Table 7– Current Groundwater Analytical Data
--8 Oxygenates--
March 6 through March 8, 2013

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	---	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW-1	3/8/2013	ND (23.6)	ND (12500)	ND (3760)	ND (23.4)	6340	ND (24)	ND (29)	ND (48.7)
MW-2	3/6/2013	**1.34' Free Product**							
MW-3	3/8/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	30.8	ND (0.24)	ND (0.29)	ND (0.487)
MW-4	3/6/2013	**2.31' Free Product**							
MW-5	3/6/2013	**2.83' Free Product**							
MW-6A	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-6B	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-7A	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-8A	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-8B	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-9A	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-9B	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-10A	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-10B	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-11A	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-11B	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-12A	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-12B	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-13A	3/25/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-13B	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-14A	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-14B	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 7 – Current Groundwater Analytical Data
--8 Oxygenates--
March 6 through March 8, 2013

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	---	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW-15A	3/25/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-15B	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-16A	3/25/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-16B	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-17B	3/6/2013	2.6 J	ND (250)	ND (75.2)	ND (0.468)	244	ND (0.48)	400	ND (0.974)
MW-18A	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-18B	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-19A	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	5.8 J	ND (0.487
MW-19B	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-20A	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-20B	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-21A	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-21B	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
MW-22B	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
RW-1	3/6/2013	**0.15' Free Product**							
RW-2	3/8/2013	72.7 J	ND (25000)	ND (7520)	ND (46.8)	32,100	ND (48)	5,970	ND (97.4)
RW-3	3/6/2013	**0.05' Free Product**							
RW-4	3/8/2013	ND (11.8)	ND (6250)	ND (1880)	ND (11.7)	5,690	ND (12)	2,180	ND (24.3)
RW-5	3/6/2013	**0.06' Free Product**							
DMW-1	3/8/2013	ND (2.36)	ND (1250)	ND (376)	ND (2.34)	2,550	ND (2.4)	75.5 J	ND (4.87)
DMW-2	3/6/2013	1.49 J	ND (125)	ND (37.6)	ND (0.234)	141	ND (0.24)	230	ND (0.487)
DMW-3	3/6/2013	ND (0.236)	239 J	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 7 - Current Groundwater Analytical Data
--8 Oxygenates--
March 6 through March 8, 2013

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	---	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Duplicate 1 (MW-20B)	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
Duplicate 2 (DMW-2)	3/6/2013	1.77 J	ND (250)	ND (75.2)	ND (0.468)	163	ND (0.48)	271	ND (0.974)
Field Blank 1	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
Field Blank 2	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
Field Blank 3	3/8/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
Field Blank 4	3/25/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
Trip Blank 1	3/8/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
Trip Blank 2	3/8/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
Trip Blank 3	3/8/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
Trip Blank 4	3/8/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
Trip Blank 5	3/25/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 8 – Current & Historical Groundwater Analytical Data
March 5, 2011 through March 8, 2013

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-1	3/5/2011	**1,760**	**18,400**	**1,270**	5,140	**4,070J**	<83.9	<121	<0.0032	**18**
	3/8/2013	**2,480**	**12,800**	**1,550**	5,650	**623**	**70.8 J**	**ND (11.6)**	ND (0.0039)	14 J
MW-2	3/5/2011	**1,650**	**3,230**	422	2,190	**462J**	**3,420**	<12.1	**1.42**	<15
	3/6/2013	**1.34' Free Product**								
MW-3	3/5/2011	<15	10.4	9.52	30.6	4.74J	7.91	<0.121	<0.0032	<15
	3/8/2013	0.417 J	1.05	0.408 J	1.72 J	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
MW-4	3/5/2011	**1,830**	198	**1,270**	3,160	**598**	**3,100**	<12.1	<0.0032	<15
	3/6/2013	**2.31' Free Product**								
MW-5	6/20/2011	**0.30' Free Product**								
	3/6/2013	**2.83' Free Product**								
MW-6A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	13 J
MW-6B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	**19**
MW-7A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
MW-8A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	6.8 J
MW-8B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
MW-9A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.62	0.642 J	ND (0.0039)	ND (3.8)
MW-9B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.79	0.675 J	ND (0.0039)	ND (3.8)
MW-10A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
MW-10B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
MW-11A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.00	ND (0.116)	ND (0.0039)	11 J
MW-11B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.12	ND (0.116)	ND (0.0039)	ND (3.8)
MW-12A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
MW-12B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
MW-13A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	7.8 J
MW-13B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
MW-14A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
MW-14B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 8 – Current & Historical Groundwater Analytical Data
March 5, 2011 through March 8, 2013

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15** (Action Level)
MW-15A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	5.3 J
MW-15B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
MW-16A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	**35**
MW-16B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
MW-17B	3/6/2013	**6.58**	2.47	1.1 J	3.87 J	ND (0.352	**244**	ND (0.232)	ND (0.0039)	ND (3.8)
MW-18A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.42	ND (0.116)	ND (0.0039)	**590**
MW-18B	3/6/2013	ND (0.111)	0.459 J	ND (0.109)	2.03 J	ND (0.176)	0.841 J	ND (0.116)	ND (0.0039)	ND (3.8)
MW-19A	3/6/2013	0.566 J	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
MW-19B	3/6/2013	0.253 J	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
MW-20A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.15	ND (0.116)	ND (0.0039)	ND (3.8)
MW-20B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.25	ND (0.116)	ND (0.0039)	8.77 J
MW-21A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	12 J
MW-21B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.34	ND (0.116)	ND (0.0039)	6.8 J
MW-22B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.83	ND (0.116)	ND (0.0039)	ND (3.8)
RW-1	3/6/2013	**0.15' Free Product**								
RW-2	3/8/2013	**9,420**	**12,800**	**2,030**	**11,000**	**565 J**	**9100**	**224 J**	**1.65**	ND (3.8)
RW-3	3/6/2013	**0.05' Free Product**								
RW-4	3/8/2013	**3,390**	**1,730**	**977**	4,900	**210 J**	**4,460**	**ND (5.81)**	ND (0.0039)	12 J
RW-5	3/6/2013	**0.06' Free Product**								
DMW-1	3/8/2013	**507**	ND (1.22)	ND (1.09	ND (0.179)	ND (1.76)	**131**	**14.2 J**	ND (0.0039)	ND (3.8)
DMW-2	3/6/2013	4.12	0.548 J	ND (0.109)	0.805 J	ND (0.176)	**153**	ND (0.116)	ND (0.0039)	ND (3.8)
DMW-3	3/6/2013	0.281 J	0.497 J	ND (0.109)	ND (0.179	ND (0.176)	1.76	ND (0.116)	ND (0.0039)	**120**

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 8 – Current & Historical Groundwater Analytical Data
March 5, 2011 through March 8, 2013

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
Duplicate 1 (MW-20B)	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.4	ND (0.116)	ND (0.0039)	4.5 J
Duplicate 2 (DMW-2)	3/6/2013	4.62	0.748 J	ND (0.218)	1.05 J	ND (0.352	**169**	ND (0.232)	ND (0.0039)	ND (3.8)
Field Blank 1	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	NA	NA
Field Blank 2	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	NA	NA
Field Blank 3	3/8/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	NA	NA
Field Blank 4	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	NA	NA
Trip Blank 1	3/8/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	NA	NA
Trip Blank 2	3/8/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	NA	NA
Trip Blank 3	3/8/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	NA	NA
Trip Blank 4	3/8/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	NA	NA
Trip Blank 5	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	NA	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 9 - Tabulated Field Screening Results
Broad River Amoco (BP); UST Permit #11946

