GETTLER-RYAN INC.

TRANSMITTAL

TO: Ms. Tina Berry
Tosco Marketing Company
2000 Crow Canyon Place, Suite 400
San Ramon, California 94583

DATE: November 24, 1998
PROJ. #: 140175.02
SUBJECT: Report
Tosco (Unocal) Station No.4186
1771 First Street
Livermore, California

FROM:
Clyde J. Galantine
Project Geologist
Gettler-Ryan Inc.
6747 Sierra Court, Suite J
Dublin, California 94568

- do another round of sampling to verify GW flow direction before installing add'l MWs.
- Page 2 of Boring log U-2 missing
- DO QMRs for now

WE ARE SENDING YOU:

COPIES	DATED	DESCRIPTION
1	November 23, 1998	Well Installation Report

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COMMENTS:
Enclosed is one copy of the above report for your files. If you have any questions or comments, please call me at (925) 551-7555.

cc: Eva Chu, Alameda County Health Care Services Agency

GETTLER-RYAN INC.

WELL INSTALLATION REPORT

at

Tosco (Unocal) Service Station No. 4186
1771 First Street
Livermore, California

Report No. 140175.02

Prepared for:

Ms. Tina Berry
Tosco Marketing Company
2000 Crow Canyon Place, Suite 400
San Ramon, California 94583

Prepared by:

Gettler-Ryan Inc.
6747 Sierra Court, Suite J
Dublin, California 94568

Clyde J. Galantine
Project Geologist

Stephen J. Carter
Senior Geologist
R.G. 5577

REGISTERED GEOLOGIST
STEPHEN J. CARTER
No. 5577
STATE OF CALIFORNIA

November 23, 1998

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WELL INSTALLATION REPORT

at

Tosco (Unocal) Service Station No. 4186
1771 First Street
Livermore, California

Report No. 140175.02

INTRODUCTION

This report summarizes field activities performed by Gettler-Ryan Inc. (GR) on June 15 and 16, 1998, at the subject site. The purpose of this subsurface investigation was to assess soil and groundwater conditions due to results of the September 10, 1997 soil gas survey conducted by Pacific Environmental Group (Pacific). The work performed included: drilling three soil borings and constructing groundwater monitoring wells in each of the borings; collecting soil samples for description and chemical analysis; developing and sampling the newly installed groundwater monitoring wells, surveying each of the wells; analyzing the soil and groundwater samples; and preparing this report. Also included is a work plan addendum for an additional subsurface investigation based on the findings documented in this report. This work was performed at the request of Tosco Marketing Company (Tosco) and in response to a letter from the Alameda County Health Care Services Agency (ACHCSA) received by Tosco on February 25, 1998. This work was originally proposed in the GR Report No. 140175.02-1, *Work Plan for Monitoring Well Installation*, dated April 8, 1998.

SITE DESCRIPTION

The subject site is an operating service station located on the southwest corner of the intersection of First Street and N Street in Livermore, California (Figure 1). The site is bounded to the north by First Street, to the east by N Street, and to the south and west by commercial buildings. Properties in the immediate site vicinity are used for a mix of commercial purposes that include restaurants, automobile repair shops, and shopping facilities. The site is located at an approximate elevation of 480 feet above sea level.

Current aboveground site facilities consist of two dispenser islands, a canopy and a station building/convenience store. Two 10,000-gallon underground storage tanks (USTs) containing gasoline are located in the common pit immediately east of the station building. The former waste oil UST was removed in June 1993. Pertinent site features are shown on Figure 2.

PREVIOUS ENVIRONMENTAL WORK

On June 6, 1996, GeoStrategies (GSI) collected six soil samples from beneath the fuel dispensers and along the product delivery piping during dispenser and piping replacement activities. A total of 25 cubic yards of soils was excavated and transported to Forward Landfill located in Stockton, California. Analytical results were reported as not detected for Total Petroleum Hydrocarbons calculated as gasoline (TPHg) and benzene, toluene, ethylbenzene and xylenes (BTEX) for all samples collected beneath the dispenser islands and product delivery piping (GSI, 1996).

On September 10, 1997, Pacific conducted a soil gas survey as part of a baseline site evaluation associated with the property transfer from Unocal Corporation to Tosco. Six soil gas probes were advanced and samples collected at 3 or 15 feet bgs in the vicinity of the UST complex, dispenser islands, and product lines. Analytical results ranged from 41 to 4,500 ppb of TPHg, not detected to 110 ppb of benzene and not detected to 8,000 ppb of methyl tert-butyl ether (MTBE). Field data sheets indicate that no petroleum hydrocarbon odors were noted. The area of primary impact appears to be localized around the UST complex, where the TPHg was reported up to 4,500 ppb, benzene up to 110 ppb and MTBE concentrations up to 8,000 ppb (Pacific, 1997).

REGIONAL GEOLOGY

The subject site is located in the Livermore Valley and is underlain by Holocene age alluvial fan and gravel facies. These deposits are composed of semiconsolidated deposits of sand and gravel in a matrix of clayey sand. The Livermore Valley is host to many northwest trending faults. The site is approximately 1-mile southwest of the Mocho Fault and approximately 1½-miles northeast of the Livermore Fault (California Department of Water Resources, 1974). Previous investigations performed by GSI indicated the upper 4 feet bgs was a dark brown sandy gravel with silt. Groundwater was anticipated to be approximately 20 feet below ground surface with a flow towards the northwest (conversations with ACHSCA personnel). The nearest surface water is Arroyo Mocho, located approximately 2,900 feet south of the site.

FIELD ACTIVITIES

Field work was performed in accordance with the GR Site Safety Plan No. 140175.02, dated May 19, 1998. GR Field Methods and Procedures are included in Appendix A. Underground Service Alert (USA) was notified prior to beginning drilling activities and a utility locator service was employed to clear each drilling location. Drilling and well installation was performed under Zone 7 Drilling Permit No. 98084. A copy of the well drilling permit is included in Appendix B.

Three on-site soil borings were drilled June 15 and 16, 1998 and completed as groundwater monitoring wells U-1, U-2, and U-3. The wells were installed to total depths of approximately 34, 33, and 34 feet bgs, respectively. Locations of the wells are shown on Figure 2.

All borings were drilled using a truck-mounted drill rig equipped with eight-inch diameter hollow stem augers. Drilling was performed by Woodward Drilling Company of Rio Vista, California (#C57 710079). A GR geologist observed the drilling and well installation activities, described the encountered soil, and prepared a log of each boring. Logs of the soil borings are included in Appendix B. Although notified, a representative of ACHSCA was not present to witness placement of the well seals.

Soil cuttings generated during drilling were placed in drums and stored at the site pending disposal. Sample US-1 (comp) was collected from the stockpiled soil cuttings and submitted to the laboratory to be composited and analyzed as one sample. Stockpile sampling procedures are presented in Appendix A. Water generated during the cleaning of the drilling equipment was placed in properly labeled drums and stored at the site pending disposal.

Well Installation

Each well was constructed using 2-inch diameter Schedule 40 polyvinyl chloride (PVC) casing and 0.02-inch machine-slotted well screen. The annular space around the well screen in each well boring was packed with Lonestar #3 sand to approximately one foot above the top of the well screen. The sandpack in each well was followed by a bentonite transition seal and then neat cement. The top of each well is protected by a vault box, locking well cap, and lock. Well construction details are included on the boring logs in Appendix B.

Well Monitoring, Development, and Sampling

Monitoring, development, and sampling of the three newly installed wells was performed by GR personnel. Copies of the well development and field monitoring data sheets are included in Appendix C.

The wells were developed and sampled on July 13, 1998. Depth to groundwater in the wells were measured and each well checked for the presence of floating product prior to development. Each well dewatered during development. After the wells were properly developed, groundwater samples were collected in appropriate containers supplied by the laboratory. Purge water generated during development and sampling procedures was discharged to properly labeled drums and stored at the site pending disposal. Monitoring data are summarized in Table 1.

Wellhead Survey

Following installation, the well casing elevations were surveyed by Virgil Chavez Land Surveying of Vallejo, California (California Land Surveyor No. 6323). Top of casing and vault box elevations were measured relative to MSL, and the horizontal locations of the wells surveyed. Well casing elevations are summarized in Table 1. A copy of the surveyor's report is included in Appendix D.

SUBSURFACE CONDITIONS

The unsaturated (vadose) zone is comprised predominantly of gravel with silt, sand and clay, sandy silt with gravel, and clay. The saturated zone is comprised of clay with varying amounts of sand and gravels with varying amounts of clay and sand. Groundwater was initially encountered at depths ranging from 20 to 25 feet bgs.

Prior to well development and groundwater sample collection on May 15, 1998, GR personnel measured the depth to groundwater in wells U-1 through U-3 at 23.28 to 23.82 feet below top of well casing. Floating product or a product sheen was not observed in these wells. These data were used to construct a Potentiometric Map (Figure 3). Based on these data, shallow groundwater beneath the subject site flows west-southwest at a calculated hydraulic gradient of 0.015. The encountered water bearing zone appears to be unconfined.

CHEMICAL ANALYTICAL RESULTS

A total of five soil samples from the soil borings, one composite sample from the stockpiled drill cuttings, and three groundwater samples were collected and submitted for chemical analysis. Analyses were performed by Sequoia Analytical of Redwood City, California (ELAP #1210). Copies of the laboratory reports and chain-of-custody forms are included in Appendix E.

Chemical Analytical Procedures

Selected soil samples from the well borings were analyzed for TPHg, BTEX, and MTBE according to CA/LUFT/Environmental Protection Agency (EPA) Method 8020. The soil stockpile sample was analyzed for TPHg, BTEX, and lead according to EPA Methods 3050BM/6010. Groundwater samples were also analyzed for TPHg, BTEX, and MTBE by EPA Methods 8015 Modified/8020. Groundwater chemical analytical data are summarized in Table 1. Soil chemical analytical data are summarized in Table 2.

Soil Chemical Analytical Results

Petroleum hydrocarbons were not detected in the five soil samples collected from the soil borings except for 0.009 ppm toluene and 0.007 ppm xylenes detected in a sample from well boring U-3 at 20.5 feet bgs.

Groundwater Chemical Analytical Results

Petroleum hydrocarbons were not detected in the groundwater sample from well U-1. Well U-2 contained 1,200 parts per billion (ppb) TPHg, 130 ppb benzene, and 1,100 ppb MTBE. Well U-3 contained 70,000 ppb TPHg, 3,100 ppb benzene, and 7,500 ppb MTBE These data were used to construct a groundwater concentration map (Figure 3).

Stockpile Chemical Analytical Results

Petroleum hydrocarbons were not detected in soil stockpile sample US-1(comp). The sample contained 9 ppm lead.

WASTE DISPOSAL

Approximately 115 gallons of waste water generated by cleaning the drilling equipment and well development and sampling procedures were removed from the site by GR on July 13, 1998, and transported to the Tosco Refinery in Rodeo, California, for treatment. Approximately 2.45 tons of soil (drill cuttings) were removed from the site by Denbeste Transportation, Inc. of Windsor, California and transported to the Forward Incorporated facility in Manteca, California for disposal. A copy of the Forward disposal confirmation forms are included in Appendix G.

DISCUSSION

Based on the chemical analytical results, the extent of petroleum hydrocarbons in soil beneath the site appears to be adequately delineated, however the extent of petroleum hydrocarbons in groundwater is not delineated to the northwest, west, south, and southeast.

