

Atlantic Richfield Company

Shannon Couch
Operations Project Manager

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June 13, 2011

Re: Vapor Intrusion Assessment Report
Atlantic Richfield Company Station #2035
1001 San Pablo Avenue, Albany, California
ACEH Case #RO0000100

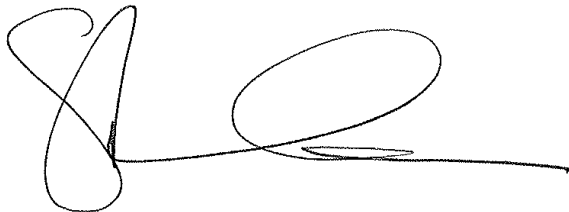
RECEIVED

10:48 am, Jun 14, 2011

Alameda County
Environmental Health

I declare that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached document are true and correct.

Submitted by,



Shannon Couch
Operations Project Manager

Attachment

VAPOR INTRUSION ASSESSMENT REPORT

Atlantic Richfield Company Station #2035
1001 San Pablo Avenue, Albany, California
ACEH Fuel Leak Case #RO0000100

Prepared for:

Ms. Shannon Couch
RM Operations Project Manager
Atlantic Richfield Company
P.O. Box 1257
San Ramon, California 94583

Prepared by:



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13 June 2011

Project #06-88-610

13 June 2011

Project No. 06-88-610

Atlantic Richfield Company
P.O. Box 1257
San Ramon, CA 94583
Submitted via ENFOS

Attn.: Ms. Shannon Couch

Re: Vapor Intrusion Assessment Report, Atlantic Richfield Company Station #2035,
1001 San Pablo Avenue, Albany, Alameda County, California; ACEH Case #RO0000100

Dear Ms. Couch:

Broadbent & Associates, Inc. (BAI) respectfully submits this *Vapor Intrusion Assessment Report* for Atlantic Richfield Company (a BP affiliated company) Station #2035 located at 1001 San Pablo Avenue, Albany, Alameda County, California (Site). This report contains the results of an on-site vapor intrusion assessment performed on March 31, 2011. These activities were conducted in accordance with the *Revised Vapor Intrusion Assessment Sampling Work Plan* (BAI, 11/1/2010), as approved by the Alameda County Environmental Health Services Agency (ACEH) letter dated November 18, 2010.

Should you have questions or require additional information, please do not hesitate to contact us at (530) 566-1400.

Sincerely,

BROADBENT & ASSOCIATES, INC.



Thomas A. Venus
Senior Engineer, P.E.



Enclosures

cc: Mr. Paresh Khatri, Alameda County Environmental Health (Submitted via ACEH ftp site)
Electronic copy uploaded to GeoTracker

VAPOR INTRUSION ASSESSMENT REPORT
Atlantic Richfield Company Station #2035
1001 San Pablo Avenue, Albany, California

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VAPOR INTRUSION ASSESSMENT REPORT
Atlantic Richfield Company Station #2035
1001 San Pablo Avenue, Albany, California

1.0 INTRODUCTION

On behalf of the Atlantic Richfield Company, RM - a BP affiliated company, Broadbent & Associates, Inc. (BAI) has prepared this *Vapor Intrusion Assessment Report* concerning the Atlantic Richfield Company Station #2035, located at 1001 San Pablo Avenue, Albany, Alameda County, California (Site). The vapor intrusion assessment activities were conducted following the *Revised Vapor Intrusion Assessment Sampling Work Plan* (BAI, 11/1/2010), which was approved by the Alameda County Environmental Health Services Agency (ACEH) in their letter dated November 18, 2010. This document includes discussions on the site background, previous vapor intrusion assessment investigations, descriptions of revised soil gas sampling procedures, laboratory analyses, discussion of results, conclusions and recommendations. Drawings and appendices referenced within this document are provided following the conclusion of the document's text.

2.0 SITE BACKGROUND

The Site is currently an active ARCO-brand gasoline retail outlet located on the southeast corner of San Pablo and Marin Avenues in Albany, California. A Site Location Map is provided as Drawing 1 following the text conclusion. The land use in the immediate vicinity of the Site is mixed commercial and residential. Development at the Site consists of a service station building with four gasoline underground storage tanks (USTs) with associated piping, and four pump dispensers on two dispenser islands. The Site is primarily covered with asphalt or concrete surfacing. The ACEH-assigned Fuel Leak Case No. is RO0000100 / GeoTracker Global ID No. T0600100081. A Shell-brand service station is located at 999 San Pablo Avenue across the street approximately 65 feet to the north-northwest of the Site. The Shell Station #13-5037 is an active leaking UST case, ACEH Fuel Leak Case No. RO0000121 / GeoTracker Global ID No. T0600101277.

Numerous subsurface investigations and remedial activities have been conducted on-site since 1989. A comprehensive Site history can be found within the *Work Plan for Soil & Water Investigation* (BAI, 1/5/2009). The Site history can be supplemented with the results from advancing three soil borings and the construction of three new ground-water monitoring wells at the Site in March and April 2009, as reported in the subsequent *Soil & Ground-Water Investigation Report* (BAI, 5/20/2009).

3.0 VAPOR INTRUSION ASSESSMENT

3.1 Previous Soil Gas Investigations

During two previous soil-gas sampling events, significant concentrations of leak check tracer compounds were detected, as BAI reported in the *Vapor Intrusion Assessment Report* (BAI, 7/30/2010). Laboratory analysis of soil-gas samples collected on April 16, 2010 detected elevated concentrations of 1,1,-Difluoroethane (1,1-DFA), the leak check tracer compound administered via spray can around the well and on the sampling train fittings during sample

collection. Due to the elevated concentrations of the 1,1-DFA leak check tracer compound, another round of soil-gas sampling was conducted on May 14, 2010 using a different leak check compound, Isopropyl Alcohol (IPA). In this instance, paper towels saturated with liquid IPA were placed around the well and on the sampling train fittings during collection of samples. Elevated concentrations of the IPA leak check tracer compound were again detected in samples. This was troubling in that no loss of vacuum was observed during the negative pressure 'shut-in' leak checks which preceded each sampling event. Since it was problematic to validate the previously collected analytical data, BAI stated in the July 30, 2010 report that its sampling protocols were going to be re-evaluated and would recommend collecting soil-gas samples using a different approach.

3.2 Soil Gas Sampling Procedures

Soil vapor sampling activities were completed on 31 March 2011. No precipitation had been recorded in the area within the previous 24-hour period. One-liter Summa[®] canisters were used to collect the samples for analysis. The Summa canisters were shipped by the laboratory under high vacuum, leak checked, and batch certified to be free of contaminants. Each initial canister vacuum was measured before use and verified to be -30 inches of Mercury (in.Hg).

After setting up a secure and barricaded work area in the Station forecourt, the sampling train was assembled. The 3/8-inch diameter Nylaflow tubing coming from the soil gas monitoring implant was connected to a 3/8-inch to 1/4-inch Swagelok reducer. A short length of 1/4-inch tubing connected the reducer to a Swagelok valve. Behind the Swagelok valve was an in-line vacuum gauge then a tee, which branched one short 1/4-inch line to the Summa canister (with its own vacuum gauge) and the other short 1/4-inch line to a 100 cubic centimeter (cc) calibrated syringe with three-way valve tip.

With the valve to the soil gas monitoring implant closed, the sampling train was checked for leaks during a shut-in leak test by applying with the calibrated syringe a vacuum of -15 inches Mercury (in.Hg), or -16 in.Hg in the case of SG-1 for a period of 10 minutes (-15 in.Hg is fifty percent above the standard threshold of -10 in.Hg, considered representative of "No Flow" conditions). When the applied vacuum did not drop over the 10 minutes, the vacuum test indicated that the sampling train was leak-tested tight. Observations were recorded on the field notes, contained within Appendix A.

