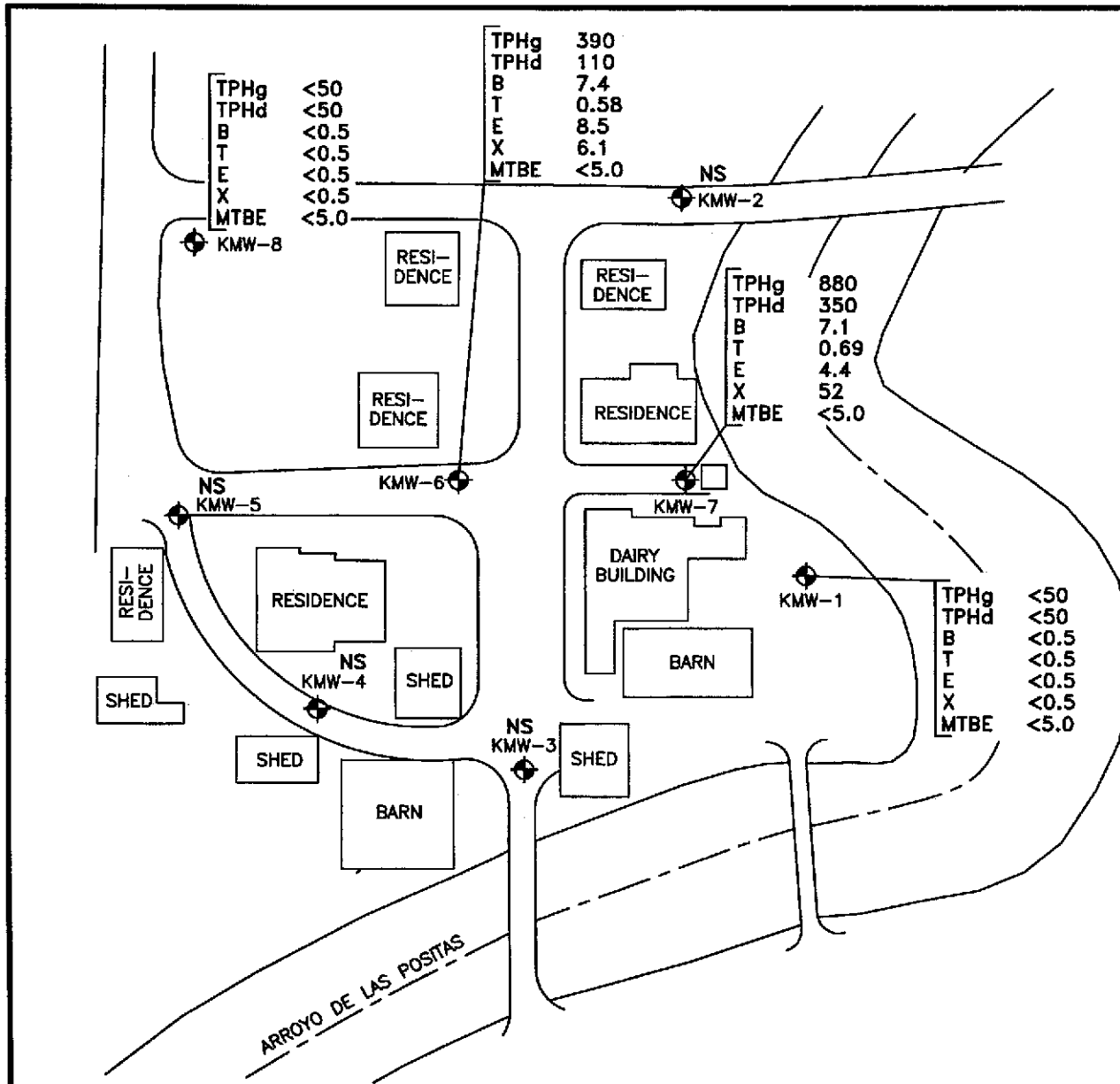
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**GROUNDWATER ELEVATION CONTOURS (04/03)**

PROJECT TITLE:  
**FRIESMAN RANCH PROPERTY  
1800 FRIESMAN ROAD  
LIVERMORE, CALIFORNIA**

SCALE:  
**1" = 80'**

FIGURE:  
**3**

BASE:  
ATC ASSOCIATES INC. MARCH 28, 2003. QUARTERLY GROUNDWATER MONITORING REPORT, FIRST QUARTER 2003, FRIESMAN RANCH PROPERTY, LIVERMORE, CALIFORNIA.

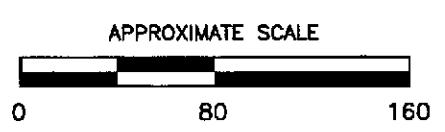
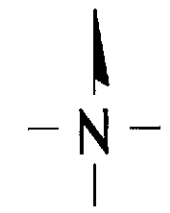


**LEGEND**

⊕ GROUNDWATER MONITORING WELL

TPHg TOTAL PETROLEUM HYDROCARBONS AS GASOLINE  
 TPHd TOTAL PETROLEUM HYDROCARBONS AS DIESEL  
 B BENZENE  
 T TOLUENE  
 E ETHYLBENZENE  
 X TOTAL XYLENES  
 MTBE METHYL TERTIARY BUTYL ETHER  
 NS NOT SAMPLED

NOTES:  
 BTEX & MTBE WERE ANALYZED BY EPA METHOD 8021B.  
 ALL CHEMICAL CONCENTRATIONS ARE REPORTED IN MICROGRAMS PER LITER (µg/L).  
 GROUNDWATER SAMPLES WERE COLLECTED ON 04/15/03



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PROJ. NO. 01203087.00	DRAWN BY: CRD	ACAD FILE: 0001-AR103.dwg
DATE 07/23/03	CHECK BY: EH	APP. BY: JAL

SHEET TITLE: **GROUNDWATER ANALYTICAL RESULTS (04/03)**

PROJECT TITLE: **FRIESMAN RANCH PROPERTY  
 1800 FRIESMAN ROAD  
 LIVERMORE, CALIFORNIA**

SCALE: **1" = 80'**

FIGURE: **4**

BASE:  
 ATC ASSOCIATES INC. MARCH 28, 2003. QUARTERLY GROUNDWATER MONITORING REPORT, FIRST QUARTER 2003, FRIESMAN RANCH PROPERTY, LIVERMORE, CALIFORNIA

**TABLE 1**  
**SUMMARY OF GROUNDWATER ELEVATION DATA**  
**FRIESMAN RANCH PROPERTY**  
**LIVERMORE, ALAMEDA COUNTY, CALIFORNIA**

WELL NUMBER	SAMPLING DATE	WATER LEVEL FROM T.O.C. (feet)	FREI-PRODUCT THICKNESS (feet)	T.O.C. ELEVATION USGS Datum (ft. above MSL)	GROUNDWATER ELEVATIONS USGS Datum (ft. above MSL)
KMW-1	9/8/1997	12.82	0.00	370.12	357.30
	12/28/1998	12.72	0.00		357.40
	1/12/1999	12.97	0.00		357.15
	3/25/1999	11.99	0.00		358.13
	6/21/1999	NM	NM		NC
	9/16/1999	NM	NM		NC
	10/16/2002	14.27	0.00		355.85
	1/17/2003	11.67	0.00		358.45
	4/15/2003	11.08	0.00		359.04
KMW-2	9/8/1997	14.28	0.00	370.72	356.44
	12/28/1998	14.08	0.00		356.64
	1/12/1999	14.32	0.00		356.40
	3/25/1999	13.19	0.00		357.53
	6/21/1999	NM	NM		NC
	9/16/1999	NM	NM		NC
	10/16/2002	*	*		*
	1/17/2003	12.77	0.00		357.95
	4/15/2003	12.73	0.00		357.99
KMW-3	9/8/1997	12.34	0.00	369.10	356.76
	12/28/1998	12.39	0.00		356.71
	1/12/1999	15.13	0.00		353.97
	3/25/1999	11.59	0.00		357.51
	6/21/1999	NM	NM		NC
	9/16/1999	NM	NM		NC
	10/16/2002	13.69	0.00		355.41
	1/17/2003	10.85	0.00		345.20
	4/15/2003	10.16	0.00		358.94
KMW-4	9/8/1997	13.76	0.00	369.80	356.04
	12/28/1998	13.76	0.00		356.04
	1/12/1999	14.40	0.00		355.40
	3/25/1999	12.89	0.00		356.91
	6/21/1999	NM	NM		NC
	9/16/1999	NM	NM		NC
	10/16/2002	15.92	0.00		353.88
	1/17/2003	12.17	0.00		357.63
	4/15/2003	11.90	0.00		357.90