Additional groundwater monitoring and sampling will be performed in the fourth quarter of 1998. Groundwater analysis will be requested for TPHg, BTEX, MTBE by Methods 8015/8020. In addition, the highest MTBE concentration will be confirmed by EPA Method 8260.

ADDENDUM TO WELL INSTALLATION WORK PLAN

Based on the findings documented in this report, data from the third quarter 1998 groundwater monitoring and sampling event (October 7, 1998), and a groundwater-only monitoring event conducted on November 9, 1998, GR proposes to install four additional monitoring wells at the locations shown on Figure 2.

Data from the October 7, 1998 monitoring and sampling event indicate that the groundwater flow direction was north at a gradient of 0.025. Data from the November 9, 1998 monitoring event indicate that the groundwater flow direction had changed to south-southeast at a hydraulic gradient of 0.017. As discussed previously in this report, the groundwater flow direction on May 15, 1998 was west-southwest at a gradient of 0.015. These data indicate that the groundwater flow direction may be varying. However, the proposed additional wells will address the lateral and vertical extent of hydrocarbons in the soils and variations in groundwater flow beneath the site.

To further delineate the lateral extent of the dissolved hydrocarbons, GR proposes to install four groundwater monitoring wells at the locations shown on Figure 2. The four proposed wells will be drilled, sampled, installed, and monitored as described in the GR Work Plan dated April 8, 1998 (GR, 1998) and documented in this report. The completed depth of each well will also be similar to wells U-1 , U-2, and U-3. Implementation of this proposed scope of work will commence upon receipt of regulatory approval and a well installation permit.

DISTRIBUTION

GR recommends that a copy of this report be forwarded to Ms. Eva Chu of the Alameda County Health Care Services Agency at 1131 Harbor Bay Parkway, Suite 250, Alameda, California 94502-6577.

REFERENCES

California Department of Water Resources, 1974, Evaluation of Ground Water Resources; Livermore and Sunol Valleys: Bulletin 118-2.

GeoStrategies, 1996, Product Line Replacement Report for Unocal Service Station No. 4186, 1771 1st Street, Livermore, California: Report dated August 7, 1996.

Gettler Ryan Inc., 1998, Work Plan for Monitoring Well Installation for Unocal Service Station No. 4186, 1771 1st Street, Livermore, California: Work Plan dated April 8, 1998.

Pacific Environmental Group, 1997, Soil Gas Survey Results for Unocal Service Station No. 4186, 1771 1st Street, Livermore, California: Project 311-163.1A dated October 29, 1997.

TABLE 1 - GROUNDWATER MONITORING AND CHEMICAL ANALYTICAL DATA

Tosco (Unocal) Service Station No. 4186
1771 First Street
Livermore, California

Sample No.	Sample Date	Total Well Depth (ft.)	Well Elevation[1] (ft. MSL)	Depth to Water (ft.)	Floating Product (ft.)	Groundwater Elevation (ft. MSL)	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	MTBE (ppb)
U-1	7/13/98	34	478.27	23.28	0.0	454.99	ND	ND	ND	ND	ND	ND
U-2	7/13/98	33	477.44	23.52	0.0	453.92	1,200	130	12	62	180	1,100
U-3	7/13/98	34	478.46	23.82	0.0	454.64	70,000	3,100	5,500	2,700	16,000	7,500
Trip Blank	7/13/98	---	---	---	---	---	ND	ND	ND	ND	ND	ND

EXPLANATION:

TPHg = Total Petroleum Hydrocarbons as gasoline
BTEX = benzene, toluene, ethylbenzene, and xylenes
MTBE = Methyl tertiary butyl ether
ND = not detected
ft. = feet
ft. MSL = feet relative to Mean Sea Level.
ppb = parts per billion
--- = not applicable

ANALYTICAL LABORATORY:

Sequoia Analytical (ELAP #1210)

ANALYTICAL METHODS:

TPHg/BTEX/MTBE = EPA Methods 8015 Modified/8020

[1] Well elevations reported as top of casing (TOC) surveyed by Virgil Chavez Land Surveying, Licensed California Land Surveyor No. 6323.

TABLE 2 - SOIL CHEMICAL ANALYTICAL DATA
Tosco (Unocal) Service Station No. 4186
1771 First Street
Livermore, California

Sample Location and ID	Sample Depth (feet)	Date Collected	TPHg (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Xylenes (ppm)	MTBE by 8020 (ppm)
Boring U-1								
U-1-21.5	21.5	6/15/98	ND	ND	ND	ND	ND	ND
Boring U-2								
U-2-10.5	10.5	6/16/98	ND	ND	ND	ND	ND	ND
U-2-21	21	6/16/98	ND	ND	ND	ND	ND	ND
Boring U-3								
U-3-15.5	15.5	6/16/98	ND	ND	ND	ND	ND	ND
U-3-20.5	20.5	6/16/98	ND	ND	0.009	ND	0.007	ND
Stockpile								
US-1(comp)[1]	----	5/12/98	ND	ND	ND	ND	ND	ND

EXPLANATION:

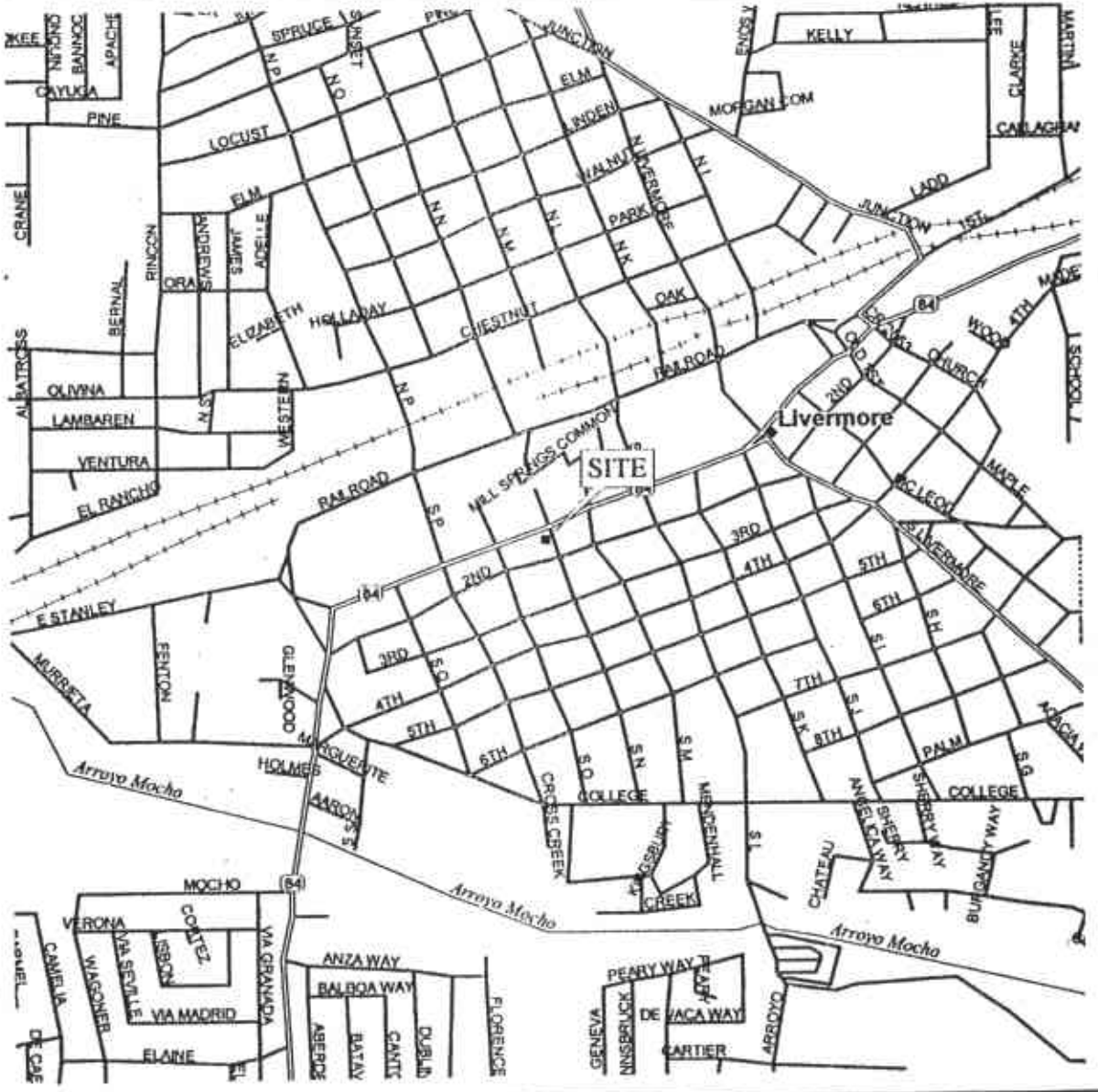
TPHg = Total Petroleum Hydrocarbons as gasoline
BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes
MTBE = Methyl t-Butyl Ether
feet = feet below ground surface
ppm = parts per million
ND = Not Detected
[1] Sample also analyzed for total lead (9 ppm).

ANALYTICAL LABORATORY:

Columbia Analytical Services (ELAP #1426)

ANALYTICAL METHODS:

TPHg/BTEX/MTBE = CA/LUFT/EPA Method 8020
Lead = EPA Methods 3050BM/6010A



Source: Street Atlas USA, Delorme (1995).

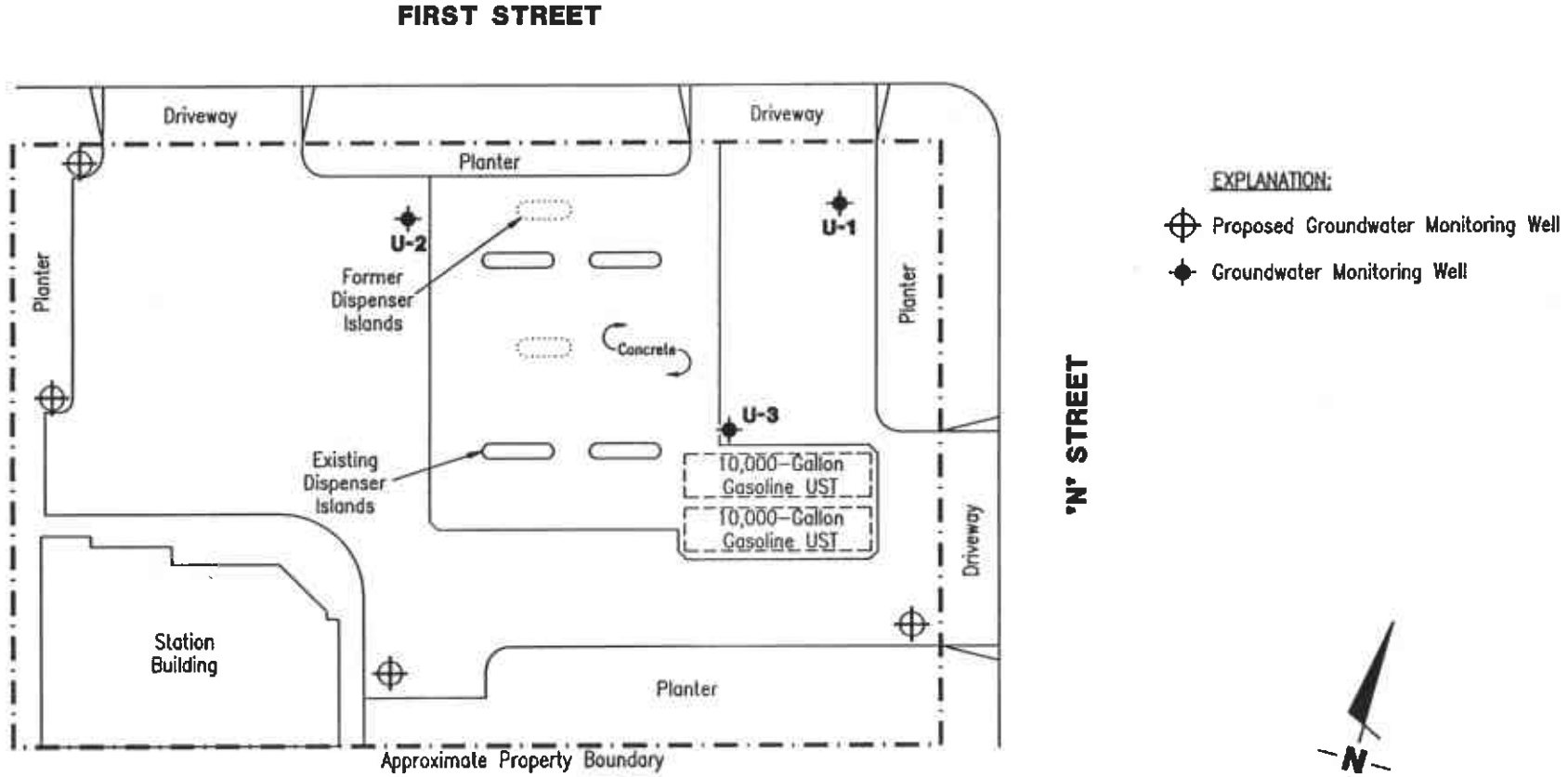
FIGURE 1

Gettler - Ryan Inc.