Temp. Well ID	Date	Total Depth (feet)	Encountered Water Depth (feet)	Benzene	MTBE	BTEXM
RBSLs				5.0	40	N/A
TMW-1	5/17/12	15.0	13.0	>1	>1	>1
TMW-2	5/17/12	15.0	13.0	>1	>1	>1
TMW-3	5/17/12	15.0	13.0	>1	>1	>1
TMW-4	5/17/12	15.0	13.0	>1	>1	1.51
TMW-5	5/17/12	15.0	12.5	**59.3**	1.75	139.9
TMW-6	5/18/12	15.0	12.5	3.65	2.50	84.2
TMW-7	5/18/12	15.0	12.5	**80.3**	**322.4**	973
TMW-8	5/18/12	15.0	12.5	>1	1.04	38.2
TMW-9	5/18/12	15.0	12.5	**73.5**	**142.8**	249.8
TMW-10	5/18/12	15.0	12.5	**7.3**	9.69	24.8
TMW-11	5/24/12	15.0	12.5	>1	>1	19.7
TMW-11D	7/24/12	34.5	33.0	2	1	3
TMW-12	5/24/12	15.0	12.5	>1	1.68	3.12
TMW-12D	7/25/12	34.0	33.0	1	8	9
TMW-13	5/24/12	15.0	12.5	**12**	14.9	32.9
TMW-14	5/24/12	15.0	12.5	1	4.06	5.1
TMW-14D	7/20/12	39.0	37.5	0	2	3
TMW-15	5/25/12	15.0	13.0	>1	0.80	3.34
TMW-16	5/25/12	15.0	13.0	0.57	>1	2.24
TMW-16D	7/24/12	39.5	38.0	4	**113**	118
TMW-17	5/25/12	15.0	13.0	>1	>1	>1
TMW-18	6/13/12	19.0	16.0	0	0	5.0
TMW-19	6/13/12	19.0	16.5	0	0	0
TMW-19D	7/17/12	40.0	38.0	1	0	9
TMW-20	6/13/12	19.0	18.0	>1	>1	9
TMW-21	6/13/12	19.0	18.0	>1	>1	4
TMW-22	6/13/12	19.0	18.0	>1	7	0
TMW-23	6/19/12	20.0	19.0	>1	>1	7
TMW-23D	6/19/12	42.0	40.0	>1	>1	2
TMW-24	6/21/12	19.0	18.5	3	23	63
TMW-25	7/5/12	19.0	18.5	**266**	**234**	1212
TMW-25D	7/19/12	40.0	38.0	**138**	**440**	1239
TMW-26	refusal due to rubble at ~ 4-5 feet					
TMW-26D	refusal due to rubble at ~ 4-5 feet					
TMW-27	6/20/12	20.0	19.0	**81**	**127**	938
TMW-27D	7/5/12	39.0	38.0	**130**	**147**	446
TMW-28	6/20/12	20.0	19.0	**102**	**270**	888
TMW-28D	6/20/12	40.0	38.0	**132**	**196**	751
TMW-29	7/5/12	20.0	19.0	>1	>1	25
TMW-29D	7/16/12	40.0	38.5	0	0	19

Note: Results expressed in ug/L (PPB)

Table 9 - Tabulated Field Screening Results
Broad River Amoco (BP); UST Permit #11946

Temp. Well ID	Date	Total Depth (feet)	Encountered Water Depth (feet)	Benzene	MTBE	BTEXM
RBSLs				5.0	40	N/A
TMW-30	7/05/12	20.0	19.0	1	>1	7
TMW-30D	7/17/12	40.0	38.5	0	0	28
TMW-31	7/05/12	20.0	19.0	>1	>1	2
TMW-31D	7/05/12	37.0	36.0	>1	>1	23
TMW-32	7/05/12	19.0	18.0	>1	>1	7
TMW-32D	7/19/12	40.0	38.5	**70**	2.2	170.0
TMW-33	7/05/12	20.0	19.0	>1	>1	2
TMW-33D	7/25/12	39.0	37.0	>1	>1	>1
TMW-34	7/12/12	20.0	19.0	**226**	**378**	1275
TMW-35	7/12/12	20.0	19.0	**125**	**355**	1100
TMW-36	7/12/12	20.0	19.0	**130**	**220**	1026
TMW-37	7/17/12	23.0	22.0	**62**	1.0	108
TMW-38	7/13/12	25.0	23.5	**28**	1.0	140
TMW-39	7/17/12	25.0	22.5	0	0	3
TMW-40	7/23/12	25.0	23.0	>1	>1	62
TMW-40D	7/23/12	39.5	38.0	>1	>1	2
TMW-41	7/26/12	24.0	22.0	>1	>1	>1
TMW-42	7/26/12	20.0	18.5	>1	>1	>1
TMW-43	7/26/12	26.0	24.0	>1	>1	>1
TMW-43D	8/6/12	39.0	37.5	>1	>1	>1
TMW-44	8/6/12	24.0	22.0	>1	>1	>1
TMW-44D	8/6/12	39.0	37.5	>1	>1	>1
TMW-45	8/7/12	24.0	22.0	>1	>1	>1
TMW-45D	8/7/12	39.0	37.5	>1	>1	>1
TMW-46	8/7/12	24.0	22.0	>1	>1	>1
TMW-46D	8/7/12	35.0	33.5	>1	>1	>1
TMW-47	7/27/12	23.0	21.0	>1	>1	>1
TMW-48	7/25/12	20.0	18.5	>1	19	32
TMW-48D	7/25/12	34.0	32.0	>1	35	42
TMW-49	7/26/12	19.0	18.0	>1	15	15
TMW-49D	7/26/12	34.0	32.0	>1	1	1
TMW-50D	9/13/12	40.0	37.5	>1	>1	>1
TMW-51D	9/13/12	39.0	37.0	>1	>1	2
TMW-52D	9/13/12	38.0	36.0	>1	>1	>1
TMW-53D	9/14/12	38.0	36.0	>1	>1	>1
TMW-54D	9/14/12	38.0	36.0	>1	1	4
TMW-55D	9/14/12	38.0	36.0	>1	>1	>1

Note: Results expressed in ug/L (PPB)

Table 10- Free Product Delineation Results
Broad River Amoco (BP); UST Permit #11946

Temp. Well ID	Date	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickness
FP-1	10/4/12	14.65	N/A	N/A
	10/12/12	15.88	N/A	N/A
FP-2	10/4/12	13.82	N/A	N/A
	10/12/12	14.30	N/A	N/A
FP-3	10/4/12	14.64	N/A	N/A
	10/12/12	14.32	N/A	N/A
FP-4	10/4/12	14.28	N/A	N/A
	10/12/12	14.30	N/A	N/A
FP-5	10/4/12	14.29	N/A	N/A
	10/12/12	15.08	N/A	N/A
FP-6	10/4/12	15.15	N/A	N/A
	10/12/12	15.30	N/A	N/A
FP-7	10/4/12	14.70	N/A	N/A
	10/12/12	15.58	N/A	N/A
FP-8	10/4/12	15.13	N/A	N/A
	10/12/12	16.38	N/A	N/A
FP-9	10/4/12	14.65	N/A	N/A
	10/12/12	15.98	N/A	N/A
FP-10	10/4/12	15.88	N/A	N/A
	10/12/12	16.35	N/A	N/A
FP-11	10/4/12	15.20	N/A	N/A
	10/12/12	16.30	N/A	N/A
FP-12	10/4/12	14.17	14.15	0.02
	10/12/12	14.43	14.40	0.03
FP-13	10/4/12	12.72	N/A	N/A
	10/12/12	15.98	N/A	N/A
FP-14	10/4/12	16.70	N/A	N/A
	10/12/12	17.07	N/A	N/A
FP-15	10/4/12	13.37	N/A	N/A
	10/12/12	15.17	N/A	N/A
FP-16	10/4/12	15.96	N/A	N/A
	10/12/12	16.21	N/A	N/A

SUMMARY of SLUG TEST

SOUTH CAROLINA
Department of Health and Environmental Control (DHEC)

Site Data

SITE ID: # 11946 COUNTY Richland

FACILITY NAME Broad River Amoco

Slug Data

See Appendix F Table_____ Figure_____ for a list of all data measurements.
(water level logs, etc.) (Complete as appropriate).