WELL NUMBER	SAMPLING DATE	WATER LEVEL FROM T.O.C. (feet)	FREE PRODUCT THICKNESS (feet)	T.O.C. ELEVATION USGS Datum (Ft. above MSL)	GROUNDWATER ELEVATIONS USGS Datum (Ft. above MSL)
KMW-5	9/8/1997	14.24	0.00	369.52	355.28
	12/28/1998	14.17	0.00		355.35
	1/12/1999	15.32	0.00		354.20
	3/25/1999	13.27	0.00		356.25
	6/21/1999	NM	NM		NC
	9/16/1999	NM	NM		NC
	10/16/2002	16.45	0.00		353.07
	1/17/2003	12.60	0.00		356.92
4/15/2003	12.76	0.00	356.76		
KMW-6	9/8/1997	14.28	0.00	370.08	355.80
	12/28/1998	14.16	0.00		355.92
	1/12/1999	14.47	0.00		355.61
	3/25/1999	13.22	0.00		356.86
	6/21/1999	14.56	0.00		355.52
	9/16/1999	14.29	0.00		355.79
	10/16/2002	16.27	0.00		353.81
	1/17/2003	12.54	0.00		357.54
4/15/2003	12.56	0.00	357.52		
KMW-7	12/28/1998	12.91	0.00	370.04	357.13
	1/12/1999	13.15	0.00		356.89
	3/25/1999	12.12	0.00		357.92
	6/21/1999	12.86	0.00		357.18
	9/16/1999	13.00	0.00		357.04
	10/16/2002	14.63	0.00		355.41
	1/17/2003	11.77	0.00		358.27
4/15/2003	11.31	0.00	358.73		
KMW-8	12/28/1998	13.37	0.00	368.61	355.24
	1/12/1999	13.70	0.00		354.91
	3/25/1999	12.48	0.00		356.13
	6/21/1999	13.30	0.00		355.31
	9/16/1999	13.57	0.00		355.04
	10/16/2002	15.85	0.00		352.76
	1/17/2003	11.87	0.00		356.74
4/15/2003	12.25	0.00	356.36		

**NOTES:**

G.S. = Ground Surface

NC = Not Calculable

NM - Not Measured

T.O.C. = Top of casing. All measurements in feet relative to top of casing.

USGS = United States Geological Survey

All wells have 4" ID casing = 0.65 gallons per casing length (foot).

Wells KMW-7 and KMW-8 installed on December 23, 1998

\* Well obstructed, no water level measurement taken

**TABLE 2**  
**SUMMARY OF GROUNDWATER ANALYTICAL RESULTS**  
**FRIESMAN RANCH PROPERTY**  
**LIVERMORE, ALAMEDA COUNTY, CALIFORNIA**

WELL NUMBER	SAMPLE COLLECTION DATE	TPH-D (µg/L)	TPH-G (µg/L)	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL BENZENE (µg/L)	TOTAL XYLENES (µg/L)	MTBE (µg/L)	PAHs (µg/L)	LEAD (µg/L)
KMW-1	9/8/1997	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<10	-
	12/28/1998	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<10	7.8
	12/28/1998	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<10	5.9
	3/25/1999	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	-
	6/21/1999	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/16/1999	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/16/2002	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	-
	1/17/2003	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	-
4/15/2003	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	-	
KMW-2	9/8/1997	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<10	-
	12/28/1998	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<10	<5.0
	3/25/1999	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	-
	6/21/1999	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/16/1999	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/16/2002	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/17/2003	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/15/2003	NS	NS	NS	NS	NS	NS	NS	NS	NS
KMW-3	9/8/1997	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<10	-
	12/28/1998	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<10	<5.0
	3/25/1999	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	-
	6/21/1999	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/16/1999	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/16/2002	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	-
	1/17/2003	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/15/2003	NS	NS	NS	NS	NS	NS	NS	NS	NS
KMW-4	9/8/1997	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<10	-
	12/28/1998	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<10	7.5
	3/25/1999	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	-
	6/21/1999	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/16/1999	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/16/2002	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	-
	1/17/2003	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/15/2003	NS	NS	NS	NS	NS	NS	NS	NS	NS
KMW-5	9/8/1997	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<10	-
	9/8/1997	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<10	-
	12/28/1998	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<10	8.5
	3/25/1999	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	-
	6/21/1999	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/16/1999	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/16/2002	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	-
	1/17/2003	NS	NS	NS	NS	NS	NS	NS	NS	NS
4/15/2003	NS	NS	NS	NS	NS	NS	NS	NS	NS	
KMW-6	9/8/1997	3,200, d	13,000, a	250	14	560	490	<150**	140*	-
	12/28/1998	1,800, d	3,200, a	86	3.6	140	90	<50**	130*	15
	3/26/1999	1,700, d,b	7,000, a	160	5.1	270	200	<100**	100*	<5.0
	3/26/1999	1,700, d,b	6,700, a	170	6.5	270	200	<100**	100*	-
	6/21/1999	1,500, d,b	3,800, a	170	<0.5	260	160	<10	200*	<5.0
	9/16/1999	1,900, d	7,100, a	230	9.8	300	210	<120	<10	<5.0
	10/16/2002	1,600, d	4,600, a	100	8.4	190	110	<50	-	-
	10/16/2002	1,900, d	5,100, a	110	10	210	110	<50	-	-
	1/17/2003	2,100, d	5,700, a	87	4.3	170	100	<25	-	-
	1/17/2003	1,900, d	5,800, a	89	6.4	180	100	<25	-	-
	4/15/2003	110, d	390, a	7.4	0.5h	8.5	6.1	<5.0	-	-
	4/15/2003	100, d	270, a	4.2	0.51	5.6	3.0	<5.0	-	-
KMW-7	12/28/1998	1,000, d,h	9,100, a,h	23	17	190	700	<70**	110*	38
	3/25/1999	1,200 d,b	4,300, a,h	19	16	56	270	<70**	23 *	22
	6/21/1999	1,300, d,b	1,300, a	6.5	<0.5	21	62	<5.0	27 *	<5.0
	6/21/1999	1,200, d	2,000, a	6.4	6.7	24	76	<5.0	17 *	-
	9/16/1999	1,100, d	950, a	3.3	2	19	33	<10	<10	<10
	10/16/2002	480, d	270, a	1.3	<0.5	4	15	<5.0	-	-
	1/17/2003	610, d	1,100, a	7.8	1.3	24	84	<10	-	-
	4/15/2003	350, d	880, a	7.1	0.69	4.4	52	<5.0	-	-
KMW-8	12/28/1998	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<10	12
	3/25/1999	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	-
	6/21/1999	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	-
	9/16/2002	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	-
	10/16/2002	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	-
	1/17/2003	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	-
4/15/2003	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	-	
TAP Sample	4/15/2003	-	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	-