6747 Sierra Ct., Suite J
Dublin, CA 94568
(510) 551-7555

VICINITY MAP
Unocal Service Station No. 4186
1771 First Street
Livermore, California

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
140075		04/98	



Source: Figure Modified From Survey Provided By Virgil Chavez Land Surveying.

Gettler - Ryan Inc.
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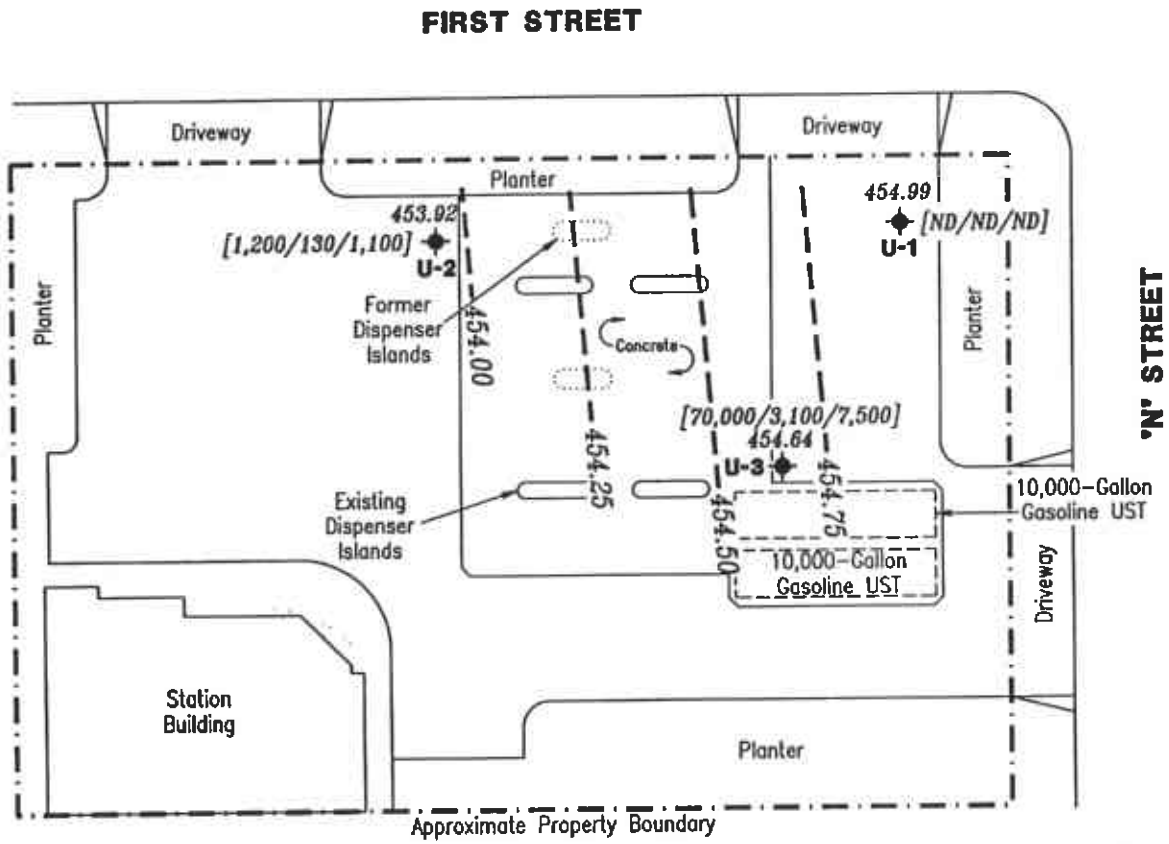
Dublin, CA 94568

SITE PLAN
Tosco (Unocal) Service Station No. 4186
1771 First Street
Livermore, California

FIGURE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
140175		11/98	



EXPLANATION:

- ✦ Groundwater Monitoring Well
- *454.99* Groundwater Elevation Measured In Feet Referenced To Mean Sea Level
- 454.75 – – – Groundwater Elevation Contour, Dashed Where Inferred
- *[70,000/3,100/7,500]* Concentrations Of TPHg/Benzene/MTBE Measured In Parts Per Billion
- *ND* Not Detected

Approximate Groundwater Flow Direction At A Gradient Of 0.015 Ft./Ft.

N

0 30

Scale in Feet

Source: Figure Modified From Survey Provided By Virgil Chavez Land Surveying.

Gettler - Ryan Inc.

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Dublin, CA 94568
(925) 551-7555

POTENTIOMETRIC/GROUNDWATER CONCENTRATION MAP
Tosco (Unocal) Service Station No. 4186
1771 First Street
Livermore, California

FIGURE 3

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
140175		09/98	

APPENDIX A

GR FIELD METHODS AND PROCEDURES

GETTLER-RYAN INC.
FIELD METHODS AND PROCEDURES

Site Safety Plan

Field work performed by Gettler-Ryan Inc. (GR) is conducted in accordance with GR's Health and Safety Plan and the Site Safety Plan. GR personnel and subcontractors who perform work at the site are briefed on the of these plans contents prior to initiating site work. The GR geologist or engineer at the site when the work is performed acts as the Site Safety Officer. GR utilizes a photoionization detector (PID) to monitor ambient conditions as part of the Health and Safety Plan.

Collection of Soil Samples

Exploratory soil borings are drilled by a California-licensed well driller. A GR geologist is present to observe the drilling, collect soil samples for description, physical testing, and chemical analysis, and prepare a log of the exploratory soil boring. Soil samples are collected from the exploratory soil boring with a split-barrel sampler or other appropriate sampling device fitted with clean brass or stainless steel liners. The sampling device is driven approximately 18 inches with a 140-pound hammer falling 30 inches. The number of blows required to advance the sampler each successive 6 inches is recorded on the boring log. The encountered soil is described using the Unified Soil Classification System (ASTM 2488-84) and the Munsell Soil Color Chart.

After removal from the sampling device, soil samples for chemical analysis are covered on both ends with teflon sheeting or aluminum foil, capped, labeled, and placed in a cooler with blue ice for preservation. A chain-of-custody form is initiated in the field and accompanies the selected soil samples to the analytical laboratory. Samples are selected for chemical analysis based on:

a. depth relative to underground storage tanks and existing ground surface
b. depth relative to known or suspected groundwater
c. presence or absence of contaminant migration pathways
d. presence or absence of discoloration or staining
e. presence or absence of obvious gasoline hydrocarbon odors
f. presence or absence of organic vapors detected by headspace analysis

Field Screening of Soil Samples

A PID is used to perform head-space analysis in the field for the presence of organic vapors from the soil sample. This test procedure involves removing some soil from one of the sample tubes not retained for chemical analysis and immediately covering the end of the tube with a plastic cap. The PID probe is inserted into the headspace inside the tube through a hole in the plastic cap. Head-space screening results are recorded on the boring log. Head-space screening procedures are performed and results recorded as reconnaissance data. GR does not consider field screening techniques to be verification of the presence or absence of hydrocarbons.

Stockpile Sampling

Stockpile samples consist of four individual sample liners collected from each 100 cubic yards (yd^3) of stockpiled soil material. Four arbitrary points on the stockpiled material are chosen, and discrete soil sample is collected at each of these points. Each discrete stockpile sample is collected by removing the upper 3 to 6 inches of soil, and

then driving the stainless steel or brass tube into the stockpiled material with a wooden mallet or hand driven soil sampling device. The sample tubes are then covered on both ends with teflon sheeting or aluminum foil, capped, labeled, placed in the cooler with blue ice for preservation. A chain-of-custody form is initiated in the field and accompanies the selected soil samples to the analytical laboratory. Stockpiled soils are covered with plastic sheeting after completion of sampling.

Construction of Monitoring Wells

Monitoring wells are constructed in the exploratory borings with Schedule 40 polyvinyl Chloride (PVC) casing. All joints are thread-joined; no glues, cements, or solvents are used in well construction. The screened interval is constructed of machine-slotted PVC well screen which generally extends from the total well depth to a point above the groundwater. An appropriately-sized sorted sand is placed in the annular space adjacent to the entire screened interval. A bentonite transition seal is placed in the annular space above the sand, and the remaining annular space is sealed with neat cement or cement grout.

Wellheads are protected with water-resistant traffic rated vault boxes placed flush with the ground surface. The top of the well casing is sealed with a locking cap. A lock is placed on the well cap to prevent vandalism and unintentional introduction of materials into the well.

Storing and Sampling of Drill Cuttings

Drill cuttings are stockpiled on plastic sheeting or stored in drums depending on site conditions and regulatory requirements. Stockpile samples are collected and analyzed on the basis of one composite sample per 50 cubic yards of soil. Stockpile samples are composed of four discrete soil samples, each collected from an arbitrary location on the stockpile. The four discrete samples are then composited in the laboratory prior to analysis.

Each discrete stockpile sample is collected by removing the upper 3 to 6 inches of soil, and then driving the stainless or brass sample tube into the stockpiled material with a hand, mallet, or drive sampler. The sample tubes are then covered on both ends with teflon sheeting or aluminum foil, capped, labeled, and placed in a cooler with blue ice for preservation. A chain-of-custody form is initiated in the field and accompanies the selected soil samples to the analytical laboratory. Stockpiled soils are covered with plastic sheeting after completion of sampling.

Wellhead Survey

The top of the newly-installed well casing is surveyed by a California-licensed Land Surveyor to mean sea level (MSL).

Well Development

The purpose of well development is to improve hydraulic communication between the well and surrounding aquifer. Prior to development, each well is monitored for the presence of separate-phase hydrocarbons and the depth-to-water is recorded. Wells are then developed by alternately surging the well with the bailer, then purging the well with a pump to remove accumulated sediments and draw groundwater into the well. Development continues until the groundwater parameters (temperature, pH, and conductivity) have stabilized.

