

# GROUNDWATER TECHNOLOGY, INC.

4057 Port Chicago Highway, Concord, CA 94520 (415) 671-2387

FAX: (415) 685-9148

February 18, 1993

Project No. 020203139


Ms. Pam Evans  
Alameda County Health Care Services Agency  
Department of Environmental Health  
80 Swan Way, Room 200  
Oakland, CA 94621

SUBJECT: Environmental Assessment Report  
Southland Store No. 19035  
100 Lewelling Boulevard  
San Lorenzo, California

Dear Ms. Evans:

The enclosed Environmental Assessment Report has been prepared by Groundwater Technology, Inc. on behalf of The Southland Corporation (Southland). The report presents the findings and work performed by Groundwater Technology at the site referenced above. As stated in the Recommendations and Conclusions section of the report, Groundwater Technology, on behalf of Southland, requests quarterly monitoring and sampling for three additional quarters followed by an evaluation of the site for closure. If you have any questions or comments, please contact the Groundwater Technology Concord office at (510) 671-2387.

Sincerely,  
**Groundwater Technology, Inc.**

  
Sandra L. Lindsey  
Project Manager

SLL:ab

Enclosure

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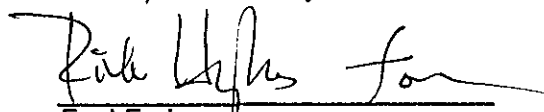
**ENVIRONMENTAL ASSESSMENT REPORT  
SOUTHLAND STORE NO. 19035  
100 LEWELLING BOULEVARD  
SAN LORENZO CALIFORNIA**

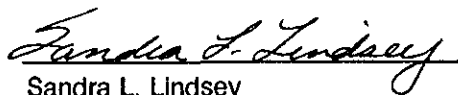
020203139

JANUARY 29, 1993


Prepared for:  
The Southland Corporation  
6820 Stoneridge Mall Road  
Pleasanton, California 94588

**Groundwater Technology, Inc.**  
Written/Submitted by

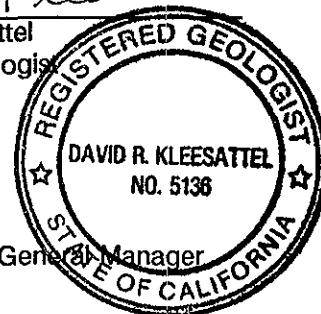
  
Fred Essig  
Project Geologist

  
Sandra L. Lindsey  
Project Manager

**Groundwater Technology, Inc.**  
Reviewed/Approved by

  
David R. Kleesattel  
Registered Geologist  
No. 5136

For:  
John S. Gaines  
Vice President, General Manager  
West Region



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**ENVIRONMENTAL ASSESSMENT REPORT  
SOUTHLAND STORE NO. 19035  
100 LEWELLING BOULEVARD  
SAN LORENZO, CALIFORNIA**

**JANUARY 29, 1993**

## **1.0 INTRODUCTION**

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This report summarizes the environmental assessment work conducted by Groundwater Technology, Inc. (Groundwater Technology) at The Southland Corporation (Southland) Store No. 19035 located at 100 Lewelling Blvd., San Lorenzo, California (Figure 1). The assessment work completed during November and December 1992 included drilling and installing four monitoring wells, sampling soil and groundwater, analyzing the samples, and preparing this report.

## **2.0 BACKGROUND**

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In May 1992, according to the IT Corporation (IT) UST Removal Environmental Compliance Report, dated June 29, 1992, three underground storage tanks (USTs) were removed from the above-referenced site. Confirmation samples collected from the tank pit contained total petroleum hydrocarbons-as-gasoline (TPH-G) in concentrations ranging from below method detection limits (MDLs) to 63 parts per million (ppm). Monitoring wells MW-1, MW-2, MW-3, and MW-4 were installed by Groundwater Technology on November 17 and 18, 1992. The site is currently an operating 7-Eleven convenience store.

### **3.0 SCOPE OF WORK**

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#### **3.1 Site-Specific Health and Safety Plan and Permitting**

Groundwater Technology prepared a site-specific Health and Safety Plan required by the Occupational Health and Safety Administration (OSHA) Standard Hazardous Waste Operations and Emergency Response guidelines (29 CFR 1910.120). The site-specific Health and Safety Plan was prepared after a review of site conditions and available existing site-specific health and safety plans for the site. The Health and Safety Plan was reviewed and signed by all Groundwater Technology personnel and subcontractors before working at the site.

Groundwater Technology reviewed the site history and information with Southland representatives before beginning work at the site. Before monitoring well installation, drilling permits were obtained from Zone-7 Alameda County Flood Control and Water Conservation District (Appendix A).

#### **3.2 Soil Borings**

On November 17 and 18, 1992, Groundwater Technology supervised the drilling and installation of four monitoring wells. Monitoring wells MW-1, MW-2, MW-3, and MW-4 were installed to 30 feet below grade. Soil borings were drilled with a truck-mounted drill rig equipped with 11-inch outside diameter, hollow-stem augers. The hollow-stem augers were steam cleaned between each boring. A field geologist, under the supervision of a California Registered Geologist, logged the materials encountered during drilling using the Unified Soil Classification System.

The steam cleaning water was stored in a labeled 55-gallon drum and disposed of by Laidlaw Environmental Services at their facility in Buttonwillow, California. Approximately 5 cubic yards of soil from the borings were placed on and covered by polyethylene plastic, characterized, and removed by Balch Petroleum to Mountain View Landfill in Mountain View, California on November 20, 1992.

### 3.3 Soil Sampling

During drilling, soil samples were collected at 5-foot intervals from approximately 5 feet below grade to the bottom of the boring. Samples were collected using a 2.5-inch-outside-diameter split-spoon sampler, lined with three 2-inch-diameter by 6-inch-long brass sample tubes. The sampler was driven 18 inches ahead of the augers at each sample point. Soil samples were field screened using a photo-ionization detector (PID). One sample from every 5-foot interval was sealed with aluminum foil, capped, taped, labeled, placed on ice in an insulated container, and delivered to a California-certified laboratory. All sampling was performed according to Groundwater Technology standard operating procedures (SOPs) (Appendix B).

Three soil samples from each boring and one composite soil sample were selected for analysis. Each sample was analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX), and TPH-G by Environmental Protection Agency (EPA) Methods 5030/8020/8015. Also, a soil sample collected at 20 feet below grade from well MW-4 was analyzed for total lead by EPA Method 6010.

### 3.4 Monitoring Well Installation

Monitoring wells MW-1, MW-2, MW-3, and MW-4 were constructed of 4-inch-diameter Schedule 40 polyvinyl chloride (PVC) casing with flush threads and 0.020-inch-slot well screen. The well screen was installed from 15 to 30 feet below grade in each well. A sand filter was placed around the well screen to a height of approximately 2 feet above the top of the screen. The wells were completed with 2 feet of bentonite and a neat-cement seal to grade. The wellhead was protected by a locking cap and a traffic-rated street box with a water-tight bolted lid. Well construction details are presented on the drill logs included in Appendix C. Each monitoring well elevation was surveyed by a professional licensed survey to the north rim of the PVC well casing. The elevations were surveyed to a County of Alameda monument at the intersection of Lewelling Boulevard and Usher Street. The monument disc is stamped "LEW-USH" 1967 and has an elevation of 39.696 feet above mean sea level.

### 3.5 Groundwater Monitoring

On December 8, 1992, each well was monitored to determine the depth to groundwater and the thickness of separate-phase hydrocarbons, if present. The water levels were measured using an INTERFACE PROBE™ Well Monitoring System, which consists of a dual optical sensor and electrical conductivity probe that distinguishes between water and petroleum products.

### 3.6 Monitoring Well Development

After monitoring water levels on December 8, 1992, the monitoring wells were developed by surging and balling groundwater from each well using a PVC bailer. This technique promotes a uniform sand filter pack, removes fine-grain sediments from the well screen and filter pack, and improves the hydraulic communication between the well and aquifer. The groundwater from each well was bailed until visibly clear. Approximately 3 to 4 well casing volumes were extracted from each well before sample collection.

### 3.7 Groundwater Sampling

After the wells were developed on December 8, 1992, groundwater samples were collected from wells MW-1, MW-2, MW-3 and MW-4 using a Teflon® sampler. Immediately before collecting the sample from well MW-2, a distilled water rinsate blank was collected from the Teflon® sampler as a quality control check on the cleanliness of the sampler. Each sample was acidified, labeled, placed on ice in an insulated container, and delivered to a California-certified laboratory. The samples were accompanied by a chain-of-custody record during transport. Water samples were analyzed for BTEX and TPH-G using EPA Methods 5030/8020/8015. The water samples collected for total lead analyses were not preserved or filtered and were analyzed using EPA Methods 239.2/7421/3020. Water generated during the purging and development process was stored in Department of Transportation (DOT)-approved 55-gallon drums, characterized, and transported on January 28, 1993 by Laidlaw Environmental for disposal at their Buttonwillow, California facility.