Water Level Recovery Data was measured by manually w/ water level indicator
(Hermit Data Logger, Manually with Water Level Indicator, etc.) (List Method).

Complete the following table for each well tested.
COMPLETE A SECOND SHEET IF MORE THAN FOUR WELLS ARE TESTED

Slug Test Conducted in well(s) number	MW-17B	DMW-2		
Initial Rise/Drawdown in well (feet)	23.59	26.90		
Radius of Well Casing (feet)	0.08	0.08		
Effective Radius of Well (feet)	0.25	0.19		
Static Saturated Aquifer Thickness (feet)	50.00	50.00		
Length of Well Screen (feet)	10.00	5.00		
Static Height of Water Column in Well (ft) (bottom of screen to semi-confining unit @ top)	9.00	35.00		

Calculations

See Appendix F Table_____ Figure_____ for calculations. (Complete as appropriate).

The method for aquifer calculations was Bouwer-Rice (i.e. Bouwer-Rice, Cooper, etc.

Calculated values by well were as follows:

Slug Test Conducted in well(s) number	MW-17B	DMW-2	
Hydraulic Conductivity (ft/sec.)	2.72E-7	1.01E-7	

Thickness of the aquifer used to calculate hydraulic conductivity was _____ feet.

The aquifer is _____ confined ✓ semi-confined _____ water table (Check as appropriate).

The estimated seepage velocity is 1.07 feet per year based on a hydraulic conductivity of 1.87 E-7 ft./sec. a hydraulic gradient of 3.98E-2 ft/ft., and a porosity of 37 per cent for clayey silt / clayey sand soil (list type i.e., silty sand ,clay, etc).

Effective

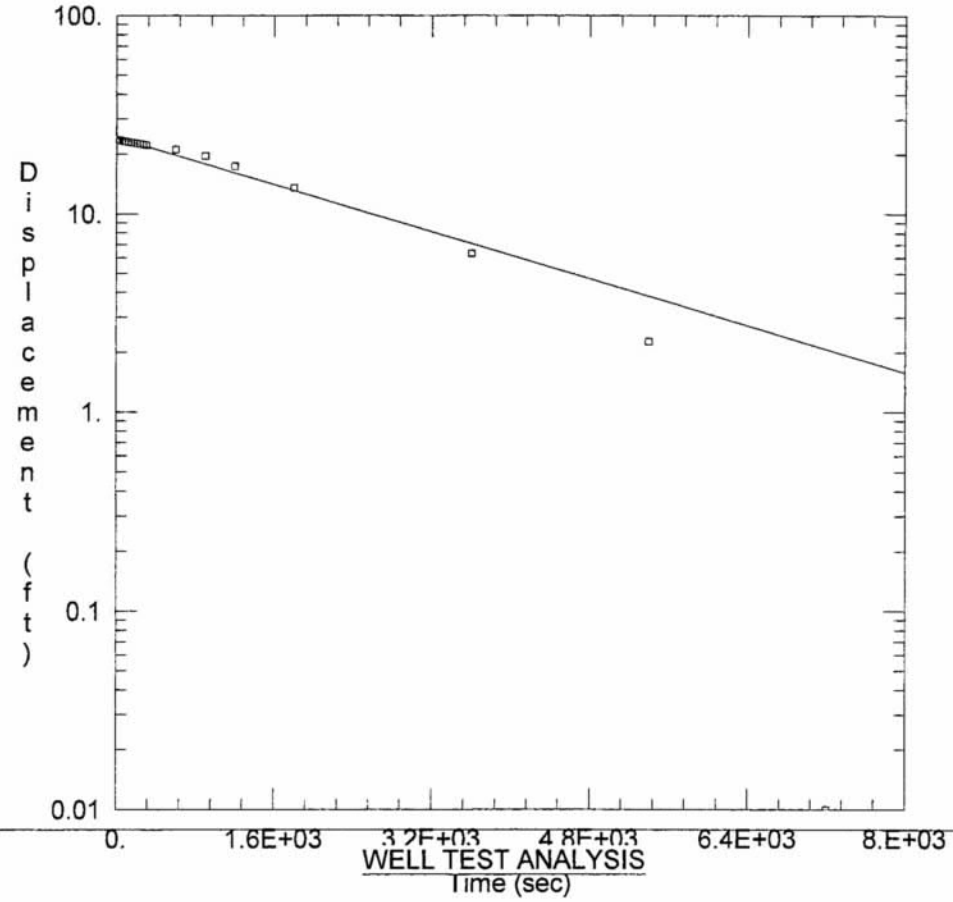
SUMMARY of SLUG TEST

Slug Test Data for AQTESOLV

Broad River Amoco (UST Permit #11946)
Performed in Monitoring Well MW-17B
March 8, 2013

Static Depth to Water (ft.) = 9.05
Total Depth (ft.) = 39.5

Elapsed Time (sec)	Depth to Water (feet)	Displacement (feet)
0	32.64	23.59
5	32.63	23.58
10	32.58	23.53
15	32.56	23.51
20	32.54	23.49
30	32.52	23.47
60	32.35	23.30
90	32.21	23.16
120	32.10	23.05
150	31.94	22.89
180	31.81	22.76
210	31.70	22.65
240	31.60	22.55
270	31.45	22.40
300	31.30	22.25
600	30.10	21.05
900	28.60	19.55
1200	26.43	17.38
1800	22.59	13.54
3600	15.35	6.30
5400	11.32	2.27
7200	9.06	0.01



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: ARM Environmental Services
Client: Cecchini
Project: 06-414.1-12
Test Location: Broad River Amoco

AQUIFER DATA

Saturated Thickness: 50. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-17B)

Initial Displacement: 23.59 ft
Wellbore Radius: 0.25 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.3
Casing Radius: 0.083 ft
Well Skin Radius: 0.25 ft
Total Well Penetration Depth: 9. ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 2.716E-07 ft/sec
y0 = 24.21 ft

2nd ZONE AQUIFER CALCULATIONS

HYDRAULIC GRADIENT

The top of casing elevations of each of the permanent groundwater monitoring wells were established by direct survey. The elevation of the aquifer was then calculated and utilized to evaluate the primary direction of groundwater flow and the hydraulic gradient in the water bearing formation at the site

Calculations

Based on water elevation change per unit distance as measured from MW-18B to MW-15B as presented on Figure 5B:

I = Hydraulic Gradient = **3.98 E-2 ft/ft**
(8.03 ft / 201.84 ft)

SEEPAGE VELOCITY

Vs = Seepage Velocity
K = Hydraulic Conductivity **= 2.72 E-7 ft/sec**
Hydraulic conductivity calculated from slug test conducted in MW-17B.
n = Effective Porosity (assumed) = **0.32** (clayey silt to clayey sand)