Groundwater Monitoring and Sampling

Decontamination Procedures

All physical parameter measuring and sampling equipment are decontaminated prior to sample collection using Alconox or equivalent detergent followed by steam cleaning with deionized water. During field sampling, equipment placed in a well are decontaminated before purging or sampling the next well by cleaning with Alconox or equivalent detergent followed by steam cleaning with deionized water.

Water-Level Measurements

Prior to sampling each well, the static water level is measured using an electric sounder and/or calibrated portable oil-water interface probe. Both static water-level and separate-phase product thickness are measured to the nearest ±0.01 foot. The presence of separate-phase product is confirmed using a clean, acrylic or polyvinylchloride (PVC) bailer, measured to the nearest ±0.01 foot with a decimal scale tape. The monofilament line used to lower the bailer is replaced between borings with new line to preclude the possibility of cross-contamination. Field observations (e.g. product color, turbidity, water color, odors, etc.) are noted. Water-levels are measured in wells with known or suspected lowest dissolved chemical concentrations to the highest dissolved concentrations.

Sample Collection and Labeling

A temporary PVC screen is installed in the boring to facilitate a grab groundwater sample collection. Samples of groundwater are collected from the surface of the water in each well or boring using the teflon bailer or a pump. The water samples are then gently poured into laboratory-cleaned containers and sealed with teflon-lined caps, and inspected for air bubbles to check for headspace. The samples are then labeled by an adhesive label, noted in permanent ink, and promptly placed in an ice storage. A Chain-of-Custody Record is initiated and updated throughout handling of the samples, and accompanies the samples to the laboratory certified by the State of California for analyses requested.

APPENDIX B

Permits, Boring Logs, and Well Construction Details

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94588-5127 • PHONE (510) 484-2600 FAX (510) 462-3914

June 4, 1998

Mr. Clyde Galantine
Gettler-Ryan, Inc.
6747 Sierra Court, Suite J
Dublin, CA 94568

Dear Mr. Galantine:

Enclosed are drilling permits 98083 and 98084 for monitoring well construction projects at 4191 First Street in Pleasanton and at 1771 First Street in Livermore for Tosco Marketing Company.

Please note that permit condition A-2 requires that a well construction report be submitted after completion of the work. The report should include drilling and completion logs, location sketch, and permit number. Please submit the original of your completion report. We will forward your submittal to the California Department of Water Resources.

If you have any questions, please contact Wyman Hong at extension 235 or me at extension 240.

Very truly yours,

Wyman Hong for

Craig A. Mayfield
Water Resources Engineer III

CAM:WH:arr

Enc.

E:\Amanda\GPOs\GPO1\GPO1.MONITORING.wpd

ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE, PLEASANTON, CALIFORNIA 94588-5127 PHONE (510) 484-2600 X235
FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Unocal Service Station No 4186
1771 + st Street
Livermore CA

California Coordinates Source _____ ft. Accuracy ± _____ ft.
CCN _____ ft. CCE _____ ft.
APN 97-10-1-1

CLIENT
Name Tosco Marketing Co. - Tina Berry
Address 2000 Crow Canyon Pl, Suite 400 Phone (510) 277-2321
City San Ramon CA Zip 94583

APPLICANT
Name Gettler-Ryan
Clyde Galantine Fax (510) ~~277~~ 551-7888
Address 6747 Sierra Ct Suite J Phone (510) 551-7555
City Dublin CA Zip 94568

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	☐	General	☐
Water Supply	☐	Contamination	☐
Monitoring	☒	Well Destruction	☐

PROPOSED WATER SUPPLY WELL USE

New Domestic	☐	Replacement Domestic	☐
Municipal	☐	Irrigation	☐
Industrial	☐	Other Environmental	☒

DRILLING METHOD:

Mud Rotary	☐	Air Rotary	☐	Auger	☒
Cable	☐	Other	☐		

DRILLER'S LICENSE NO. C57 710077

WELL PROJECTS

Drill Hole Diameter	8 in.	Maximum Depth	35 ft.
Casing Diameter	2 in.		
Surface Seal Depth	12 ft.	Number	3

GEOTECHNICAL PROJECTS

Number of Borings		Maximum Depth	ft.
Hole Diameter	in.		

ESTIMATED STARTING DATE June 1998
ESTIMATED COMPLETION DATE June 1998

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

Agent for Tosco

APPLICANT'S SIGNATURE Clyde Galantine Date 5/20/98

FOR OFFICE USE

PERMIT NUMBER 98084
WELL NUMBER _____
APN _____

PERMIT CONDITIONS

Circled Permit Requirements Apply

(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 SUPPLY WELLS
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 and irrigation wells unless a lesser depth is specially approved.

(C.) GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

D. 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.

E. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

F. WELL DESTRUCTION. See attached.

G. SPECIAL CONDITIONS

Approved Wyman Hong Date 27 May 98
Wyman Hong

101996

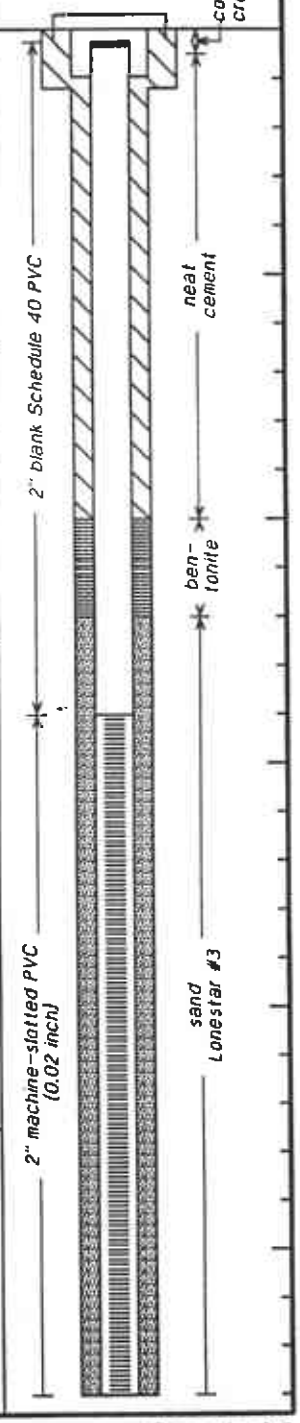
Gettler-Ryan Inc.

Log of Boring U-1

PROJECT: *Tosco (Unocal) Station No. 4186*	LOCATION: *1771 1st Street, Livermore, CA*
GSI PROJECT NO.: *140175.02*	CASING ELEVATION: *478.27 feet MSL*
DATE STARTED: *06/15/98*	WL (ft. bgs): *24.9* DATE: *06/16/98* TIME: *8:00 am*
DATE FINISHED: *06/15/98*	WL (ft. bgs): DATE: TIME:
DRILLING METHOD: *8" hollow-stem auger*	TOTAL DEPTH: *34.5 Feet*
DRILLING COMPANY: *Woodward Drilling*	GEOLOGIST: *Clyde Galantine*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SOIL CLASS	GEOLOGIC DESCRIPTION
				ML	Asphalt and fill gravel.
					GRAVELLY SILT WITH SAND (ML) – dark brown (10YR 3/3), damp, very stiff, non plastic, 80% silt, 20% fine gravel, 15% fine to coarse sand, 5% clay.
5	8	23	U-1-6		
				GW	GRAVEL WITH SAND (GW) – dark brown (10YR 4/3), damp, very dense, 75% subangular to rounded fine gravel, 20% fine to coarse sand, 5% clay.
10	2	80	U-1-11		
				GW GC	GRAVEL WITH CLAY AND SAND (GW-GC) – brown (10YR 5/3), saturated, very dense, 70% subangular to rounded fine gravel, 20% fine to coarse sand, 10% clay.
15	3	69	U-1-15.5		
	–	44	U-1-19		
20	4	78	U-1-21.5		
				CL	CLAY (CL) – yellowish brown (10YR 5/4), damp, very stiff, plastic, 75% clay, 20% silt, 5% fine to medium sand.
25	2	24	U-1-26.5		

WELL DIAGRAM



JOB NUMBER: *140175.02*

Gettler-Ryan Inc.

Log of Boring U-1

PROJECT: *Tosco (Unocal) Station No. 4186*

LOCATION: *1771 1st Street, Livermore, CA*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT.	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	WELL DIAGRAM
33	1	24	U-1-30			CL	Becomes damp to wet.	cap, 2" machine-slotted PVC (0.02 inch), sand Lonestar #3
	2	28	U-1-34.5					
38								
43								
48								
53								
58								

JOB NUMBER: *140175.02*

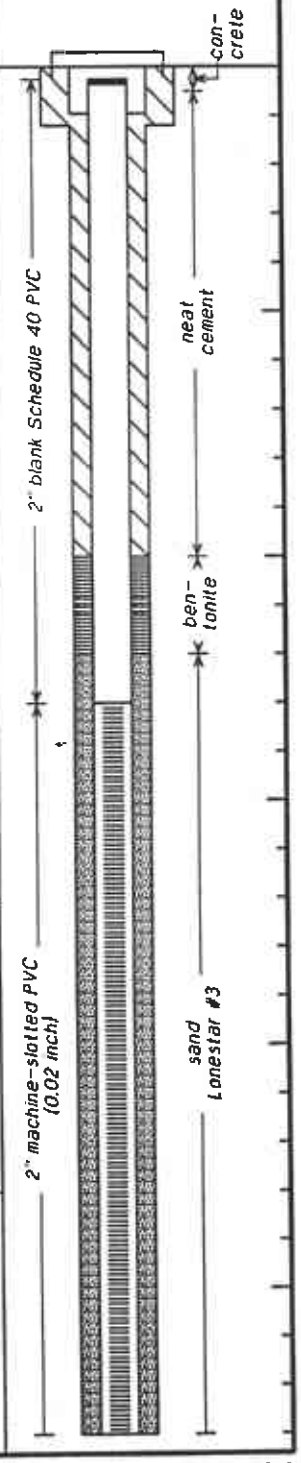
Gettler-Ryan Inc.

Log of Boring U-2

PROJECT: *Tosco (Unocal) Station No. 4186*	LOCATION: *1771 1st Street, Livermore, CA*
GSI PROJECT NO.: *140175.02*	CASING ELEVATION: *477.44 feet MSL*
DATE STARTED: *06/16/98*	WL (ft. bgs): *23.8* DATE: *06/16/98* TIME: *3:00 pm*
DATE FINISHED: *06/16/98*	WL (ft. bgs): DATE: TIME:
DRILLING METHOD: *8" hollow-stem auger*	TOTAL DEPTH: *34.5 Feet*
DRILLING COMPANY: *Woodward Drilling*	GEOLOGIST: *Clyde Galantine*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT.	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
							Asphalt and fill gravel.
						GW GM	
5	-	21	U-2-5.5				GRAVEL WITH SILT AND SAND (GW-GM) - brown (10YR 5/3), damp, medium dense, 75% subangular to rounded fine gravel, 15% fine to coarse sand, 10% silt.
10	3	40	U-2-10.5				
	-	79	U-2-14				Becomes very dense.
15							
						GW GC	
20	4	51	U-2-21				GRAVEL WITH CLAY AND SAND (GW-GC) - brown (10YR 5/3), saturated, very dense, 70% subangular to rounded fine gravel, 20% fine to coarse sand, 10% clay.
						CL	
25	4	33	U-2-26.5				CLAY (CL) - brown (10YR 5/3) with dark blue gray (5B 4/1) mottling, moist to damp, hard, plastic, 90% clay, 10% silt, trace fine sand.

