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Alameda County

Environmental Health

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Atlantic Richfield Company (a BP affiliated company)

P.O. Box 1257 San Ramon, CA 94583 Phone: (925) 275-3801 Fax: (925) 275-3815

April 29, 2009

 Re: Addendum Soil and Ground-Water Investigation Work Plan Atlantic Richfield Company Station #771 899 Rincon Avenue Livermore, California ACEH Case RO0000200

"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:

Sarl Supple

Paul Supple Environmental Business Manager



April 29, 2009

Project No. 06-82-608

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

Attn.: Mr. Paul Supple

Re: Addendum Soil and Ground-Water Investigation Work Plan, Atlantic Richfield Company (a BP affiliated company) Station #771, 899 Rincon Avenue, Livermore, California. Case No. RO0000200.

Dear Mr. Supple:

Provided herein is an addendum to the work plan that was included in the Broadbent and Associates, Inc. (BAI) February 10, 2009 *Initial Site conceptual Model and Soil and Ground-Water Investigation Work Plan* (herein referred to as the Work Plan). The Work Plan recommended that two additional ground-water monitor wells (MW-12 and MW-13) be installed off-site on the neighboring Shopping Center property to the south and west of the Station #771 to further characterize the extent of impacted ground water. The Work Plan further stated that the locations of the current underground storage tanks (USTs) and product lines prevents the safe collection of confirmation samples in the former UST area at this time. In response to the Work Plan, the Alameda County Environmental Health (ACEH) issued the March 16, 2009 letter stating, "it is conceivable that borings can be installed at a safe distance form the USTs and drilled at an angle to reach the target depths without compromising safety."

Accordingly, it is proposed that angled soil boring ASB-1 be initiated off-site on the neighboring Shopping Center property to the south at the location depicted in Drawing 1. The angled boring will trend in a northerly direction at an angle of approximately 20 and 30 degrees from vertical and proceed underneath the former and current UST location. The angled boring should facilitate the collection of soil samples post soil vapor extraction remedial activities (system operational in 1994 and 1995) and allow for further vertical definition of impacted soil below the former USTs. A geologic cross section depicting ASB-1, the current USTs and former UST excavation, and relevant historical soil sample analytical data is provided in Drawing 2. As shown in Drawing 2, the location of ASB-1 was determined based on the safety requirement to maintain a minimum distance of 10 feet between the current USTs and the boring.

Similar to proposed off-site ground-water monitor wells MW-12 and MW-13, ASB-1 will be installed using a hollow steam auger drilling technique. ASB-1 will proceed to a distance of approximately 50 feet which corresponds to a depth of 43 feet below land surface (bls) and extends the boring below the southerly portion of the former UST excavation. Soil samples will be collected at

distances of 24, 30, 36, 42, and 48 feet along the boring. All soil samples collected from ASB-1 will be submitted to a laboratory for analysis. Additional soil sampling details for ASB-1 (including laboratory analysis) will follow what has already been proposed in the Work Plan for off-site wells MW-12 and MW-13.

Once the ACEH has approved this Soil and Ground-Water Investigation Work Plan, access agreement negotiations with the Shopping Center property owner will be initiated. As discussed above, proposed monitor wells MW-12 and MW-13 and angled soil boring ASB-1 are all located on the neighboring Shopping Center property. With a signed access agreement in place, Stratus will be directed to execute field work. If, a signed access agreement is not in place following 90 days approval of this Addendum Work Plan by the ACEH, assistance with access agreement negotiations from the ACEH will be requested. Upon completion of field work and receipt of a data packet from Stratus summarizing field activities including laboratory analytical reports, BAI will complete a soil and ground-water investigation report for submittal to the ACEH.

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

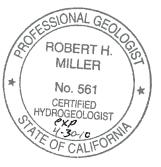
Sincerely,

BROADBENT & ASSOCIATES, INC.