$$Vs = \frac{I \times K}{n}$$

$$Vs = \frac{(3.98E-2\ ft/ft)(2.72E-7\ ft/sec)}{0.32}$$

$$Vs = 3.38E-8\ ft/sec$$

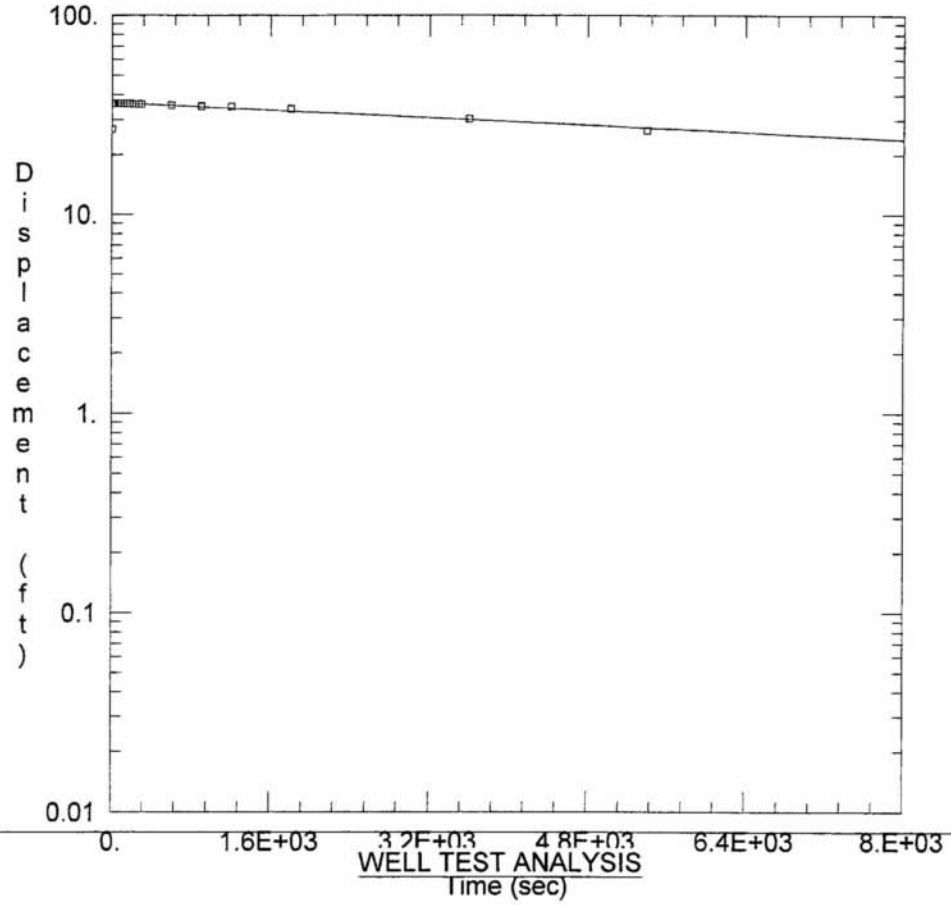
Vs = 1.07 ft/yr

Slug Test Data for AQTESOLV

Broad River Amoco (UST Permit #11946)
Performed in Monitoring Well dMW-2
March 8, 2013

Static Depth to Water (ft.) = 9.40
Total Depth (ft.) = 65.0

Elapsed Time (sec)	Depth to Water (feet)	Displacement (feet)
0	45.70	36.30
5	45.69	36.29
10	45.68	36.28
15	45.67	36.27
20	45.66	36.26
30	45.65	36.25
60	45.62	36.22
90	45.58	36.18
120	45.55	36.15
150	45.51	36.11
180	45.47	36.07
210	45.42	36.02
240	45.40	36.00
270	45.36	35.96
300	45.33	35.93
600	44.97	35.57
900	44.48	35.08
1200	44.30	34.90
1800	43.50	34.10
3600	39.80	30.40
5400	36.01	26.61



WELL TEST ANALYSIS

PROJECT INFORMATION

Company: ARM Environmental Services
Client: Cecchini
Project: 06-414.1-12
Test Location: Broad River Amoco

AQUIFER DATA

Saturated Thickness: 50. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (DMW-2)

Initial Displacement: 26.9 ft
Wellbore Radius: 0.19 ft
Screen Length: 5. ft
Gravel Pack Porosity: 0.3
Casing Radius: 0.083 ft
Well Skin Radius: 0.2 ft
Total Well Penetration Depth: 35. ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 1.007E-07 ft/sec
y0 = 36.49 ft

2ND ZONE AQUIFER CALCULATIONS (deeper depth)

HYDRAULIC GRADIENT

The top of casing elevations of each of the permanent groundwater monitoring wells were established by direct survey. The elevation of the aquifer was then calculated and utilized to evaluate the primary direction of groundwater flow and the hydraulic gradient in the water bearing formation at the site

Calculations

Based on water elevation change per unit distance as measured from DMW-3 to DMW-1 as presented on Figure 5C:

I = Hydraulic Gradient = **1.27 E-2 ft/ft**
(2.08 ft / 163.73 ft)

SEEPAGE VELOCITY

Vs = Seepage Velocity
K = Hydraulic Conductivity = **1.01 E-7 ft/sec**
Hydraulic conductivity calculated from slug test conducted in DMW-2.
n = Effective Porosity (assumed) = **0.30** (clayey sand)

$$Vs = \frac{I \times K}{n}$$

$$Vs = \frac{(1.27E-2\ ft/ft)(1.01E-7\ ft/sec)}{0.30}$$

$$Vs = 4.28E-9\ ft/sec$$

Vs = 0.13 ft/yr

SUMMARY OF SLUG TEST

SOUTH CAROLINA
Department of Health and Environmental Control (DHEC)

Site Data

SITE ID: # 11946 COUNTY Richland

FACILITY NAME Broad River Road Amoco (BP)

Slug Data

See Appendix D Table ____ Figure ____ for a list of all data measurements.

Water Level Recovery Data was measured by Manually
(Hermit Data Logger, Manually with Water Level Indicator, etc.)

Complete the following table for each well tested.

Slug Test Conducted in Well Number	MW-1	MW-3		
Initial Rise/Drawdown in Well (feet)	5.60	11.82		
Radius of Well Casing (feet)	0.083	0.083		
Effective Radius of Well (feet)	0.167	0.167		
Static Saturated Aquifer Thickness (feet)	50.00	50.00		
Length of Well Screen (feet)	20.00	10.00		
Static Height of Water Column in Well (feet)	24.70	13.22		

Calculations

See Appendix D Table ____ Figure ____ for a list of all data measu-
The method for aquifer calculations was Bouwer-Rice (i.e., Bouwer-Rice, Cooper, etc.)

Calculated values by well were as follows:

Slug Test Conducted in Well(s) Number	MW-1	MW-3	
Hydraulic Conductivity (feet/day)	0.0959	0.1065	

The aquifer is ____ confined x semi-confined ____ water table (Check as appropriate).

The estimated seepage velocity is 0.6 feet per year based on
a hydraulic conductivity of 0.1012, a hydraulic gradient of 0.004, and
a porosity of 25 per cent for clay

SUMMARY OF SLUG TEST

Broad River Amoco (BP)
Columbia, SC
SCDHEC ID # 11946

Shallow:

Hydraulic Conductivity (k)

	MW-1	MW-3
0.1012 ft/day	0.0959	0.1065
36.938 ft/year		
0.030846 m/day		
11.2587 m/year		

Velocity: 0.001619 ft/day $v=(kxdh/dl)/n_e$

0.591008 ft/year or 0.6 ft/year
0.180139 m/year 0.2 m/year

Average hydraulic gradient (dh/dl) 0.004 ft/ft
Effective Porosity (n_e) 0.25

Shallow:

Hydraulic Conductivity (k)

	MW-1	MW-3	MW-2
0.069 ft/day	0.0959	0.1065	0.0046
25.185 ft/year			
0.021031 m/day			
7.676388 m/year			

Velocity: 0.001104 ft/day $v=(kxdh/dl)/n_e$

0.40296 ft/year or 0.4 ft/year
0.122822 m/year 0.1 m/year

Average hydraulic gradient (dh/dl) 0.004 ft/ft
Effective Porosity (n_e) 0.25

Broad River BP
4335 Broad River Rd
Columbia SC
SCDHEC # 11946

SLUG TEST

MW-1
3/28/2011
STATIC: 15.3 ft.

Bottom of Well 40 ft.