WELL DIAGRAM



JOB NUMBER: *140175.02*

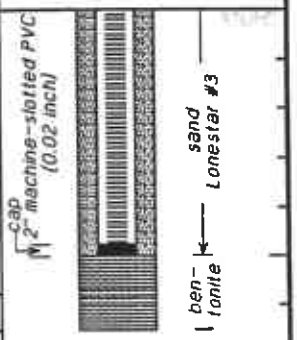
Gettler-Ryan Inc.

Log of Boring U-2

PROJECT: *Tosco (Unocal) Station No. 4186*

LOCATION: *1771 1st Street, Livermore, CA*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT.	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	WELL DIAGRAM
						CL		
	3	18	U-2-31.5				Color change to brown (10YR 5/3), becomes moist to saturated, very stiff.	
33							Becomes damp, hard.	
	5	82	U-2-34			GW GC	GRAVEL WITH CLAY AND SAND (GW-GC) - gray (5Y 5/1) to dark yellowish brown (10YR 4/6), saturated, very dense, 75% subangular to rounded fine gravel, 20% fine to coarse sand, 10% clay.	
38								
43								
48								
53								
58								



JOB NUMBER: *140175.02*

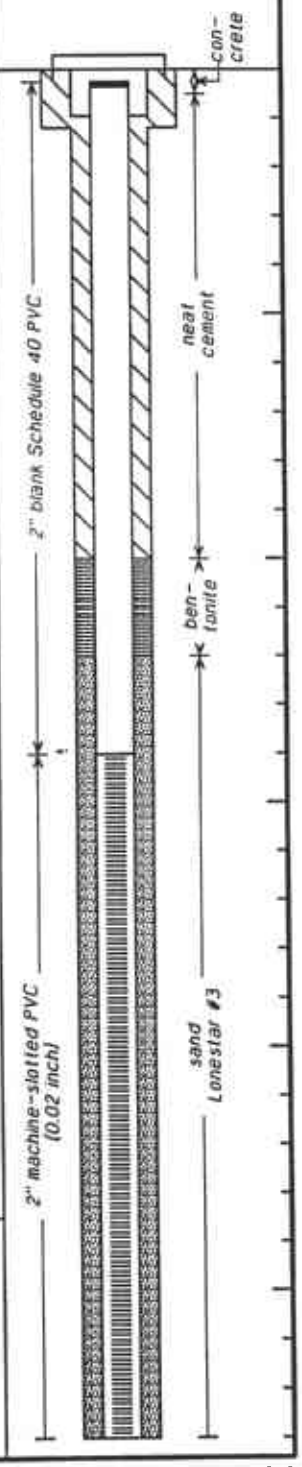
Gettler-Ryan Inc.

Log of Boring U-3

PROJECT: *Tosco (Unocal) Station No. 4186*	LOCATION: *1771 1st Street, Livermore, CA*
GSI PROJECT NO.: *140175.02*	CASING ELEVATION: *454.92 feet MSL*
DATE STARTED: *06/16/98*	WL (ft. bgs): *23.9* DATE: *06/16/98* TIME: *4:45 pm*
DATE FINISHED: *06/16/98*	WL (ft. bgs): DATE: TIME:
DRILLING METHOD: *8" hollow-stem auger*	TOTAL DEPTH: *38.5 Feet*
DRILLING COMPANY: *Woodward Drilling*	GEOLOGIST: *Clyde Galantine*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SOIL CLASS	GEOLOGIC DESCRIPTION
					Asphalt and fill gravel.
				GW GC	
5	2	27	U-3-8		GRAVEL WITH CLAY AND SAND (GW-GC) - brown (10YR 5/3), moist, dense, 70% subangular to rounded fine gravel, 20% fine to coarse sand, 10% clay.
10	2	51	U-3-11		Becomes very dense.
15	18	88	U-3-15.5		
20	-	70	U-3-20.5		
				CL	
25	218	35	U-3-25.5		CLAY (CL) - yellowish brown (10YR 5/4), damp to moist, hard, plastic, 85% clay, 15% silt, trace fine sand.

WELL DIAGRAM



JOB NUMBER: *140175.02*

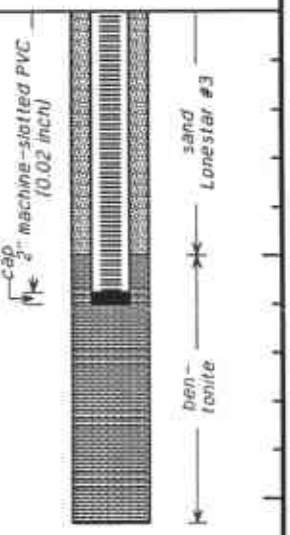
Gettler-Ryan Inc.

Log of Boring U-3

PROJECT: *Tosco (Unocal) Station No. 4186*

LOCATION: *1771 1st Street, Livermore, CA*

DEPTH feet	PID (ppm)	BLOWS/FT. #	SAMPLE NUMBER	SAMPLE INT.	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	WELL DIAGRAM
						CL		
	31	14	U-3-31				Color change to olive brown (2.5Y 4/4), becomes saturated.	
33								
	340	30	U-3-34.5				CLAY WITH SAND AND GRAVEL (CL) - olive brown (2.5Y 4/4), 70% clay, 10% silt, 10% fine to coarse sand, 10% fine gravel.	
						GW		
38	372	44	U-3-38.5				GRAVEL (GW) - brown (10YR 4/3), saturated, very dense, 85% subangular to rounded fine gravel, 10% fine to coarse gravel, 10% clay, abundant water.	
43								
48								
53								
58								



JOB NUMBER: *140175.02*

APPENDIX C

Well Development and Groundwater Sampling Field Data Sheets

GETTLER-RYAN INC.

DAILY SAMPLING REPORT

Site Location: Unocal #4186
1771 First Street
Livermore CA

Job # 140175.C2

Date: 7-13-9E

DESCRIPTION OF WORK PERFORMED:

Monitor	✓
Purge	✓
Sample	✓
Develop	✓
Total # of Wells @ site:	3
Water levels only:	∅
Monitored/Sampled:	3
Bailed Product:	

CHECK LIST:

Transfer Purge Water To:	
Drums on site:	
Holding tank:	✓
Total Purge Water (gals):	40 +75 (115)
Sampling Truck:	203C
Purge water trailer:	
Traffic Control:	
Arrow board/road signs/cones	

PURGING EQUIPMENT:

Disposal bailer	
Teflon bailer	✓
3/8" stack pumps	
1" double diaphram	
Grundfo's	

SAMPLING EQUIPMENT:

Teflon bailer	
Disposable bailer	3
Grab sample	
Pressure bailer	

OTHER EQUIPMENT:

Gloves	6 pairs
Bailer cord	100'
Well plug size	" #

SPECIAL EQUIPMENT:

Turbidity Meter	
D O Meter	
Re-Dox Meter	
Alkalinity test	

COMMENTS: Vaced out 1 Steel Drum Rinse water & water from top of Concrete 75 gals. ~~Dump~~ Pumped Sludge from Rinse drum to soil Drum & removed empty There are 8 Drums of soil & 1 Drum of Concrete left onsite

Sampled by: [signature]

Assistant:

Time Billed: 3 hrs.

daily.frm

MONITORING WELL
OBSERVATION SUMMARY SHEET

CLIENT FACILITY #: Unocal #4186 G-R JOB #: 140175.02

LOCATION: 1771 First Street DATE: 7-13-95

CITY: Livermore CA TIME:

Well ID	Total Depth	Depth to Water	Product Thickness	TOB or TOC	Comments
U-1	34.0	23.28	—	TOC	
U-2	33.2	23.52	—	—	
U-3	34.0	23.82	—	—	

Comments:

Sampler: Assistant:

sumsheet11/93

WELL MONITORING/DEVELOPMENT
FIELD DATA SHEET

Client/ Facility: Tosco / Unocal #4186 | Job#: 140175.02

Address: 1771 First St | Date: 7-13-95

City: Livermore CA | Sampler: F. Cline

Well ID: U-1 | Well Condition: okay

Well Diameter: 2" in. | Hydrocarbon Thickness: 0 Ft. | Amount Bailed (product/water): 0 (gal.)

Total Depth: 30.1 ft.

Volume Factor (VF)	2" = 0.17	3" = 0.38	4" = 0.66
	6" = 1.50	12" = 5.80	

Depth to Water: 23.28 ft.

10.72 x VF 0.17 = 1.8 x 3 (case volume) = Estimated Purge Volume: 18 (gal.)

Purge Equipment: Disposable Bailer; (Bailer); Stack; (Suction); Grundfos; Other: _____

Sampling Equipment: (Disposable Bailer); Bailer; Pressure Bailer; Grab Sample; Other: _____

Starting Time: 16:25 | Weather Conditions: clear warm

Sampling Time: 18:20 | Water Color: Brown → Clear | Odor: None

Purging Flow Rate: 1 gpm. | Sediment Description: Silty → Clear

Did well de-water? Yes | If yes; Time: 16:55 | Volume: 10 (gal.)

Time	Volume (gal.)	pH	Conductivity µmhos/cm	Temperature °C	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
16:20	0	7.45	2125	22.8	clear	clear	Initial
16:30	5	7.43	1970	22.4	Brown	Muddy	Surging
16:50	10	7.49	1960	24.4	Brown	cloudy	Dewater
18:20	15	7.47	1900	22.8	clear	clear	Sample
	Well Dewatered @ 10 gals						
	well recovered to 24.5 @ 18:20						

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
U-1	3 x 40 ml VOA	Y	HCl	STL	Gas BTEX MTBE

COMMENTS: Developed by Surge & Purge Surge well. Bailed dry & pump well using suction pump until

9/97-fieldat.frm

WELL MONITORING/DEVELOPMENT
FIELD DATA SHEET

Client/ Facility: Tosco / Unocal #4186 | Job#: 140175.02

Address: 1771 First St | Date: 7-13-9E

City: Livermore CA | Sampler: E. Cline

Well ID: U-2 | Well Condition: okay

Well Diameter: 2" in. | Hydrocarbon Thickness: 0 Ft. | Amount Bailed (product/water): 0 (gal.)

Total Depth: 33.5 ft.

Depth to Water: 23.52 ft.

Volume Factor (VF)	2" = 0.17	3" = 0.38	4" = 0.66
	6" = 1.50	12" = 5.80	

9.98 X VF 0.17 = 1.7 X 3 (case volume) = Estimated Purge Volume: 16.7 (gal.)

Purge Equipment: Disposable Bailer; (Bailer); Stack; (Suction); Grundfos; Other: _____

Sampling Equipment: (Disposable Bailer); Bailer; Pressure Bailer; Grab Sample; Other: _____

Starting Time: 1700 | Weather Conditions: clear warm.

Sampling Time: 1830 | Water Color: clear → Muddy → Clear | Odor: None

Purging Flow Rate: NA gpm. | Sediment Description: clear → silty → Clear

Did well de-water? Yes | If yes; Time: 1715 | Volume: 5 (gal.)

Time	Volume (gal.)	pH	Conductivity µmhos/cm	Temperature °C	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
1700	0	7.52	1690	20.6	clear	clear	
1715	5	7.35	2290	21.4	brown	silty	Dewater.
1830	10	7.33	2095	22.4	clear	clear	Sample
	well	dewatered @	5gals		recovered to		
	24.5	@	1836				

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
U-2	3 x 40ml VOA	Y	HCl	SEQ	Gas BTEX MTBE

COMMENTS: Developed by Surge & Purge. Surge well, Bail silt & pump well using suction pump until clear.