## 4.0 SITE CONDITIONS

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### 4.1 Hydrogeology

Topographically, the site is situated on the east side of the San Francisco Bay Plain. The right-lateral strike-slip Hayward Fault and the Oakland Hills are located approximately one mile east of the site. The surface elevation at the site is approximately 36 feet above mean sea level. The local land surface slopes gently to the west. The site is approximately 1,500 feet north of the San Lorenzo Creek, which flows to the west into the San Francisco Bay.

The materials encountered during drilling were predominantly silty and sandy clay. The materials encountered at wells, MW-2 and MW-4 (Figure 2) are illustrated on geologic cross section A-A' (Figure 3).

On December 8, 1992, groundwater levels measured at the site ranged between 18.26 feet below grade at well MW-3 to 19.26 feet below grade at well MW-2. No separate-phase hydrocarbons were detected while measuring water levels. A potentiometric surface map (Figure 4) was prepared using the water level data collected on December 8, 1992. Figure 4 shows a groundwater flow direction to the west with a gradient of approximately 0.001 foot per foot. The groundwater level data are presented in Table 1.

### 4.2 Analytical Results for Soil

The analytical results of the soil samples collected from well MW-1 indicated xylene concentrations of 0.023 to 0.049 ppm in samples from 10 and 20 feet, respectively. The other soil samples collected from the wells did not contain BTEX or TPH-G concentrations above MDLs. Analysis of a sample collected from well MW-4 at 20 feet below grade indicated no detectable total lead. Results of soil sample analyses are summarized in Table 2. The laboratory reports are included in Appendix D.

#### 4.3 Analytical Results for Groundwater

Analytical results for groundwater samples collected from the wells on December 8, 1992, reported that BTEX or TPH-G concentrations were not detected above the MDLs. Total lead was detected at concentrations ranging from below the MDL of 5 parts per billion (ppb) in MW-4 to 13 ppb in MW-1. Analytical results of the groundwater samples are summarized in Table 1 and the laboratory reports are included in Appendix D.

### 5.0 RECOMMENDATIONS AND CONCLUSIONS

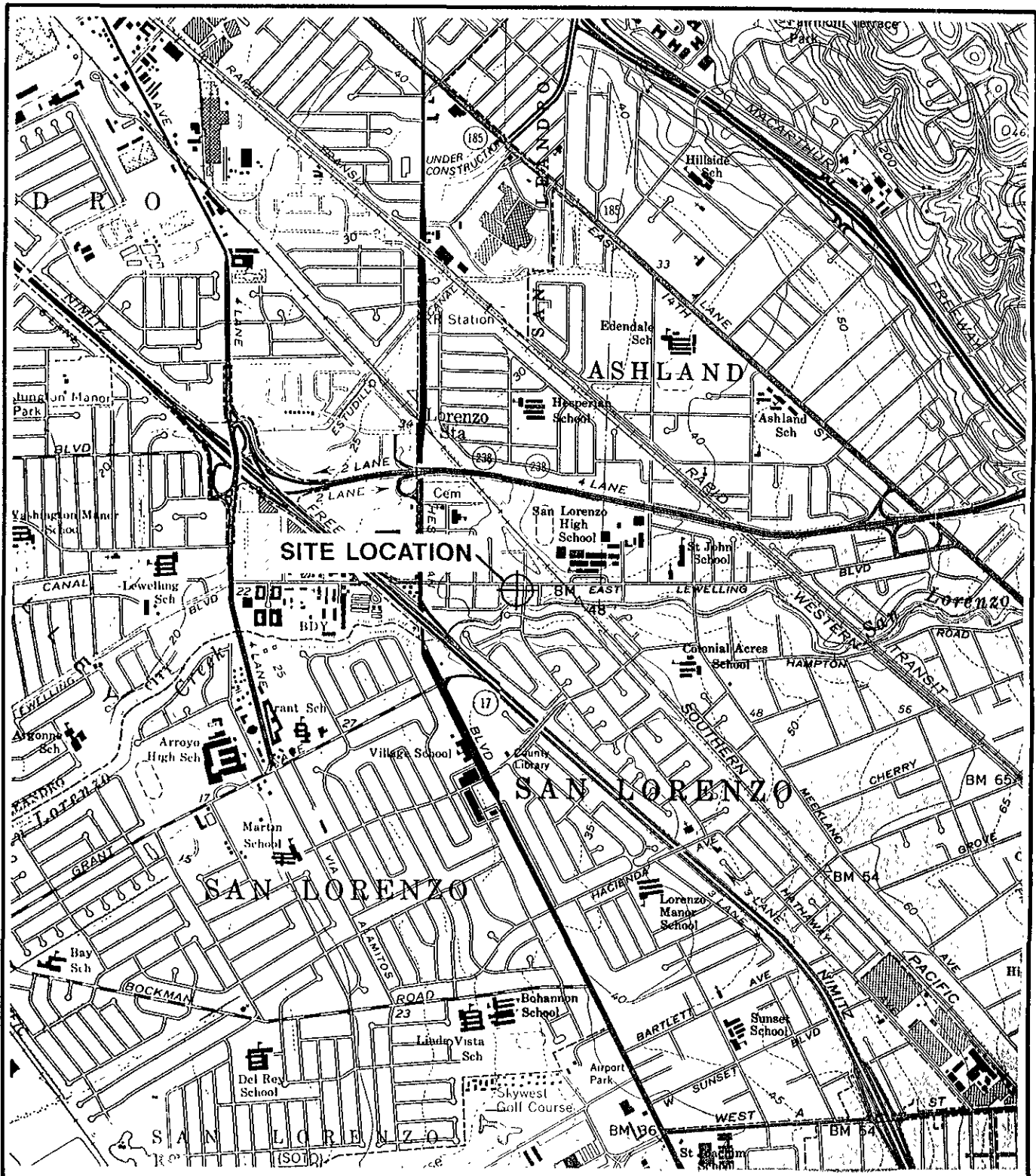
Based on the analytical results of the soil samples collected from the soil borings and the analytical results of the groundwater samples, Groundwater Technology recommends the following:

- Quarterly groundwater monitoring and sampling for three additional quarters to evaluate the effects of seasonal fluctuations in depth to groundwater and groundwater quality during a 1-year period.
- After monitoring and sampling data from a complete year have been obtained and evaluated, destroy the groundwater monitoring wells and request confirmation of site closure from the Regional Water Quality Control Board.

This concludes Groundwater Technology's Environmental Assessment Report for Southland Store No. 10935 at 100 Lewelling Boulevard in San Lorenzo, California.

**FIGURES**

- FIGURE 1      SITE LOCATION MAP
- FIGURE 2      SITE PLAN
- FIGURE 3      GEOLOGIC CROSS SECTION A-A'
- FIGURE 4      POTENTIOMETRIC SURFACE MAP (12/08/92)



**GROUNDWATER  
TECHNOLOGY**

4057 PORT CHICAGO HWY  
CONCORD, CA 94520  
(510) 671-2387



SCALE:

0 FEET 2000

**SITE LOCATION MAP**

CLIENT:

**THE SOUTHLAND CORPORATION  
STORE No. 19035**

DATE:

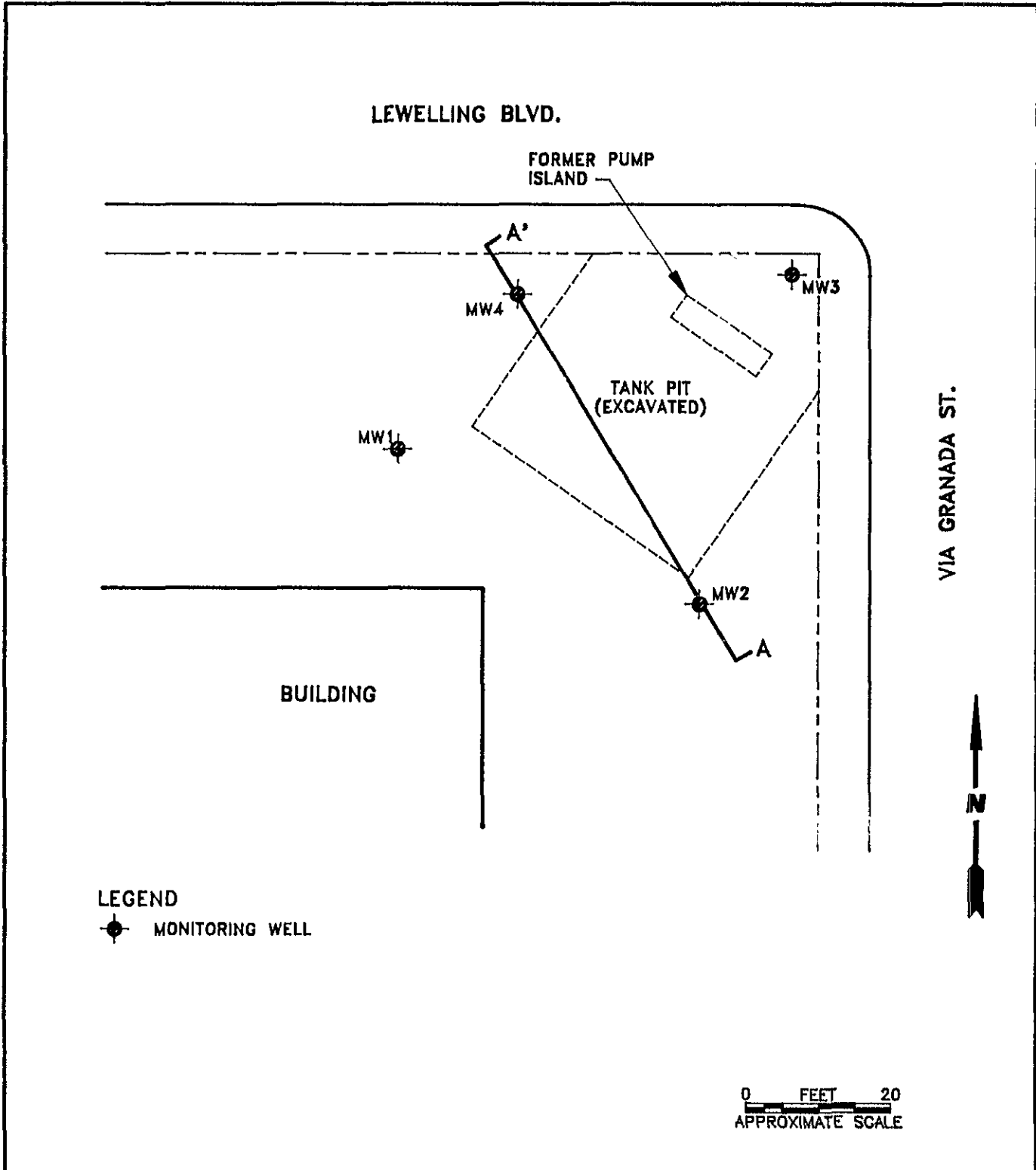
**1/21/93**

LOCATION:

**100 LEWELLING BLVD.  
SAN LORENZO, CALIFORNIA**


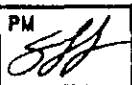

FIGURE:

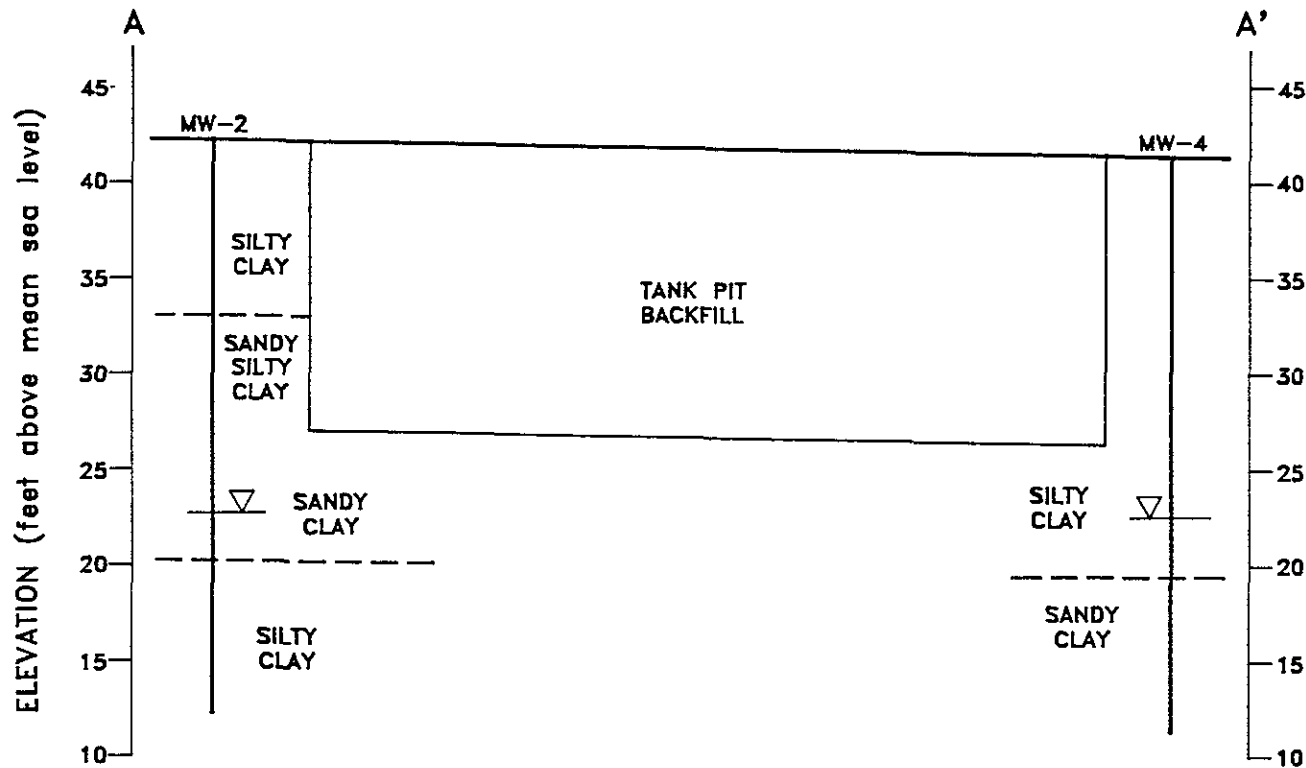
**1**



LEGEND  
 MONITORING WELL


0 FEET 20  
 APPROXIMATE SCALE

		<b>GROUNDWATER TECHNOLOGY</b> 4057 PORT CHICAGO HWY. CONCORD, CA 94520 (510) 871-2387		<b>SITE PLAN AND          CROSS SECTION LOCATION MAP</b>			
CLIENT: <b>THE SOUTHLAND CORPORATION</b> STORE No. 19035			LOCATION: <b>100 LEWELLING BLVD.</b> <b>SAN LORENZO, CALIFORNIA</b>		REV. NO.: 0	DATE: 1/21/93	
PM 	PE/RG 	DESIGNED SL	DETAILED ML	ACAD FILE: <b>CSECLOC/SP193</b>	PROJECT NO.: <b>020203139</b>	FIGURE: <b>2</b>	



