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Environmental Health

Well EW-3 Installation Report for Fuel Leak Case No. RO0000324, Livermore Gas and Mini-Mart, 160 Holmes Street, Livermore, California

Date:
June 7, 2007

Project No.:
015-01-027

Prepared For:
Manwel and Samira Shuwayhat
54 Wolfe Canyon Road
Kentfield, California 94904

Allterra Environmental, Inc.
849 Almar Avenue, Suite C, No. 281
Santa Cruz, California 95060

Phone: (831) 425-2608
Fax: (831) 425-2609
http://www.allterraenv.com

June 7, 2007
Project No.: *015-01-027*

Manwel and Samira Shuwayhat
Livermore Gas and Mini Mart
54 Wolfe Canyon Road
Kentfield, California 94904

SUBJECT: Well EW-3 Installation Report for Fuel Leak Case No. RO0000324, Livermore Gas and Mini Mart, 160 Holmes Street, Livermore, California

Dear Mr. and Mrs. Shuwayhat:

On your behalf, Allterra Environmental, Inc. (Allterra) has prepared this Well EW-3 Installation Report for the property located at 160 Holmes Street in Livermore, California (Site). The purpose of this well installation was to provide an extraction point for highly impacted groundwater located between the fuel dispensers and UST pit. Site work was conducted in accordance with the Regional Water Quality Control Board (RWQCB), Alameda County Environmental Health Department guidelines, and Allterra's Site Investigation and Groundwater Monitoring Field Protocol presented in Appendix A.

Site Location and Description
The Site is located on the southwest corner of Holmes Street and Second Street at 160 Holmes Street in Livermore, California (Figure 1). The Site currently operates as a service station and convenience store. Pertinent site features, such as monitoring well locations, are presented in Figure 2.

Site Geology and Hydrogeology
Site geology consists primarily of clayey sand and silty clay fill material from surface grade to approximately 8 feet below ground surface (bgs). Underlying the fill material, fine grain material generally consisting of silty clay, sandy silt, and silty sand occur to approximately 28 feet bgs. A generally continuous coarse-grained material layer consisting of sandy gravel with varying amounts of clay/silt occurs from approximately 28 feet bgs to depths ranging from approximately 54 to 69 feet bgs, where a sandy to silty clay layer exists. The thickness of the clay layer has not been determined; however, a thickness of at least five feet was confirmed in boring MW-1B.

Initial groundwater occurs beneath the upper layer of fine-grained material at a depth of approximately 28 feet bgs and a suspected clay aquitard underlies the coarse-grained layer at depths between approximately 54 and 69 feet bgs. The potentiometric surface, as measured in monitoring wells, occurs at depths between 18 and 24 feet bgs. This difference between initial and static groundwater levels suggests a partially confined shallow aquifer. Based on recent quarterly groundwater monitoring data, groundwater generally flows to the north-northwest at an estimated gradient of 0.008 foot per foot (ft/ft).

Well Installation Activities

The following is a discussion of well installation activities conducted at the Site. The purpose of this scope of work was to provide an extraction point for high levels of dissolved fuel-related contaminants between fuel dispensers and the existing UST pit.

Pre-Field Activities

Well Drilling Permit

Prior to conducting well installation field activities, well installation permit 27080 was obtained from the Zone 7 Water Agency. A copy of the permit is enclosed as Appendix B.

Underground Utility Locating

Underground Service Alert (USA) was notified to identify public utilities in the work area prior to commencing drilling activities.

Field Activities

Extraction Well Drilling

On May 10, 2007, Allterra personnel supervised in the drilling of one soil boring, designated EW-3. Using a truck-mounted hollow-stem auger drill rig, boring EW-3 was advanced to a depth of approximately 35 feet bgs, and was completed as a groundwater extraction well. The location of the extraction well is presented in Figure 2.

Soil Classification and Sample Collection

During drilling, soil from the borings was described and classified under the Unified Soil Classification System (USCS). Soil samples were collected from well-boring EW-3 at depths of 5, 10, 15, 20, 25, 30, and 35 feet bgs to determine soil lithology. No soil samples were submitted for laboratory analysis. The boring log for EW-3 is presented in Appendix C.

Well Construction

Extraction well EW-3 was installed to approximately 35 feet bgs and was constructed of four-inch diameter Schedule 40 Polyvinyl Chloride (PVC) well casing with 0.020-inch machine slotted screen from 25 to 30 feet bgs. The annular space was backfilled with No. 3, clean, well-sorted sand from the bottom of the casing to approximately two foot above the top of the screened interval. A two-foot bentonite transition seal was used and the well was sealed to surface grade using neat cement containing approximately 5% bentonite powder. The boring log with well construction details is presented in Appendix C.

Well Development and Sampling

On May 16, 2007, Allterra personnel developed newly installed well EW-3. Well development activities included the measuring of the static groundwater level to 0.01 feet, evaluating groundwater in the well for the presence of petroleum hydrocarbons, and developing well EW-3 using a combined surging and purging technique. Allterra's well development field protocol is included in Appendix A and well development field logs are included in Appendix D.

On May 18, 2007, Allterra personnel sampled groundwater from newly installed well EW-3. The well sampling field log is presented in Appendix D.

Laboratory Analysis of Groundwater Samples

One groundwater sample was collected from EW-3 and analyzed for total petroleum hydrocarbons as gasoline (TPHg) as well as diesel (TPHd) by EPA method 8015C, for benzene, toluene, ethylbenzene, xylenes (BTEX), and methyl tert-butyl ether (MTBE) by EPA Method 8021B, and for the fuel oxygenates MTBE, ethyl tert-butyl ether (ETBE), tert-amyl methyl ether (TAME), di-isopropyl ether (DIPE), tert-butyl alcohol (TBA), and methanol, ethanol, 1,2-dibromoethane (EDB), and 1,2-dichloroehtane (1,2-DCA) by EPA Method 8260B. The certified analytical report, including quality assurance and quality control (QA/QC) data for the samples is included in Appendix F and analytical results are presented in Table 2.