**Notes:**

- |  |  |    |  |
|--|--|----|--|
| TPH-D  | Total Petroleum Hydrocarbons as Diesel                         | a  | Unmodified or weakly modified gasoline is significant              |
| TPH-G  | Total Petroleum Hydrocarbons as Gasoline                       | b  | Diesel range compounds are significant; no recognizable pattern    |
| MTBE   | Methyl Tertiary-Butyl Ether                                    | d  | Gasoline range compounds are significant                           |
| PAHs   | Polyaromatic Hydrocarbons                                      | h  | Lighter than water immiscible sheen is present                     |
| MCL  | Cal/EPA Maximum Contaminant Level                              | ** | Reporting limit raised due to high presence of TPH-g               |
| µg/L   | Micrograms per Liter (approx. equal to parts per billion)      | -  | Not analyzed   |
| <0.5   | Not detected at or above the laboratory method reporting limit | NS | Not Sampled  |
| TAP Sample was collected from the water supply well on-site. |  | *  | Napthalene only, all other chemicals were <10 micrograms per liter |

**TABLE 3**  
**QUALITY ASSURANCE/QUALITY CONTROL SAMPLE ANALYTICAL RESULTS**  
**FRIESMAN RANCH PROPERTY**  
**LIVERMORE, ALAMEDA COUNTY, CALIFORNIA**  
**April 2003**

QA/QC SAMPLE TYPE	SAMPLE ID	SAMPLE COLLECTION DATE	TPH-D (µg/L)	TPH-G (µg/L)	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL BENZENE (µg/L)	TOTAL XYLENES (µg/L)	MTBE (µg/L)	PAHs (µg/L)	LEAD (µg/L)
Primary Sample	KMW-6	4/15/2003	110	390	7.4	0.58	8.5	6.1	<5.0	-	-
Duplicate Sample	KMW-16	4/15/2003	100	270	4.2	0.51	5.6	3.0	<5.0	-	-
Trip Blank	Trip Blank	4/15/2003	-	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	-
	RPD		9.5%	36.4%	55.2%	12.8%	41.1%	68.1%	NC	NC	NC

**Notes:**

TPH-D Total Petroleum Hydrocarbons as Diesel  
 TPH-G Total Petroleum Hydrocarbons as Gasoline  
 MTBE Methyl Tertiary-Butyl Ether  
 RPD Relative Percent Difference  
 µg/L Micrograms per Liter (approx. equal to parts per billion)  
 <0.5 Not detected at or above the laboratory method reporting limit  
 NC Not calculable  
 - Not Analyzed

**TABLE 4**  
**BIO-ATTENUATION PARAMETER ANALYTICAL RESULTS**

Analyte	KMW-1	KMW-2	KMW-3	KMW-4	KMW-5	KMW-6	KMW-7	KMW-8
<b>Field Measurements</b>								
DO (mg/L)	0.56	NM	NM	NM	NM	NM	0.51	0.51
ORP (mV)	55	NM	NM	NM	NM	<-100	145	120
Temperature (°C)	18.1	NM	NM	NM	NM	19.3	17.7	16.2
pH	6.73	NM	NM	NM	NM	6.06	6.12	6.50
Turbidity (NTU)	1.70	NM	NM	NM	NM	9.4	5.1	11.8
<b>Laboratory Measurement</b>								
Alkalinity (mg/L)	384	NM	NM	NM	NM	526	577	425
BOD (mg/L)	<2.0	NM	NM	NM	NM	6.4	NA	NA
COD (mg/L)	<20	NM	NM	NM	NM	<20	NA	NA
Ferrous Iron, FE (II) (mg/L)	0.071	NM	NM	NM	NM	2.4	<0.05	<0.05
Nitrate (mg/L)	1.8	NM	NM	NM	NM	<1.0	15	2.4
Sulfate (mg/L)	78	NM	NM	NM	NM	12	97	81

Notes:

DO = Dissolved Oxygen.

ORP = Oxidation-Reduction Potential (measured in millivolts [mV]).

BOD = Biological Oxygen Demand.

COD = Chemical Oxygen Demand.

NA = Not Analysed.

<5.0 = Analyte not present at or above indicated reporting limit.

FE(II) = Percent Ferrous Iron represents percentage of Fe(II) of Total Fe in system.

NTU = Nephelometric Turbidity Units

NM = Not Measured

mg/L = milligrams per liter

pH = Hydrogen-ion index



**APPENDIX A  
FIELD MONITORING NOTES**



**RECORD OF WATER LEVEL MEASUREMENTS**  
**APRIL 15, 2003**



# FIELD REPORT/DATA SHEET

Date: 4.15.03  
 Day: M Tu W Th F

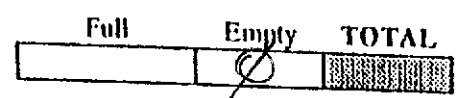
Project Number: 75.23909.0001

Field Technician: P Arroyo

DTW Order	Well ID	Diam	Lock	Exp. Cap	Total Depth	DTW Initial	DTW Final	Time Sampled	Comments
	KMW-1	4	Good	Good	23.40	11.08	11.08	1140	
	KMW-2	4	↓	↓	13.30	12.73	12.73	NS	
	KMW-3	4			23.90	10.16	10.16	NS	
	KMW-4	4			23.65	11.90	11.90	NS	
	KMW-5	4			23.40	12.76	12.76	NS	
	KMW-6	4			23.40	12.56	12.56	1520	
	KMW-7	4			23.50	11.31	11.31	1430	
	KMW-8	4			23.65	12.25	12.25	1320	

NOTES:

Number of Drums Onsite



Estimated Value: \_\_\_\_\_

ARE ALL DRUMS LABELLED WITH THE LABELS FACING OUT

**FIELD PURGE/SAMPLING WORKSHEETS**  
**APRIL 15, 2003**



# GROUNDWATER MONITORING WELL PURGE/SAMPLING WORK SHEET

Project Name: Friesman Ranch  
 Address: 1600 FRIESMAN RD.  
LIVERMORE, CA  
 Well Number: KMW-1  
 Development/Purge/Sampler(s): P. Arroyo

Project Number: 75.23909.0001  
 Date: 4-15-03  
 Well Lock Number: \_\_\_\_\_  
 Well Integrity: Good  
 Ambient Conditions: Sunny

Pre-Purge DO (mg/L) 5.6

Screened at		WELL VOLUME CALCULATION				
Well Casing Diameter (in.)	Total Well Depth (ft.)	Depth to Groundwater (GW)	Linear Feet of GW		Gallons Per Linear Foot	1 Well Volume (gal.)
2	-	-	=	X	0.17	=
3	-	-	=	X	0.38	=
<u>4</u>	<u>23.40</u>	<u>11.08</u>	=	<u>12.32</u>	<u>0.66</u>	= <u>8.13</u>
4.5	-	-	=	X	0.83	=
6	-	-	=	X	1.5	=

### GROUNDWATER SURFACE INSPECTION (BAILER CHECK)

Floating Product (ft.) (in.): None Sheen/Iridescence: None Odor: None

### GROUNDWATER PURGING PURGE METHOD

Stainless Steel Bailer; Submersible Pump; Air Diaphragm Pump; Honda Pump; Other \_\_\_\_\_