9/97-R

WELL MONITORING/DEVELOPMENT
FIELD DATA SHEET

Client/ Facility: Tosco / Unocal #4186 | Job#: 140175.02

Address: 1771 First St | Date: 7-13-98

City: Livermore CA | Sampler: F. Cline

Well ID: M-3 | Well Condition: okay

Well Diameter: 2" in. | Hydrocarbon Thickness: 0 Ft. | Amount Bailed (product/water): 0 (gal.)

Total Depth: ~~23~~ 34.0 ft.

Depth to Water: 23.82 ft.

Volume Factor (VF)	2" = 0.17	3" = 0.38	4" = 0.66	6" = 1.50	12" = 5.80

10.18 x VF 0.17 = 1.7 x (case volume) = Estimated Purge Volume: 17 (gal.)

Purge Equipment: Disposable Bailer; (Bailer); Stack; (Suction); Grundfos; Other: _____

Sampling Equipment: (Disposable Bailer); Bailer; Pressure Bailer; Grab Sample; Other: _____

Starting Time: 1720 | Weather Conditions: clear warm

Sampling Time: 1845 | Water Color: clear | Odor: None

Purging Flow Rate: NA gpm. | Sediment Description: None

Did well de-water? Yes | If yes; Time: 1735 | Volume: 10 gals (gal.)

Time	Volume (gal.)	pH	Conductivity µmhos/cm	Temperature °C	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
1720	0	7.29	1040	24.2	clear	clear	
1735	10	7.45	1320	22.9	Brown	Muddy	Reserve
1840	15	7.05	1330	22.9	clear	clear	Sat.
	well	Recovered	to	29°	~~Clear~~		

LABORATORY INFORMATION

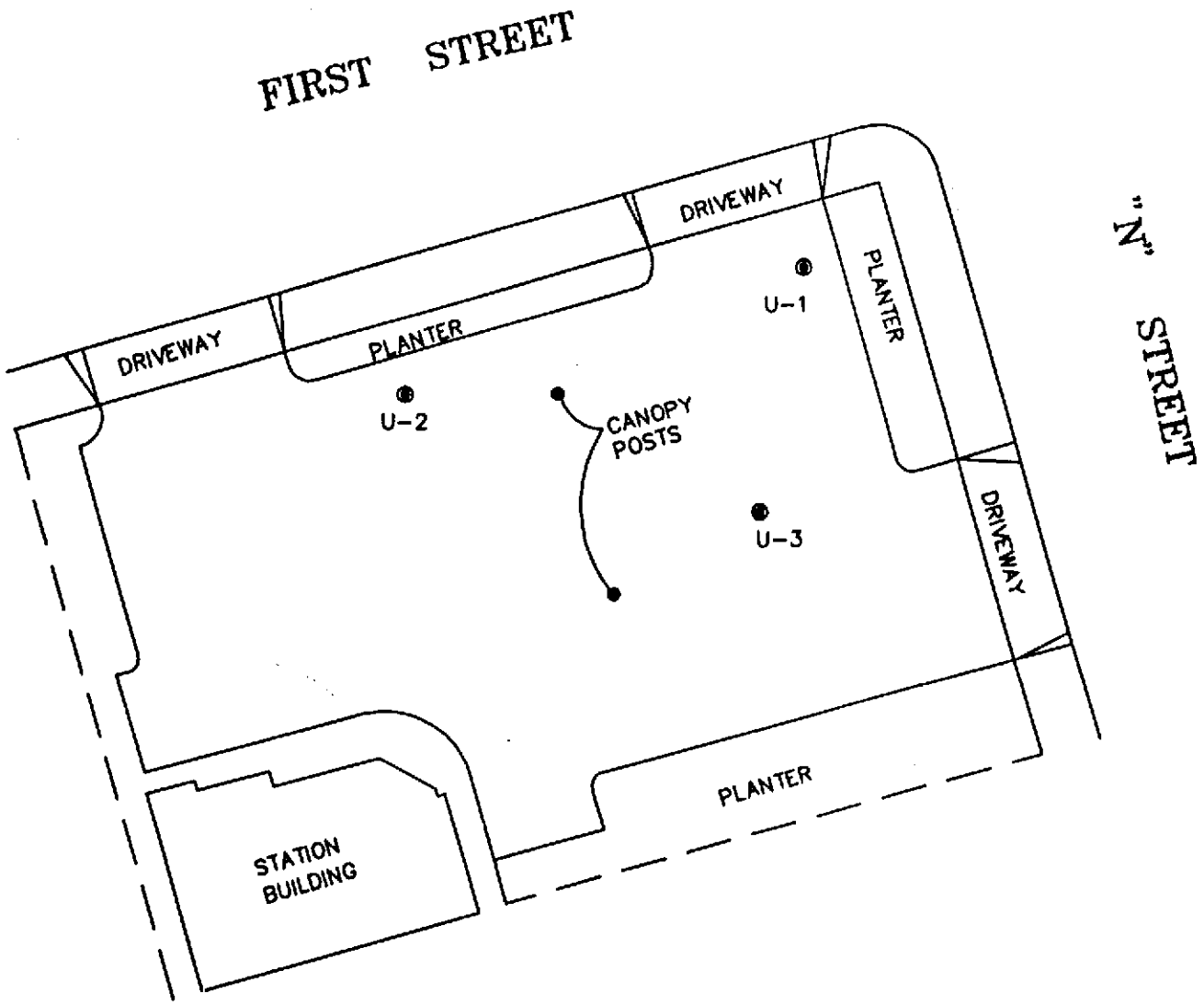
SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
M-3	3 x 40ml VOA	Y	HCl	STL	6 os BTEX MTBE

COMMENTS: Developed by Surge & Purge Surge well. Bail 5/1 & pump well using suction pump until clear.

9/97-fieldst.frm

APPENDIX D

Surveyor's Report



SITE MAP
UNOCAL SERVICE STATION #4186
1771 FIRST STREET
LIVERMORE, CALIFORNIA

VIRGIL CHAVEZ LAND SURVEYING
312 GEORGIA STREET, SUITE 200
VALLEJO, CALIFORNIA

PROJECT NO. 1604-19

AUGUST, 1998 SCALE: 1"=30' SHEET 1 OF 1

APPENDIX E

Laboratory Reports and Chain-of-Custody Forms

Columbia Analytical Services, Inc.

July 1, 1998

Service Request No.: S9801563

Mr. Clyde Galantine
Gettler-Ryan, Inc.
6747 Sierra Court
Suite J
Dublin, CA 94568

RE: 4186 TOSCO/140175.02

Dear Mr. Galantine:

The following pages contain analytical results for sample(s) received by the laboratory on June 17, 1998. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. listed above. To help expedite our service, please refer to this number when contacting the laboratory.

Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 12, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

Please feel welcome to contact me should you have questions or further needs.

Sincerely,

Steven L. Green
Project Chemist

COLUMBIA ANALYTICAL SERVICES, Inc.
Acronyms

A2LA	American Association for Laboratory Accreditation
ASTM	American Society for Testing and Materials
BOD	Biochemical Oxygen Demand
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CAM	California Assessment Metals
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
COD	Chemical Oxygen Demand
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank sample
ICP	Inductively Coupled Plasma atomic emission spectrometry
ICV	Initial Calibration Verification sample
J	Estimated concentration. The value is less than the MRL, but greater than or equal to the MDL. If the value is equal to the MRL, the result is actually <MRL before rounding.
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified
MBAS	Methylene Blue Active Substances
MCL	Maximum Contaminant Level. The highest permissible concentration of a substance allowed in drinking water as established by the U. S. EPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl tert-Butyl Ether
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the paper industry for Air and Stream Improvement
ND	Not Detected at or above the method reporting/detection limit (MRL/MDL)
NIOSH	National Institute for Occupational Safety and Health
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	Standard Methods for the Examination of Water and Wastewater, 18th Ed., 1992
STLC	Solubility Threshold Limit Concentration
SW	Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Ed., 1986 and as amended by Updates I, II, IIA, and IIB.
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
tr	Trace level. The concentration of an analyte that is less than the PQL but greater than or equal to the MDL. If the value is equal to the PQL, the result is actually <PQL before rounding.
TRPH	Total Recoverable Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: TOSCO
Project: 4186 TOSCO/140175.02
Sample Matrix: Soil

Service Request: S9801563
Date Collected: 6/16/98
Date Received: 6/17/98

Total Metals
Lead

Prep Method: EPA 3050BM
Analysis Method: 6010A
Test Notes:

Units: mg/Kg (ppm)
Basis: Wet

Sample Name	Lab Code	MRL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
Comp US-1	S9801563-028	5	1	6/24/98	6/24/98	9	
Method Blank	S980624-MB	5	1	6/24/98	6/24/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	TOSCO	**Service Request:**	S9801563
Project:	4186 TOSCO/140175.02	**Date Collected:**	6/15/98
Sample Matrix:	Soil	**Date Received:**	6/17/98

BTEX, MTBE and TPH as Gasoline

Sample Name:	U-1-21.5	Units:	mg/Kg (ppm)
Lab Code:	S9801563-006	Basis:	Wet
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	1	1	6/22/98	6/25/98	ND	
Benzene	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Toluene	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Ethylbenzene	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Xylenes, Total	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Methyl-tert-butyl ether	EPA 5030	8020	0.05	1	6/22/98	6/25/98	ND	

IS22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	TOSCO	**Service Request:**	S9801563
Project:	4186 TOSCO/140175.02	**Date Collected:**	6/16/98
Sample Matrix:	Soil	**Date Received:**	6/17/98

BTEX, MTBE and TPH as Gasoline

Sample Name:	U-2-10.5	Units:	mg/Kg (ppm)
Lab Code:	S9801563-011	Basis:	Wet
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	1	1	6/22/98	6/25/98	ND	
Benzene	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Toluene	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Ethylbenzene	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Xylenes, Total	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Methyl-tert-butyl ether	EPA 5030	8020	0.05	1	6/22/98	6/25/98	ND	

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	TOSCO	**Service Request:**	S9801563
Project:	4186 TOSCO/140175.02	**Date Collected:**	6/16/98
Sample Matrix:	Soil	**Date Received:**	6/17/98

BTEX, MTBE and TPH as Gasoline

Sample Name:	U-2-21	Units:	mg/Kg (ppm)
Lab Code:	S9801563-013	Basis:	Wet
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	1	1	6/22/98	6/25/98	ND	
Benzene	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Toluene	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Ethylbenzene	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Xylenes, Total	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Methyl-tert-butyl ether	EPA 5030	8020	0.05	1	6/22/98	6/25/98	ND	

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	TOSCO	**Service Request:**	S9801563
Project:	4186 TOSCO/140175.02	**Date Collected:**	6/16/98
Sample Matrix:	Soil	**Date Received:**	6/17/98

BTEX, MTBE and TPH as Gasoline

Sample Name:	U-3-15.5	Units:	mg/Kg (ppm)
Lab Code:	S9801563-019	Basis:	Wet
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	1	1	6/22/98	6/25/98	ND	
Benzene	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Toluene	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Ethylbenzene	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Xylenes, Total	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Methyl-tert-butyl ether	EPA 5030	8020	0.05	1	6/22/98	6/25/98	ND	

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: TOSCO
Project: 4186 TOSCO/140175.02
Sample Matrix: Soil