Waste Disposal

Soil cuttings generated during well installation activities are temporarily stored on-site in labeled, DOT-approved 55-gallon drums. Soil drums will be sampled, analyzed, and profiled for disposal under waste manifest at an appropriate disposal facility.

Purge water generated during well development is temporarily stored on-site in a 6,500 gallon poly-tank pending permitted discharge to the sanitary sewer.

Results of Well Installation Activities

Subsurface Conditions

Well EW-3 is located in the concrete driving surface located outside the covered canopy between existing fuel dispensers and UST pit. Generally, subsurface soils consist primarily of silty clay material from surface grade to approximately 19 feet bgs, silty clay from approximately 20 to 30 feet bgs, and a silt, sand, gravel mixture from 30 to 35 feet bgs. Initial groundwater was measured at 31 feet bgs and the groundwater level stabilized at 28 feet bgs. The boring log for EW-3 is presented in Appendix C. Depth to groundwater measurements are presented in Table 1.

Analytical Results

Elevated levels of petroleum hydrocarbons were detected in the groundwater sample collected from EW-3. Dissolved TPHg was detected at a concentration of 15,000 micrograms per liter (µg/L), TPHd at 840 µg/L, benzene at 1,500 µg/L, and MTBE at 170,000 µg/L. TBA, TAME, DIPE, ETBE, EDB, 1,2-DCA, ethanol, and methanol were not detected at or above laboratory detection limits. Groundwater analytical results from well samples are presented in Table 2.

Discussion of Results

Interim groundwater extraction from previously installed extraction wells EW-1 and EW-2 resulted in high flow rates (10 to 14 gallons per minute [gpm]) and a partially diluted influent stream (TPHg average of 2,600 µg/L and MTBE average of 10,000 µg/L). This prompted the

installation of extraction well EW-3 with screen interval from 25 to 30 feet bgs to target the highest levels of contamination while producing a more manageable groundwater extraction flow rate (expected to be between 1 and 5 gpm).

Initial results of the EW-3 installation suggest that the screen interval has successfully targeted the zone of high level dissolved contamination, with TPHg levels of 15,000 µg/L and MTBE of 170,000 µg/L. However, the drawback of the short screen interval is the slow groundwater recharge rate encountered during well development activities. The slow groundwater recharge rate could be attributed to several factors, such as a seasonally low water table, a smeared borehole, and/or an insufficient EW-3 screen interval.

Conclusions
Based on previous and current site data, Allterra concludes the following:

- Subsurface soils encountered during drilling of EW-3 were consistent with previous subsurface investigations.
- Groundwater in EW-3 equilibrated at approximately 28 feet below top-of-casing, which is roughly 4 feet deeper than recently measured depths to water in on-site wells EW-1 and EW-2.
- A slow groundwater recharge rate was observed during well development activities.
- High levels of dissolved TPHg (15,000 µg/L), benzene (1,500 µg/L), and MTBE (170,000 µg/L) were detected in EW-3.

Recommendations
Based on the conclusions presented above, Allterra recommends the following:

- Pilot test well EW-3 as an extraction point for interim remediation.

Limitations
Allterra prepared this report for the use of Livermore Gas and Mini Mart and ACEHS in evaluating groundwater quality at selected on-site locations at the time of this study. Statements, conclusions, and recommendations in this report are based solely on the field observations and analytical results related to work performed by Allterra and there is no warranty, expressed or implied. Site conditions and data can change over time; therefore, data presented in this report is only applicable to the timeframe of this study. Allterra's services have been performed in accordance with environmental principles generally accepted at this time and location.

Should you have any questions, please contact Allterra at (831) 425-2608.

Sincerely,
Allterra Environmental, Inc.