Stagnant Volumes Purged	Volume Purged (gal.)	Time	pH	Conductivity (µs/cmhos)	Temp. (°C)	Color/Turbidity (other)
0	0	<u>1121</u>	<u>6.75</u>	<u>4045</u>	<u>19.4</u>	<u>Cloudy</u>
1	<u>8.0</u>	<u>1124</u>	<u>7.13</u>	<u>1271</u>	<u>18.1</u>	<u>CLEAR</u>
2	<u>16.0</u>	<u>1127</u>	<u>7.01</u>	<u>1101</u>	<u>17.6</u>	↓
3	<u>24.0</u>	<u>1130</u>	<u>6.73</u>	<u>1085</u>	<u>18.1</u>	
4	_____	_____	_____	_____	_____	_____
5	_____	_____	_____	_____	_____	_____
6	_____	_____	_____	_____	_____	_____
7	_____	_____	_____	_____	_____	_____
8	_____	_____	_____	_____	_____	_____
9	_____	_____	_____	_____	_____	_____
10	_____	_____	_____	_____	_____	_____

Recovery Rate:

Fast

Medium

Slow

### GROUNDWATER SAMPLING

Sampling Equipment: Disposable Bailer

#### Water Level Recovery

	Depth to GW (ft.)	
(I) Initially	<u>11.08</u>	
(P) After Purging	<u>12.35</u>	
P - 0.8 (P-I) =	<u>11.33</u>	80% Recovery
(S) Before Sampling	<u>11.08</u>	
(P-S) / (P-I) X 100 =	<u>100</u>	% Total Recovery

#### Sample Containers

No.	Preservation Method/pH
<u>1</u>	<u>None</u>
<u>3</u>	<u>HCL</u>
<u>3</u>	<u>None (1 H2SO4)</u>
<u>1</u>	<u>HCL</u>

Sample Date/Time: 4-15-03 / 1140 Turbidity (NTU): 1.7

Calibrate Date/Time: 4-15-03 EH (MEV): 55

### PURGED WATER CONTAINMENT

Total drums at site: Water 3 Soil 0 Water pump through treatment system \_\_\_\_\_

Remarks: \_\_\_\_\_

# GROUNDWATER MONITORING WELL PURGE/SAMPLING WORK SHEET

Project Name: Friesman Ranch  
 Address: 1600 Friesman RD.  
LIVERMORE, CA  
 Well Number: KMW-6  
 Development/Purge/Sampler(s): P. Arroya

Project Number: 75.23909.0001  
 Date: 4.15.03  
 Well Lock Number: \_\_\_\_\_  
 Well Integrity: Good  
 Ambient Conditions: Cloudy

Screened at		WELL VOLUME CALCULATION				
Well Casing Diameter (in.)	Total Well Depth (ft.)	Depth to Groundwater (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)	
2	23.40	12.56	10.84	X	0.17	=
3				X	0.38	=
4				X	0.66	=
4.5				X	0.83	=
6				X	1.5	=
						7.15

### GROUNDWATER SURFACE INSPECTION (BAILER CHECK)

Floating Product (ft.) (in.): None Sheen/Iridescence: None Odor: YES

### GROUNDWATER PURGING/PURGE METHOD

Stainless Steel Bailer;  Submersible Pump;  Air Diaphragm Pump;  Honda Pump; Other \_\_\_\_\_

Stagnant Volumes Purged	Volume Purged (gal.)	Time	pH	Conductivity (µs/cmhos)	Temp. (°C)	Color/Turbidity (other)
0	0	1456	6.56	1403	21.3	CLEAR
1	7.0	1501	6.21	1371	19.3	↓
2	14.0	1506	6.09	1358	19.4	
3	21.0	1511	6.06	1354	19.3	
4						
5						
6						
7						
8						
9						
10						

**Recovery Rate:**

Fast  
 Medium  
 Slow

### GROUNDWATER SAMPLING

Sampling Equipment: Disposable Bailer

Water Level Recovery		Depth to GW (ft.)	Sample Containers	No.	Preservation Method/pH
(I) Initially		<u>12.56</u>	1 liter (L), amber glass	<u>1</u>	<u>None</u>
(P) After Purging		<u>13.30</u>	40 ml VOA	<u>3</u>	<u>HCL</u>
P - 0.8 (P-I) =		<u>12.70</u> 80% Recovery	500 ml polypropylene	<u>3</u>	<u>None (1 H<sub>2</sub>SO<sub>4</sub>)</u>
(S) Before Sampling		<u>12.56</u>	Trip Blank	<u>1</u>	<u>HCL</u>
(P-S) / (P-I) X 100 =		<u>100</u> % Total Recovery			

Sample Date/Time: 4.15.03 / 1520 Turbidity (NTU): 9.4

Calibrate Date/Time: 4.15.03 EH (MEV): < 100

### PURGED WATER CONTAINMENT

Total drums at site: Water 3 Soil 0 Water pump through treatment system \_\_\_\_\_

Remarks: Took Duplicate.

# GROUNDWATER MONITORING WELL PURGE/SAMPLING WORK SHEET

Project Name: FRIESMAN Ranch  
 Address: 1600 FRIESMAN RD.  
LIVERMORE, CA  
 Well Number: KMW-7  
 Development/Purge/Sampler(s): P. Arroyo

Project Number: 75.23909.0001  
 Date: 4-15-03  
 Well Lock Number: \_\_\_\_\_  
 Well Integrity: Good  
 Ambient Conditions: Cloudy

Pre-Purge DO (mg/L) .51

Screened at		WELL VOLUME CALCULATION				
Well Casing Diameter (in.)	Total Well Depth (ft.)	Depth to Groundwater (GW)	Linear Feet of GW		Gallons Per Linear Foot	1 Well Volume (gal.)
2	-	-	=	X	0.17	=
3	-	-	=	X	0.38	=
<u>4</u>	<u>23.50</u>	<u>11.31</u>	=	<u>12.19</u>	<u>0.66</u>	= <u>8.04</u>
4.5	-	-	=	X	0.83	=
6	-	-	=	X	1.5	=

### GROUNDWATER SURFACE INSPECTION (BAILER CHECK)

Floating Product (ft. (in.)): None Sheen/Iridescence: None Odor: YES

### GROUNDWATER PURGING/PURGE METHOD

Stainless Steel Bailer; Submersible Pump; Air Diaphragm Pump; ~~Honda Pump~~; Other \_\_\_\_\_

Stagnant Volumes Purged	Volume Purged (gal.)	Time	pH	Conductivity (µs/cmhos)	Temp. (°C)	Color/Turbidity (other)
0	0	<u>14:10</u>	<u>6.47</u>	<u>1385</u>	<u>19.0</u>	<u>CLEAR</u>
1	8.0	<u>14:15</u>	<u>6.10</u>	<u>1324</u>	<u>20.7</u>	↓
2	16.0	<u>14:20</u>	<u>6.11</u>	<u>1275</u>	<u>18.3</u>	
3	24.0	<u>14:25</u>	<u>6.12</u>	<u>1251</u>	<u>17.9</u>	
4						
5						
6						
7						
8						
9						
10						

**Recovery Rate:**

**Fast**  
 **Medium**  
 **Slow**

### GROUNDWATER SAMPLING

Sampling Equipment: Disposable Bailer

#### Water Level Recovery

(I) Initially 11.31  
 (P) After Purging 12.20  
 P - 0.8 (P-I) = 11.48 80% Recovery  
 (S) Before Sampling 11.31  
 (P-S) / (P-I) X 100 = 100 % Total Recovery

#### Sample Containers

1 liter (L), amber glass  
 40 ml VOA  
 500 ml polypropylene  
 Trip Blank

No.	Preservation Method/pH
<u>1</u>	<u>None</u>
<u>3</u>	<u>HCL</u>
<u>3</u>	<u>None</u>
<u>1</u>	<u>HCL</u>

Sample Date/Time: 4-15-03 / 1430 Turbidity (NTU): 5.1

Calibrate Date/Time: 4-15-03

EH (MEV): 145

### PURGED WATER CONTAINMENT

Total drums at site: Water 3 Soil 0 Water pump through treatment system \_\_\_\_\_