After the shut-in leak test, the closed valve to the soil gas monitoring implant was opened and the sampling train slowly purged of three calculated interior volumes using the calibrated syringe. During this process, water was unexpectedly drawn up into the aboveground tubing during attempts to sample soil gas implants SG-3 and SG-4. A quick measurement of the depth to water in nearby well MW-7 of 2.5 feet below top of casing (or approximately 2.8 feet below ground surface) confirmed the likelihood that the soil gas sampling implants SG-3 and SG-4 were submerged. Typical of the soil gas monitoring implants at the Site, the mesh screen inlets for SG-3 and SG-4 were between 3.0 and 3.5 ft bgs. The higher than normal seasonal precipitation for this year might be a potential reason for this occurrence. No samples were able to be collected from soil gas monitoring implants SG-3 or SG-4 during this sampling event.

Following completion of purging, a clear plastic shroud was setup over the sampling train to contain the chemical tracer/leak-check compound (Helium gas) that was to be released within. The shroud was placed to completely cover the soil gas sampling implant wellhead, its aboveground tubing, and the tubing, fittings, sample Summa canister and calibrated purge syringe that made up the sampling train. Once setup, Helium gas was released via tubing under the shroud. A Radiodetection Model MGD-2002 Helium Detector was used to monitor the concentration within the shroud by placing its probe within. Prior to and during sampling an attempt was made to create and maintain a positive-pressure concentration of approximately 20 percent Helium within the shroud using the compressed gas cylinder's flow regulator. Helium concentrations within the shroud were recorded in the field notes at one-minute intervals.

Once a positive-pressure Helium atmosphere was created under the shroud, the valve to the Summa canister was opened and the sample was collected. The sampling rates into the Summa canister were fixed by the laboratory-supplied critical orifice assemblies (flow regulator) with 0.0060 inch orifice allowing approximately 200 standard cc per minute (cc/min). Samples were collected into the Summa canisters until the vacuum had dropped from approximately -30 in.Hg to -5 in.Hg. Sample start times, end times, starting vacuums, ending vacuums, and Helium concentrations during sampling were recorded on the field notes, contained in Appendix A and summarized in Table 1.

Finally, for comparison purposes, one Summa canister was used to collect an ambient air sample (identified as 'Ambient') from the ground level just outside the door into the Station Building. No leak-check compound was required or utilized.

3.3 Laboratory Analysis of Soil Gas Samples

Collected samples were submitted promptly under chain-of-custody protocol to Calscience Environmental Laboratories, Inc. in Garden Grove, California (CA-ELAP #1230, NELAP #03220CA). Soil gas samples were analyzed for Gasoline Range Organics (GRO, hydrocarbon chain lengths C6-C12) by EPA Method TO-3 and for Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX), Methyl Tertiary Butyl Ether (MTBE), Tertiary Butyl Alcohol (TBA), Di-Isopropyl Ether (DIPE), Ethyl Tertiary Butyl Ether (ETBE), Tertiary Amyl Methyl Ether (TAME), and Ethanol by EPA Method TO-15. Soil gas samples were also analyzed for Oxygen (O₂) and Argon, Carbon Dioxide (CO₂), Methane (CH₄), and Helium (tracer/leak-check compound) by Modified Method ASTM D-1946. Laboratory analyses for soil gas samples were performed in accordance with the EPA standard holding times for Summa canisters.

No significant irregularities were reported during laboratory analysis of the soil gas samples. The laboratory analytical report for the soil gas samples, including chain-of-custody documentation, is provided in Appendix B. Soil gas sample laboratory analytical results along with Environmental Screening Levels (ESLs) for shallow soil gas (commercial/industrial land use) established by the California Regional Water Quality Control Board, San Francisco Bay Region (SFRWQCB) are summarized in Table 2.

As summarized in Table 2, Benzene was detected at 0.0026 milligrams per cubic meter (mg/m³) in Sample SG-1. Toluene was detected at 0.011 mg/m³ in sample SG-1, at 0.0039 mg/m³ in

SG-5, and 0.0082 mg/m³ in the Ambient. The remaining petroleum hydrocarbons GRO, Ethylbenzene, Total Xylenes, MTBE, ETBE, DIPE, TAME, TBA, and Ethanol were not detected above the sample-specific laboratory reporting limits given. The tracer gas/leak-check compound Helium was found in samples SG-1, SG-2, and SG-5 in minor concentrations of 0.951 percent, 0.0172 percent, and 0.543 percent, respectively.

3.4 Discussion of Vapor Intrusion Assessment Results

The inability to collect soil gas samples from implants SG-3 and SG-4 was disappointing in context with the past difficulties of sampling soil gas at this Site. However, soil gas implants SG-3 and SG-4 are located significant distances away from the Station Building (over 20 and 30 feet, respectively). Technically, it is only of direct concern whether or not the vapor intrusion to indoor air pathway is viable at an existing building's location, rather than whether conditions presently exist that might create a vapor intrusion to indoor air pathway for some hypothetical unplanned building location that may or may not be ever constructed in the future. The collection of samples from soil gas sampling implants SG-1 and SG-2 under the concrete slabs immediately adjacent to the existing Station Building foundation were deemed most important as they would measure whether the vapor intrusion to indoor air pathway was or was not a viable pathway of concern for the Station occupants. Therefore, the successful collection of samples SG-1 and SG-2 met the overall objective of the vapor intrusion assessment at the Site.

Taken at their laboratory reported values, the Benzene and Toluene concentrations detected in the soil gas samples did not exceed the ESLs of 0.280 mg/m³ or 180 mg/m³ respectively, for shallow soil gas in the applicable commercial/industrial land use scenario. However, the detection of the Helium in the samples requires that the sample results be further qualified. As 0.951 percent Helium was detected in sample SG-1 when the concentration within the shroud was an average of 17.7 percent means that the laboratory reported concentration of 0.0026 mg/m³ Benzene should be adjusted upward by 5.37 percent (0.951 divided by 17.7), to become 0.0027 mg/m³. Similarly, the Toluene concentration of SG-1 (0.011 mg/m³) should be adjusted slightly upward by 5.37 percent (0.951 divided by 17.7), to become 0.012 mg/m³. Finally, the Toluene concentration of SG-5 (0.0039 mg/m³) should be adjusted slightly upward by 3.50 percent (0.543 divided by 15.5), to become 0.0040 mg/m³. However these adjusted concentrations are still below the ESLs. This finding means that concentrations of petroleum hydrocarbons in soil gas migrating through the vadose zone at the Site do not present an unacceptable risk for exposure via the migration to indoor air pathway model.

It should also be noted that the lowered Oxygen concentrations (between 5.12-11.8 percent) and increased Carbon Dioxide concentrations (between 5.46-6.65 percent) reported in subsurface soil gas samples SG-1, SG-2 and SG-5 provides direct albeit secondary evidence of active aerobic microbiological respiration in the subsurface, indicating bioremediation or at least bioattenuation is occurring.