Erik Allen
Environmental Scientist

Michael Killoran, P.G. 6670
Senior Geologist

PROFESSIONAL GEOLOGIST
MICHAEL J. KILLORAN
No. 6670
STATE OF CALIFORNIA

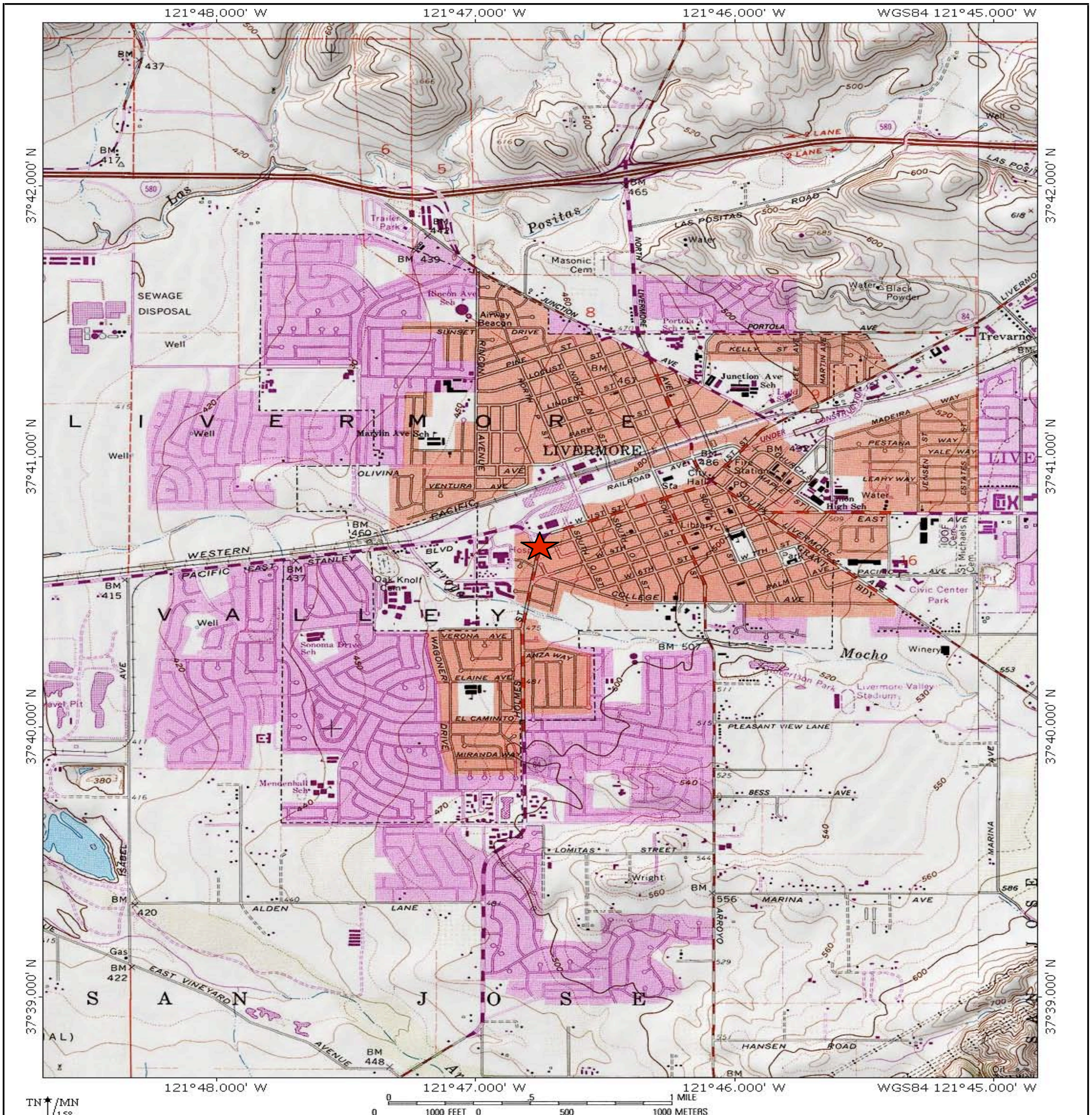
Attachments:
Figure 1, Site Vicinity Map
Figure 2, Site Plan

Table 1, Groundwater Elevation Data
Table 2, Groundwater Analytical Results

APPENDIX A, Site Investigation Field Protocol
APPENDIX B, Well Installation Permit
APPENDIX C, Boring Log and Well Completion Report
APPENDIX D, Well Development and Well Sampling Field Logs
APPENDIX E, Certified Groundwater Analytical Reports and Chain of Custody