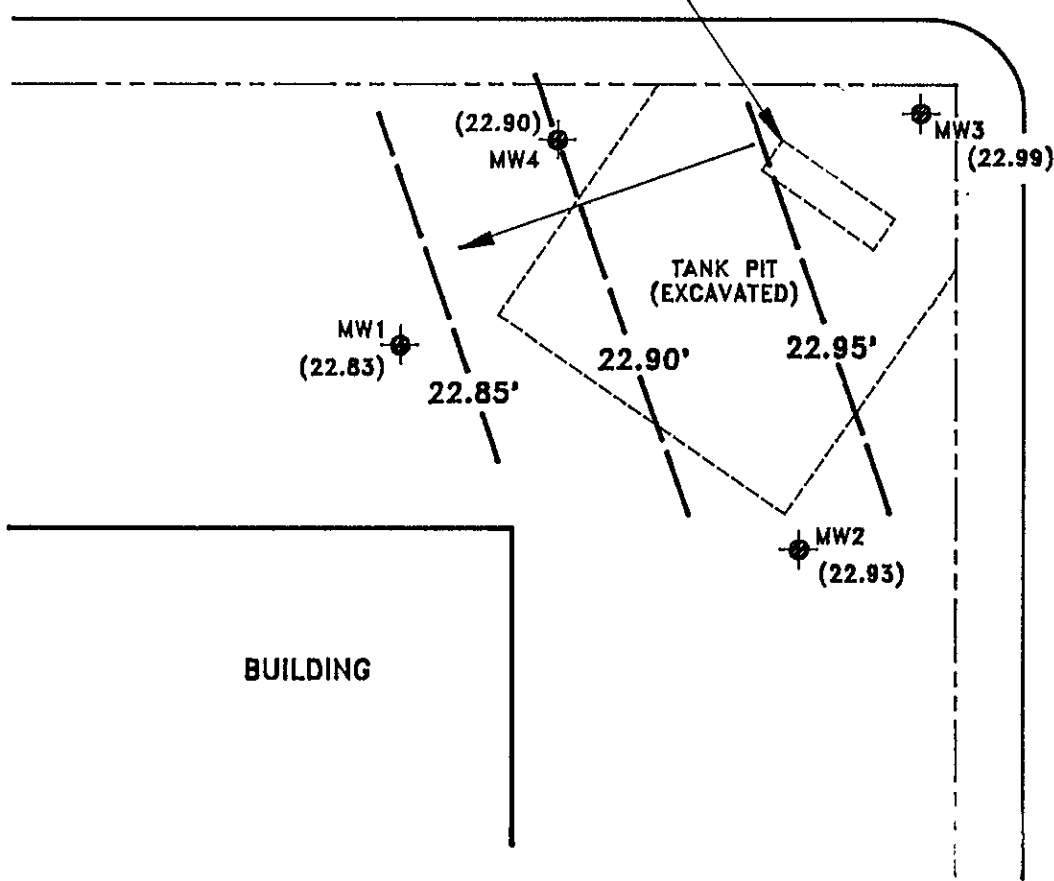
**LEGEND**

▽ WATER TABLE ELEVATION

		<b>GROUNDWATER TECHNOLOGY</b> 4057 PORT CHICAGO HWY CONCORD, CA 94520 (510) 671-2387		<b>GEOLOGIC CROSS SECTION A-A'</b>			
<b>CLIENT:</b> THE SOUTHLAND CORPORATION STORE No. 19035			<b>LOCATION:</b> 100 LEWELLING BLVD. SAN LORENZO, CALIFORNIA		<b>REV. NO.:</b> 0	<b>DATE:</b> 1/26/93	
<b>PM</b> <i>[Signature]</i>	<b>PE/RG</b> <i>DRK</i>	<b>DESIGNED</b> SL	<b>DETAILED</b> ML	<b>ACAD FILE:</b> CSECAA	<b>PROJECT NO.:</b> 020203139	<b>FIGURE:</b> <b>3</b>	

LEWELLING BLVD.


FORMER PUMP  
ISLAND





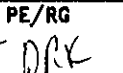
VIA GRANADA ST.



LEGEND

-  MONITORING WELL
- ( ) POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- POTENTIOMETRIC SURFACE CONTOUR
- ← GROUNDWATER FLOW DIRECTION

0 FEET 20  
APPROXIMATE SCALE

		GROUNDWATER TECHNOLOGY 4057 PORT CHICAGO HWY. CONCORD, CA 94520 (510) 871-2387		<b>POTENTIOMETRIC SURFACE MAP</b> <b>(12/8/92)</b>			
CLIENT: <b>THE SOUTHLAND CORPORATION</b> STORE No. 19035			LOCATION: 100 LEWELLING BLVD. SAN LORENZO, CALIFORNIA		REV. NO.: 0	DATE: 1/21/93	
PM 	PE/RG 	DESIGNED SL	DETAILED ML	ACAD FILE: PSMD892/SP193	PROJECT NO.: 020203139	FIGURE: <b>4</b>	

**TABLES**

**TABLE 1**      **GROUNDWATER ANALYTICAL RESULTS AND MONITORING DATA  
COLLECTED ON DECEMBER 8, 1992**

**TABLE 2**      **ANALYTICAL RESULTS OF SOIL SAMPLES  
COLLECTED ON NOVEMBER 17, 1992**



**TABLE 1**  
**GROUNDWATER ANALYTICAL RESULTS AND MONITORING DATA**  
**COLLECTED ON DECEMBER 8, 1992**  
**(Concentrations in parts per billion)**

SAMPLE ID/ ELEV	BENZENE	TOLUENE	ETHYL- BENZENE	XYLENES	TOTAL LEAD	TPH-AS- GASOLINE	DTW (ft)	SPT (ft)	WTE (ft)
MW-1/41.90	<0.3	<0.3	<0.3	<0.5	13	<10	19.07	0.00	22.83
MW-2/42.19	<0.3	<0.3	<0.3	<0.5	7.5	<10	19.26	0.00	22.93
MW-3/41.29	<0.3	<0.3	<0.3	<0.5	7	<10	18.25	0.00	22.99
MW-4/41.44	<0.3	<0.3	<0.3	<0.5	<5	<10	18.54	0.00	22.90
Rinse Blank	<0.3	<0.3	<0.3	<0.5	--	<10	--	--	--

TPH = Total petroleum hydrocarbons  
DTW = Depth to groundwater  
SPT = Separate-phase hydrocarbon thickness  
WTE = Water table elevation in feet above mean sea level

TABLE 2  
 ANALYTICAL RESULTS OF SOIL SAMPLES  
 COLLECTED ON NOVEMBER 17, 1992  
 (Concentrations in parts per million)

SAMPLE ID	SAMPLE DEPTH (Ft)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL LEAD	TPH AS GASOLINE
MW1-10	10	<0.005	<0.005	<0.005	0.023	--	<1
MW1-20	20	<0.005	<0.005	<0.005	0.049	--	<1
MW1-30	30	<0.005	<0.005	<0.005	<0.015	--	<1
MW2-10	10	<0.005	<0.005	<0.005	<0.015	--	<1
MW2-20	20	<0.005	<0.005	<0.005	<0.015	--	<1
MW2-30	30	<0.005	<0.005	<0.005	<0.015	--	<1
MW3-10	10	<0.005	<0.005	<0.005	<0.015	--	<1
MW3-20	20	<0.005	<0.005	<0.005	<0.015	--	<1
MW3-30	30	<0.005	<0.005	<0.005	<0.015	--	<1
MW4-10	10	<0.005	<0.005	<0.005	<0.015	--	<1
MW4-20	20	<0.005	<0.005	<0.005	<0.015	<5	<1
MW4-30	30	<0.005	<0.005	<0.005	<0.015	--	<1
Composite	NA	<0.005	<0.005	<0.005	<0.015	--	<1

TPH = Total petroleum hydrocarbons  
 Ft = Feet

APPENDIX A  
WELL INSTALLATION PERMITS



ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94566 (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

1) LOCATION OF PROJECT Southland Store No. 19035
100 Lewelling Boulevard
San Lorenzo, CA

PERMIT NUMBER 92475
LOCATION NUMBER

CLIENT
Name The Southland Corporation
Address 5820 Stoneridge Mall Rd. (510) 847-2076
City Pleasanton, CA Zip 94566

PERMIT CONDITIONS

Circled Permit Requirements Apply

3) APPLICANT
Name Groundwater Technology, Inc.
Address 4057 Port Chicago Hwy (510) 671-2387
City Concord, CA Zip 94520

DESCRIPTION OF PROJECT
Water Well Construction [X] Geotechnical Investigation
Cathodic Protection [ ] General [ ]
Well Destruction [ ] Contamination [ ]

5) PROPOSED WATER WELL USE
Domestic [ ] Industrial [ ] Irrigation [ ]
Municipal [ ] Monitoring [X] Other [ ]

PROPOSED CONSTRUCTION
Drilling Method:
Mud Rotary [ ] Air Rotary [ ] Auger [X]
Cable [ ] Other [ ]

DRILLER'S LICENSE NO. 434343

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 25 ft.
Surface Seal Depth 10-15 ft. Number 4

GEOTECHNICAL PROJECTS
Number of Borings [ ] Maximum
Hole Diameter [ ] in. Depth [ ] ft.

7) ESTIMATED STARTING DATE October 12, 1992
ESTIMATED COMPLETION DATE October 30, 1992

8) I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

- A. GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.
B. WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic, irrigation, and monitoring wells unless a lesser depth is specially approved.
C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.
D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.
E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 28 Sep 92
Wyman Hong

APPLICANT'S SIGNATURE [Signature] Date 9/24/92

**APPENDIX B**

**GROUNDWATER TECHNOLOGY, INC.  
STANDARD OPERATING PROCEDURES**

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**GROUNDWATER TECHNOLOGY, INC.  
STANDARD OPERATING PROCEDURE  
CONCERNING GROUNDWATER MONITORING  
SOP 8**

---

Groundwater monitoring of wells at the site shall be conducted using an ORS Environmental Equipment (ORS) INTERFACE PROBE™ and SURFACE SAMPLER™. The INTERFACE PROBE™ is a hand-held, battery-operated device for measuring depth to petroleum product and depth to water as measured from an established datum (*i.e.*, top of the well casing which has been surveyed). Separate-phase hydrocarbon (product) thickness is then calculated by subtracting the depth to product from the depth to water. In addition, water elevations are adjusted for the presence of fuel with the following calculation:

$$(\text{Product Thickness}) (0.8) + (\text{Water Elevation}) = \text{Corrected Water Elevation}$$

Note: The factor of 0.8 accounts for the density difference between water and petroleum hydrocarbons.