Matthew G. Herrick, P.G., C.HG. Senior Hydrogeologist

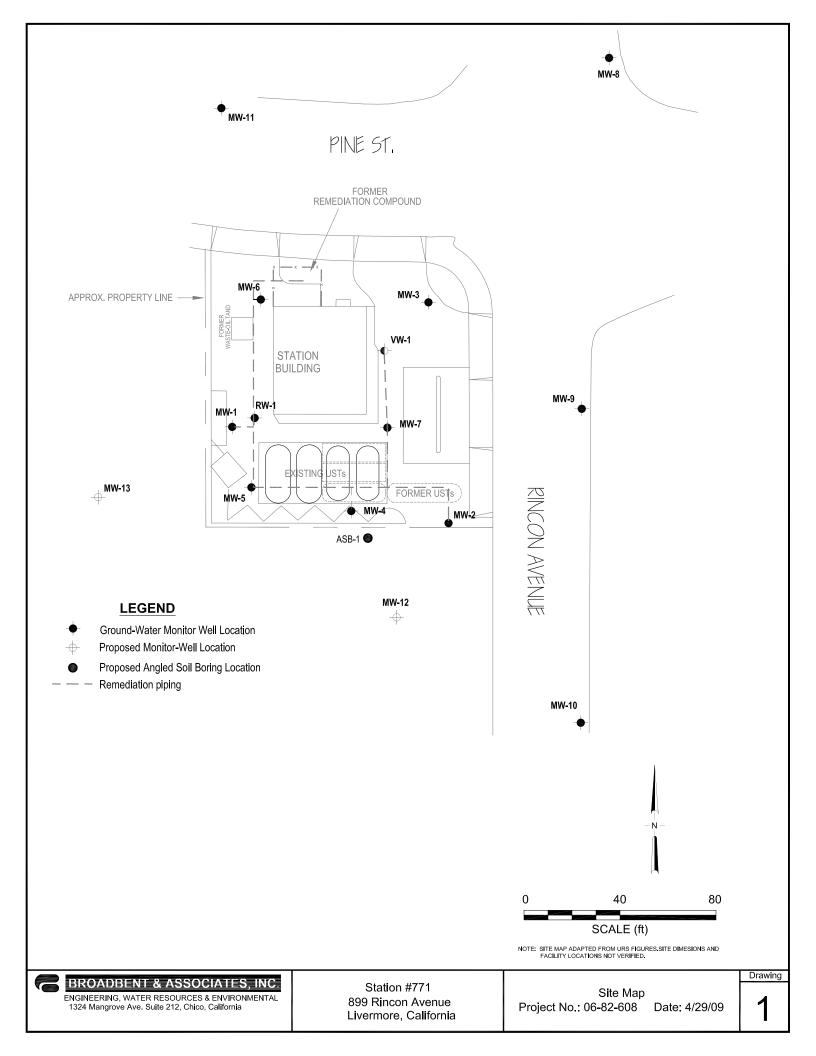
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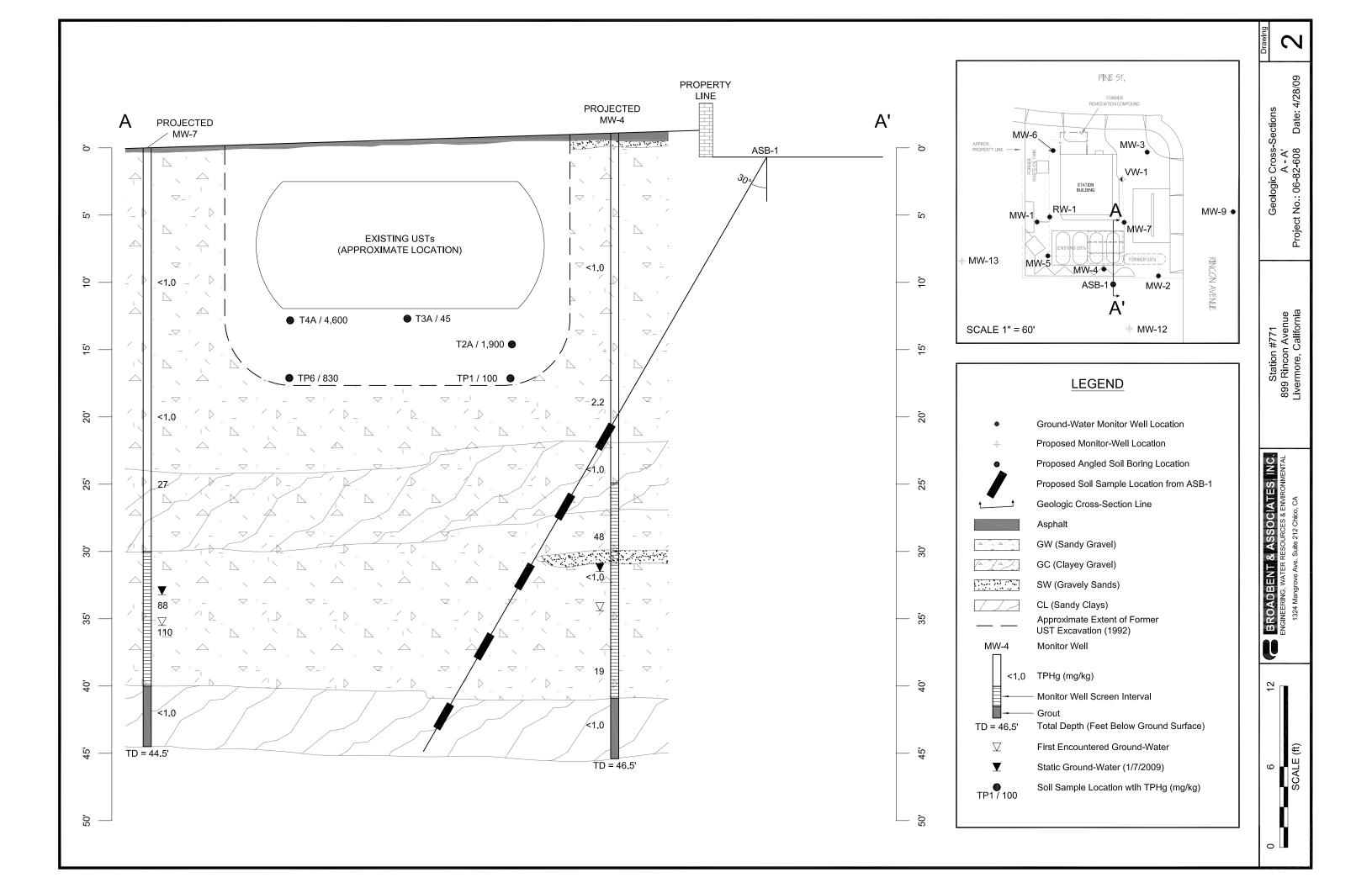
Robert H. Miller, P.G., C.HG. Principal Hydrogeologist