cc: Jerry Wickham, ACEHS

FIGURES 1-2



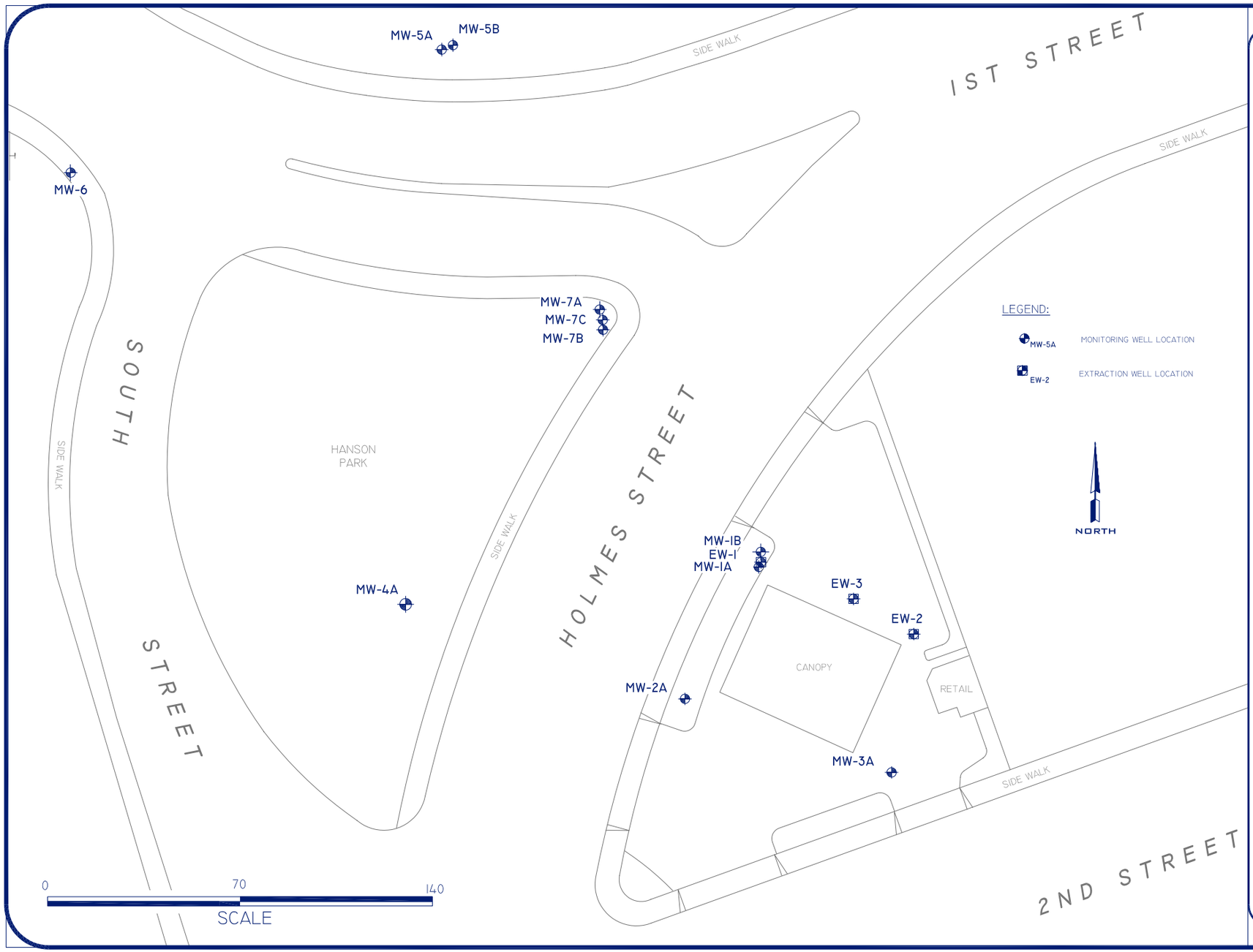
Site Vicinity Map

Livermore Gas and Minimart
160 Holmes Street
Livermore, California

Figure 1

6/6/07

ALLTERRA
849 Almar Avenue, Suite C, No. 281
Santa Cruz, California
http://www.allterraenv.com



General Notes

STAMP

160 HOLMES STREET
SOIL AND GROUNDWATER INVESTIGATION AND REMEDIATION PROJECT

PREPARED BY: ALLTERRA

No.	Revision/Issue	Date
0	DRAFT/REVIEW	5/29

Firm Name and Address
ALLTERRA ENVIRONMENTAL, INC.
849 ALMAR AVE., SUITE C, No. 281
SANTA CRUZ, CALIFORNIA
831-425-2608 FAX 831-425-2609
WWW.ALLTERRAENV.COM

Sheet Name and Address

SITE PLAN

160 HOLMES STREET
LIVERMORE, CALIFORNIA

Project	Sheet
015-01-027	FIGURE 2
Date: 5-29-07	
Scale: SEE DRAWING	

FNAME
REVDATE
USER

TABLES 1-2

Table 1
Groundwater Elevation Data
160 Holmes Street, Livermore

Monitoring Well ID	Date	Top of Casing Elevation* (feet, msl)	Screen Interval (feet bgs)	Depth to Groundwater (feet)	Groundwater Elevation (feet, msl)
EW-3	5/18/07	NM	25-30	29.25	NC

Notes:
MSL: Mean sea level
bgs: Below ground surface
NM: Well not measured
NC: Not calculated

Table 2

Groundwater Analytical Results

160 Holmes Street, Livermore, California

Well ID	Date Collected	Groundwater Elevation (feet above MSL)	Total Petroleum Hydrocarbonss (µg/L)		Aromatic Volatile Organic Compounds (µg/L)					Oxygenated Volatile Organics (µg/L)							Lead Scavengers (µg/L)	
			Gasoline	Diesel	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE (8021B)	TAME	TBA	DIPE	ETBE	MTBE	ethanol	methanol	EDB	1,2-DCA
EW-3	5/18/07	---	15,000	840	1,500	340	<50	530	170,000	<5,000	<50,000	<5,000	<5,000	170,000	<500,000	<5,000,000	<5,000	<5,000

Notes:

Samples analyzed for TPHg and TPHd by EPA Method 8015Cm, BTEX by EPA Method 8021B, MTBE by EPA Method 8021B and/or 8260B, and the fuel oxygenates DIPE, ETBE,

µg/L = micrograms per liter
NA = Not Analyzed
EDB = 1,2-Dibromoether
TBA = tert-Butanol
1,2-DCA = 1,2-Dichloroethane
MTBE = methyl tertiary butyl ether
DIPE =Di-isoprpopyl Ether
ETBE = Ethyl tert-Butyl Ether
TAME - tert-Amyl Methyl Ether

ALLTERRA

APPENDIX A
Site Investigation Field Protocol

APPENDIX A
Site Investigation Field Protocol

Monitoring Well Installation/Construction and Soil Sampling: A truck-mounted, hollow-stem auger drill rig is used to drill boreholes for monitoring wells. The borehole diameter is a minimum of 4-inches larger than the outside diameter of the casing when installing well screen. The hollow-stem auger provides minimal interruption of drilling while permitting soil sampling at desired intervals. An Allterra geologist or engineer will continuously log each borehole during drilling and will constantly check drill cuttings for indications of both the first recognizable occurrence of groundwater and volatile organic compounds using a portable photoionization detector (PID).

During drilling, soil samples are collected in 2-inch by 6-inch brass sleeves. Three brass tubes are placed in an 18-inch long split-barrel (spoon) sampler of the appropriate inside-diameter. The split-barrel sampler is driven its entire length using a 140-pound hammer, or until refusal. The sampler is extracted from the borehole and the bottom brass sleeve is capped with Teflon® sheets and plastic caps, labeled, and stored on ice. The two other brass sleeves are used for soil lithology classification (according to the Unified Soil Classification System) and field screening using a PID.

All soil borings not converted into monitoring wells are backfilled with a mixture of neat cement with 5% bentonite powder to surface grade.

Monitoring wells are constructed with blank and factory-perforated Schedule 40 polyvinyl chloride (PVC). The perforated interval consists of slotted casing, generally with 0.02-inch wide by 1.5-inch long slots, with 42 slots per foot. A threaded PVC cap is secured to the bottom of the casing. After setting the casing inside the hollow-stem auger, sand or gravel filter material is poured into the annular space to fill from boring bottom to generally 1 to 2 feet above the screened interval. A 1- to 2-foot thick bentonite seal is set above this sand/gravel pack. Neat cement containing approximately 5% bentonite is then tremmied into the annular space from the top of the bentonite plug to approximately 0.5 feet below ground surface. A traffic-rated well box is installed around each wellhead.