The INTERFACE PROBE™ consists of a dual-sensing probe which utilizes an optical liquid sensor and electrical conductivity to distinguish between water and petroleum products. A coated steel measuring tape transmits the sensor's signals to the reel assembly where an audible alarm sounds a continuous tone when the sensor is immersed in petroleum product and an oscillating tone when immersed in water. The INTERFACE PROBE™ is accurate to 1/16th inch.

A SURFACE SAMPLER™ shall be used for visual inspection of the groundwater to note sheens (difficult to detect with the INTERFACE PROBE™), odors, microbial action, etc.

The SURFACE SAMPLER™ used consists of a 12-inch-long case acrylic tube with a Delrin ball which closes onto a conical surface creating a seal as the sampler is pulled up. The sampler is calibrated in inches and centimeters for visual inspection of product thickness.

To reduce the potential for cross contamination between wells, the monitorings shall take place in order from the least to the most contaminated wells. Wells containing separate-phase hydrocarbons (free product) should be monitored last. Between each monitoring the equipment shall be washed with laboratory-grade detergent and double rinsed with distilled water.

**GROUNDWATER TECHNOLOGY, INC.  
STANDARD OPERATING PROCEDURE  
CONCERNING WATER SAMPLING METHODOLOGY  
SOP 9**

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Before water sampling, each well shall be purged by pumping a minimum of four well volumes or until the discharge water indicates stabilization of temperature conductivity and pH. If the well is evacuated before four well volumes are removed or stabilization is achieved, the sample should be taken when the water level in the well recovers to 80 percent of its initial level.

Retrieval of the water sample, sample handling and sample preservation shall be conducted according to Standard Operating Procedure 10 concerning "Sampling for Volatiles in Water." The sampling equipment used shall consist of a Teflon® and/or stainless steel samplers which meet U.S. Environmental Protection Agency (EPA) regulations. Glass vials with Teflon® lids should be used to store the collected samples.

To ensure sample integrity, each vial shall be filled with the sampled water in such a way that the water stands above the lip of the vial. The cap should then be quickly placed on the vial and tightened securely. The vial should then be checked to ensure that air bubbles are not present prior to labeling of the sample. Label information should include a sample identification number, job identification, date, time, type of analysis requested, and sampler's name. Chain-of-custody records shall be completed according to Standard Operating Procedure (SOP) 11 concerning chain of custody.

The vials should be immediately placed in high quality coolers for shipment to the laboratory. The coolers should be packed with sufficient ice or freezer packs to ensure that the samples are kept below 4° Celsius (C). To minimize sample degradation the prescribed analysis shall take place within seven days of sample collection unless specially prepared acidified vials are used.

To minimize the potential for cross contamination between wells, all the well development and water sampling equipment which contacts the groundwater shall be cleaned between each sampling. As a second precautionary measure, the wells shall be sampled in order of increasing contaminant concentrations (the least contaminated well first, the most contaminated well last) as established by previous analysis.

**STANDARD OPERATING PROCEDURE 10  
CONCERNING SAMPLING FOR VOLATILES IN WATER  
(DISSOLVED GASOLINE, SOLVENTS, ETC.)  
SOP 10**

---

1. Use only vials properly washed and baked.
2. Use clean sampling equipment. Scrub with Alconox or equivalent laboratory detergent and water followed by a thorough water rinse. Complete with a distilled water rinse.

Sampling equipment which has come into contact with liquid hydrocarbons (free product) should be regarded with suspicion. Such equipment should have tubing and cables replaced and all resilient parts washed with laboratory detergent solution as indicated above. Visible deposits may have to be removed with hexane. Solvent washing should be followed by detergent washing, as indicated above.

This procedure is valid for volatile organic analysis only. For extractable organics (for example, pesticides, or base neutrals for U.S. Environmental Protection Agency [EPA] Method 625 a final rinse with pesticide-grade isopropyl alcohol), followed by overnight or oven drying will be necessary.

3. Take duplicate samples. Mark on forms as a single sample with two containers to avoid duplication of analyses.
4. Take a site blank using distilled water or known uncontaminated source. This sample will be run at the discretion of the project manager.
5. Fill out labels and forms as much as possible ahead of time. Use an indelible marker.
6. Preservatives are required for some types of samples. Use specially prepared vials marked as indicated below, or use the appropriate field procedure (SOP 12 for acidification). Make note on forms that samples were preserved. Always have extra vials in case of problems. Samples for volatile analyses should be acidified below pH 2 upright. Eye protection, foot protection, and disposable vinyl gloves are required for handling. Samples designated for expedited service and analyzed within seven (7) days of sampling will be acceptable without preservation. Acid-causing burns. Glasses or goggles (not contact lenses) are necessary for protection of the eyes. Flush eyes with water for 15 minutes if contact occurs and seek medical attention. Rinse off hands frequently with water during handling.

For sampling chlorinated drinking water supplies for chlorinated volatiles, samples shall be preserved with sodium thiosulfate. Use vials labeled "CONTAINS THIOSULFATE." No particular cautions are necessary.

7. Fill vial to overflowing with water, avoiding turbulence and bubbling as much as possible. Water should stand above lip of vial.
8. Carefully, but quickly, slip cap onto vial. Avoid dropping the Teflon® septum from cap by not inverting cap until it is in contact with the vial. Disc should have Teflon® face toward the water. Also avoid touching white Teflon® face with dirty fingers.
9. Tighten cap securely, invert vial, and tap against hand to see there are not bubbles inside.





10. Label vial, using indelible ink, as follows:
  - A. Sample I.D. No.
  - B. Job I.D. No.
  - C. Date and Time
  - D. Type of analysis required
  - E. Your name
11. Unless the fabric-type label is used, place Scotch™ tape over the label to preserve its integrity.
12. For chain-of-custody reasons, sample vial should be wrapped end-for-end with Scotch™ tape or evidence tape and signed with indelible ink where the end of the tape seals on itself. The septum needs to be covered.
13. Chill samples immediately. Samples to be stored should be kept at 4° Celsius (C) (30° Fahrenheit [F]). Samples received at the laboratory above 10°C (as measured at glass surface by a thermocouple probe), after overnight shipping, will be considered substandard, so use a high quality cooler with sufficient ice or freezer packs.
14. Fill out Chain-of-Custody Manifest and Analysis Request Form (see Chain of Custody Procedures, SOP 11).

GROUNDWATER TECHNOLOGY, INC.  
STANDARD OPERATING PROCEDURE  
CONCERNING CHAIN OF CUSTODY  
SOP 11

---

1. Samples must be maintained under custody until shipped or delivered to the laboratory. The laboratory will then maintain custody. A sample is under custody if:
  - a) It is in your possession
  - b) It is in your view after being in your possession
  - c) You locked it up after it was in your possession
  - d) It is in a designated secure area
2. Custody of samples may be transferred from one person to another. Each transferer and recipient must date, sign and note the time on the chain-of-custody form.
3. In shipping, the container must be sealed with tape, and bear the sender's signature across the area of bonding at the ends of the tape to prevent undetected tampering. Each sampling jar should be taped and signed as well. Scotch tape works well.
4. Write "sealed by" and sign in the "Remarks" box at the bottom of the form before sealing the box. Place form in a plastic bag and seal it inside the box.
5. The "REMARKS" section of the form is for documenting details such as:
  - a) Correlation of sample numbers if samples are split between labs.
  - b) QC numbers when lab is logging in the samples.
  - c) Sample temperature and condition when received by lab.
  - d) Preservation notation.
  - e) pH of samples when opened for analysis (if acidified).
  - f) Sampling observation or sampling problem.
6. The chain-of-custody form should be included inside the shipping container. A copy should be sent to the project manager.
7. When the samples are received by the lab, the chain-of-custody form will be dated, signed, and the time noted by a laboratory representative. The form will be retained in the laboratory files along with shipping bills and receipts .
8. At the time of receipt of samples by the laboratory, the shipping container will be inspected and the sealing signature will be checked. The samples will be inspected for condition and bubbles, and the temperature of a representative sample container will be measured externally by a thermocouple probe (held tightly between two samples) and recorded. The laboratory QC numbers will be placed on the labels, in the accession log, and on the chain-of-custody form. If samples are acidified, their pH will be measured by narrow range pH paper at the time of opening for analysis. All comments concerning procedures requiring handling of the samples will be dated and initialed on the form by the laboratory person performing the procedure. A copy of the completed chain-of-custody form with the comments on sample integrity will be returned to the sampler.