Service Request: S9801563
Date Collected: 6/16/98
Date Received: 6/17/98

BTEX, MTBE and TPH as Gasoline

Sample Name: U-3-20.5
Lab Code: S9801563-020
Test Notes:

Units: mg/Kg (ppm)
Basis: Wet

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	1	1	6/22/98	6/25/98	ND	
Benzene	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Toluene	EPA 5030	8020	0.005	1	6/22/98	6/25/98	0.009	
Ethylbenzene	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Xylenes, Total	EPA 5030	8020	0.005	1	6/22/98	6/25/98	0.007	
Methyl-tert-butyl ether	EPA 5030	8020	0.05	1	6/22/98	6/25/98	ND	

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	TOSCO	**Service Request:**	S9801563
Project:	4186 TOSCO/140175.02	**Date Collected:**	6/16/98
Sample Matrix:	Soil	**Date Received:**	6/17/98

BTEX, MTBE and TPH as Gasoline

Sample Name:	Comp US-1	Units:	mg/Kg (ppm)
Lab Code:	S9801563-028	Basis:	Wet
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	1	1	6/22/98	6/25/98	ND	
Benzene	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Toluene	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Ethylbenzene	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Xylenes, Total	EPA 5030	8020	0.005	1	6/22/98	6/25/98	ND	
Methyl-tert-butyl ether	EPA 5030	8020	0.05	1	6/22/98	6/25/98	ND	

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	TOSCO	**Service Request:**	S9801563
Project:	4186 TOSCO/140175.02	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

BTEX, MTBE and TPH as Gasoline

Sample Name:	Method Blank	Units:	mg/Kg (ppm)
Lab Code:	S980622-SB1	Basis:	Wet
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	1	1	6/22/98	6/22/98	ND	
Benzene	EPA 5030	8020	0.005	1	6/22/98	6/22/98	ND	
Toluene	EPA 5030	8020	0.005	1	6/22/98	6/22/98	ND	
Ethylbenzene	EPA 5030	8020	0.005	1	6/22/98	6/22/98	ND	
Xylenes, Total	EPA 5030	8020	0.005	1	6/22/98	6/22/98	ND	
Methyl-tert-butyl ether	EPA 5030	8020	0.05	1	6/22/98	6/22/98	ND	

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	TOSCO	**Service Request:**	S9801563
Project:	4186 TOSCO/140175.02	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
		Date Extracted:	NA
		Date Analyzed:	NA

Surrogate Recovery Summary
BTEX and TPH as Gasoline

Prep Method:	EPA 5030	Units:	PERCENT
Analysis Method:	8020 CA/LUFT	Basis:	NA

Sample Name	Lab Code	Test Notes	Percent Recovery	
			4-Bromofluorobenzene	a,a,a-Trifluorotoluene
U-1-21.5	S9801563-006		74	89
U-2-10.5	S9801563-011		76	88
U-2-21	S9801563-013		78	89
U-3-15.5	S9801563-019		84	90
U-3-20.5	S9801563-020		75	89
Comp US-1	S9801563-028		79	83
Method Blank	S980622-SB1		71	81
CAS Acceptance Limits:			51-137	51-137

SUR2/020397p

5480 1705

UNOCAL 76

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☐ 15055 S.W. Sequoia Pkwy, Suite 110 • Portland, OR 97222 • (503) 624-9800

1 of 4

Consultant Company: Getler-Ryan 1401750.02	Project Name: 4186
Address: 6747 Sierra Ct Suite J	UNOCAL Project Manager: Tina Berry
City: Dublin State: CA Zip Code: 94568	AFE #:
Telephone: (510) 551-7555 FAX #: (510) 551-7888	Site #, City, State: 4186 Livermore, CA
Report To: Clyde Galantine Sampler: Clyde Galantine	QC Data: ☐ Level D (Standard) ☐ Level C ☐ Level B ☐ Level A

Turnaround Time: ☒ 10 Work Days ☐ 5 Work Days ☐ 3 Work Days ☐ 2 Work Days ☐ 1 Work Day ☐ 2-8 Hours

CODE: ☐ Misc. ☒ Detect. ☐ Eval. ☐ Remed. ☐ Demol. ☐ Closure

☐ Drinking Water ☐ Waste Water ☐ Other

Analyses Requested

	Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Laboratory Sample #	TPH-g BTEX MTBE	Total Pb								Comments
1.	US-1 (Comp) (28)	6/16/98 3:30	soil	4	tube	1,25-27	X	X								If total Pb >50 ppm, then run for STLC Pb
2.																
3.																
4.																
5.																
6.																
7.																
8.																
9.																
10.																

Pink - Client
Yellow - Laboratory
White - Laboratory

PAY CAS

Relinquished By: Clyde Galantine	Date: 6/16/98	Time: 17:45	Received By:	Date: 6/17/98	Time: 1005
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By Lab:	Date:	Time:

Were Samples Received in Good Condition? ☐ Yes ☐ No Samples on Ice? ☐ Yes ☐ No Method of Shipment _____ Page __ of __

To be completed upon receipt of report:

1) Were the analyses requested on the Chain of Custody reported? ☐ Yes ☐ No If no, what analyses are still needed? _____

2) Was the report issued within the requested turnaround time? ☐ Yes ☐ No If no, what was the turnaround time? _____

Approved by: _____ Signature: _____ Company: _____ Date: _____

5980 1565

UNOCAL 76

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East 11115 Montgomery, Suite B • Spokane, WA 99206 • (509) 924-9200
15055 S.W. Sequoia Pkwy, Suite 110 • Portland, OR 97222 • (503) 624-9800

Consultant Company: Getler-Ryan 140175.02	Project Name: 4186
Address: 6747 Sierra Ct Suite J	UNOCAL Project Manager: Tina Berry
City: Dublin State: CA Zip Code: 94568	AFE #:
Telephone: (510) 551-7555 FAX #: (510) 551-7888	Site #, City, State: 4186 Livermore, CA
Report To: Clyde Galantine Sampler: Clyde Galantine	QC Data: ☐ Level D (Standard) ☐ Level C ☐ Level B ☐ Level A

Turnaround Time: ☒ 10 Work Days ☐ 5 Work Days ☐ 3 Work Days ☐ 2 Work Days ☐ 1 Work Day ☐ 2-8 Hours

☐ Drinking Water ☐ Waste Water ☐ Other

CODE: ☐ Misc. ☒ Detect. ☐ Eval. ☐ Remed. ☐ Demol. ☐ Closure

Analyses Requested: (BTEX & MTBE 8015/8020)

	Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Laboratory Sample #		Comments
1	U-1-6	6/15/98 1:45	soil	1	tube	2		
2	U-1-11	1:55				3		
3	U-1-15.5	2:00				4		
4	U-1-19	2:10				5		
5	U-1-21.5	2:15				6	X	
6	U-1-26.5	2:40				7		
7	U-1-30	2:45				8		
8	U-1-34.5	3:05				9		
9	U-2-5.5	6/16/98 9:40				10		
10	U-2-10.5	" 9:45				11	X	

RAY CATS

Relinquished By: Clyde Galantine	Date: 6/16/98	Time: 17:45	Received By: [illegible]	Date: 6/17/98	Time: 10:25
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By Lab:	Date:	Time:

Were Samples Received in Good Condition? ☐ Yes ☐ No Samples on Ice? ☐ Yes ☐ No Method of Shipment _____ Page __ of __

To be completed upon receipt of report:
1) Were the analyses requested on the Chain of Custody reported? ☐ Yes ☐ No If no, what analyses are still needed? _____
2) Was the report issued within the requested turnaround time? ☐ Yes ☐ No If no, what was the turnaround time? _____

Approved by: _____ Signature: _____ Company: _____ Date: _____

Pink - Client
Yellow - Laboratory
White - Laboratory

5480 1565

UNOCAL 76

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Consultant Company: Geffler-Ryan 140175.02	Project Name: 4186
Address: 6747 Sierra Ct Suite J	UNOCAL Project Manager: Tina Berry
City: Dublin State: CA Zip Code: 94568	AFE #:
Telephone: (510) 551-7555 FAX #: (510) 551-7888	Site #, City, State: 4186 Livermore, CA
Report To: Clyde Galantine Sampler: Clyde Galantine	QC Data: ☐ Level D (Standard) ☐ Level C ☐ Level B ☐ Level A

Turnaround Time: ☒ 10 Work Days ☐ 5 Work Days ☐ 3 Work Days ☐ 2 Work Days ☐ 1 Work Day ☐ 2-8 Hours

CODE: ☐ Misc. ☒ Detect. ☐ Eval. ☐ Remed. ☐ Demol. ☐ Closure

☐ Drinking Water ☐ Waste Water ☐ Other

Analyses Requested: TPH/BTEX/MTBE 8015/8020

	Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Laboratory Sample #	TPH/BTEX/MTBE 8015/8020	Comments
1	1. U-2-14	6/16/98 9:50	soil	1	tube	12		
3	2. U-2-21	10:00				13	X	
4	3. U-2-26.5	10:05				14		
5	4. U-2-31.5	10:10				15		
6	5. U-2-34	10:15				16		
7	6. U-3-6	12:20				17		
8	7. U-3-11	12:25				18		
9	8. U-3-15.5	12:30				19	X	
10	9. U-3-20.5	12:40				20	X	
11	10. U-3-25.5	12:45				21		

RAM CAS

Relinquished By: Clyde Galantine	Date: 6/16/98	Time: 17:45	Received By: [signature] Date: 6/17/98 Time: 1005
Relinquished By:	Date:	Time:	Received By: Date: Time:
Relinquished By:	Date:	Time:	Received By Lab: Date: Time:

Were Samples Received in Good Condition? ☐ Yes ☐ No Samples on Ice? ☐ Yes ☐ No Method of Shipment _____ Page __ of __

To be completed upon receipt of report:

1) Were the analyses requested on the Chain of Custody reported? ☐ Yes ☐ No If no, what analyses are still needed? _____

2) Was the report issued within the requested turnaround time? ☐ Yes ☐ No If no, what was the turnaround time? _____

Approved by: _____ Signature: _____ Company: _____ Date: _____

Pink - Client

Yellow - Laboratory

White - Laboratory

5980 1505

UNOCAL 76

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4 of

Consultant Company: Getler Ryan 140175.02	Project Name: 4186
Address: 6747 Sierra Ct Suite J	UNOCAL Project Manager: Tina Berry
City: Dublin State: CA Zip Code: 94568	AFE #:
Telephone: (510) 551-7555 FAX #: (510) 551-7888	Site #, City, State: 4186 Livermore CA
Report To: Clyde Galantine Sampler: Clyde Galantine	QC Data: ☐ Level D (Standard) ☐ Level C ☐ Level B ☐ Level A

Turnaround Time: ☒ 10 Work Days ☐ 5 Work Days ☐ 3 Work Days ☐ 2 Work Days ☐ 1 Work Day ☐ 2-8 Hours

CODE: ☐ Misc. ☒ Detect. ☐ Eval. ☐ Remed. ☐ Demol. ☐ Closure

☐ Drinking Water ☐ Waste Water ☐ Other

Analyses Requested: TPH(G)(BTEX MTBE) 8015/8020

Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Laboratory Sample #	Comments
1. U-3-31	6/16/98 12:50	Soil	1	tube	22	
2. U-3-34.5	" 12:55	"	"	"	23	
3. U-3-38.5	" 1:35	"	"	"	24	
4.						
5.						
6.						
7.						
8.						
9.						
10.						