Monitoring Well Development: After installation, the wells are thoroughly developed to remove residual drilling materials from the wellbore and fine material from the filter pack. Typically, 10 well volumes are removed from the well and field parameters, such as pH, temperature, and conductivity, are recorded between each well volume. Well development techniques used may include surging, swabbing, bailing, and/or pumping All development water is collected either in drums or tanks for temporary storage, and properly disposed of pending laboratory analytical results. Following development, the well is typically allowed to stand undisturbed for a minimum of 48 hours before its first sampling.

Well Monitoring and Sample Collection: A Teflon bailer or submersible pump was used to purge a minimum of three well volumes of groundwater from each well. After each well volume is purged, field parameters such as pH, temperature, and conductivity are recorded. Wells are purged until field parameters have stabilized or a maximum of 10 well volumes of groundwater have been removed. If the well yield is low and the well was dewatered, the well is allowed to recharge to 80% of its original volume prior to sample collection. Field parameter measurements and pertinent qualitative observations, such as groundwater color and odor, are recorded in Groundwater Sampling Field Logs. Groundwater samples are collected in appropriate bottles and stored on ice for delivery, under chain-of-custody documentation, to a state-certified laboratory for analysis.

Sample Identification and Chain-Of-Custody Procedures: Each sample container submitted for analysis is labeled to identify the job number, date, time of sample collection, a sample number unique to the sample, any in-field measurements made, sampling methodology, name(s) of on-site personnel, and any other pertinent field observations also recorded on the field excavation or boring log. During shipment, the person with custody or the samples will relinquish them to the next person by signing the chain-of-custody form(s) and noting the date and time.

Equipment Decontamination: All drilling, sampling, well construction, and well development equipment is cleaned in a solution of laboratory grade detergent and distilled water or steam cleaned before use at each sampling point.

Field Personnel: During groundwater sampling activities, sampling personnel will wear pertinent attire to minimize risks to health and safety. Field personnel will also use a pair of clean, powderless, surgical gloves for each successive sampling point. Used surgical gloves will be placed into waste drums for future disposal.

Waste Disposal: Soil generated during drilling will be stored in DOT-approved 55-gallon waste drums pending proper disposal. Water generated during well development, purging, and sampling activities will be placed into DOT-approved 55-gallon waste drums pending proper disposal and/or permitted discharge to the sanitary sewer.

APPENDIX B
Well Installation Permit

ZONE 7 WATER AGENCY

100 NORTH CANYONS PARKWAY, LIVERMORE, CALIFORNIA 94551 VOICE (925) 454-5000 FAX (925) 454-5728

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT 160 Helmes St.
Livermore, CA 94550

California Coordinates Source _____ ft. Accuracy _____ ft.
CCN _____ ft. CCE _____ ft.
APN 97-82-7-7

CLIENT
Name Manwel & Samira Shuwayhat
Address 54 Wolfe Canyon Rd. Phone _____
City Kentfield, CA Zip 94904

APPLICANT
Name Alkira Environmental, Inc. (Erik Allen)
Fax _____
Address 849 Almar Ave, Suite G #281 Phone 831-425-2608
City Santa Cruz Zip 95060

TYPE OF PROJECT
- ✓ Well Construction
  - Cathodic Protection
  - Water Supply
  - ✓ Monitoring
- Geotechnical Investigation
  - General
  - Contamination
  - Well Destruction

PROPOSED WELL USE
- New Domestic
- Municipal
- Industrial
- ✓ Dewatering
- Irrigation
- ✓ Remediation
- ✓ Groundwater Monitoring
- Other _____

DRILLING METHOD
- Mud Rotary
- Air Rotary
- ✓ Hollow Stem Auger
- Cable Tool
- Direct Push
- Other _____

DRILLING COMPANY Exploration GeoServices
DRILLER'S LICENSE NO. 484288

WELL PROJECTS
- Drill Hole Diameter 12 in. Maximum
- Casing Diameter 4 in. Depth 35 ft.
- Surface Seal Depth 23 ft. Number EW-3(1)

SOIL BORINGS
- Number of Borings _____ Maximum
- Hole Diameter _____ in. Depth _____ ft.

ESTIMATED STARTING DATE 5/15/07
ESTIMATED COMPLETION DATE 5/15/07

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

APPLICANT'S SIGNATURE Erik Allen Date 4/17/07
Erik Allen

ATTACH SITE PLAN OR SKETCH

PERMIT NUMBER 27080
WELL NUMBER 3S/2E-17C33
APN 097-0082-007-07

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.
3. An access port at least 0.5 inches in diameter is required on the wellhead for water level measurements.
4. A sample port is required on the discharge pipe near the wellhead.

(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. Submit to Zone 7 within 60 days after the completion of permitted work the well installation report including all soil and water laboratory analysis results.

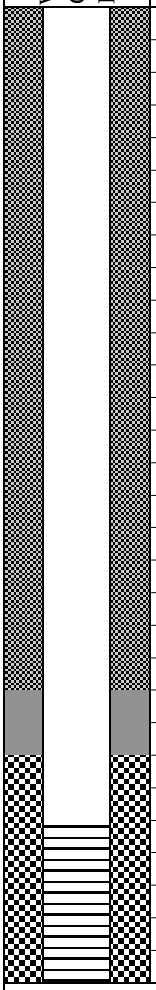
Approved Wyman Hong Date 5/7/07
Wyman Hong

Revised: April 27, 2005

APPENDIX C
Boring Log and Well Completion Report

Field Well/Boring Log

Field location of boring (See attached Site Plan)	**Boring ID** **EW-3**	Page: 1 of 2
	Project Number: 015-01-027	
	Date: 5/10/07	
	Location: 160 Holmes St., Livermore, CA	
	Logged By: MK	
Drilling Method/Boring Diameter (inches): Hollow stem auger/ 12	Driller: Exploration Geoservices	
	Casing installation data: 4-inch casing, 12-inch bore hole. Screen interval: 25 to 30 feet below ground surfa (bgs); blank interval: 0.5 to 25 feet and 30 to 35 feet bgs.	