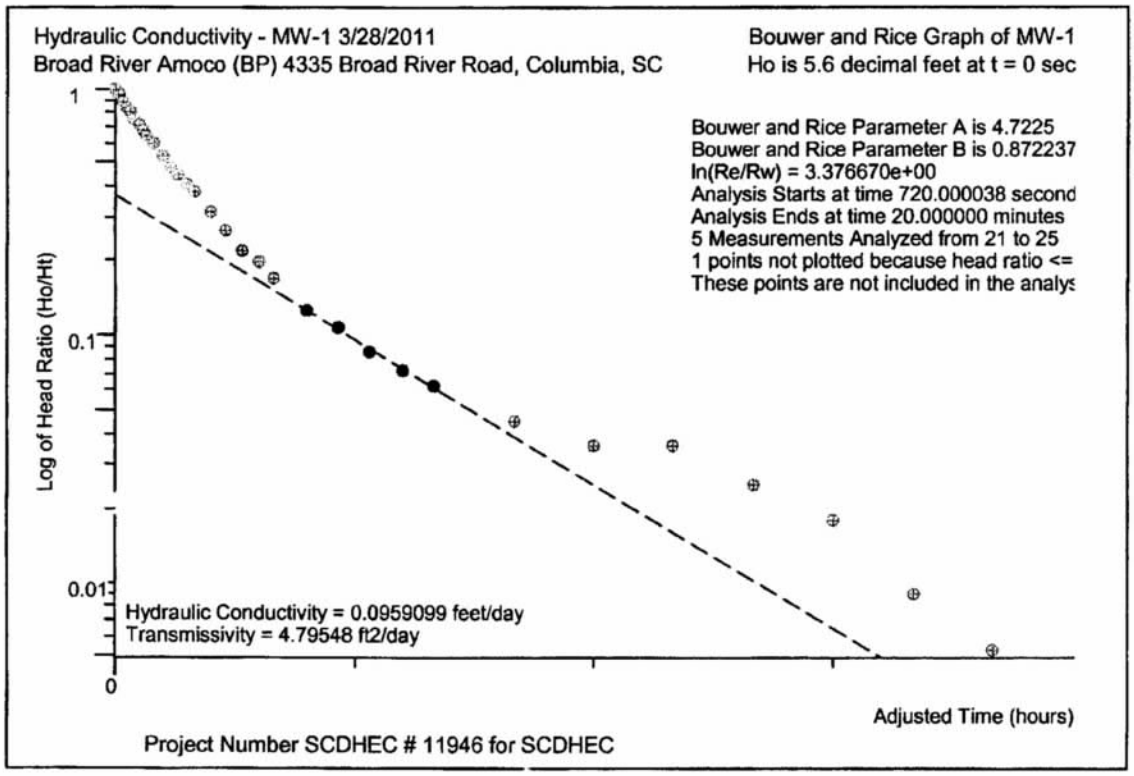
Height of Water Table 24.7 ft.

Time (minutes)	Depth	Drawdown	Displacement
0	20.9	19.1	5.6
0.25	20.55	19.45	5.25
0.5	20.2	19.8	4.9
0.75	19.98	20.02	4.68
1	19.78	20.22	4.48
1.25	19.5	20.5	4.2
1.5	19.28	20.72	3.98
1.75	19.06	20.94	3.76
2	18.9	21.1	3.6
2.5	18.65	21.35	3.35
3	18.28	21.72	2.98
3.5	17.97	22.03	2.67
4	17.78	22.22	2.48
4.5	17.6	22.4	2.3
5	17.42	22.58	2.12
6	17.05	22.95	1.75
7	16.78	23.22	1.48
8	16.52	23.48	1.22
9	16.4	23.6	1.1
10	16.25	23.75	0.95
12	16	24	0.7
14	15.9	24.1	0.6
16	15.78	24.22	0.48
18	15.7	24.3	0.4
20	15.65	24.35	0.35
25	15.55	24.45	0.25
30	15.5	24.5	0.2
35	15.5	24.5	0.2
40	15.44	24.56	0.14
45	15.4	24.6	0.1
50	15.35	24.65	0.05
55	15.33	24.67	0.03
60	15.3	24.7	0
65	15.3	24.7	0
70	15.3	24.7	0
75	15.3	24.7	0
80	15.3	24.7	0
85	15.3	24.7	0
90	15.3	24.7	0

Data from file:	C:\ENVIRO~1\BROADR~1\MW1.SLG
Title:	Hydraulic Conductivity - MW-1
Site Name:	Broad River Amoco (BP)
Location:	4335 Broad River Road, Columbia, SC
Client:	SCDHEC
Project Number:	SCDHEC # 11946
Test Date:	3/28/2011
Well Number:	MW-1
Casing Radius:	0.083 feet
Effective Well Radius:	0.167 feet
Aquifer Thickness:	50 feet
Water Table to Screen Bottom:	24.7 feet
Screen Length:	20 feet
Static Water Level:	0 decimal feet

K ratio is not entered
There are 33 time and drawdown measurements
Tests starts with trial 1
Time values will be adjusted by 0 days (0.000000 seconds)

Trial	Time (minutes)	Adjusted Time (minutes)	Drawdown (decimal feet)	Head (decimal feet)	Head Ratio
1	0	0	5.6	5.6	1
2	0.25	0.25	5.25	5.25	0.9375
3	0.5	0.5	4.9	4.9	0.875
4	0.75	0.75	4.68	4.68	0.835714
5	0.999999	0.999999	4.48	4.48	0.8
6	1.25	1.25	4.2	4.2	0.75
7	1.5	1.5	3.98	3.98	0.710714
8	1.75	1.75	3.76	3.76	0.671429
9	2	2	3.6	3.6	0.642857
10	2.5	2.5	3.35	3.35	0.598214
11	3	3	2.98	2.98	0.532143
12	3.5	3.5	2.67	2.67	0.476786
13	4	4	2.48	2.48	0.442857
14	4.5	4.5	2.3	2.3	0.410714
15	5	5	2.12	2.12	0.378571
16	6	6	1.75	1.75	0.3125
17	7	7	1.48	1.48	0.264286
18	8	8	1.22	1.22	0.217857
19	9	9	1.1	1.1	0.196429
20	10	10	0.95	0.95	0.169643
21	12	12	0.7	0.7	0.125
22	14	14	0.6	0.6	0.107143
23	16	16	0.48	0.48	0.0857143
24	18	18	0.4	0.4	0.0714286
25	20	20	0.35	0.35	0.0625
26	25	25	0.25	0.25	0.0446429
27	30	30	0.2	0.2	0.0357143
28	35	35	0.2	0.2	0.0357143
29	40	40	0.14	0.14	0.025
30	45	45	0.1	0.1	0.0178571
31	50	50	0.05	0.05	0.00892857
32	55	55	0.03	0.03	0.00535714
33	60	60	0	0	0


Hydraulic Conductivity - MW-1 3/28/2011
Broad River Amoco (BP) 4335 Broad River Road, Columbia, SC
Bouwer and Rice Graph of MW-1
Ho is 5.6 decimal feet at t = 0 sec
Bouwer and Rice Parameter A is 4.7225
Bouwer and Rice Parameter B is 0.872237
ln(Re/Rw) = 3.376670e+00
Analysis Starts at time 720.000038 second
Analysis Ends at time 20.000000 minutes
5 Measurements Analyzed from 21 to 25
1 points not plotted because head ratio <=
These points are not included in the analys
Log of Head Ratio (Ho/Ht)
1
0.1
0.01
0
Hydraulic Conductivity = 0.0959099 feet/day
Transmissivity = 4.79548 ft2/day
Adjusted Time (hours)
Project Number SCDHEC # 11946 for SCDHEC

Broad River BP
4335 Broad River Rd
Columbia SC
SCDHEC # 11946

SLUG TEST

MW-3
3/25/2011
STATIC: 14.78 ft.

Bottom of Well 28 ft.