Finally, the concentration of Toluene (0.0082 mg/m³) reported in the Ambient sample was below the ESL. The reported concentration of Ethanol (0.032 mg/m³) in the Ambient sample does not have an ESL for comparison. However, this low concentration is not considered to be a hazard,

although they do indicate existing onsite concentrations above the slab outside the entrance door of the Station Building on the day and time sampled.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

BAI prepared this *Vapor Intrusion Assessment Report* for Station #2035 following implementation of the scope of work proposed in the *Revised Vapor Intrusion Assessment Sampling Work Plan* (BAI, 11/1/2010). Based on the resultant observations, the following can be concluded:

- The inability to collect soil gas samples from SG-3 and SG-4 due to high groundwater did not detrimentally affect the overall outcome of the vapor intrusion assessment at Station #2035. The successful collection of samples from soil gas implants SG-1 and SG-2 under the concrete slabs immediately adjacent to the existing Station Building were deemed most important to determining whether the vapor intrusion to indoor air pathway was or was not a viable pathway of concern at the Site as presently in use.
- No GRO, Ethylbenzene, Total Xylenes, MTBE, ETBE, DIPE, TAME, TBA or Ethanol were detected in the soil gas samples collected. The low concentration of Benzene detected in sample SG-1 and the low concentrations of Toluene reported by the laboratory in samples SG-1 and SG-5 were several orders of magnitude below the Environmental Screening Levels for shallow soil gas in the appropriate commercial/industrial land use scenario, even when adjusted for minor dilution as calculated by concentrations of the Helium tracer gas/leak-check compound.
- The absence of petroleum hydrocarbon contaminants at concentrations in soil gas above the ESLs indicates that the vapor intrusion to indoor air pathway is not an issue of concern at Station #2035.

4.2 Recommendations

Based on the information obtained and presented in this report, the following recommendations are presented:

- Based on the information obtained and presented in this report, no conditions were encountered or observed which justify further investigation, characterization or remediation with respect to petroleum hydrocarbons in soil gas at the Site.

5.0 CLOSURE

The findings presented in this document are based upon: observation of BAI and TEG field personnel, the points investigated, and results of laboratory tests performed by CalScience Environmental Laboratories, Inc. (Garden Grove, California). Our services were performed in

accordance with the generally accepted standard of practice at the time this document was written. No other warranty, expressed or implied was made. This report has been prepared for the exclusive use of Atlantic Richfield Company. It is possible that variations in soil or groundwater conditions could exist beyond points explored in this investigation. Also changes in site conditions could occur in the future due to variations in rainfall, temperature, regional water usage, or other factors.

6.0 REFERENCES

- ACEH, 18 November 2010. *Fuel Leak Case No. RO0000100 and Geotracker Global ID T0600100081, ARCO #2035, 1001 San Pablo Avenue, Albany, CA 94706*. Letter from Mr. Paresh Khatri (ACEH) to Mr. Chuck Carmel (Atlantic Richfield Company) approving "Revised Vapor Intrusion Assessment Sampling Work Plan" (BAI, 11/1/2010).
- American Petroleum Institute (API), November 2005. *Collecting and Interpreting Soil Gas Samples from the Vadose Zone*. API Publication No. 4741.
- BAI, 1 November 2010. *Revised Vapor Intrusion Assessment Sampling Work Plan, Atlantic Richfield Company Service Station #2035, 1001 San Pablo Avenue, Albany, California, ACEH Case #RO0000100*. Submitted to Mr. Chuck Carmel for Atlantic Richfield Company and Mr. Paresh Khatri for ACEH.
- BAI, 30 July 2010. *Vapor Intrusion Assessment Report, Atlantic Richfield Company Service Station #2035, 1001 San Pablo Avenue, Albany, California, ACEH Case #RO0000100*. Submitted to Mr. Chuck Carmel for Atlantic Richfield Company and Mr. Paresh Khatri for ACEH.
- BAI, 25 September 2009. *Revised Vapor Intrusion Assessment Work Plan, Atlantic Richfield Company Service Station #2035, 1001 San Pablo Avenue, Albany, California, ACEH Case #RO0000100*. Submitted to Mr. Chuck Carmel for Atlantic Richfield Company and Mr. Paresh Khatri for ACEH.
- BAI, 10 August 2009. *Vapor Intrusion Assessment Work Plan, Atlantic Richfield Company Service Station #2035, 1001 San Pablo Avenue, Albany, California, ACEH Case #RO0000100*. Submitted to Mr. Chuck Carmel for Atlantic Richfield Company and Mr. Paresh Khatri for ACEH.
- California State Water Resources Control Board, 4 October 2010 (Version 2.0). *Draft for Public Comment, Leaking Underground Fuel Tank Guidance Manual*.
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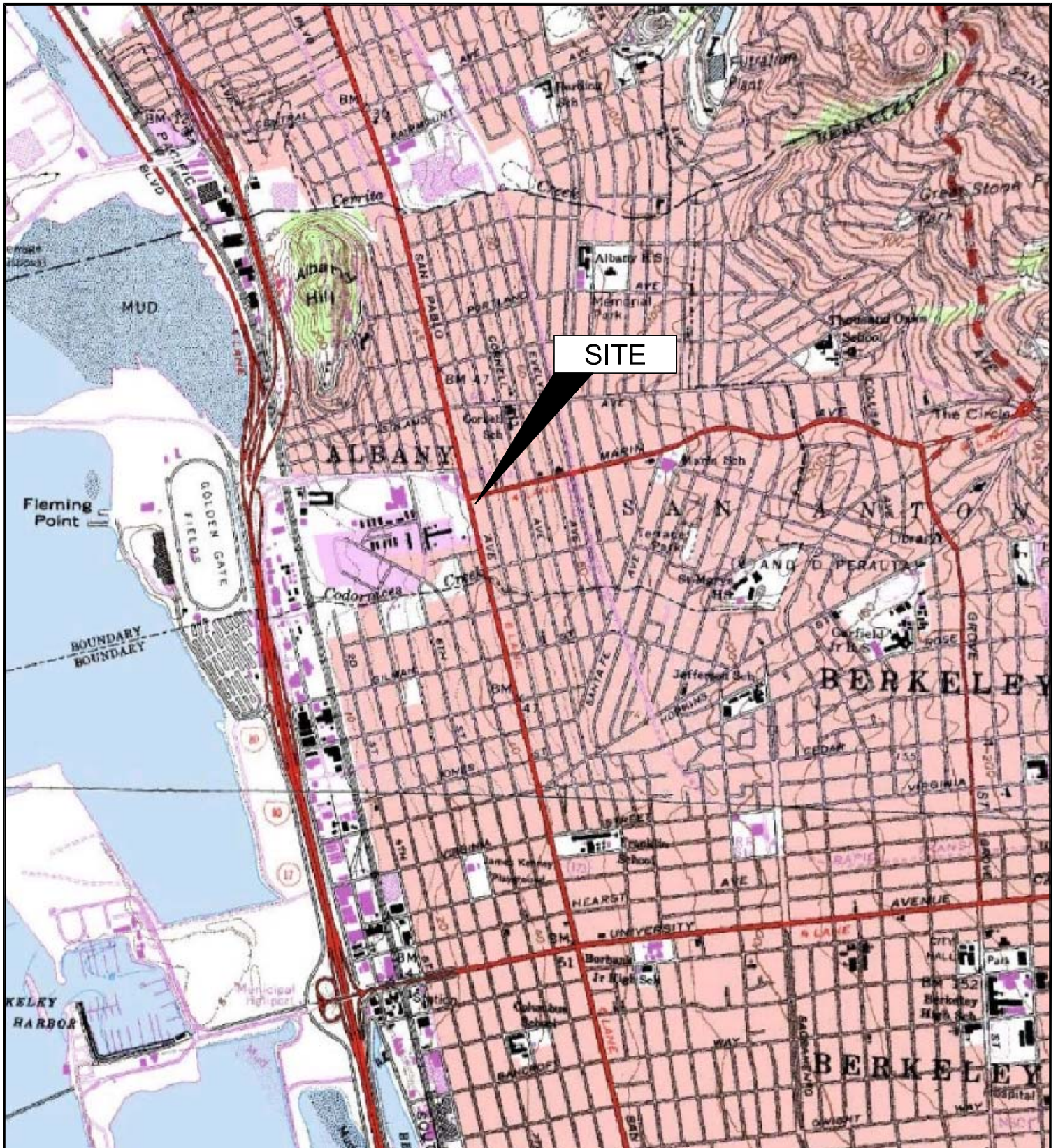
Hartman, Blayne, September 2006. “How to Collect Reliable Soil-Gas Data for Risk-Based Applications – Specifically Vapor Intrusion. Part 4 – Updates on Soil-Gas Collection and Analytical Procedures.” LUSTLine Bulletin 53, pps. 14-19.