enclosure: Drawing 1: Addendum Site Map with Proposed Sample Locations Drawing 2: Geologic Cross Section A-A' Relevant Lithologic and Monitor Well Construction Logs

 Mr. Paresh Khatri, Alameda County Environmental Health, 1131 Harbor Bay Parkway, Suite 250, Alameda, CA 94502 (Submitted via ACEH ftp Site) Mr. Paul M. Smith, Livermore-Pleasanton Fire Department, 3560 Nevada St., Pleasanton, CA 94566 Mr. Chuck Headlee, RWQCB, 1515 Clay St. Suite 1400, Oakland, CA 94612 (Submitted via GeoTracker) GeoTracker





Depth of boring: <u>46–1/2 feet</u> Diameter o	f boring: 10 inc	hesDate_drilled:6-28-91
Well depth: <u>42 feet</u> Material type	Sch 40 PVC	_ Casing diameter: <u>4 inches</u>
Screen interval:26 to 42 feet	Slot_size:	0.020-inch
Drilling Company: Exceltech	_ Driller:	Don & Kenny
Method Used: Hollow-Stem Auger		_ Field Geologist: Barbara Sieminski
Signature of Registered Prof	essiona n /E	Tarian
Registration No. <u>: CEO</u>	4600 State:	CA

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Depth	Sample No.	Blow	P.I.D.	USCS Code	Description	Well Const.
- 0 -				<u></u>	Sand, with small gravel, yellow, damp, loose: fill.	
				SW GW	Sandy gravel with cobbles, brown, damp, medium dense:	ס ק ק ק ס ק ק ק ס ק ק
- 2 -				GW	fill. Sandy gravel with clay, brown, damp, medium dense.	v v v v v v v v v v v v v v v v v v v v v v v v v v v v v v
- 6 -	S−5.5	3 4 10	0			
- 8 -	S-10	18 16	0		Moist, dense.	0 0
- 12 -		21	Ŭ			0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
- 14 -	S-15	18 21 28	0		Gray, very moist.	
- 18 -					Noticeable product odor.	
- 20 -	S-20	18 26 35	82		Very dense. (Section continues downward)	
	R	E		NA	LOG OF BORING B-7/MW-4 ARCO Station 771 899 Rincon Avenue Livermore, California	PLATI 4