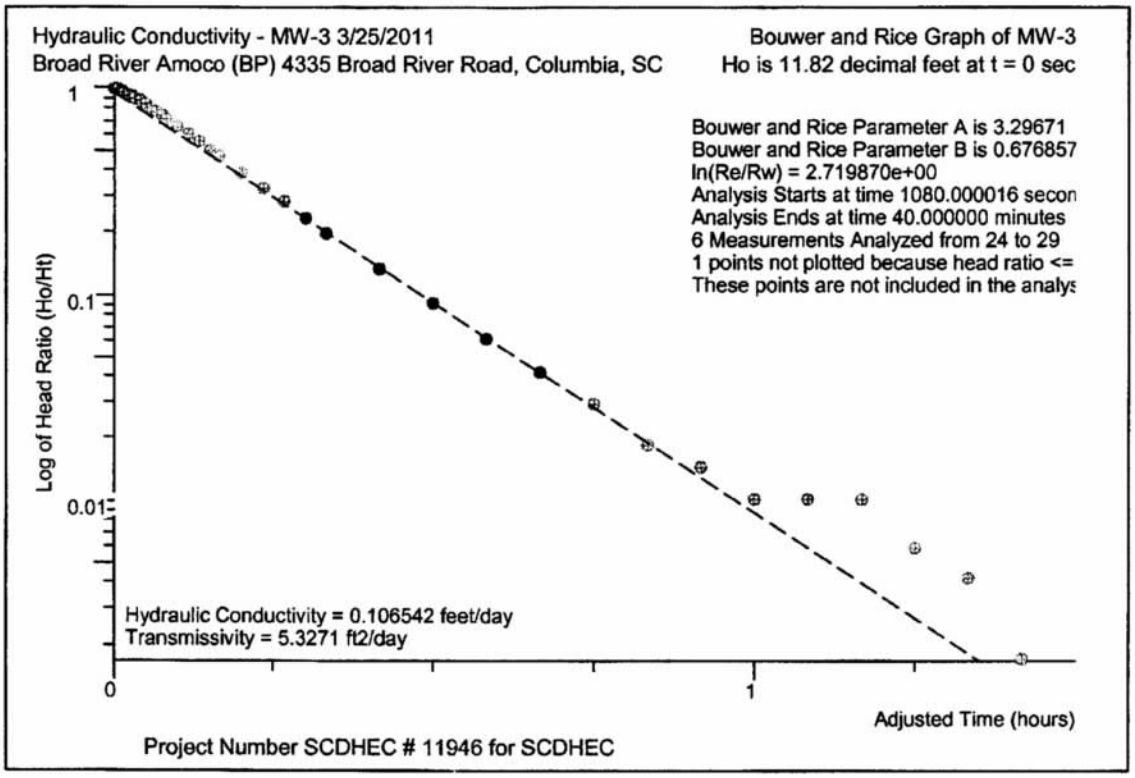
Height of Water Table 13.22 ft.

Time (minutes)	Depth	Drawdown	Displacement
0	26.6	1.4	11.82
0.25	26.5	1.5	11.72
0.5	26.48	1.52	11.7
0.75	26.18	1.82	11.4
1	25.9	2.1	11.12
1.25	25.7	2.3	10.92
1.5	25.58	2.42	10.8
1.75	25.45	2.55	10.67
2	25.3	2.7	10.52
2.5	25.1	2.9	10.32
3	24.65	3.35	9.87
3.5	24.28	3.72	9.5
4	23.92	4.08	9.14
4.5	23.55	4.45	8.77
5	23.15	4.85	8.37
6	22.4	5.6	7.62
7	21.84	6.16	7.06
8	21.25	6.75	6.47
9	20.7	7.3	5.92
10	20.25	7.75	5.47
12	19.35	8.65	4.57
14	18.65	9.35	3.87
16	18.08	9.92	3.3
18	17.55	10.45	2.77
20	17.13	10.87	2.35
25	16.34	11.66	1.56
30	15.85	12.15	1.07
35	15.5	12.5	0.72
40	15.28	12.72	0.5
45	15.13	12.87	0.35
50	15	13	0.22
55	14.95	13.05	0.17
60	14.9	13.1	0.12
65	14.9	13.1	0.12
70	14.9	13.1	0.12
75	14.85	13.15	0.07
80	14.83	13.17	0.05
85	14.8	13.2	0.02
90	14.78	13.22	0

Data from file:	C:\ENVIRO~1\BROADR~1\MW3.SLG
Title:	Hydraulic Conductivity - MW-3
Site Name:	Broad River Amoco (BP)
Location:	4335 Broad River Road, Columbia, SC
Client:	SCDHEC
Project Number:	SCDHEC # 11946
Test Date:	3/25/2011
Well Number:	MW-3
Casing Radius:	0.083 feet
Effective Well Radius:	0.167 feet
Aquifer Thickness:	50 feet
Water Table to Screen Bottom:	13.22 feet
Screen Length:	10 feet
Static Water Level:	0 decimal feet

K ratio is not entered
There are 39 time and drawdown measurements
Tests starts with trial 1
Time values will be adjusted by 0 days (0.000000 seconds)

Trial	Time (minutes)	Adjusted Time (minutes)	Drawdown (decimal feet)	Head (decimal feet)	Head Ratio
1	0	0	11.82	11.82	1
2	0.25	0.25	11.72	11.72	0.99154
3	0.5	0.5	11.7	11.7	0.989848
4	0.75	0.75	11.4	11.4	0.964467
5	1	1	11.12	11.12	0.940778
6	1.25	1.25	10.92	10.92	0.923858
7	1.5	1.5	10.8	10.8	0.913706
8	1.75	1.75	10.67	10.67	0.902707
9	2	2	10.52	10.52	0.890017
10	2.5	2.5	10.32	10.32	0.873096
11	3	3	9.87	9.87	0.835025
12	3.5	3.5	9.5	9.5	0.803723
13	4	4	9.14	9.14	0.773266
14	4.5	4.5	8.77	8.77	0.741963
15	5	5	8.37	8.37	0.708122
16	6	6	7.62	7.62	0.64467
17	7	7	7.06	7.06	0.597293
18	8	8	6.47	6.47	0.547377
19	9	9	5.92	5.92	0.500846
20	10	10	5.47	5.47	0.462775
21	12	12	4.57	4.57	0.386633
22	14	14	3.87	3.87	0.327411
23	16	16	3.3	3.3	0.279188
24	18	18	2.77	2.77	0.234349
25	20	20	2.35	2.35	0.198816
26	25	25	1.56	1.56	0.13198
27	30	30	1.07	1.07	0.0905245
28	35	35	0.72	0.72	0.0609137
29	40	40	0.5	0.5	0.0423012
30	45	45	0.35	0.35	0.0296108
31	50	50	0.22	0.22	0.0186125
32	55	55	0.17	0.17	0.0143824
33	60	60	0.12	0.12	0.0101523
34	65	65	0.12	0.12	0.0101523
35	70	70	0.12	0.12	0.0101523
36	75	75	0.07	0.07	0.00592217
37	80	80	0.05	0.05	0.00423012
38	85	85	0.02	0.02	0.00169205
39	90	90	0	0	0


Hydraulic Conductivity - MW-3 3/25/2011
Broad River Amoco (BP) 4335 Broad River Road, Columbia, SC
Bouwer and Rice Graph of MW-3
Ho is 11.82 decimal feet at t = 0 sec
Bouwer and Rice Parameter A is 3.29671
Bouwer and Rice Parameter B is 0.676857
ln(Re/Rw) = 2.719870e+00
Analysis Starts at time 1080.000016 secon
Analysis Ends at time 40.000000 minutes
6 Measurements Analyzed from 24 to 29
1 points not plotted because head ratio <=
These points are not included in the analys
Log of Head Ratio (Ho/Ht)
1
0.1
0.01
Hydraulic Conductivity = 0.106542 feet/day
Transmissivity = 5.3271 ft2/day
0
1
Adjusted Time (hours)
Project Number SCDHEC # 11946 for SCDHEC

Broad River BP
4335 Broad River Rd
Columbia SC
SCDHEC # 11946

SLUG TEST

MW-2
3/28/2011
STATIC: 14.05 ft.