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Ririe, G. Todd, Robert E. Sweeney, and Blayne Hartman, December 2009. *BP Remediation Management Technical Guidance – Petroleum Hydrocarbon Vapor Intrusion Sampling*.

Ririe, G. Todd and Blayne Hartman, 27 July 2010. Email communications to Tom Venus (BAI) and Chuck Carmel (BP) concerning draft Vapor Intrusion Assessment Report for ARCO Sta.2035.

US Environmental Protection Agency, November 2002. *OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)*. EPA530-D-02-004.



SITE

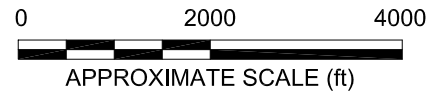
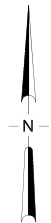
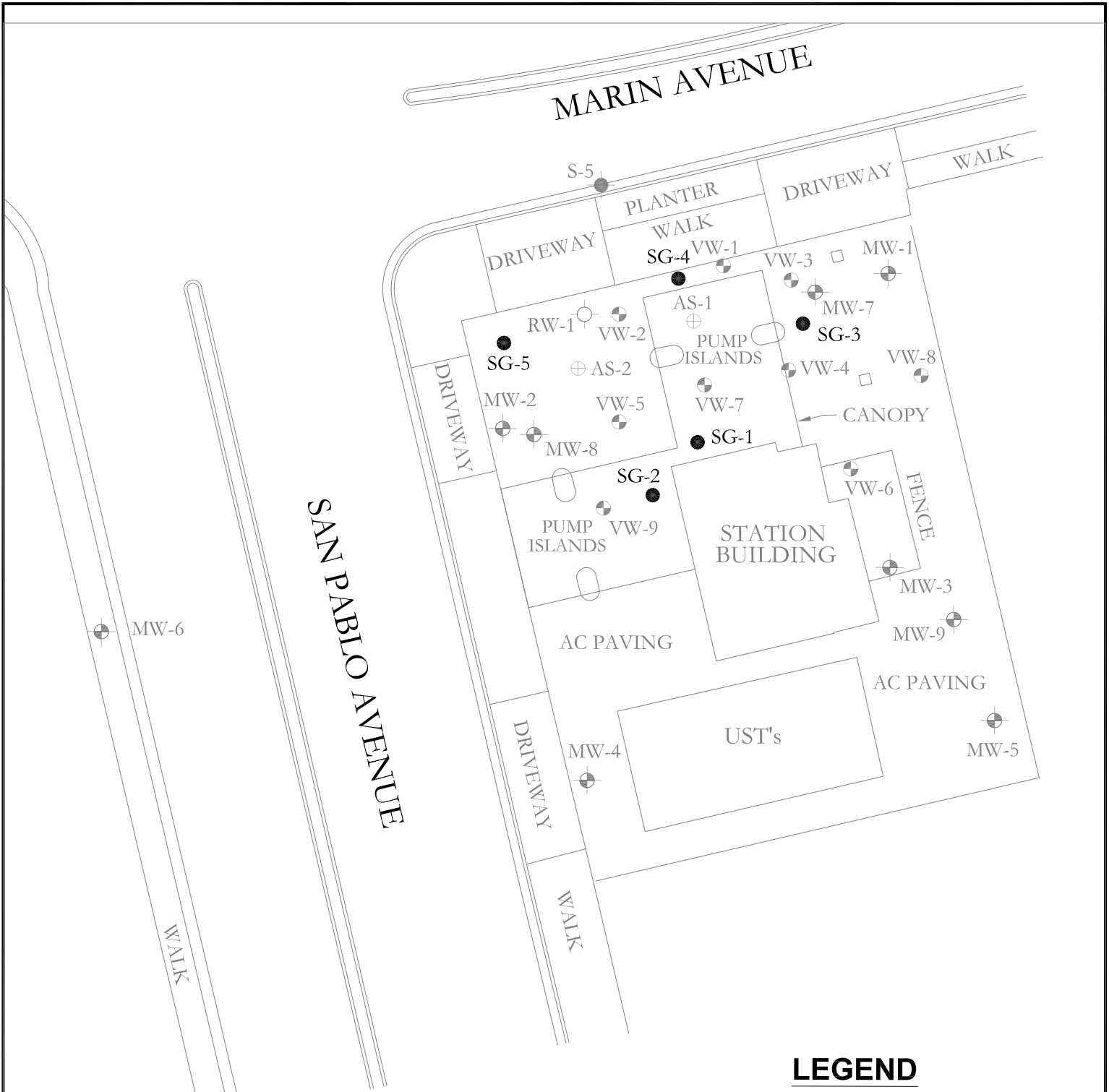


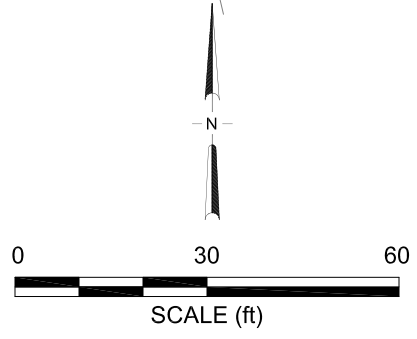
IMAGE SOURCE: USGS



LEGEND

- Soil Gas Boring/ Temporary Vapor well
- ⊕ (ARCO) Monitoring well
- ⊕ (ARCO) Vapor extraction well
- ⊕ (ARCO) Air sparge well
- S-5 ● (Shell) Monitoring well

NOTES: SITE MAP ADAPTED FROM WOOD RODGERS FIGURE. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.



**Table 1 - Soil Vapor Sampling Field Data, 31 March 2011
Station #2035, 1001 San Pablo Avenue, Albany, California**

Sample ID	COA# ⁽¹⁾	Can# ⁽²⁾	Static Leak Test		Purging		Sampling				Helium Percent					
			Start Time	End Time	Start Vac.	End Vac.	cc	End Time	Start Time	End Time	Elapsed	Start Vac.	End Vac.	Low	High	Average
SG-1	A251	LC172	10:26	10:37	-16	-16	185	10:56	11:00	11:05	0:05	-31	-5	16.7	20	17.7
SG-2	A290	LC119	11:34	11:44	-15	-15	233	11:45	11:53	12:01	0:08	-30	-5	21	26	24.2
SG-3	Soil gas implant submerged - no sample collected															
SG-4	Soil gas implant submerged - no sample collected															
SG-5	A305	LC189	13:54	14:04	-15	-15	210	14:08	14:09	14:14	0:05	-30	-5	14	18	15.5
Ambient	A201	LC398	n/a	n/a	n/a	n/a	n/a	n/a	14:51	14:56	0:05	-31	-5	n/a	n/a	n/a

Notes:

- (1) COA# = Critical Orifice Assembly Number (Laboratory-supplied flow regulator; 0.0060 inch orifice, approximately 200 standard cubic centimeters per minute).
- (2) Can# = Laboratory-supplied 1-liter Summa canister tracking number.
- (3) Vacuums measured in inches Mercury.
- (4) n/a = Not applicable/not available; data not collected in the field.