Remarks: \_\_\_\_\_

# GROUNDWATER MONITORING WELL PURGE/SAMPLING WORK SHEET

Project Name: Friesman Ranch  
 Address: 1600 Friesman RD.  
LIVERMORE, CA  
 Well Number: KMW-8  
 Development/Purge/Sampler(s): P. Arroyo

Project Number: 75.23909.0001  
 Date: 4.15.03  
 Well Lock Number: \_\_\_\_\_  
 Well Integrity: Good  
 Ambient Conditions: Cloudy

Pre-Purge DO (mg/L) 5.1

Screened at		WELL VOLUME CALCULATION				
Well Casing Diameter (in.)	Total Well Depth (ft.)	Depth to Groundwater (GW)	Linear Feet of GW		Gallons Per Linear Foot	1 Well Volume (gal.)
2				X	0.17	=
3				X	0.38	=
<u>4</u>	<u>23.65</u>	<u>12.25</u>	<u>11.40</u>	X	<u>0.66</u>	<u>= 7.52</u>
4.5				X	0.83	=
6				X	1.5	=

### GROUNDWATER SURFACE INSPECTION (BAILER CHECK)

Floating Product (ft.) (in.): None Sheen/Iridescence: None Odor: None

### GROUNDWATER PURGING-PURGE METHOD

Stainless Steel Bailer; Submersible Pump; Air Diaphragm Pump; ~~Honda Pump~~ Other \_\_\_\_\_

Stagnant Volumes Purged	Volume Purged (gal.)	Time	pH	Conductivity (µs/cmhos)	Temp. (°C)	Color/Turbidity (other)
0	<u>0</u>	<u>1305</u>	<u>6.82</u>	<u>1336</u>	<u>17.7</u>	<u>CLEAR</u>
1	<u>7.0</u>	<u>1309</u>	<u>6.65</u>	<u>1233</u>	<u>16.4</u>	↓
2	<u>14.0</u>	<u>1313</u>	<u>6.52</u>	<u>1232</u>	<u>16.7</u>	
3	<u>21.0</u>	<u>1318</u>	<u>6.50</u>	<u>1266</u>	<u>16.2</u>	
4						
5						
6						
7						
8						
9						
10						

Recovery Rate:

Fast

Medium

Slow

### GROUNDWATER SAMPLING

Sampling Equipment: Disposable Bailer

#### Water Level Recovery

	Depth to GW (ft.)	Sample Containers	No.	Preservation Method/pH
(I) Initially	<u>12.25</u>	1 liter (L), amber glass	<u>1</u>	<u>None</u>
(P) After Purging	<u>12.80</u>	40 ml VOA	<u>3</u>	<u>HCL</u>
P - 0.8 (P-I) =	<u>12.36</u> 80% Recovery	500 ml polypropylene	<u>3</u>	<u>None</u>
(S) Before Sampling	<u>12.25</u>	Trip Blank	<u>1</u>	<u>HCL</u>
(P-S) / (P-I) X 100 =	<u>100</u> % Total Recovery			

Sample Date/Time: 4.15.03 / 1320 Turbidity (NTU): 11.8

Calibrate Date/Time: 4.15.03 EH (MEV): 120

### PURGED WATER CONTAINMENT

Total drums at site: Water 3 Soil 0 Water pump through treatment system \_\_\_\_\_

Remarks: \_\_\_\_\_



**APPENDIX B  
CHAIN OF CUSTODY RECORDS AND CERTIFIED ANALYTICAL  
LABORATORY REPORTS**





McC Campbell Analytical Inc.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560  
Telephone : 925-798-1620 Fax : 925-798-1622  
<http://www.mcccampbell.com> E-mail: [main@mcccampbell.com](mailto:main@mcccampbell.com)

ATC Associates  6602 Owens Drive, #100  Pleasanton, CA 94588	Client Project ID: #75.23909.0001	Date Sampled: 04/15/03
		Date Received: 04/15/03
	Client Contact: Jim Lehrman	Date Reported: 04/22/03
	Client P.O.:	Date Completed: 04/22/03

**WorkOrder: 0304240**

April 22, 2003

Dear Jim:

Enclosed are:

- 1). the results of 7 analyzed samples from your #75.23909.0001 project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions please contact me. McC Campbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Angela Rydelius, Lab Manager











McC Campbell Analytical Inc.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560  
 Telephone : 925-798-1620 Fax : 925-798-1622  
 http://www.mccampbell.com E-mail: main@mccampbell.com

### QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: W

WorkOrder: 0304240

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		BatchID: 6573		Spiked Sample ID: 0304240-007A				
Compound	Sample	Spiked	MS*	MSD*	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(btex) £	ND	60	101	101	0	111	103	7.78	80	120
MTBE	ND	10	111	112	1.01	102	108	5.54	80	120
Benzene	ND	10	98.2	99.9	1.72	98.9	98.4	0.535	80	120
Toluene	ND	10	102	103	1.38	103	102	0.663	80	120
Ethylbenzene	ND	10	102	103	0.530	103	103	0	80	120
Xylenes	ND	30	107	107	0	107	107	0	80	120
%SS:	103	100	99.3	100	0.965	99.5	98.9	0.636	80	120

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:  
 NONE

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 \* (MS-Sample) / (Amount Spiked); RPD = 100 \* (MS - MSD) / (MS + MSD) \* 2.

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

# cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or



McC Campbell Analytical Inc.

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 http://www.mccampbell.com E-mail: main@mccampbell.com

### QC SUMMARY REPORT FOR SW8015C

Matrix: W

WorkOrder: 0304240

EPA Method: SW8015C		Extraction: SW3510C		BatchID: 6554		Spiked Sample ID: N/A				
Compound	Sample	Spiked	MS*	MSD*	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(d)	N/A	7500	N/A	N/A	N/A	92	92	0	70	130
%SS:	N/A	100	N/A	N/A	N/A	90.2	90.2	0	70	130

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:  
 NONE

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

% Recovery =  $100 * (MS - Sample) / (Amount\ Spiked)$ ; RPD =  $100 * (MS - MSD) / (MS + MSD) * 2$ .

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is Inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.





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 http://www.mcccampbell.com E-mail: main@mcccampbell.com

### QC SUMMARY REPORT FOR E200.7

Matrix: W

WorkOrder: 0304240

EPA Method: E200.7		Extraction: E200.7			BatchID: 6550		Spiked Sample ID: N/A			
Compound	Sample	Spiked	MS*	MSD*	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	mg/L	mg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
Iron	N/A	10	N/A	N/A	N/A	118	107	9.71	70	130

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:  
 NONE

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

% Recovery =  $100 * (MS - Sample) / (Amount\ Spiked)$ ; RPD =  $100 * (MS - MSD) / (MS + MSD) * 2$ .

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.



### QC SUMMARY REPORT FOR E300.1

Matrix: W

WorkOrder: 0304240

EPA Method: E300.1		Extraction: E300.1		BatchID: 6576			Spiked Sample ID: N/A			
Compound	Sample	Spiked	MS*	MSD*	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	mg/L	mg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
Nitrate as N	N/A	1000	N/A	N/A	N/A	88.3	88.9	0.681	80	120
Sulfate	N/A	1000	N/A	N/A	N/A	94.2	94.8	0.616	80	120
%SS:	N/A	100	N/A	N/A	N/A	90.4	90.9	0.574	80	120

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:  
 NONE

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

% Recovery = 100 \* (MS-Sample) / (Amount Spiked); RPD = 100 \* (MS - MSD) / (MS + MSD) \* 2.