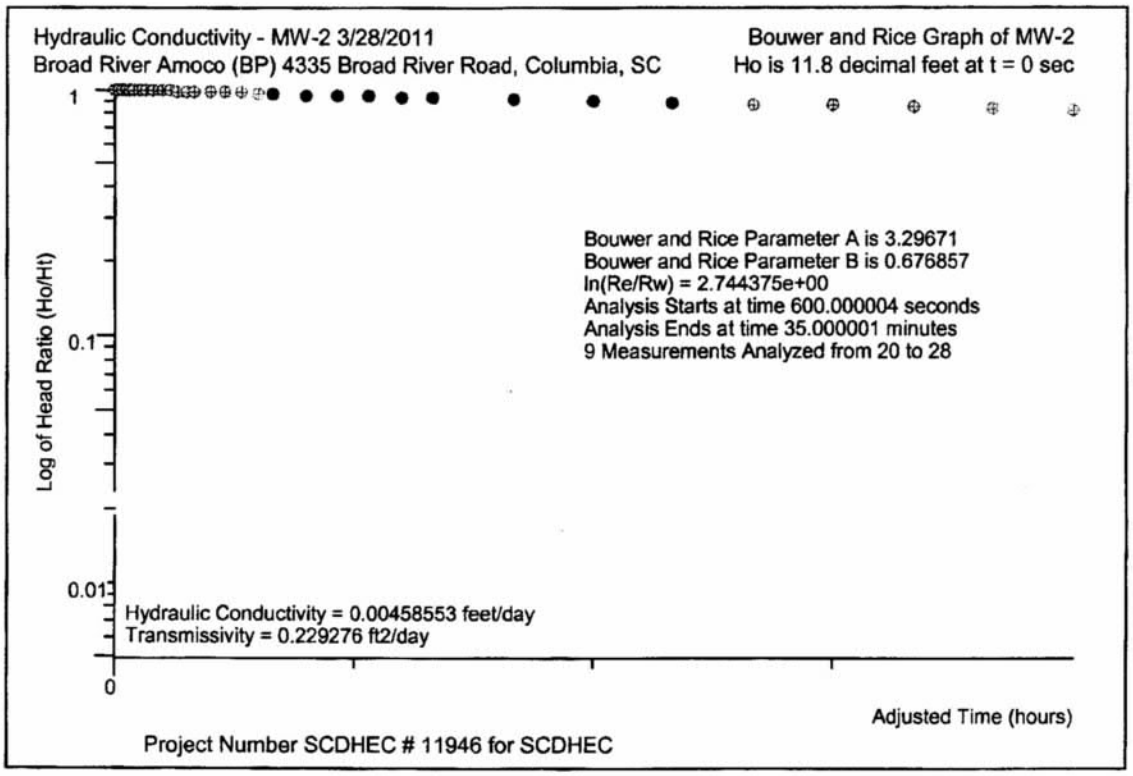
Bottom of Well: 28 ft.
Height of Water Table: 13.95 ft.

Time (minutes)	Depth	Drawdown	Displacement
0	25.85	2.15	11.8
0.25	25.82	2.18	11.77
0.5	25.8	2.2	11.75
0.75	25.77	2.23	11.72
1	25.77	2.23	11.72
1.25	25.75	2.25	11.7
1.5	25.74	2.26	11.69
1.75	25.73	2.27	11.68
2	25.71	2.29	11.66
2.5	25.7	2.3	11.65
3	26.68	1.32	11.63
3.5	25.65	2.35	11.6
4	26.61	1.39	11.56
4.5	25.58	2.42	11.53
5	25.55	2.45	11.5
6	25.53	2.47	11.48
7	25.5	2.5	11.45
8	25.45	2.55	11.4
9	25.4	2.6	11.35
10	25.35	2.65	11.3
12	25.25	2.75	11.2
14	25.2	2.8	11.15
16	27.14	0.86	11.09
18	25.05	2.95	11
20	24.96	3.04	10.91
25	24.8	3.2	10.75
30	24.63	3.37	10.58
35	24.42	3.58	10.37
40	24.3	3.7	10.25
45	24.16	3.84	10.11
50	24.05	3.95	10
55	23.86	4.14	9.81
60	23.7	4.3	9.65
65	23.7	4.3	9.65
70	23.7	4.3	9.65
75	23.7	4.3	9.65
80	23.7	4.3	9.65
85	23.7	4.3	9.65
90	23.7	4.3	9.65

Data from file:	C:\ENVIRO~1\BROADR~1\MW2.SLG
Title:	Hydraulic Conductivity - MW-2
Site Name:	Broad River Amoco (BP)
Location:	4335 Broad River Road, Columbia, SC
Client:	SCDHEC
Project Number:	SCDHEC # 11946
Test Date:	3/28/2011
Well Number:	MW-2
Casing Radius:	0.083 feet
Effective Well Radius:	0.167 feet
Aquifer Thickness:	50 feet
Water Table to Screen Bottom:	13.95 feet
Screen Length:	10 feet
Static Water Level:	0 decimal feet

K ratio is not entered
There are 33 time and drawdown measurements
Tests starts with trial 1
Time values will be adjusted by 0 days (0.000000 seconds)

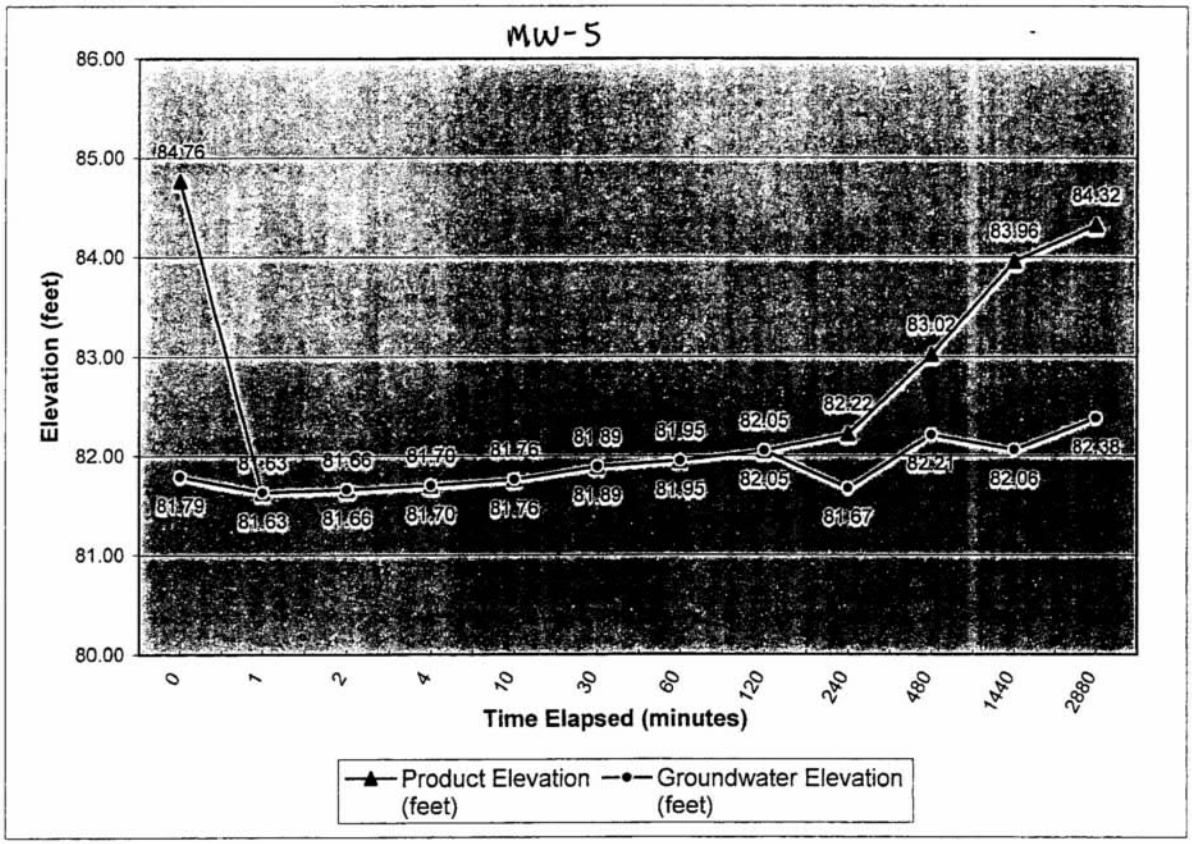
Trial	Time (minutes)	Adjusted Time (minutes)	Drawdown (decimal feet)	Head (decimal feet)	Head Ratio
1	0	0	11.8	11.8	1
2	0.25	0.25	11.77	11.77	0.997458
3	0.5	0.5	11.75	11.75	0.995763
4	0.75	0.75	11.72	11.72	0.99322
5	1	1	11.72	11.72	0.99322
6	1.25	1.25	11.7	11.7	0.991525
7	1.5	1.5	11.69	11.69	0.990678
8	1.75	1.75	11.68	11.68	0.98983
9	2	2	11.66	11.66	0.988136
10	2.5	2.5	11.65	11.65	0.987288
11	3	3	11.63	11.63	0.985593
12	3.5	3.5	11.6	11.6	0.983051
13	4	4	11.56	11.56	0.979661
14	4.5	4.5	11.53	11.53	0.977119
15	5	5	11.5	11.5	0.974576
16	6	6	11.48	11.48	0.972881
17	7	7	11.45	11.45	0.970339
18	8	8	11.4	11.4	0.966102
19	9	9	11.35	11.35	0.961864
20	10	10	11.3	11.3	0.957627
21	12	12	11.2	11.2	0.949153
22	14	14	11.15	11.15	0.944915
23	16	16	11.09	11.09	0.939831
24	18	18	11	11	0.932203
25	20	20	10.91	10.91	0.924576
26	25	25	10.75	10.75	0.911017
27	30	30	10.58	10.58	0.89661
28	35	35	10.37	10.37	0.878814
29	40	40	10.25	10.25	0.868644
30	45	45	10.11	10.11	0.85678
31	50	50	10	10	0.847458
32	55	55	9.81	9.81	0.831356
33	60	60	9.65	9.65	0.817797