**Table 2 - Soil Vapor Sampling Laboratory Analytical Results, 31 March 2011
Station #2035, 1001 San Pablo Avenue, Albany, California**

Sample ID	GRO (C6-C12) (mg/m ³)	Benzene (mg/m ³)	Toluene (mg/m ³)	Ethyl- benzene (mg/m ³)	Total Xylenes (mg/m ³)	MTBE (mg/m ³)	ETBE (mg/m ³)	DIPE (mg/m ³)	TAME (mg/m ³)	TBA (mg/m ³)	Ethanol (mg/m ³)	Oxygen +		Carbon	
												Helium (%)	Argon (%)	Dioxide (%)	Methane (%)
SG-1	<54	0.0026	0.011	<0.0030	<0.012	<0.010	<0.012	<0.012	<0.012	<0.0085	<0.013	0.951	5.38	6.65	<0.700
SG-2	<56	<0.0023	<0.0028	<0.0032	<0.013	<0.011	<0.012	<0.012	<0.012	<0.0089	<0.014	0.0172	11.8	5.46	<0.735
SG-5	<59	<0.0025	0.0039	<0.0034	<0.013	<0.011	<0.013	<0.013	<0.013	<0.0094	<0.015	0.543	5.12	5.89	<0.775
Ambient	<49	<0.0021	0.0082	<0.0028	<0.011	<0.0093	<0.011	<0.011	<0.011	<0.0078	0.032	<0.0129	20.6	<0.645	<0.645
ESL-Com.	29 mg/m ³	0.280	180	3.30	58.0	31.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Notes:

- (1) GRO analysis by EPA TO-3; Benzene through Ethanol analysis by EPA TO-15; He/Q+Ar/CO₂/CH₄ analysis by ASTM D-1946.
- (2) <X = Not detected above the given laboratory reporting limit (X) in milligrams per cubic meter (mg/m³)
- (3) ESL-Com = Environmental Screening Level for shallow soil gas (commercial or industrial land use); from California Regional Water Quality Control Board, San Francisco Bay Region (SFBRWQCB), May 2008.
- (4) n/a = ESL not available or not applicable.

APPENDIX A

SOIL GAS SAMPLING FIELD DATA SHEETS

TEG / Summa Canister Data Sheet

Client: Broadbent

Location: 1001 San Pablo Ave Albany, CA

Date: 3-31-11

Client ID#: 06-88-610

Project Manager: T. Venus

TEG #: 10331

TEG Technician: C.V.S.

Leak check: Helium under shroud

VAPOR SAMPLE NUMBER: SG-1

Vacuum Test:

	Inches Hg	Time of reading
Initial Pressure	<u>-16</u>	<u>1026</u>
Final Pressure	<u>-16</u>	<u>1037</u>

flow reg. A251
Can. LC172

Purge Test:

	Inches Hg	Time of reading
Initial Pressure	<u>185 cc</u>	<u>purge w/ syringe</u>
Final Pressure		<u>1056</u>

Ambient Temperature: 65° F

Breathing Zone PID reading: 0

Time PID reading taken: 1056

Vapor Sample:

	Inches Hg	Time of reading
Initial Pressure	<u>-31</u>	<u>1100</u>
Final Pressure	<u>-5</u>	<u>1105</u>

Tedlar Bag Sample Time (min): _____

Vapor Sampling

Start time: 1100

Time Finished: 1105

Monitoring atmosphere under shroud during sampling:

Tracer used: Helium %

Time (min)	PID (ppm)	Time (min)	PID (ppm)	Time (min)	PID (ppm)	Time (min)	PID (ppm)	Time (min)	PID (ppm)
0.0	<u>18</u>	13		31		49		67	
0.5	<u>18</u>	14		32		50		68	
1.0	<u>17</u>	15		33		51		69	
1.5	<u>17</u>	16		34		52		70	
2.0	<u>18</u>	17		35		53		71	
2.5	<u>20</u>	18		36		54		72	
3.0	<u>18</u>	19		37		55		73	
3.5	<u>18</u>	20		38		56		74	
4.0	<u>17</u>	21		39		57		75	
4.5	<u>16.8</u>	22		40		58		76	
5.0	<u>16.7</u>	23		41		59		77	
6.0		24		42		60		78	
7.0		25		43		61		79	
8.0		26		44		62		80	
9.0		27		45		63		81	
10.0		28		46		64		82	
11.0		29		47		65		83	
12.0		30		48		66		84	

TEG / Summa Canister Data Sheet

Client: Broadbent

Location: 1001 San Pablo Ave. Albany, GA

Date: 3-31-11

Client ID#: 06-88-610

Project Manager: T. Venus

TEG #: 10331

TEG Technician: C.V.S.

orifice

VAPOR SAMPLE NUMBER: SG-2

Vacuum Test:

	Inches Hg	Time of reading
Initial Pressure	<u>-15</u>	<u>1134</u>
Final Pressure	<u>-15</u>	<u>1144</u>

can LC119
orifice A290
orifice

Purge Test:

	Inches Hg	Time of reading
Initial Pressure	<u>233 cc purge</u>	
Final Pressure	<u>w/ syringe</u>	<u>1145</u>

Ambient Temperature: 70 F

Breathing Zone PID reading: _____

Time PID reading taken: _____

Vapor Sample:

	Inches Hg	Time of reading
Initial Pressure	<u>-30 (-27)</u>	<u>1153 (1157)</u>
Final Pressure	<u>-5</u>	<u>1201</u>

Tedlar Bag Sample Time (min): _____

Vapor Sampling

Start time: 1157

Time Finished: 1201

Monitoring atmosphere under shroud during sampling:

Tracer used: Helium 6/0

Time (min)	PID (ppm)	Time (min)	PID (ppm)	Time (min)	PID (ppm)	Time (min)	PID (ppm)	Time (min)	PID (ppm)
0.0	<u>25</u>	13		31		49		67	
0.5	<u>25</u>	14		32		50		68	
1.0	<u>21</u>	15		33		51		69	
1.5	<u>24</u>	16		34		52		70	
2.0	<u>26</u>	17		35		53		71	
2.5	<u>25</u>	18		36		54		72	
3.0	<u>25</u>	19		37		55		73	
3.5	<u>24</u>	20		38		56		74	
4.0	<u>23</u>	21		39		57		75	
4.5		22		40		58		76	
5.0		23		41		59		77	
6.0		24		42		60		78	
7.0		25		43		61		79	
8.0		26		44		62		80	
9.0		27		45		63		81	
10.0		28		46		64		82	
11.0		29		47		65		83	
12.0		30		48		66		84	

TEG / Summa Canister Data Sheet

Client: Broadbent

Location: 1001 San Pablo Ave, Albany

Date: 3-31-11

Client ID#: 06-88-610

Project Manager: T. Venus

TEG #: 10331

TEG Technician: C.V.S.

VAPOR SAMPLE NUMBER: SG-5

Vacuum Test:

	Inches Hg	Time of reading
Initial Pressure	<u>-15</u>	1354 <u>1404</u>
Final Pressure	<u>-15</u>	<u>1404</u>

Purge Test:

	Inches Hg	Time of reading
Initial Pressure	<u>210 cc. Purge</u>	
Final Pressure	<u>w/ Syringe</u>	<u>1408</u>

Ambient Temperature: 75° F

Breathing Zone PID reading: 0.0

Time PID reading taken: 1408

Vapor Sample:

	Inches Hg	Time of reading
Initial Pressure	<u>-30</u>	<u>1409</u>
Final Pressure	<u>-5</u>	<u>1414</u>

Tedlar Bag Sample Time (min): X

% of Helium

Vapor Sampling

Start time: 1409

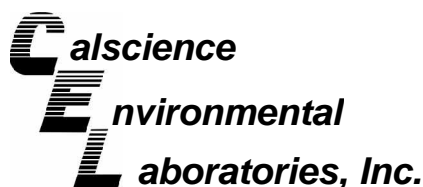
Time Finished: 1414
Tracer used: Helium (%)

Monitoring atmosphere under shroud during sampling:

Time (min)	PID (ppm)	Time (min)	PID (ppm)	Time (min)	PID (ppm)	Time (min)	PID (ppm)	Time (min)	PID (ppm)
0.0	<u>16</u>	13		31		49		67	
0.5	<u>16</u>	14		32		50		68	
1.0	<u>15</u>	15		33		51		69	
1.5	<u>15</u>	16		34		52		70	
2.0	<u>17</u>	17		35		53		71	
2.5	<u>18</u>	18		36		54		72	
3.0	<u>15</u>	19		37		55		73	
3.5	<u>14</u>	20		38		56		74	
4.0	<u>16</u>	21		39		57		75	
4.5	<u>15</u>	22		40		58		76	
5.0	<u>14</u>	23		41		59		77	
6.0		24		42		60		78	
7.0		25		43		61		79	
8.0		26		44		62		80	
9.0		27		45		63		81	
10.0		28		46		64		82	
11.0		29		47		65		83	
12.0		30		48		66		84	

APPENDIX B

LABORATORY ANALYTICAL REPORT
WITH
CHAIN-OF-CUSTODY DOCUMENTATION



April 18, 2011

Tom Venus
Broadbent & Associates, Inc.
1324 Mangrove Ave, Ste 212
Chico, CA 95926-2642

Subject: **CalScience Work Order No.: 11-04-0228**
Client Reference: BP 2035 Vapor Intrusion Assessment

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 4/5/2011 and analyzed in accordance with the attached chain-of-custody.

CalScience Environmental Laboratories certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analysis, if any, is provided herein, and follows the standard CalScience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

A handwritten signature in black ink, appearing to read 'Richard Villafania'.

CalScience Environmental
Laboratories, Inc.
Richard Villafania
Project Manager

Analytical Report



Broadbent & Associates, Inc.
 1324 Mangrove Ave, Ste 212
 Chico, CA 95926-2642

Date Received: 04/05/11
 Work Order No: 11-04-0228
 Preparation: N/A
 Method: ASTM D-1946
 Units: %v

Project: BP 2035 Vapor Intrusion Assessment

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Ambient (LC398/A201)	11-04-0228-1-A	03/31/11 15:02	Air	GC 36	N/A	04/05/11 14:16	110405L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.645	1.29		Oxygen + Argon	20.6	0.645	1.29	
Carbon Dioxide	ND	0.645	1.29						

SG-1 (LC172/A251)	11-04-0228-2-A	03/31/11 11:05	Air	GC 36	N/A	04/05/11 14:33	110405L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.700	1.4		Oxygen + Argon	5.38	0.700	1.4	
Carbon Dioxide	6.65	0.700	1.4						

SG-2 (LC119/A290)	11-04-0228-3-A	03/31/11 12:01	Air	GC 36	N/A	04/05/11 14:50	110405L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.735	1.47		Oxygen + Argon	11.8	0.735	1.47	
Carbon Dioxide	5.46	0.735	1.47						

SG-5 (LC189/A305)	11-04-0228-4-A	03/31/11 14:14	Air	GC 36	N/A	04/05/11 15:07	110405L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.775	1.55		Oxygen + Argon	5.12	0.775	1.55	
Carbon Dioxide	5.89	0.775	1.55						

Method Blank	099-03-002-1,271	N/A	Air	GC 36	N/A	04/05/11 08:43	110405L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.500	1		Oxygen + Argon	ND	0.500	1	
Carbon Dioxide	ND	0.500	1						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Broadbent & Associates, Inc.
1324 Mangrove Ave, Ste 212
Chico, CA 95926-2642

Date Received: 04/05/11
Work Order No: 11-04-0228
Preparation: N/A
Method: EPA TO-15
Units: mg/m3

Project: BP 2035 Vapor Intrusion Assessment

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Ambient (LC398/A201)	11-04-0228-1-A	03/31/11 15:02	Air	GC/MS II	N/A	04/05/11 17:24	110405L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0021	1.29		Tert-Butyl Alcohol (TBA)	ND	0.0078	1.29	
Toluene	0.0082	0.0024	1.29		Diisopropyl Ether (DIPE)	ND	0.011	1.29	
Ethylbenzene	ND	0.0028	1.29		Ethyl-t-Butyl Ether (ETBE)	ND	0.011	1.29	
Xylenes (total)	ND	0.011	1.29		Tert-Amyl-Methyl Ether (TAME)	ND	0.011	1.29	
Methyl-t-Butyl Ether (MTBE)	ND	0.0093	1.29		Ethanol	0.032	0.012	1.29	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	97	57-129			1,2-Dichloroethane-d4	104	47-137		
Toluene-d8	96	78-156							

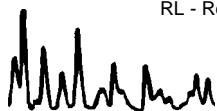
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SG-1 (LC172/A251)	11-04-0228-2-A	03/31/11 11:05	Air	GC/MS II	N/A	04/05/11 18:15	110405L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.0026	0.0022	1.4		Tert-Butyl Alcohol (TBA)	ND	0.0085	1.4	
Toluene	0.011	0.0026	1.4		Diisopropyl Ether (DIPE)	ND	0.012	1.4	
Ethylbenzene	ND	0.0030	1.4		Ethyl-t-Butyl Ether (ETBE)	ND	0.012	1.4	
Xylenes (total)	ND	0.012	1.4		Tert-Amyl-Methyl Ether (TAME)	ND	0.012	1.4	
Methyl-t-Butyl Ether (MTBE)	ND	0.010	1.4		Ethanol	ND	0.013	1.4	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	87	57-129			1,2-Dichloroethane-d4	104	47-137		
Toluene-d8	91	78-156							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SG-2 (LC119/A290)	11-04-0228-3-A	03/31/11 12:01	Air	GC/MS II	N/A	04/05/11 19:06	110405L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0023	1.47		Tert-Butyl Alcohol (TBA)	ND	0.0089	1.47	
Toluene	ND	0.0028	1.47		Diisopropyl Ether (DIPE)	ND	0.012	1.47	
Ethylbenzene	ND	0.0032	1.47		Ethyl-t-Butyl Ether (ETBE)	ND	0.012	1.47	
Xylenes (total)	ND	0.013	1.47		Tert-Amyl-Methyl Ether (TAME)	ND	0.012	1.47	
Methyl-t-Butyl Ether (MTBE)	ND	0.011	1.47		Ethanol	ND	0.014	1.47	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	88	57-129			1,2-Dichloroethane-d4	103	47-137		
Toluene-d8	89	78-156							

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Broadbent & Associates, Inc.
 1324 Mangrove Ave, Ste 212
 Chico, CA 95926-2642

Date Received: 04/05/11
 Work Order No: 11-04-0228
 Preparation: N/A
 Method: EPA TO-15
 Units: mg/m3

Project: BP 2035 Vapor Intrusion Assessment

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SG-5 (LC189/A305)	11-04-0228-4-A	03/31/11 14:14	Air	GC/MS II	N/A	04/05/11 19:56	110405L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0025	1.55		Tert-Butyl Alcohol (TBA)	ND	0.0094	1.55	
Toluene	0.0039	0.0029	1.55		Diisopropyl Ether (DIPE)	ND	0.013	1.55	
Ethylbenzene	ND	0.0034	1.55		Ethyl-t-Butyl Ether (ETBE)	ND	0.013	1.55	
Xylenes (total)	ND	0.013	1.55		Tert-Amyl-Methyl Ether (TAME)	ND	0.013	1.55	
Methyl-t-Butyl Ether (MTBE)	ND	0.011	1.55		Ethanol	ND	0.015	1.55	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u>	<u>Qual</u>	
		<u>Limits</u>					<u>Limits</u>		
1,4-Bromofluorobenzene	90	57-129			1,2-Dichloroethane-d4	102	47-137		
Toluene-d8	93	78-156							