Well Construction Details	PID (ppm)	Blows/ft. or PSI	Sample ID	Depth (feet)	Sample	Soil Group Symbol (USGS)	Description
				1			6" concrete
				2			
				3			
				4			
			(No samples	5		SM	Brown silty sand and silt, moist, medium dense, no PO
			collected for	6			
			analysis)	7			
				8			
				9			
				10			
				11			
				12			
				13			
				14			
				15		ML	Brown silt and clay, moist to very moist, medium, slight PO
				16			
				17			
				18			
				19			
				20			Grayish brown silt with clay and sand, moist, medium, strong PO
				21			
				22			
				23			
				24			
				25			Grayish brown silt with clay and sand, moist, medium, strong PO
				26			
				27			
				28			
				29			
				30			Same but stronger PO and very moist

Water Level Information		
Date	Time	Depth (feet)
5/10/07	(initial)	~31'
5/10/07	(static)	~28'

When applicable 31-60 feet bgs on page 2

Notes:

- = Cement
- = Bentonite
- = #3 Sand
- = 0.002 inch slotted PVC screen
- = Blank PVC casing

Field Well/Boring Log

Field location of boring (See attached Site Plan)	**Boring ID** **EW-3**	Page: 2 of 2
	Project Number: 015-01-027	
	Date: 5/10/07	
	Location: 160 Holmes St., Livermore, CA	
	Logged By: MK	
Drilling Method/Boring Diameter (inches): Hollow stem auger/8	Driller: Exploration Geoservices	
	Casing installation data: 4-inch casing, 12-inch bore hole. Screen interval: 25 to 30 feet below ground surfa (bgs); blank interval: 0.5 to 25 feet and 30 to 35 feet bgs.	

Well Construction Details	PID (ppm)	Blows/ft. or PSI	Sample ID	Depth (feet)	Sample	Soil Group Symbol (USGS)	Description
				31			
				32			
				33		GM	Grayish brown silt/sand/gravel, wet, medium/stiff, SPO
				34			
				35			
				36			Total depth of well: 35 feet bgs.
				37			
				38			
				39			
				40			
				41			
				42			
				43			
				44			
				45			
				46			
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				57			
				58			
				59			
				60			
				61			

Notes:

- = Cement
- = Bentonite
- = #3 Sand
- = 0.002 inch slotted PVC screen
- = Blank PVC casing

▽ = initial water level

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

APPENDIX D
Well Development and Well Sampling Field Logs

ALLTERRA

Groundwater Sampling Field Log

Site Address 160 Holmes	Date 5-18-07
Project Number	Field Personnel D.L.

Monitoring Well Information

Monitoring Well ID EW-3	Monitoring Well Diameter (inches) 4"
Depth to Water (feet) 29.25	Water Column (feet) 5.75
Total Depth (feet) 35'	80% Recharge Depth (feet)
Depth to Product (feet)	1 Well Volume (gallons) 3.80
Comments	

Field Measurements and Observations

Time	Depth to Water	Purge Volume	Conduc-tivity	Temper-ature	pH	Turbidity	Color	Odor
|	|	|	1224 µS	19.2°C	7.99	med.	brn.	med.
			1222 µS	19.1°C	7.75	med.	brn.	med.

Total Purge Volume	Comments

Groundwater Sampling Information

Sample ID EW-3	Sample Time ———
Sample Containers (Number/Type) 4 Voa / 1 L	
Comments	

Groundwater Sampling Field Log

Site Address	Date
Project Number	Field Personnel

Monitoring Well Information

Monitoring Well ID	Monitoring Well Diameter (inches)
Depth to Water (feet)	Water Column (feet)
Total Depth (feet)	80% Recharge Depth (feet)
Depth to Product (feet)	1 Well Volume (gallons)
Comments	

Field Measurements and Observations

Time	Depth to Water	Purge Volume	Conduc-tivity	Temper-ature	pH	Turbidity	Color	Odor

Total Purge Volume	Comments

Groundwater Sampling Information

Sample ID	Sample Time
Sample Containers (Number/Type)	
Comments	

Allterra Environmental, Inc.

Well Development Field Log

Site Address 160 Holmes	Date 5-16-07
Project Number	Field Personnel D.L.

Monitoring Well Information

Monitoring Well ID EW-3	Monitoring Well Diameter (inches) 4"
Depth to Water (feet) 26.83	Water Column (feet) 8.17
Total Depth (feet) 35'	80% Recharge Depth (feet)
Depth to Product (feet)	1 Well Volume (gallons) 5.39
Comments	

Field Measurements and Observations

Time	Depth to Water	Purge Volume	Conductivity	Temperature	pH	Turbidity	Color	Odor
			1638 µS	20.6°C	6.67	high	brown	med. high
			1597 µS	19.9°C	6.90			
			1539 µS	19.8C	6.94			
			1457 µS	20.7°C	7.52			

Well ran dry

Purged @ 5 gallons per 45 minutes

Total Purge Volume

Groundwater Sampling Information

Sample ID EW-3	Sample Time
Sample Containers (Number/Type) 4 VOa	
Comments	

flow rate:

APPENDIX E
Certified Groundwater Analytical Reports and Chain of Custody

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Allterra Environmental, Inc 849 Almar Ave, Ste. C #281 Santa Cruz, CA 95060	Client Project ID: #015-01-027; 160 Holmes	Date Sampled: 05/18/07
		Date Received: 05/29/07
	Client Contact: James Allen	Date Reported: 06/04/07
	Client P.O.:	Date Completed: 06/04/07

WorkOrder: 0705686

June 04, 2007

Dear James:

Enclosed are:

1). the results of **1** analyzed sample from your **#015-01-027; 160 Holmes project,**

2). a QC report for the above sample

3). a copy of the chain of custody, and

4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Best regards,

Angela Rydelius, Lab Manager

0705686

ALLTERRA

849 Almar Avenue, Suite C, #281

Website: www.allterraenv.com

Phone: (831) 425-2608 Facsimile: (831) 425-2609

Chain of Custody Record

Turn Around Time (circle one) RUSH 24HR 48HR 72HR 5 Day

Report and Bill to: Allterra Environmental, Inc.