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

# GeoAnalytical Laboratories, Inc.

1405 Kansas Avenue Modesto, CA 95351 Phone (209) 572-0900 Fax (209) 572-0916

## CERTIFICATE OF ANALYSIS

Report # P106-02

Date: 4/23/03

McCampbell Analytical  
110 2nd Ave. South #D7  
Pacheco CA 94553

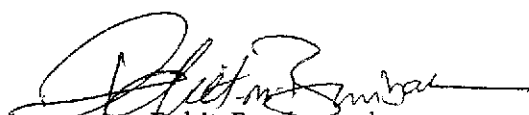
Project: #75.23909.0001

Date Rec'd: 4/16/03  
Date Started: 4/19/03  
Date Completed: 4/23/03

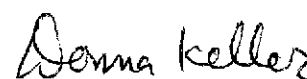
PO#

Date Sampled: 4/15/03  
Time:  
Sampler:

Sample ID	Lab ID	RL	Method	Analyte	Results	Units
0304240 - 001 E	P303685	20	SM2320B	Total Alkalinity as CaCO <sub>3</sub>	384	mg/L
		20	410.4	Chemical Oxygen Demand	ND	mg/L
0304240 - 002 E	P303686	20	SM2320B	Total Alkalinity as CaCO <sub>3</sub>	526	mg/L
		20	410.4	Chemical Oxygen Demand	ND	mg/L
0304240 - 003 D	P303687	20	SM2320B	Total Alkalinity as CaCO <sub>3</sub>	516	mg/L
0304240 - 004 D	P303688	20	SM2320B	Total Alkalinity as CaCO <sub>3</sub>	577	mg/L
0304240 - 005 D	P303689	20	SM2320B	Total Alkalinity as CaCO <sub>3</sub>	425	mg/L

  
Rohit Bombaywala  
Inorganic Supervisor

Certification # 1157

  
Donna Keller  
Laboratory Director

# GeoAnalytical Laboratories, Inc.

1405 Kansas Avenue Modesto, CA 95351 Phone (209) 572-0900 Fax (209) 572-0916

## CERTIFICATE OF ANALYSIS

Report # P106-02

Date: 4/21/03

McCampbell Analytical  
110 2nd Ave. South #D7  
Pacheco CA 94553

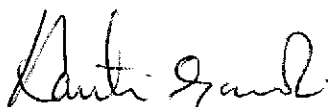
Project: #75.23909.0001

Date Rec'd: 4/16/03  
Date Started: 4/16/03  
Date Completed: 4/21/03


PO#

Date Sampled: 4/15/03  
Time:  
Sampler:

Sample ID	Lab ID	RL	Method	Analyte	Results	Units
0304240 - 001 E	P303685	2.0	SM5210B	B.O.D	ND	mg/L
0304240 - 002 E	P303686	2.0	SM5210B	B.O.D	6.4	mg/L

  
Kanti Gandhi  
Chemist

Certification # 1157

  
Donna Keller  
Laboratory Director

# GeoAnalytical Laboratories, Inc.

1405 Kansas Avenue Modesto, CA 95351 Phone (209) 572-0900 Fax (209) 572-0916


Report# P106-02

## QC REPORT

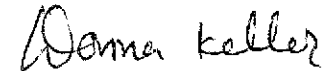
McC Campbell Analytical  
110 2nd Ave. South #D7  
Pacheco CA 94553

Analyte	Method	Batch #	Dates Analyzed	Orig.	Dupl.	MS %Rec	MSD %Rec	RPD	LCS %Rec	Blank	Comments
Total Alkalinity as CaCO <sub>3</sub>	SM2320B	I02854	4/19/03			82.3	90.8	1.1	109.2	ND	
Chemical Oxygen Demand	410.4	I02876	4/23/03			103.3	103.3	0.0	103.3	ND	

\* LCS/LCSD (see comments)

  
Rohit Bombaywala  
Inorganic Supervisor

Certification # 1157

  
Donna Keller  
Laboratory Director

# GeoAnalytical Laboratories, Inc.

1405 Kansas Avenue Modesto, CA 95351 Phone (209) 572-0900 Fax (209) 572-0916

Report# P106-02

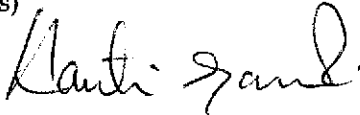
## QC REPORT

McC Campbell Analytical  
110 2nd Ave. South #D7  
Pacheco

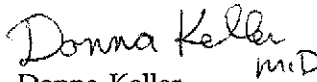
CA 94553

Analyte	Method	Batch #	Dates Analyzed	Orig.	Dupl.	MS %Rec	MSD %Rec	RPD	LCS %Rec	Blank	Comments
B.O.D	SM5210B	B00209	4/16/03-4/21/03	87	90			3.4		ND	

\* LCS/LCSD (see comments)

  
Kanti Gandhi  
Chemist

Certification # 1157

  
Donna Keller  
Laboratory Director

**McC Campbell Analytical Inc.**

110 Second Avenue South, #D7  
 Pacheco, CA 94553-5560  
 (925) 798-1620

**CHAIN-OF-CUSTODY RECORD**

P106-02

WorkOrder: 0304240

Subcontractor:

GEO ANALYTICAL LABORATORIES  
 1405 Kansas Avenue  
 Modesto, CA 95351

TEL: (209) 572-0900  
 FAX: (209) 572-0916  
 ProjectNo: #75.23909.0001  
 Acct #: N/A

Date Received: 4/15/03

Date Printed: 4/15/03

Sample ID	ClientSampID	Matrix	Collection Date	TAT	Requested Tests				
					Alkalinity	BOD	COD		
0304240-001E	KMW-1	Water	4/15/03 11:40:00 AM	Standard	1	1	1	P303685	③
0304240-002E	KMW-6	Water	4/15/03 3:20:00 PM	Standard	1	1	1	P303686	⊥
0304240-003D	KMW-16	Water	4/15/03 3:20:00 PM	Standard	1			P303687	①
0304240-004D	KMW-7	Water	4/15/03 2:30:00 PM	Standard	1			P303688	
0304240-005D	KMW-8	Water	4/15/03 1:20:00 PM	Standard	1			P303689	⊥

Comments: PLEASE ANALYZE SAMPLES FOR ALKALINITY, BOD, AND COD; STANDARD TAT; PLEASE FAX RESULTS AS SOON AS READY; THANK YOU...☺

Please send results to: *Melissa Vallejos*

Relinquished by:	Date/Time	Received by:	Date/Time
<i>Melissa Vallejos</i>	<i>04/15 6:00pm</i>	<i>Jed ex</i>	<i>4/15/03</i>
<i>Jed ex</i>	<i>4/16/03</i>	<i>[Signature]</i>	<i>4/16/03</i>

# McC Campbell Analytical Inc.

# CHAIN-OF-CUSTODY RECORD



110 Second Avenue South, #D7  
 Pacheco, CA 94553-5560  
 (925) 798-1620

WorkOrder: 0304240

**Client:**

ATC Associates  
 6602 Owens Drive, #100  
 Pleasanton, CA 94588

TEL: (925) 460-5300  
 FAX: (925) 463-2559  
 ProjectNo: #75.23909.0001  
 PO:

Date Received: 4/15/03  
 Date Printed: 4/15/03

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests						
					Alkalinity	BOD	COD	E200_7	E300_1	SW8015C	8021B/8015
0304240-001	KMW-1	Water	4/15/03 11:40:00 AM		E	E	E	D	C	B	A
0304240-002	KMW-6	Water	4/15/03 3:20:00 PM		E	E	E	D	C	B	A
0304240-003	KMW-16	Water	4/15/03 3:20:00 PM		D			E	C	B	A
0304240-004	KMW-7	Water	4/15/03 2:30:00 PM		D			E	C	B	A
0304240-005	KMW-8	Water	4/15/03 1:20:00 PM		D			E	C	B	A
0304240-006	Trip Blank	Water	4/15/03								A
0304240-007	TAP Sample	Water	4/15/03 4:00:00 PM								A

Prepared by: Melissa Valles

**Comments:**

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.