Method Blank	097-09-002-9,157	N/A	Air	GC/MS II	N/A	04/05/11 12:17	110405L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0016	1		Tert-Butyl Alcohol (TBA)	ND	0.0061	1	
Toluene	ND	0.0019	1		Diisopropyl Ether (DIPE)	ND	0.0084	1	
Ethylbenzene	ND	0.0022	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.0084	1	
Xylenes (total)	ND	0.0087	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.0084	1	
Methyl-t-Butyl Ether (MTBE)	ND	0.0072	1		Ethanol	ND	0.0094	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u>	<u>Qual</u>	
		<u>Limits</u>					<u>Limits</u>		
1,4-Bromofluorobenzene	95	57-129			1,2-Dichloroethane-d4	101	47-137		
Toluene-d8	89	78-156							

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Broadbent & Associates, Inc.
1324 Mangrove Ave, Ste 212
Chico, CA 95926-2642

Date Received: 04/05/11
Work Order No: 11-04-0228
Preparation: N/A
Method: EPA TO-3M

Project: BP 2035 Vapor Intrusion Assessment

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Ambient (LC398/A201)	11-04-0228-1-A	03/31/11 15:02	Air	GC 19	N/A	04/05/11 13:28	110405L01

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	49	1.29		mg/m3

SG-1 (LC172/A251)	11-04-0228-2-A	03/31/11 11:05	Air	GC 19	N/A	04/05/11 14:04	110405L01
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Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	54	1.4		mg/m3

SG-2 (LC119/A290)	11-04-0228-3-A	03/31/11 12:01	Air	GC 19	N/A	04/05/11 14:39	110405L01
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Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	56	1.47		mg/m3

SG-5 (LC189/A305)	11-04-0228-4-A	03/31/11 14:14	Air	GC 19	N/A	04/05/11 15:14	110405L01
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Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	59	1.55		mg/m3

Method Blank	099-12-685-359	N/A	Air	GC 19	N/A	04/05/11 07:42	110405L01
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Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	38	1		mg/m3

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Broadbent & Associates, Inc.
1324 Mangrove Ave, Ste 212
Chico, CA 95926-2642

Date Received: 04/05/11
Work Order No: 11-04-0228
Preparation: N/A
Method: ASTM D-1946 (M)

Project: BP 2035 Vapor Intrusion Assessment

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Ambient (LC398/A201)	11-04-0228-1-A	03/31/11 15:02	Air	GC 55	N/A	04/05/11 15:49	110405L01

Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0129	1.29		%v

SG-1 (LC172/A251)	11-04-0228-2-A	03/31/11 11:05	Air	GC 55	N/A	04/05/11 16:09	110405L01
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Parameter	Result	RL	DF	Qual	Units
Helium	0.951	0.0140	1.4		%v

SG-2 (LC119/A290)	11-04-0228-3-A	03/31/11 12:01	Air	GC 55	N/A	04/05/11 16:30	110405L01
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Parameter	Result	RL	DF	Qual	Units
Helium	0.0172	0.0147	1.47		%v

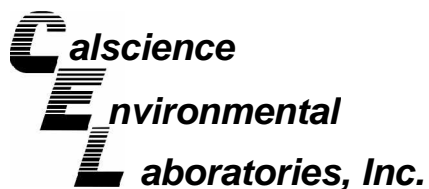
SG-5 (LC189/A305)	11-04-0228-4-A	03/31/11 14:14	Air	GC 55	N/A	04/05/11 16:50	110405L01
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Parameter	Result	RL	DF	Qual	Units
Helium	0.543	0.0155	1.55		%v

Method Blank	099-12-872-89	N/A	Air	GC 55	N/A	04/05/11 15:28	110405L01
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Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Quality Control - Duplicate



Broadbent & Associates, Inc.
1324 Mangrove Ave, Ste 212
Chico, CA 95926-2642

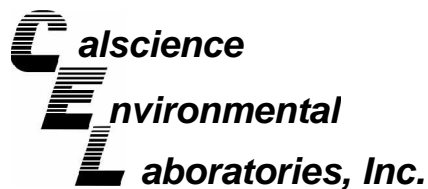
Date Received: 04/05/11
Work Order No: 11-04-0228
Preparation: N/A
Method: EPA TO-3M

Project: BP 2035 Vapor Intrusion Assessment

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
SG-5 (LC189/A305)	Air	GC 19	N/A	04/05/11	110405D01

<u>Parameter</u>	<u>Sample Conc.</u>	<u>DUP Conc</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Gasoline Range Organics (C6-C12)	ND	ND	NA	0-20	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - LCS/LCS Duplicate



Broadbent & Associates, Inc.
1324 Mangrove Ave, Ste 212
Chico, CA 95926-2642

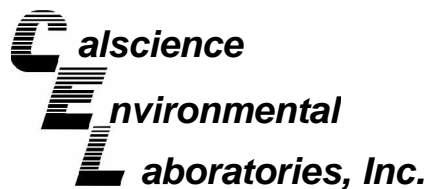
Date Received: N/A
Work Order No: 11-04-0228
Preparation: N/A
Method: ASTM D-1946

Project: BP 2035 Vapor Intrusion Assessment

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-03-002-1,271	Air	GC 36	N/A	04/05/11	110405L01

<u>Parameter</u>	<u>LCS %REC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Methane	96	95	80-120	1	0-30	
Carbon Dioxide	106	87	80-120	20	0-30	
Carbon Monoxide	104	102	80-120	1	0-30	
Oxygen + Argon	94	92	80-120	2	0-30	
Nitrogen	100	98	80-120	2	0-30	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - LCS/LCS Duplicate



Broadbent & Associates, Inc.
1324 Mangrove Ave, Ste 212
Chico, CA 95926-2642

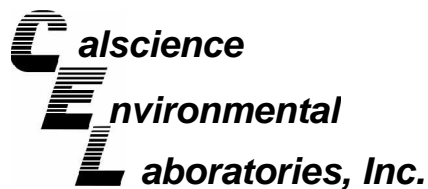
Date Received: N/A
Work Order No: 11-04-0228
Preparation: N/A
Method: EPA TO-15

Project: BP 2035 Vapor Intrusion Assessment

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
097-09-002-9,157	Air	GC/MS II	N/A	04/05/11	110405L01

<u>Parameter</u>	<u>LCS %REC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Benzene	112	111	60-156	0	0-40	
Toluene	116	115	56-146	1	0-43	
Ethylbenzene	122	120	52-154	1	0-38	
Xylenes (total)	127	124	42-156	2	0-41	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - LCS/LCS Duplicate



Broadbent & Associates, Inc.
1324 Mangrove Ave, Ste 212
Chico, CA 95926-2642

Date Received: N/A
Work Order No: 11-04-0228
Preparation: N/A
Method: ASTM D-1946 (M)

Project: BP 2035 Vapor Intrusion Assessment

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-872-89	Air	GC 55	N/A	04/05/11	110405L01

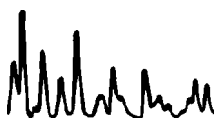
<u>Parameter</u>	<u>LCS %REC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Helium	97	97	80-120	1	0-30	
Hydrogen	109	110	80-120	1	0-30	