PLEASE CAS

Relinquished By: Clyde Galantine	Date: 6/16/98	Time: 17:45	Received By: [illegible]	Date: 6/17/98	Time: 0905
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By Lab:	Date:	Time:

Were Samples Received in Good Condition? ☐ Yes ☐ No Samples on Ice? ☐ Yes ☐ No Method of Shipment _____ Page __ of __

To be completed upon receipt of report:
1) Were the analyses requested on the Chain of Custody reported? ☐ Yes ☐ No If no, what analyses are still needed? _____
2) Was the report issued within the requested turnaround time? ☐ Yes ☐ No If no, what was the turnaround time? _____
Approved by: _____ Signature: _____ Company: _____ Date: _____

Pink - Client
Yellow - Laboratory
White - Laboratory

Sequoia Analytical

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1455 McDowell Blvd. North, Ste. D, Petaluma, CA 94954, (707) 792-1865, FAX (707) 792-0342

Gettler Ryan/Geostrategies
6747 Sierra Court Suite J
Dublin, CA 94568

Attention: Clyde Galentine

Client Proj. ID: Unocal/140175.02
Sample Descript: U-1
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9807806-01

Sampled: 07/13/98
Received: 07/14/98
Analyzed: 07/22/98
Reported: 07/28/98

Purgeable Total Petroleum Hydrocarbons as Gasoline/BTEX/MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	102

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

Sequoia Analytical

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Gettler Ryan/Geostrategies	Client Proj. ID: Unocal/140175.02	Sampled: 07/13/98
6747 Sierra Court Suite J	Sample Descript: U-2	Received: 07/14/98
Dublin, CA 94568	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 07/22/98
Attention: Clyde Galentine	Lab Number: 9807806-02	Reported: 07/28/98

Purgeable Total Petroleum Hydrocarbons as Gasoline/BTEX/MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	**500**	**1200**
Methyl t-Butyl Ether	**25**	**1100**
Benzene	**5.0**	**130**
Toluene	**5.0**	**12**
Ethyl Benzene	**5.0**	**62**
Xylenes (Total)	**5.0**	**180**

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	99

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

Sequoia Analytical

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1455 McDowell Blvd. North, Ste. D, Petaluma, CA 94954, (707) 792-1865, FAX (707) 792-0342

Gettler Ryan/Geostrategies	Client Proj. ID: Unocal/140175.02	Sampled: 07/13/98
6747 Sierra Court Suite J	Sample Descript: U-3	Received: 07/14/98
Dublin, CA 94568	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 07/22/98
Attention: Clyde Galentine	Lab Number: 9807806-03	Reported: 07/28/98

Purgeable Total Petroleum Hydrocarbons as Gasoline/BTEX/MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	**2500**	**70000**
Methyl t-Butyl Ether	**125**	**7500**
Benzene	**25**	**3100**
Toluene	**25**	**5500**
Ethyl Benzene	**25**	**2700**
Xylenes (Total)	**25**	**16000**

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	101

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

Sequoia Analytical

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1455 McDowell Blvd. North, Ste. D, Petaluma, CA 94954, (707) 792-1865, FAX (707) 792-0342

Gettler Ryan/Geostrategies	Client Proj. ID: Unocal/140175.02	Sampled: 07/13/98
6747 Sierra Court Suite J	Sample Descript: Trip Blank	Received: 07/14/98
Dublin, CA 94568	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 07/22/98
Attention: Clyde Galentine	Lab Number: 9807806-04	Reported: 07/28/98

Purgeable Total Petroleum Hydrocarbons as Gasoline/BTEX/MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	101

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

Sequoia Analytical

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404 N. Wiget Lane, Walnut Creek, CA 94598, (925) 988-9600, FAX (925) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100
1455 McDowell Blvd. North, Ste. D, Petaluma, CA 94954, (707) 792-1865, FAX (707) 792-0342

Gettler Ryan/Geostrategies	Client Project ID:	Unocal/140175.02			
6747 Sierra Court, Ste J	Matrix:	Liquid			
Dublin, CA 94568					
Attention: Clyde Galentine	Work Order #:	9807806	01-03	Reported:	Jul 28, 1998

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes
QC Batch#:	8070346	8070346	8070346	8070346
Analy. Method:	EPA 8015M/8020	EPA 8015M/8020	EPA 8015M/8020	EPA 8015M/8020
Prep. Method:				
Analyst:	N.A.	N.A.	N.A.	N.A.
MS/MSD #:	BLK072298	BLK072298	BLK072298	BLK072298
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Prepared Date:	N.A.	N.A.	N.A.	N.A.
Analyzed Date:	7/22/98	7/22/98	7/22/98	7/22/98
Instrument I.D.#:	N.A.	N.A.	N.A.	N.A.
Conc. Spiked:	100 µg/L	100 µg/L	100 µg/L	300 µg/L
Result:	105	102	100	306
MS % Recovery:	105	102	100	102
Dup. Result:	106	103	101	307
MSD % Recov.:	106	103	101	102
RPD:	0.95	0.98	1.0	0.0
RPD Limit:	0-0.50	0-0.50	0-0.50	0-0.50
LCS #:	LCS072298	LCS072298	LCS072298	LCS072298
Prepared Date:	N.A.	N.A.	N.A.	N.A.
Analyzed Date:	7/22/98	7/22/98	7/22/98	7/22/98
Instrument I.D.#:	N.A.	N.A.	N.A.	N.A.
Conc. Spiked:	100 µg/L	100 µg/L	100 µg/L	300 µg/L
LCS Result:	101	98	96	295
LCS % Recov.:	101	98	96	98
MS/MSD Control Limits	82-119	80-117	66-125	73-119
LCS Control Limits	84-116	81-117	79-115	80-114

SEQUOIA ANALYTICAL
ELAP #2245

Tod Granicher
Project Manager

Please Note:
The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

** MS = Matrix Spike, MSD = MS Duplicate, RPD = Relative % Difference

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (650) 364-9600, FAX (650) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (925) 988-9600, FAX (925) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100
1455 McDowell Blvd. North, Ste. D, Petaluma, CA 94954, (707) 792-1865, FAX (707) 792-0342

Gettler Ryan/Geostrategies	Client Proj. ID: Unocal/140175.02	Received: 07/14/98
6747 Sierra Court Suite J		
Dublin, CA 94568	Lab Proj. ID: 9807806	Reported: 07/28/98
Attention: Clyde Galentine		

LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. This report contains a total of 11 pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, etc.).

SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

UNOCAL 76

☒ 680 Chesapeake Drive • Redwood City, CA 94063 • (415) 364-9600
☐ 819 Striker Ave., Suite 8 • Sacramento, CA 95834 • (916) 921-9600
☐ 404 N. Wiget Lane • Walnut Creek, CA 94598 • (510) 988-9600
☐ 18939 120th Ave., N.E., Suite 101 • Bothell, WA 98011 • (206) 481-9200
☐ East 11115 Montgomery, Suite B • Spokane, WA 99206 • (509) 924-9200
☐ 15055 S.W. Sequoia Pkwy, Suite 110 • Portland, OR 97222 • (503) 624-9800

Consultant Company: Gettler Ryan Inc	Project Name: 140175.02
Address: 6747 Sierra Ct Suite J	UNOCAL Project Manager: Tina Berry
City: Dublin State: CA Zip Code: 94568	AFE #:
Telephone: ~~510~~ 925-551-7555 FAX #: 551-7888	Site #, City, State: #4186, 1771 First Street Livermore CA
Report To: Clyde Galentine Sampler: F. Cline	QC Data: ☒ Level D (Standard) ☐ Level C ☐ Level B ☐ Level A

Turnaround Time: ☒ 10 Work Days ☐ 5 Work Days ☐ 3 Work Days ☐ 2 Work Days ☐ 1 Work Day ☐ 2-8 Hours

☐ Drinking Water ☐ Waste Water ☒ Other

CODE: ☐ Misc. ☐ Detect. ☐ Eval. ☐ Remed. ☐ Demol. ☐ Closure

Analyses Requested 9807806

	Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Laboratory Sample #	THC GasBTEX MTBE 8015/8020	Comments
1.	U-1	7-13-98/1820	W	3	VOA	01	X	
2.	U-2	" /1185	"	3	"	02	X	
3.	U-3	" /1840	"	3	"	03	X	
4.	Trip Blank	-1-	"	2	"	04	X	
5.								
6.								
7.								
8.								
9.								
10.								

Relinquished By:	Date: 7-14-98	Time: 0800	Received By: D. Harding	Date: 7/14/98	Time: 0830
Relinquished By: D. Harding	Date: 7/14/98	Time:	Received By: Stacie Te	Date: 7/14/98	Time:
Relinquished By: Stacie Te	Date: 7/14/98	Time:	Received By Lab:	Date: 7/14/98	Time: 1304

Were Samples Received in Good Condition? ☐ Yes ☐ No Samples on Ice? ☐ Yes ☐ No Method of Shipment _____ Page 1 of 1

To be completed upon receipt of report:

1) Were the analyses requested on the Chain of Custody reported? ☐ Yes ☐ No If no, what analyses are still needed? _____

2) Was the report issued within the requested turnaround time? ☐ Yes ☐ No If no, what was the turnaround time? 5 14 1

Approved by: _____ Signature: _____ Company: _____ Date: _____

Pink - Client
Yellow - Laboratory
White - Laboratory

04

APPENDIX F

Waste Disposal Confirmation Form

FORWARD
INCORPORATED

P.O. Box 6336
1145 W. Charter Way • Stockton, CA 92506
(209) 466-4482 • (800) 204-4242 • FAX (209) 466-1067

July 10, 1998

Gettler-Ryan, Inc.
6747 Sierra Court , Suite J
Dublin, CA 94568

Attention: Clyde Galantine

RE: ***FORWARD, INC.*** Approval No. 722522
Contaminated soil from Unocal Station # 4186, 1771 1st Street

Dear Mr. Galantine:

FORWARD, INC. is pleased to confirm the disposal of 0.15 of material from the referenced site. The material was received at our Manteca, California facility on 07/16/98. The waste was used as Alternative Daily Cover.

Approval for this material was based on the information provided in the waste profile and associated materials submitted by Gettler-Ryan, Inc., dated July 10, 1998 on behalf of the Tosco Marketing Company. Acceptance of the waste is subject to the "Terms and Conditions" agreed to and signed by Gettler-Ryan, Inc. in the waste profile.

Thank you for the opportunity to be of service. Should you have any questions regarding this matter, please do not hesitate to contact me or our Customer Service at (800) 204-4242.

Sincerely,

FORWARD, INC.

Brad Bonner
Sales Manager

BB/sr

F:\FORWARD\MERGE FORMS\CONSULTANT CONFIRMATION OF DISPOSAL

Date 08/06/98
Time 09:54:12

FORWARD. INC.

MATERIAL ANALYSIS REPORT BY ACCOUNT

For the period 06/10/98 - 08/05/98
Detailed report for sites 00 - 99

Accounts 710123 - 710123 Customer Types - Z Materials - ZZZZZZZZZZ Material Types - Z

Date	Material	Type	Customer	Type	Tickets	Count	Est. vol.	Act. Vol.	Est. Wt.	Actual Wt.
06/25/98	COV CII F	Q	710123	B	02-036874	1	9	9	5.52	5.52
07/16/98	COV CII F	Q	710123	B	01-091864	1	1	1	0.39	0.39
	TOSCO MARKETING (D.DeWITT)				2	2	10	10	5.91	5.91
	Average					1	5	5	3.00	3.00
	Report Total				2	2	10	10	5.91	5.91
	Report Average					1	5	5	3.00	3.00