**APPENDIX C**  
**DRILL LOGS AND WELL CONSTRUCTION SPECIFICATIONS**  
**STANDARD OPERATING PROCEDURES**



Project STHL/Lewelling Owner Southland Corporation  
 Location San Lorenzo, CA Project No. 020203139 Date drilled 11/17/92  
 Surface Elev. 42.27 ft. Total Hole Depth 30 ft. Diameter 12 inches  
 Top of Casing 41.90 ft. Water Level Initial 19.5 ft. Static 12/8/92 19.07 ft.  
 Screen: Dia 4 in. Length 15 ft. Type/Size 0.020 in.  
 Casing: Dia 4 in. Length 15 ft. Type PVC  
 Filter Pack Material #3 sand Rig/Core Type B-61  
 Drilling Company Kvilhaug Drilling Method Hollow Stem Auger Permit # #92475  
 Driller Rod Furlow Log By Tim Watchers  
 Checked By David Kleesattel License No. RG# 5136 *Dona Klossattel*

See Site Map  
For Boring Location

COMMENTS:

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description
						(Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0						Asphalt Coarse base aggregate
2						
4		0	15 20 21			Brown and tan silty CLAY (dry, coarse, small gravel)
6						
8						
10		0	7 6 8			Dark brown silty CLAY (dry)
12					CL	
14		0	2 4 6			Brown sandy silty CLAY (tip of sampler was wet)
16						
18						
20		3	4 8 8			Dark brown silty CLAY moist (tip of the sampler was we4) Encountered groundwater at 19.5 ft. (11/17/92 at 11:10) (Driller noted the soil became stiffer at about 22 feet)
22						
24			9 15			



Project STHL/Lewelling Owner Southland Corporation  
 Location San Lorenzo, CA Project No. 020203139 Date drilled 11/17/92

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description
						(Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24	[Patterned]	3.7	16	[Hatched]	CL	Dark brown CLAY (wet, stiff)
25			25			
26						
28						Dark brown CLAY (saturated)
30		4.8	5			End of boring. Constructed monitoring well.
30			7			
30			10			
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						



Project STHL/Lewelling Owner Southland Corporation  
 Location San Lorenzo, CA Project No. 020203139 Date drilled 11/17/19  
 Surface Elev. 42.66 ft. Total Hole Depth 30 ft. Diameter 12 inches  
 Top of Casing 42.19 ft. Water Level Initial 20.0 ft. Static 12/8/92 19.26 ft.  
 Screen: Dia 4 in. Length 15 ft. Type/Size 0.020 in.  
 Casing: Dia 4 in. Length 15 ft. Type PVC  
 Filter Pack Material #3 sand Rig/Core Type B-61  
 Drilling Company Kvilhaug Drilling Method Hollow Stem Auger Permit # #92475  
 Driller Rod Furlow Log By Tim Watchers  
 Checked By David Kleesattel License No. RG# 5136 *D. Kleesattel*

See Site Map For Boring Location

COMMENTS:

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0						Asphalt Coarse base aggregate
2						
4		0	5 7 7			Dark brown silty CLAY (dry, soft)
6						
8						
10		0	4 9 13			Brown sandy/silty CLAY (dry, soft)
12					CL	
14		0	5 6 7			Light brown sandy CLAY (moist)
16						
18						
20		0.8	4 7 14			Brown sandy CLAY (moist) Encountered groundwater at 20 ft. (11/17/92 at 1430)
22						
24			5 10			



Project STHL/Lewelling Owner Southland Corporation  
Location San Lorenzo, CA Project No. 020203139 Date drilled 11/17/19

Depth (ft.)	Well Completion	PTD (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description
						(Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24	[Well Completion Diagram]	1.0	10	[Graphic Log Diagram]	CL	Brown sandy CLAY (wet, stiff)
26			17			
28						Light brown silty CLAY (wet)
30		0	4			End of boring. Constructed monitoring well.
32			5			
34			9			
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						



Project STHL/Lewelling Owner Southland Corporation  
 Location San Lorenzo, CA Project No. 020203139 Date drilled 11/18/19  
 Surface Elev. 41.85 ft. Total Hole Depth 30 ft. Diameter 12 inches  
 Top of Casing 41.24 ft. Water Level Initial 18.0 ft. Static 12/8/92 18.25 ft.  
 Screen: Dia 4 in. Length 15 ft. Type/Size 0.020 in.  
 Casing: Dia 4 in. Length 15 ft. Type PVC  
 Filter Pack Material #3 sand Rig/Core Type B-61  
 Drilling Company Kvilhaug Drilling Method Hollow Stem Auger Permit # #92475  
 Driller Rod Furlow Log By Tim Watchers  
 Checked By David Kleesattel License No. RG# 5136 *D. Kleesattel*

See Site Map  
For Boring Location

COMMENTS:

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description
						(Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0						Asphalt Coarse base aggregate
2						
4		0	2 4 5			Dark brown silty CLAY (soft, moist)
6						
8						
10		0.5	4 5 8			Dark brown silty CLAY (soft, moist, trace sand)
12					CL	
14		0.8	4 5 6			Dark brown silty sandy CLAY (soft, tip of sampler was wet)
16						
18						▽ Encountered groundwater at 18.0 ft. (11/18/92 at 1005)
20		1.2	5 7 17			Brown sandy CLAY (soft, wet)
22						
24			4 6			





Project STHL/Lewelling Owner Southland Corporation  
 Location San Lorenzo, CA Project No. 020203139 Date drilled 11/18/19

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description
						(Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24		1.6	8 10		CL	Brown silty CLAY (saturated, stiff)
26						Brown sandy CLAY (wet, stiff)
28			5 7 7			
30		0.5				End of boring. Constructed monitoring well.
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						



Project STHL/Lewelling Owner Southland Corporation  
 Location San Lorenzo, CA Project No. 020203139 Date drilled 11/18/92  
 Surface Elev. 41.76 ft. Total Hole Depth 30 ft. Diameter 12 inches  
 Top of Casing 41.44 ft. Water Level Initial 18.5 ft. Static 12/8/92 18.54 ft.  
 Screen: Dia 4 in. Length 15 ft. Type/Size 0.020 in.  
 Casing: Dia 4 in. Length 15 ft. Type PVC  
 Filter Pack Material #3 sand Rig/Core Type B-61  
 Drilling Company Kvilhaug Drilling Method Hollow Stem Auger Permit # #92475  
 Driller Rod Furlow Log By Tim Watchers/Chip Hurley  
 Checked By David Kleesattel License No. RG# 5136 *D. Kleesattel*

See Site Map  
For Boring Location

COMMENTS:

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0						Asphalt Coarse base aggregate
2						
4		4.2	5 8 9			Brown silty CLAY (moist, soft)
6						
8						
10		4.2	4 8 12			Brown silty CLAY (about 60% clay, about 40% silt, moist, no hydrocarbon odor)
12					CL	
14			6 8 10			Brown silty CLAY (about 60% clay, about 40% silt, moist)
16						
18			8 8			
20		3	13			Encountered groundwater at 18.5 ft. (11/17/92) Same as above
22						
24			5 7			



Project STHL/Lewelling Owner Southland Corporation  
 Location San Lorenzo, CA Project No. 020203139 Date drilled 11/18/92

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24		2.7	7		CL	Dark brown sandy CLAY (stiff, wet)
26			12			Dark brown sandy CLAY (stiff, wet)
28						
30		4	5			Dark brown sandy CLAY (saturated, no hydrocarbon odor)
30			8			End of boring. Constructed monitoring well.
30			10			
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						

**APPENDIX D**  
**LABORATORY REPORTS**  
**AND**  
**CHAIN-OF-CUSTODY RECORDS**



# GTEL

ENVIRONMENTAL  
LABORATORIES, INC.

**Northwest Region**

4080-C Pike Lane  
Concord, CA 94520  
(510) 685-7852  
(800) 544-3422 from inside California  
(800) 423-7143 from outside California  
(510) 825-0720 (FAX)

Client Number: 020203139  
Project ID: San Lorenzo  
Work Order Number: C2-12-227

December 21, 1992

Sandra Lindsey  
Groundwater Technology, Inc.  
4057 Port Chicago Hwy.  
Concord, CA 94520

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 12/09/92, under chain of custody record 19932.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,  
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen  
Laboratory Director

**Table 1**  
**ANALYTICAL RESULTS**  
 Aromatic Volatile Organics and  
 Total Petroleum Hydrocarbons as Gasoline in Water  
 EPA Methods 5030, 8020, and Modified 8015<sup>a</sup>

GTEL Sample Number		01	02	03	04
Client Identification		RBMW2	MW2	MW3	MW4
Date Sampled		12/08/92	12/08/92	12/08/92	12/08/92
Date Analyzed		12/16/92	12/16/92	12/16/92	12/16/92
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	<0.3	<0.3	<0.3	<0.3
Toluene	0.3	<0.3	<0.3	<0.3	<0.3
Ethylbenzene	0.3	<0.3	<0.3	<0.3	<0.3
Xylene, total	0.5	<0.5	<0.5	<0.5	<0.5
BTEX, total	--	--	--	--	--
Gasoline	10	<10	<10	<10	<10
Detection Limit Multiplier		1	1	1	1

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision.