RPD - Relative Percent Difference , CL - Control Limit

Work Order Number: 11-04-0228

<u>Qualifier</u>	<u>Definition</u>
AX	Sample too dilute to quantify surrogate.
BA	Relative percent difference out of control.
BA,AY	BA = Relative percent difference out of control. AY = Matrix interference suspected.
BB	Sample > 4x spike concentration.
BF	Reporting limits raised due to high hydrocarbon background.
BH	Reporting limits raised due to high level of non-target analytes.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
BY	Sample received at improper temperature.
BZ	Sample preserved improperly.
CL	Initial analysis within holding time but required dilution.
CQ	Analyte concentration greater than 10 times the blank concentration.
CU	Surrogate concentration diluted to not detectable during analysis.
DF	Reporting limits elevated due to matrix interferences.
DU	Insufficient sample quantity for matrix spike/dup matrix spike.
ET	Sample was extracted past end of recommended max. holding time.
ET	Sample was extracted past end of recommended maximum holding time.
EY	Result exceeds normal dynamic range; reported as a min est.
GR	Internal standard recovery is outside method recovery limit.
IB	CCV recovery abovelimit; analyte not detected.
IH	Calibrtn. verif. recov. below method CL for this analyte.
IJ	Calibrtn. verif. recov. above method CL for this analyte.
J,DX	J=EPA Flag -Estimated value; DX= Value < lowest standard (MQL), but > than MDL.
LA	Confirmatory analysis was past holding time.
LG,AY	LG= Surrogate recovery below the acceptance limit. AY= Matrix interference suspected.
LH,AY	LH= Surrogate recovery above the acceptance limit. AY= Matrix interference suspected.
LM,AY	LM= MS and/or MSD above acceptance limits. See Blank Spike (LCS). AY= Matrix interference suspected.
LN,AY	LN= MS and/or MSD below acceptance limits. See Blank Spike (LCS). AY= Matrix interference suspected.
LQ	LCS recovery above method control limits.
LR	LCS recovery below method control limits.
LW	Quantitation of unknown hydrocarbon(s) in sample based on gasoline.
LX	Quantitation of unknown hydrocarbon(s) in sample based on diesel.
MB	Analyte present in the method blank.
ME	LCS Recovery Percentage is within LCS ME Control Limit range.
PC	Sample taken from VOA vial with air bubble > 6mm diameter.
PI	Primary and confirm results varied by > than 40% RPD.
RB	RPD exceeded method control limit; % recoveries within limits.
SG	A silica gel cleanup procedure was performed.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.



0228

1	DATE	4-4-11	SHIPPER'S GSO ACCOUNT NO.	9255
	COMPANY	BROADBENT & ASSOCIATES, INC		
	ADDRESS	1329 MANOR GROVE AVE #212		
FROM	ADDRESS		STE/ROOM	
	CITY	CHICO	ZIP CODE	95926
	SENDER'S NAME	TOM VENUS	PHONE NUMBER	530-566-4400
2	COMPANY	CAL SOBEL		
	NAME	Kristina	PHONE NUMBER	714-855-5494
	ADDRESS	150 LINK BLDG WY		
TO	ADDRESS		STE/ROOM	
	CITY	GARDE	ZIP CODE	92841
	3 YOUR INTERNAL BILLING REFERENCE WILL APPEAR ON YOUR INVOICE 06-88-610			
SPECIAL INSTRUCTIONS				



SHIPPING AIR BILL

4 PACKAGE INFORMATION

LETTER (MAX 8 OZ)

PACKAGE (WT) _____

DECLARED VALUE \$ _____

COD AMOUNT \$ _____
(CASH NOT ACCEPTED)

5 DELIVERY SERVICE PRIORITY OVERNIGHT BY 10:30 AM EARLY PRIORITY BY 8:00 AM SATURDAY DELIVERY

*DELIVERY TIMES MAY BE LATER IN SOME AREAS • CONSULT YOUR SERVICE GUIDE OR CALL GOLDEN STATE O

6 RELEASE SIGNATURE _____
SIGN TO AUTHORIZE DELIVERY WITHOUT OBTAINING SIGNATURE

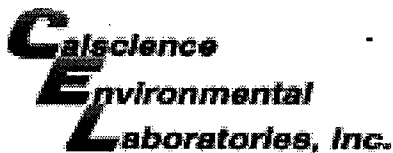
7 CREDIT CARD M/C VISA AM EX CREDIT CARD NUMBER _____

8 PICK UP INFORMATION _____
TIME _____ DRIVER # _____ ROUTE # _____

107158153

9 GSO TRACKING NUMBER

← ON PLY 3 LIFT TAB AND REMOVE FOR YOUR RECORD



WORK ORDER #: 11-04-0228

SAMPLE RECEIPT FORM

Box 1 of 1

CLIENT: Broadbent & Associates

DATE: 04/15/11

TEMPERATURE: Thermometer ID: SC1 (Criteria: 0.0 °C - 6.0 °C, not frozen)
Temperature ____ °C + 0.5 °C (CF) = ____ °C
Sample(s) outside temperature criteria (PM/APM contacted by: ____).
Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.
Received at ambient temperature, placed on ice for transport by Courier.
Ambient Temperature: [X] Air [] Filter Initial: YL

CUSTODY SEALS INTACT:
[] Box [] No (Not Intact) [X] Not Present [] N/A Initial: YL
[] Sample [] No (Not Intact) [X] Not Present Initial: NIC

SAMPLE CONDITION:
Chain-Of-Custody (COC) document(s) received with samples... [X] Yes [] No [] N/A
COC document(s) received complete... [X] Yes [] No [] N/A
Collection date/time, matrix, and/or # of containers logged in based on sample labels. []
No analysis requested. [] Not relinquished. [] No date/time relinquished. []
Sampler's name indicated on COC... [X] Yes [] No [] N/A
Sample container label(s) consistent with COC... [X] Yes [] No [] N/A
Sample container(s) intact and good condition... [X] Yes [] No [] N/A
Proper containers and sufficient volume for analyses requested... [X] Yes [] No [] N/A
Analyses received within holding time... [X] Yes [] No [] N/A
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours... [] Yes [] No [X] N/A
Proper preservation noted on COC or sample container... [] Yes [] No [X] N/A
Unpreserved vials received for Volatiles analysis []
Volatile analysis container(s) free of headspace... [] Yes [] No [X] N/A
Tedlar bag(s) free of condensation... [] Yes [] No [X] N/A

CONTAINER TYPE:
Solid: [] 4ozCGJ [] 8ozCGJ [] 16ozCGJ [] Sleeve () [] EnCores® [] TerraCores® []
Water: [] VOA [] VOAh [] VOAna2 [] 125AGB [] 125AGBh [] 125AGBp [] 1AGB [] 1AGBna2 [] 1AGBs
[] 500AGB [] 500AGJ [] 500AGJs [] 250AGB [] 250CGB [] 250CGBs [] 1PB [] 500PB [] 500PBna
[] 250PB [] 250PBn [] 125PB [] 125PBzanna [] 100PJ [] 100PJna2 [] [] []
Air: [] Tedlar® [X] Summa® Other: [] Trip Blank Lot#: Labeled/Checked by: NK
Container: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelope Reviewed by:
Preservative: h: HCL n: HNO3 na2: Na2S2O3 na: NaOH p: H3PO4 s: H2SO4 zanna: ZnAc2+NaOH f: Field-filtered Scanned by:

APPENDIX C

GEOTRACKER UPLOAD CONFIRMATION RECEIPT

STATE WATER RESOURCES CONTROL BOARD
GEOTRACKER ESI

UPLOADING A EDF FILE

SUCCESS

Processing is complete. No errors were found!
Your file has been successfully submitted!

<u>Submittal Type:</u>	EDF - Other Report / Document
<u>Submittal Title:</u>	Vapor Intrusion Assessment 3-2011
<u>Facility Global ID:</u>	T0600100081
<u>Facility Name:</u>	ARCO #02035
<u>File Name:</u>	11040228.zip
<u>Organization Name:</u>	Broadbent & Associates, Inc.
<u>Username:</u>	BROADBENT-C
<u>IP Address:</u>	67.118.40.90
<u>Submittal Date/Time:</u>	5/19/2011 2:29:38 PM
<u>Confirmation Number:</u>	5732095301

[VIEW QC REPORT](#)

[VIEW DETECTIONS REPORT](#)