Project Number: 015-01-027

Project Location: Livermore

Project Name: 160 Holmes

Sampler Signature:

Sample ID	Sample Collection		Sample Containers		Matrix					Preservation				TPHg, BTEX&MTBE (EPA 8015/8021)	TPHd (EPA 8015)	MTBE (EPA 8260B)	5 -fuel oxys (EPA 8260)	Ethanol and Methanol (EPA 8260)	Lead Scavengers (8260)	Total HVOCs (EPA 8260)	Hardness/Total dissolved solids	CAM-17 Metals (EPA 6010/6020)	LUFT 5 Metals (EPA 6010/6020)	PAH's/ PNA's (EPA 8270,625/8310)	Fish Toxicity/Bioassay	Lead (EPA 6010/200.9/200.8)	Turbidity	EDF required
	Date	Time	Number of Containers	Container Type	Air	Water	Soil	Sludge	Other	Ice	HCl	HNO_3	Other															
4\ EW-3	5/18/07		4/1	VOA/L		X				X	X			X	X		X	X	X									X

5/25/07		Time:	Received By:
Received By:	Date: 5/29/07	Time: 845	Received By:
Received By:	Date:	Time:	Received By:

Comments: REC'D SEALED & INTACT VIA c/o

ICE/t° 22.6

GOOD CONDITION ✓ APPROPRIATE

HEAD SPACE ABSENT ___ CONTAINERS ✓

DECHLORINATED IN LAB ___ PRESERVED IN LAB ___

PRESERVATION VOAS ✓ O&G ___ METALS ___ OTHER ___

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0705686 **ClientID: ATRS**

☑ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty

Report to:
James Allen
Allterra Environmental, Inc
849 Almar Ave, Ste. C #281
Santa Cruz, CA 95060

Email: allterraenvironmental@yahoo.com
TEL: 831-425-2608 FAX: 831-425-2609
ProjectNo: #015-01-027; 160 Holmes
PO:

Bill t
Accounts Payable
Allterra Environmental
849 Almar Ave, Ste. C #281
Santa Cruz, CA 95060
amanda@allterraenv.com

Requested TAT: 5 days

Date Received **05/29/2007**
Date Printed: **05/29/2007**

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
0705686-001	EW-3	Water	05/18/07	☐	C	A	A	B								

Test Legend:

1	9-OXYS_W	2	G-MBTEX_W	3	PREDF REPORT	4	TPH(D)_W	5	
6		7		8		9		10	
11		12							

Prepared by: Maria Venegas

Comments:

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

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"When Quality Counts"

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Telephone: 877-252-9262 Fax: 925-252-9269

Sample Receipt Checklist

Client Name: **Allterra Environmental, Inc**

Date and Time Received: **05/29/07 9:18:13 AM**

Project Name: **#015-01-027; 160 Holmes**

Checklist completed and reviewed by: Maria Venegas

WorkOrder N°: **0705686** Matrix Water

Carrier: CA OverNight

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature	Cooler Temp: 22.6°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	No VOA vials submitted ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
TTLC Metal - pH acceptable upon receipt (pH<2)?	Yes ☐	No ☐	NA ☑

Client contacted: Date contacted: Contacted by:

Comments:

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Allterra Environmental, Inc 849 Almar Ave, Ste. C #281 Santa Cruz, CA 95060	Client Project ID: #015-01-027; 160 Holmes	Date Sampled: 05/18/07
		Date Received: 05/29/07
	Client Contact: James Allen	Date Extracted: 05/31/07
	Client P.O.:	Date Analyzed 05/31/07

Oxygenated Volatile Organics + EDB and 1,2-DCA by P&T and GC/MS*

Extraction Method: SW5030B Analytical Method: SW8260B Work Order: 0705686

					Reporting Limit for DF =1	
Lab ID	0705686-001C					
Client ID	EW-3					
Matrix	W					
DF	10000				S	W
Compound	**Concentration**				ug/kg	µg/L
tert-Amyl methyl ether (TAME)	ND<5000				NA	0.5
t-Butyl alcohol (TBA)	ND<50,000				NA	5.0
1,2-Dibromoethane (EDB)	ND<5000				NA	0.5
1,2-Dichloroethane (1,2-DCA)	ND<5000				NA	0.5
Diisopropyl ether (DIPE)	ND<5000				NA	0.5
Ethanol	ND<500,000				NA	50
Ethyl tert-butyl ether (ETBE)	ND<5000				NA	0.5
Methanol	ND<5,000,000				NA	500
Methyl-t-butyl ether (MTBE)	170,000				NA	0.5
Surrogate Recoveries (%)						
%SS1:	96					
Comments	i					

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis.

surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.

h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; j) sample diluted due to high organic content/matrix interference; J) analyte detected below quantitation limits; k) reporting limit near, but not identical to our standard reporting limit due to variable Encore sample weight; m) reporting limit raised due to insufficient sample amount; n) results are reported on a dry weight basis; p) see attached narrative.