6602 Owens Drive, Suite 100  
 Pleasanton, CA 94588  
 Main Line: (925) 460-5300  
 Facsimile: (925) 463-2559

0304240

# CHAIN OF CUSTODY FORM

Project Name: Friesman Ranch Client: CHILDRENS HOSPITAL  
 Project Number: 75.23909.0001 Task: 2  
 Project Address: 1600 FRIESMAN RD. LIVERMORE, CA  
 Laboratory: McCAMPBELL ANALYTICAL Contact: (925) 798-1620  
 Lab Address/Phone: 110 SECOND AVE SOUTH #D-7 PACHECO, CA  
 ATC Project Manager: JIM LEHRMAN  
 ATC PM Ph. No.: (925) 225-7815 Email: LEHRMAN75@atc-enviro.com  
 ATC Sampler: P. Arroyo Phone: (925) 225-7813

Turnaround  10 day  3 day  2-8 hr  
 Time:  7 day  2 day  other  
 (working days)  5 day  24 hr ( )

## Analyses Requested

ATC Sample ID	Sample Information					Container Information			Comments / Field Notes	TPHg/BTEX/MTBE (8015M/8020)	Fuel Oxygenates (8260)	TPHd (8015M)	HVOCs (8010)	VOCs (8020)	VOCs (8260)	PP Metals (low detect) (7000/6010)	Cyanide, Total (335.2)	NITRATE, SULFATE, FE	TOTAL ALKALINITY	BOD	COD
	Date	Time	Matrix			No.	Type	Preservative													
			Soil	Water	Vapor																
KMW-1	4/15/03	1140		X		3	VOA	HCL													
KMW-1				X		1	IL AG.	None			X										
KMW-1				X		1	500mL	None									X				
KMW-1				X		1	500mL	None									X				
KMW-1				X		1	500mL	None									X				
KMW-1				X		1	500mL	H2SO4									X				
KMW-6		1520		X		3	VOA	HCL		X											
KMW-6				X		1	IL AG.	None			X										
KMW-6				X		1	500mL	None									X				
KMW-6				X		1	500mL	None									X				
KMW-6				X		1	500mL	None									X				
KMW-6				X		1	500mL	H2SO4									X				
KMW-16				X		3	VOA	HCL		X											
KMW-16				X		1	IL AG.	None			X										
KMW-16				X		1	500mL	None									X				
KMW-16				X		1	500mL	None									X				

Additional Comments: \* FILTER & PRESERVE IRON SAMPLES upon Lab Arrival  
 \* INVOICE CHILDRENS HOSPITAL Directly

Relinquished By: P. Arroyo Date/Time: 4/15/03/1700 Received By: Maria Valle Date/Time: 4/15 5pm  
 Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Received By:  PRESERVED  VOLUME  METALS  OTHER  
 Sample Condition: Good? Yes \_\_\_ No \_\_\_ On Ice? Yes \_\_\_ No \_\_\_ Cooler Temp \_\_\_\_\_  
 Transportation Method: TRUCK  CONTAINER  PRESERVED IN LAB





McC Campbell Analytical Inc.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560  
Telephone : 925-798-1620 Fax : 925-798-1622  
<http://www.mcccampbell.com> E-mail: [main@mcccampbell.com](mailto:main@mcccampbell.com)

ATC Associates 6602 Owens Drive, #100 Pleasanton, CA 94588	Client Project ID: #75.23909.0001	Date Sampled: 04/15/03
		Date Received: 04/15/03
	Client Contact: Jim Lehrman	Date Reported: 04/22/03
	Client P.O.:	Date Completed: 04/22/03

**WorkOrder: 0304240**

April 22, 2003

Dear Jim:

Enclosed are:

- 1). the results of 7 analyzed samples from your #75.23909.0001 project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions please contact me. McC Campbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Angela Rydelius, Lab Manager











**QC SUMMARY REPORT FOR SW8021B/8015Cm**

Matrix: W

WorkOrder: 0304240

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		BatchID: 6573		Spiked Sample ID: 0304240-007A				
Compound	Sample	Spiked	MS*	MSD*	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(btex) <sup>£</sup>	ND	60	101	101	0	111	103	7.78	80	120
MTBE	ND	10	111	112	1.01	102	108	5.54	80	120
Benzene	ND	10	98.2	99.9	1.72	98.9	98.4	0.535	80	120
Toluene	ND	10	102	103	1.38	103	102	0.663	80	120
Ethylbenzene	ND	10	102	103	0.530	103	103	0	80	120
Xylenes	ND	30	107	107	0	107	107	0	80	120
%SS:	103	100	99.3	100	0.965	99.5	98.9	0.636	80	120

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:  
 NONE

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 \* (MS-Sample) / (Amount Spiked); RPD = 100 \* (MS - MSD) / (MS + MSD) \* 2.

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

# cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or





McC Campbell Analytical Inc.

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 http://www.mccampbell.com E-mail: main@mccampbell.com

### QC SUMMARY REPORT FOR SW8015C

Matrix: W

WorkOrder: 0304240

EPA Method: SW8015C		Extraction: SW3510C			BatchID: 6554		Spiked Sample ID: N/A			
Compound	Sample	Spiked	MS*	MSD*	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(d)	N/A	7500	N/A	N/A	N/A	92	92	0	70	130
%SS:	N/A	100	N/A	N/A	N/A	90.2	90.2	0	70	130
All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions: NONE										

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

% Recovery =  $100 * (MS - Sample) / (Amount\ Spiked)$ ; RPD =  $100 * (MS - MSD) / (MS + MSD) * 2$ .

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.



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### QC SUMMARY REPORT FOR E200.7

Matrix: W

WorkOrder: 0304240

EPA Method: E200.7		Extraction: E200.7			BatchID: 6550			Spiked Sample ID: N/A		
Compound	Sample	Spiked	MS*	MSD*	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	mg/L	mg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
Iron	N/A	10	N/A	N/A	N/A	118	107	9.71	70	130

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:  
 NONE

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

% Recovery =  $100 * (MS - Sample) / (Amount Spiked)$ ; RPD =  $100 * (MS - MSD) / (MS + MSD) * 2$ .

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.



**QC SUMMARY REPORT FOR E300.1**

Matrix: W

WorkOrder: 0304240

EPA Method: E300.1		Extraction: E300.1			BatchID: 6576			Spiked Sample ID: N/A		
Compound	Sample	Spiked	MS*	MSD*	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	mg/L	mg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
Nitrate as N	N/A	1000	N/A	N/A	N/A	88.3	88.9	0.681	80	120
Sulfate	N/A	1000	N/A	N/A	N/A	94.2	94.8	0.616	80	120
%SS:	N/A	100	N/A	N/A	N/A	90.4	90.9	0.574	80	120

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:  
 NONE

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

% Recovery =  $100 * (MS - Sample) / (Amount\ Spiked)$ ; RPD =  $100 * (MS - MSD) / (MS + MSD) * 2$ .