**Table 1 (Continued)**

**ANALYTICAL RESULTS**

**Aromatic Volatile Organics and  
 Total Petroleum Hydrocarbons as Gasoline in Water**

EPA Methods 5030, 8020, and Modified 8015<sup>a</sup>

GTEL Sample Number		05			
Client Identification		MW1			
Date Sampled		12/08/92			
Date Analyzed		12/16/92			
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	<0.3			
Toluene	0.3	<0.3			
Ethylbenzene	0.3	<0.3			
Xylene, total	0.5	<0.5			
BTEX, total	--	--			
Gasoline	10	<10			
Detection Limit Multiplier		1			

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision.



080 E LA  
 CONCORD, CA 94520  
 (415) 685-7852  
 (800) 423-7143 (OUTSIDE CA) (800) 544-3422 (INSIDE CA)

AND ANALYSIS REQUEST

C212227

F-BOX

Company Name: **GTI** Phone #: \_\_\_\_\_  
 Company Address: **Concord** Site location: **San Lorenzo**  
 Project Manager: **Sandra Lindsey** Client Project ID: (#) **02020 3139-030**  
 I attest that the proper field sampling procedures were used during the collection of these samples. (NAME) **STILLWELLING**  
 Sampler Name (Print): **HECTOR MERINO**

Field Sample ID	GTEL Lab # (Lab use only)	# Containers	Matrix						Method Preserved				Sampling			
			WATER	SOIL	AIR	SLUDGE	PRODUCT	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	UNPRESERVED	OTHER (SPECIFY)	DATE	TIME
TRIP Blank		1	X													
PB MW2	01	1	X													12
MW2	02	2	X													
PB MW3	03	1	X													18
MW3	03	2	X													
PB MW4	04	1	X													92
MW4	04	2	X													
PB MW1	05	1	X													
MW1	05	2	X													

BTEX/602  8020  with MTBE   
 BTEX/Gas hydrocarbons PID/FID  with MTBE   
 Hydrocarbons GC/FID Gas  Diesel  Screen   
 Hydrocarbon Profile (SIMDIS)   
 Oil and Grease 413.1  413.2  SM 503   
 TPH/IR 418.1  SM 503   
 EDB by 504  DBCP by 504   
 EPA 503.1  EPA 502.2   
 EPA 601  EPA 8010   
 EPA 602  EPA 8020   
 EPA 608  8080  PCB only   
 EPA 624/PPL  8240/TAL  NBS (+15)   
 EPA 625/PPL  8270/TAL  NBS (+25)   
 EPA 610  8310   
 EP TOX Metals  Pesticides  Herbicides   
 TCLP Metals  VOA  Semi-VOA  Pest  Herb   
 EPA Metals - Priority Pollutant  TAL  RCRA   
 CAM Metals TLC  STLC   
 Lead 239.2  200.7  7420  7421  6010   
 Organic Lead   
 Corrosivity  Flash Point  Reactivity

TAT  
 Priority (24 hr)   
 Expedited (48 hr)   
 7 Business Days   
 Other \_\_\_\_\_  
 Business Days

Special Handling  
 GTEL Contact \_\_\_\_\_  
 Quote/Contract # \_\_\_\_\_  
 Confirmation # \_\_\_\_\_  
 PO # \_\_\_\_\_

SPECIAL DETECTION LIMITS  
 SPECIAL REPORTING REQUIREMENTS

REMARKS  
 Lab Use Only Lot # \_\_\_\_\_ Storage Location: \_\_\_\_\_  
 Work Order # **C212227**  
 Received by: \_\_\_\_\_

QA / QC LEVEL  
 BLUE  CLP  OTHER \_\_\_\_\_  
 FAX

**CUSTODY RECORD**

Relinquished by Sampler: \_\_\_\_\_ Date/Time: **12/9/92**  
 Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received by: \_\_\_\_\_  
 Received by: \_\_\_\_\_  
 Received by Laboratory: **J. Schum**  
 Date/Time: **12/9/92 7:50 am**  
 Waybill # \_\_\_\_\_

LAPCO Business Form - 42





**Northwest Region**

4080-C Pike Lane  
Concord, CA 94520  
(510) 685-7852  
(800) 544-3422 *from inside California*  
(800) 423-7143 *from outside California*  
(510) 825-0720 (FAX)

Client Number: 020203139  
Project ID: San Lorenzo  
Work Order Number: C2-12-228

December 22, 1992

Sandra Lindsey  
Groundwater Technology, Inc.  
4057 Port Chicago Hwy.  
Concord, CA 94520

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 12/09/92, under chain of custody record 19929.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,  
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen  
Laboratory Director

**Table 1**  
**ANALYTICAL RESULTS**  
**Lead in Water by Graphite Furnace AA**  
**EPA Methods 239.2<sup>1</sup>/7421<sup>2</sup>/3020<sup>3</sup>**

GTEL Sample Number		01	02	03	04
Client Identification		MW2	MW3	MW4	MW1
Date Sampled		12/08/92	12/08/92	12/08/92	12/08/92
Date Prepared		12/18/92	12/18/92	12/18/92	12/18/92
Date Analyzed		12/21/92	12/21/92	12/21/92	12/21/92
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Lead, total	5	7.5	7	<5	13
Detection Limit Multiplier		1	1	1	1

1. Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-020, March 1983.
2. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, November 1986.
3. Sample preparation by EPA Method 3020.



4080 PIKE LANE  
 CONCORD, CA 94520  
 (415) 685-7852  
 (800) 423-7143 (OUTSIDE CA) (800) 544-3422 (INSIDE CA)

AIN  
 C212228  
 13/2

Company Name: GTEL Phone #: \_\_\_\_\_  
 Company Address: CONCORD Site location: \_\_\_\_\_  
 Project Manager: Sandra Lindsey Client Project ID: (#) 020203139-030503  
 (NAME) STHLLGOLEWELLING  
 Sampler Name (Print): HECTOR MERVINO

I attest that the proper field sampling procedures were used during the collection of these samples.

Field Sample ID	GTEL Lab # (Lab use only)	# Containers	Matrix						Method Preserved				Sampling				
			WATER	SOIL	AIR	SLUDGE	PRODUCT	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	UNPRESERVED	OTHER (SPECIFY)	DATE	TIME	
MW 2	01	1	X														
MW 3	02	1	X														
MW 4	03	1	X														
MW 1	04	1	X														

BTEX/602  8020  with MTBE   
 BTEX/Gas Hydrocarbons PID/FID  with MTBE   
 Hydrocarbons GC/FID Gas  Diesel  Screen   
 Hydrocarbon Profile (SIMDIS)   
 Oil and Grease 413.1  413.2  SM 503   
 TPH/IR 418.1  SM 503   
 EDB by 504  DBCP by 504   
 EPA 503.1  EPA 502.2   
 EPA 601  EPA 8010   
 EPA 602  EPA 8020   
 EPA 608  8080  PCB only   
 EPA 824/PPL  8240/TAL  NBS (+15)   
 EPA 825/PPL  8270/TAL  NBS (+25)   
 EPA 610  8310   
 EP TOX Metals  Pesticides  Herbicides   
 TCLP Metals  VOA  Semi-VOA  Pest  Herb   
 EPA Metals - Priority Pollutant  TAL  RCRA   
 CAM Metals TTLC  STLC   
 Lead 239.2  200.7  7420  7421  6010   
 Organic Lead   
 Corrosivity  Flash Point  Reactivity   
 TOTAL LEAD

TAT: Priority (24 hr)  Expedited (48 hr)  7 Business Days  Other \_\_\_\_\_ Business Days

Special Handling: \_\_\_\_\_

Special Detection Limits: \_\_\_\_\_

Special Reporting Requirements: \_\_\_\_\_

QA/QC LEVEL: BLUE  CLP  OTHER \_\_\_\_\_

Relinquished by Sampler: [Signature] Date: 12-9-92 Time: \_\_\_\_\_

Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Relinquished by: \_\_\_\_\_ Date: 2/9/92 Time: 7:50

**CUSTODY RECORD**

REMARKS: SAMPLES UNPRESERVED

Lab Use Only Lot #: \_\_\_\_\_ Storage Location: 20F2

Work Order #: C212228

Received by: \_\_\_\_\_

Received by: \_\_\_\_\_

Received by Laboratory: J. Schum

Waybill #: \_\_\_\_\_



Client Number: 020203139  
Project ID: 100 Leweling Blvd.  
Work Order Number: C2-11-368