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Allterra Environmental, Inc	Client Project ID: #015-01-027; 160 Holmes	Date Sampled: 05/18/07
849 Almar Ave, Ste. C #281		Date Received: 05/29/07
Santa Cruz, CA 95060	Client Contact: James Allen	Date Extracted: 05/30/07-06/01/07
	Client P.O.:	Date Analyzed 05/30/07-06/01/07

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE*

Extraction method SW5030B Analytical methods SW8021B/8015Cm Work Order: 0705686

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	EW-3	W	15,000,a,i	170,000	1500	340	ND<50	530	100	116

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	5.0	0.5	0.5	0.5	0.5	1	µg/L
	S	NA	NA	NA	NA	NA	NA	1	mg/Kg

* water and vapor samples and all TCLP & SPLP extracts are reported in ug/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples in mg/L.

cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; j) reporting limit raised due to high MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern; n) TPH(g) range non-target isolated peaks subtracted out of the TPH(g) concentration at the client's request; p) see attached narrative.

DHS ELAP Certification N° 1644

Angela Rydelius, Lab Manager

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Allterra Environmental, Inc 849 Almar Ave, Ste. C #281 Santa Cruz, CA 95060	Client Project ID: #015-01-027; 160 Holmes	Date Sampled: 05/18/07
		Date Received: 05/29/07
	Client Contact: James Allen	Date Extracted: 05/29/07
	Client P.O.:	Date Analyzed 05/30/07

Diesel Range (C10-C23) Extractable Hydrocarbons as Diesel*

Extraction method SW3510C Analytical methods SW8015C Work Order: 0705686

Lab ID	Client ID	Matrix	TPH(d)	DF	% SS
0705686-001B	EW-3	W	840,d,i	1	90

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	µg/L
	S	NA	NA

* water samples are reported in µg/L, wipe samples in µg/wipe, soil/solid/sludge samples in mg/kg, product/oil/non-aqueous liquid samples in mg/L, and all DISTLC / STLC / SPLP / TCLP extracts are reported in µg/L.

cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) aged diesel? is significant); d) gasoline range compounds are significant; e) unknown medium boiling point pattern that does not appear to be derived from diesel; f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; k) kerosene/kerosene range/jet fuel range; l) bunker oil; m) fuel oil; n) stoddard solvent/mineral spirit.

DHS ELAP Certification N° 1644

Angela Rydelius, Lab Manager

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QC SUMMARY REPORT FOR SW8015C

W.O. Sample Matrix: Water QC Matrix: Water WorkOrder 0705686

EPA Method SW8015C	Extraction SW3510C	BatchID: 28310	Spiked Sample ID: N/A

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(d)	N/A	1000	N/A	N/A	N/A	109	108	1.35	N/A	N/A	70 - 130	30
%SS:	N/A	2500	N/A	N/A	N/A	105	93	11.7	N/A	N/A	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:

NONE

BATCH 28310 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0705686-001B	05/18/07	05/29/07	05/30/07 10:01 PM				

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

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

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

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

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

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QC SUMMARY REPORT FOR SW8260B

W.O. Sample Matrix: Water QC Matrix: Water WorkOrder 0705686

EPA Method SW8260B **Extraction SW5030B** **BatchID: 28331** **Spiked Sample ID: 0705656-043A**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
tert-Amyl methyl ether (TAME)	ND	10	99.7	102	2.59	89.6	96.8	7.78	70 - 130	30	70 - 130	30
t-Butyl alcohol (TBA)	ND	50	88.6	86.2	2.74	95.5	94.6	0.995	70 - 130	30	70 - 130	30
1,2-Dibromoethane (EDB)	ND	10	98.5	110	10.7	88.2	96.3	8.74	70 - 130	30	70 - 130	30
1,2-Dichloroethane (1,2-DCA)	ND	10	104	105	0.557	98.4	103	4.30	70 - 130	30	70 - 130	30
Diisopropyl ether (DIPE)	ND	10	107	109	1.20	95	102	6.63	70 - 130	30	70 - 130	30
Ethanol	ND	500	107	108	0.600	104	104	0	70 - 130	30	70 - 130	30
Ethyl tert-butyl ether (ETBE)	ND	10	104	107	2.69	91.5	99.2	8.14	70 - 130	30	70 - 130	30
Methanol	ND	2500	101	101	0	103	101	1.59	70 - 130	30	70 - 130	30
Methyl-t-butyl ether (MTBE)	ND	10	110	117	5.75	98.8	104	5.58	70 - 130	30	70 - 130	30
%SS1:	101	10	114	112	2.38	106	109	3.44	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:

NONE

BATCH 28331 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0705686-001C	05/18/07	05/31/07	05/31/07 5:02 PM				

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

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

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

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

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

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QC SUMMARY REPORT FOR SW8021B/8015Cm

W.O. Sample Matrix: Water QC Matrix: Water WorkOrder 0705686

EPA Method SW8021B/8015Cm **Extraction SW5030B** **BatchID: 28303** **Spiked Sample ID: 0705629-006A**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex)£	ND	60	96.7	96	0.815	109	110	1.19	70 - 130	30	70 - 130	30
MTBE	ND	10	94.1	103	8.79	113	110	2.88	70 - 130	30	70 - 130	30
Benzene	ND	10	87.6	92.8	5.80	96.5	95.4	1.13	70 - 130	30	70 - 130	30
Toluene	ND	10	82	84.9	3.54	106	105	0.615	70 - 130	30	70 - 130	30
Ethylbenzene	ND	10	90.5	82.9	8.74	103	103	0	70 - 130	30	70 - 130	30
Xylenes	ND	30	95.3	95.7	0.345	113	113	0	70 - 130	30	70 - 130	30
%SS:	106	10	94	91	3.23	99	98	0.995	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:

NONE

BATCH 28303 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0705686-001A	05/18/07	05/30/07	05/30/07 8:38 PM	0705686-001A	05/18/07	06/01/07	06/01/07 1:54 AM

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

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

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

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

cluttered chromatogram; sample peak coelutes with surrogate peak.