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

# GeoAnalytical Laboratories, Inc.

1405 Kansas Avenue Modesto, CA 95351 Phone (209) 572-0900 Fax (209) 572-0916

## CERTIFICATE OF ANALYSIS

Report # P106-02

Date: 4/23/03

McCampbell Analytical  
110 2nd Ave. South #D7  
Pacheco CA 94553


Project: #75.23909.0001

Date Rec'd: 4/16/03  
Date Started: 4/19/03  
Date Completed: 4/23/03

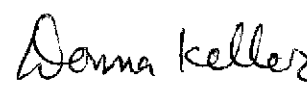
PO#

Date Sampled: 4/15/03  
Time:  
Sampler:

Sample ID	Lab ID	RL	Method	Analyte	Results	Units
0304240 - 001 E	P303685	20	SM2320B	Total Alkalinity as CaCO <sub>3</sub>	384	mg/L
		20	410.4	Chemical Oxygen Demand	ND	mg/L
0304240 - 002 E	P303686	20	SM2320B	Total Alkalinity as CaCO <sub>3</sub>	526	mg/L
		20	410.4	Chemical Oxygen Demand	ND	mg/L
0304240 - 003 D	P303687	20	SM2320B	Total Alkalinity as CaCO <sub>3</sub>	516	mg/L
0304240 - 004 D	P303688	20	SM2320B	Total Alkalinity as CaCO <sub>3</sub>	577	mg/L
0304240 - 005 D	P303689	20	SM2320B	Total Alkalinity as CaCO <sub>3</sub>	425	mg/L

  
Rohit Bombaywala  
Inorganic Supervisor

Certification # 1157

  
Donna Keller  
Laboratory Director

# GeoAnalytical Laboratories, Inc.

1405 Kansas Avenue Modesto, CA 95351 Phone (209) 572-0900 Fax (209) 572-0916

## CERTIFICATE OF ANALYSIS

Report # P106-02

Date: 4/21/03

McCampbell Analytical  
110 2nd Ave. South #D7  
Pacheco CA 94553

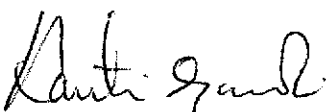
Project: #75.23909.0001

Date Rec'd: 4/16/03  
Date Started: 4/16/03  
Date Completed: 4/21/03

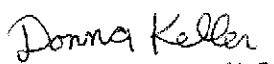
PO#

Date Sampled: 4/15/03  
Time:  
Sampler:

Sample ID	Lab ID	RL	Method	Analyte	Results	Units
0304240 - 001 E	P303685	2.0	SM5210B	B.O.D	ND	mg/L
0304240 - 002 E	P303686	2.0	SM5210B	B.O.D	6.4	mg/L

  
Kanti Gandhi  
Chemist

Certification # 1157

  
Donna Keller  
Laboratory Director

# GeoAnalytical Laboratories, Inc.

1405 Kansas Avenue Modesto, CA 95351 Phone (209) 572-0900 Fax (209) 572-0916

Report# P106-02

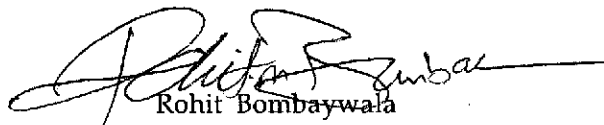
## QC REPORT

McC Campbell Analytical  
110 2nd Ave. South #D7  
Pacheco

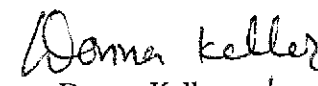
CA 94553

Analyte	Method	Batch #	Dates Analyzed	Orig.	Dupl.	MS	MSD	LCS		Comments	
						%Rec	%Rec	RPD	%Rec		Blank
Total Alkalinity as CaCO <sub>3</sub>	SM2320B	I02854	4/19/03			82.3	90.8	1.1	109.2	ND	
Chemical Oxygen Demand	410.4	I02876	4/23/03			103.3	103.3	0.0	103.3	ND	

\* LCS/LCSD (see comments)

  
Rohit Bombaywala  
Inorganic Supervisor

Certification # 1157

  
Donna Keller  
Laboratory Director

# GeoAnalytical Laboratories, Inc.

1405 Kansas Avenue Modesto, CA 95351 Phone (209) 572-0900 Fax (209) 572-0916

Report# P106-02

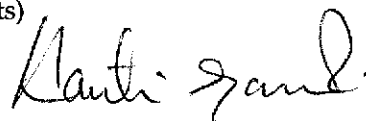
## QC REPORT

McC Campbell Analytical  
110 2nd Ave. South #D7  
Pacheco

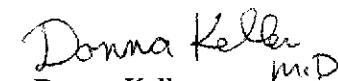
CA 94553

Analyte	Method	Batch #	Dates Analyzed	Orig.	Dupl.	MS %Rec	MSD %Rec	RPD	LCS %Rec	Blank	Comments
B.O.D	SM5210B	B00209	4/16/03-4/21/03	87	90			3.4		ND	

\* LCS/LCSD (see comments)

  
Kanti Gandhi  
Chemist

Certification # 1157

  
Donna Keller  
Laboratory Director

P106-02

# McC Campbell Analytical Inc.

# CHAIN-OF-CUSTODY RECORD

110 Second Avenue South, #D7  
Pacheco, CA 94553-5560  
(925) 798-1620

WorkOrder: 0304240

**Subcontractor:**

GEO ANALYTICAL LABORATORIES  
1405 Kansas Avenue  
Modesto, CA 95351

TEL: (209) 572-0900  
FAX: (209) 572-0916  
ProjectNo: #75.23909.0001  
Acct #: N/A

Date Received: 4/15/03

Date Printed: 4/15/03

Sample ID	ClientSampID	Matrix	Collection Date	TAT	Requested Tests				
					Alkalinity	BOD	COD		
0304240-001E	KMW-1	Water	4/15/03 11:40:00 AM	Standard	1	1	1	P303685	③
0304240-002E	KMW-6	Water	4/15/03 3:20:00 PM	Standard	1	1	1	P303686	⊥
0304240-003D	KMW-16	Water	4/15/03 3:20:00 PM	Standard	1			P303687	①
0304240-004D	KMW-7	Water	4/15/03 2:30:00 PM	Standard	1			P303688	⊥
0304240-005D	KMW-8	Water	4/15/03 1:20:00 PM	Standard	1			P303689	⊥

Comments: PLEASE ANALYZE SAMPLES FOR ALKALINITY, BOD, AND COD; STANDARD TAT; PLEASE FAX RESULTS AS SOON AS READY;  
THANK YOU...☺

Please send results to: *Melissa Vallejos*

		Date/Time			Date/Time
Relinquished by:	<i>Melissa Vallejos</i>	04/15 6:00pm	Received by:	<i>Jed ex</i>	4/15/03
Relinquished by:	<i>Jed ex</i>	4/16/03	Received by:	<i>[Signature]</i>	4/16/03



# McC Campbell Analytical Inc.



110 Second Avenue South, #D7  
 Pacheco, CA 94553-5560  
 (925) 798-1620

# CHAIN-OF-CUSTODY RECORD

WorkOrder: 0304240

**Client:**

ATC Associates  
 6602 Owens Drive, #100  
 Pleasanton, CA 94588

TEL: (925) 460-5300  
 FAX: (925) 463-2559  
 ProjectNo: #75.23909.0001  
 PO:

Date Received: 4/15/03  
 Date Printed: 4/15/03

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests						
					Alkalinity	BOD	COD	E200_7	E300_1	SW8015C	8021B/8015
0304240-001	KMW-1	Water	4/15/03 11:40:00 AM		E	E	E	D	C	B	A
0304240-002	KMW-6	Water	4/15/03 3:20:00 PM		E	E	E	D	C	B	A
0304240-003	KMW-16	Water	4/15/03 3:20:00 PM		D			E	C	B	A
0304240-004	KMW-7	Water	4/15/03 2:30:00 PM		D			E	C	B	A
0304240-005	KMW-8	Water	4/15/03 1:20:00 PM		D			E	C	B	A
0304240-006	Trip Blank	Water	4/15/03								A
0304240-007	TAP Sample	Water	4/15/03 4:00:00 PM								A

Prepared by: Melissa Valles

**Comments:**

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.