**Northwest Region**

4080-C Pike Lane  
Concord, CA 94520  
(510) 685-7852  
(800) 544-3422 from inside California  
(800) 423-7143 from outside California  
(510) 825-0720 (FAX)

November 19, 1992

Sandra Lindsey  
Groundwater Technology, Inc.  
4057 Port Chicago Hwy.  
Concord, CA 94520

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 11/18/92, under chain of custody record 72-13368.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,  
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen  
Laboratory Director

**Table 1**  
**ANALYTICAL RESULTS**  
 Aromatic Volatile Organics and  
 Total Petroleum Hydrocarbons as Gasoline in Soil  
 EPA Methods 8020, and Modified 8015<sup>a</sup>

GTEL Sample Number		01		
Client Identification		COMPOSITE		
Date Sampled		11/18/92		
Date Extracted		11/18/92		
Date Analyzed		11/18/92		
Analyte	Detection Limit, mg/Kg	Concentration, mg/Kg		
Benzene	0.005	<0.005		
Toluene	0.005	<0.005		
Ethylbenzene	0.005	<0.005		
Xylene, total	0.015	<0.015		
BTEX, total	--	--		
Gasoline	1	<1		
Detection Limit Multiplier		1		
Percent solids		82		

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision. Results reported on a wet weight basis.



4080- Pike Lane  
Concord, CA 94520  
415-685-7852

800-544-3422 (In CA)  
800-423-7143 (Outside CA)

**CHAIN-OF-CUSTODY RECORD  
AND ANALYSIS REQUEST**

72-13368

CUSTODY RECORD

**ANALYSIS REQUEST**

C 211 3108  
A-3

Project Manager: *Sandra Ludwig* Phone #: \_\_\_\_\_  
Address: *4057 Port Chicago Highway, Concord 100 Ludwig Blvd* Site location: \_\_\_\_\_  
Project Number: *02020 3139* Project Name: *100 Ludwig*  
I attest that the proper field sampling procedures were used during the collection of these samples. Sampler Name (Print): *T. Ludwig*

Field Sample ID	Source of Sample	GTEL Lab # (Lab use only)	# CONTAINERS	Matrix					Method Preserved					Sampling		
				WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	NONE	OTHER	DATE	TIME
<i>4-4 25</i>			<i>1</i>		<i>X</i>							<i>X</i>			<i>1/18/92</i>	
<i>4-4 30</i>			<i>1</i>		<i>X</i>							<i>X</i>			<i>1/18/92</i>	
<i>Composite</i>		<i>01</i>	<i>1</i>		<i>X</i>							<i>X</i>			<i>1/18/92</i>	

- BTEX 602  8020  with MTBE
- BTEX/TPH Gas: 602/8015  8020/8015  MTBE
- TPH as  Gas  Diesel  Jet Fuel
- Product I.D. by GC (SIMDIS)
- Total Oil & Grease: 413.1  413.2  503A
- Total Petroleum Hydrocarbons: 418.1  503E
- EPA 601  8010  DCA only
- EPA 602  8020
- EPA 608  8080  PCBs only
- EPA 610  8310
- EPA 624  8240  NBS +15
- EPA 625  8270  NBS +25
- EPTOX: Metals  Pesticides  Herbicides
- TCLP Metals  VOA  Semi VOA
- EPA Priority Pollutant Metals  HSL
- LEAD 7420  7421  239.2  6010  Org. Lead
- CAM Metals  STLC  TTLC
- Corrosivity  Flashpoint  Reactivity

Received by: \_\_\_\_\_  
Time: \_\_\_\_\_  
Date: *1/18/92*

Received by Laboratory: *J. Ludwig*  
Way bill # \_\_\_\_\_

**SPECIAL HANDLING**

- 24 HOURS
- EXPEDITED 48 Hours
- SEVEN DAY
- OTHER \_\_\_\_\_ (#) BUSINESS DAYS
- QA/QC CLP Level  Blue Level
- FAX

**SPECIAL DETECTION LIMITS (Specify)**

**SPECIAL REPORTING REQUIREMENTS (Specify)**

REMARKS: *24 hr turnaround on composite sample*  
*3 of 3*

Lab Use Only \_\_\_\_\_ Storage Location \_\_\_\_\_  
Lot #: \_\_\_\_\_ Work Order #: \_\_\_\_\_

Relinquished by Sampler: *J. Ludwig*  
Relinquished by: \_\_\_\_\_  
Relinquished by: \_\_\_\_\_



**Northwest Region**  
4080-C Pike Lane  
Concord, CA 94520  
(510) 685-7852  
(800) 544-3422 from inside California  
(800) 423-7143 from outside California  
(510) 825-0720 (FAX)

Client Number: 020203139  
Project ID: 100 Leweling Blvd.  
San Lorenzo  
Work Order Number: C2-11-395

December 4, 1992

Sandra Lindsey  
Groundwater Technology, Inc.  
4057 Port Chicago Hwy.  
Concord, CA 94520

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 11/18/92, under chain of custody records 72-13366 through 13368.

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Sincerely,  
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen  
Laboratory Director

**Table 1**  
**ANALYTICAL RESULTS**  
 Aromatic Volatile Organics and  
 Total Petroleum Hydrocarbons as Gasoline in Soil  
 EPA Methods 5030, 8020, and Modified 8015<sup>a</sup>

GTEL Sample Number		01	02	03	04
Client Identification		MW1-10'	MW1-20'	MW1-30'	MW2-10'
Date Sampled		11/17/92	11/17/92	11/17/92	11/17/92
Date Extracted		11/24/92	11/24/92	11/24/92	11/24/92
Date Analyzed		11/25/92	11/25/92	11/25/92	11/25/92
Analyte	Detection Limit, mg/Kg	Concentration, mg/Kg			
Benzene	0.005	<0.005	<0.005	<0.005	<0.005
Toluene	0.005	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	0.005	<0.005	<0.005	<0.005	<0.005
Xylene, total	0.015	0.023	0.049	<0.015	<0.015
BTEX, total	--	0.023	0.049	--	--
Gasoline	1	<1	<1	<1	<1
Detection Limit Multiplier		1	1	1	1
Percent solids		86.8	81	77.8	84

- a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision. Results reported on a wet weight basis.



Table 1 (Continued)

ANALYTICAL RESULTS

Aromatic Volatile Organics and  
 Total Petroleum Hydrocarbons as Gasoline in Soil

EPA Methods 5030, 8020, and Modified 8015<sup>a</sup>

GTEL Sample Number		05	06	07	08
Client Identification		MW2-20'	MW2-30'	MW3-10'	MW3-20'
Date Sampled		11/17/92	11/17/92	11/18/92	11/18/92
Date Extracted		11/24/92	11/24/92	11/24/92	11/24/92
Date Analyzed		11/25/92	11/25/92	11/25/92	11/25/92
Analyte	Detection Limit, mg/Kg	Concentration, mg/Kg			
Benzene	0.005	<0.005	<0.005	<0.005	<0.005
Toluene	0.005	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	0.005	<0.005	<0.005	<0.005	<0.005
Xylene, total	0.015	<0.015	<0.015	<0.015	<0.015
BTEX, total	--	--	--	--	--
Gasoline	1	<1	<1	<1	<1
Detection Limit Multiplier		1	1	1	1
Percent solids		81.5	78	81.1	80.5

- a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision. Results reported on a wet weight basis.

**Table 1 (Continued)**

**ANALYTICAL RESULTS**

**Aromatic Volatile Organics and  
 Total Petroleum Hydrocarbons as Gasoline in Soil**

EPA Methods 5030, 8020, and Modified 8015<sup>a</sup>

GTEL Sample Number		09	10	11	12
Client Identification		MW3-30'	MW4-10'	MW4-20'	MW4-30'
Date Sampled		11/18/92	11/18/92	11/18/92	11/18/92
Date Extracted		11/24/92	11/24/92	11/24/92	11/24/92
Date Analyzed		11/25/92	11/25/92	11/25/92	11/25/92
Analyte	Detection Limit, mg/Kg	Concentration, mg/Kg			
Benzene	0.005	<0.005	<0.005	<0.005	<0.005
Toluene	0.005	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	0.005	<0.005	<0.005	<0.005	<0.005
Xylene, total	0.015	<0.015	<0.015	<0.015	<0.015
BTEX, total	--	--	--	--	--
Gasoline	1	<1	<1	<1	<1
Detection Limit Multiplier		1	1	1	1
Percent solids		81	82.3	82.1	79.9

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision. Results reported on a wet weight basis.