Pepth Sample No. 20 P.1.D.		USCS Description				
-22-				GW	Sandy gravel with clay, brown, moist, very dense; noticeable product odor.	
-24 -	S–25	19 21 127	131	GC	Clayey gravel with sand, brown, moist, dense; obvious product odor.	
-28-		- 20		GW	Sandy gravel with clay, brown, moist, medium dense; obvious product odor.	
-30 -	S-30	15	748		Sandy clay, brown, moist, medium plasticity, hard; obvious product odor.	
-32 - -34 -	S-31.5 S-33 S-33.5 S-34.5	26 40 50 50 36 39 45	1206 /5 ₇₄₁ /6 103 20		Sandy gravel with clay, brown, moist, very dense; obvious product odor.	
-36- -38-				Ā	Wet.	
- 40 -	S-40	1 37 ■50/	5 ¹⁵			
-42-	5-42.5	13 13 15 7	17-	CĽ	Sandy clay, brown, damp, medium plasticity, very stiff	• • • • • • • • • • • • • • • • • • •
-44-	S-44 S-45.5	9 12 7	10			
-46-	p=+3.5	8 113	8		Total Depth = $46 - 1/2$ feet.	
- 48 - - 50 -					$\frac{1}{2} \log \ln = 40 - 1/2 \log t$	

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LOG OF BORING B-7/MW-4 ARCO Station 771 899 Rincon Avenue Livermore, California

PLATE 5

PROJECT

No.

S. Server

60000.06

Depth of boring: 44—1/2 fee	t Diameter of	boring: 10 inc	hes Date drilled: 7-2-91
Well depth:40 feet	Material type:	Sch 40 PVC	Casing diameter:4 inches
Screen interval:	feet	Slot size:	0.020-inch
Drilling Company: Excelted	<u>h</u>	Driller:	Don, Kenny, and Adam
Method Used: Hollow	-Stem Auger		_ Field Geologist: <u>Barbara Siemins</u> ki
Signature of Re	gistered Profe	ssional /F	- 2man
Registra	tion No.:CE 044	4600 State:	CA

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Depth	Samp No.	le	Blows	P.I.D.	USCS Code	Description	We Con	
- 0 -					GW	Asphalt (4 inches). Sandy gravel, dark brown, damp, medium dense: fill.		4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
- 4 -	S-5.5		6 7 8	٥	GW	Sandy gravel with clay, brown, damp, medium dense; gravel up to 3—inches diameter.		2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
- 8 -	S-10.5		19 20	0		Moist, dense.		4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
- 12 - - 14 -			29					444444444 44444444
- 16 -		×	50	/1				4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
- 20 -	S-20.5		17 35 43	152		Very dense; obvious product odor. (Section continues downward)		⊽ ⊽ ⊽ ⊽ ⊽ ⊽ ⊽
PRO	JECT:	2	E		NA 200.06	899 Rincon Avenue		ате 1 О

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epth	Sample No.	BLOWS	P.1.D.	USCS Code	Description	Well Const
22 -		8		GW	Sandy gravel with clay, brown, moist, very dense; obvious product odor.	
24	5–25.5 I	25 33 35	580	GC	Clayey gravel with sand, brown, wet, very dense; obvious product odor.	
30 - 32 -	S-30.5	30 50	170 ⁄5	GW	Sandy gravel with clay, brown, moist, very dense; obvious product odor.	
34 - 36 - 38 -	S-34.5 S-36 S-37	35 43 50 37 50 37 44 17	238 /5 292 /4 117	₹ Ţ	Wet.	
40-	S-40.5 S-42	15 9	10.4 6.1	CL	Sandy clay, brown, moist, medium plasticity, very stiff	
-44 -46 -48		10 13 .9 10 13	0		Total Depth = $44-1/2$ feet.	
_ 50						
	RE		SN		LOG OF BORING B-10/MW-7 ARCO Station 771 899 Rincon Avenue Livermore, California	PLA 1

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