Hydraulic Conductivity - MW-2 3/28/2011
Broad River Amoco (BP) 4335 Broad River Road, Columbia, SC
Bouwer and Rice Graph of MW-2
Ho is 11.8 decimal feet at t = 0 sec
Log of Head Ratio (Ho/Ht)
1
0.1
0.01
0
Bouwer and Rice Parameter A is 3.29671
Bouwer and Rice Parameter B is 0.676857
ln(Re/Rw) = 2.744375e+00
Analysis Starts at time 600.000004 seconds
Analysis Ends at time 35.000001 minutes
9 Measurements Analyzed from 20 to 28
Hydraulic Conductivity = 0.00458553 feet/day
Transmissivity = 0.229276 ft2/day
Adjusted Time (hours)
Project Number SCDHEC # 11946 for SCDHEC

Appendix F – Free Product Recovery Rate Test

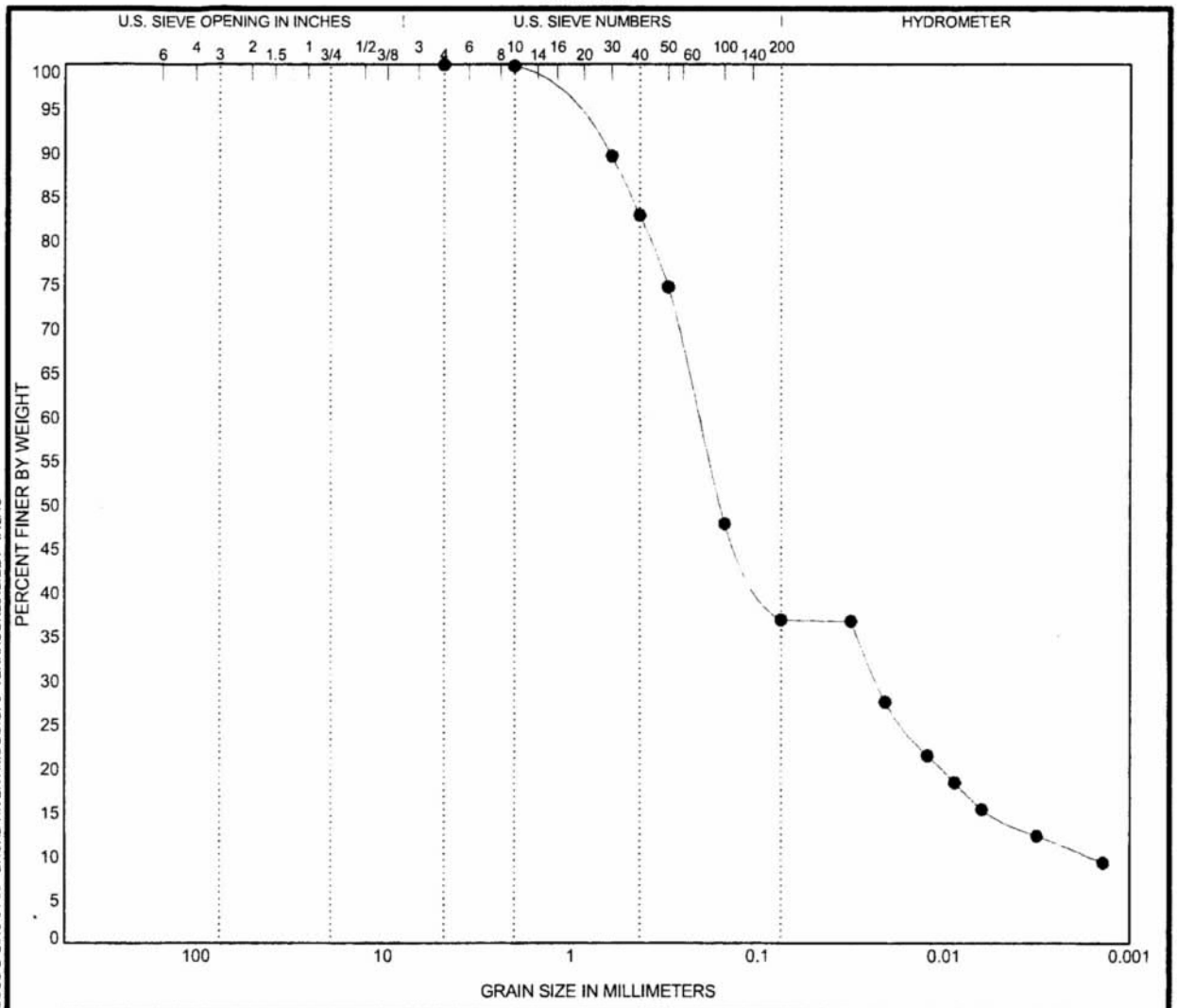
March 11 through March 13, 2013

Elapsed Time (minutes)	Product Elevation (feet)	Groundwater Elevation (feet)	Product Thickness (feet)
0	84.76	81.79	2.97
1	81.63	81.63	0.00
2	81.66	81.66	0.00
4	81.70	81.70	0.00
10	81.76	81.76	0.00
30	81.89	81.89	0.00
60	81.95	81.95	0.00
120	82.05	82.05	0.00
240	82.22	81.67	0.55
480	83.02	82.21	0.81
1440	83.96	82.06	1.90
2880	84.32	82.38	1.94



GRAIN SIZE DISTRIBUTION

ASTM D422



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth (ft)	USCS Classification	LL	PL	PI	Cc	Cu
●	MW-17B	38.0 -					1.51	117.43

	Boring ID	Depth (ft)	D_{100}	D_{60}	D_{30}	D_{10}	% Gravel	% Sand	% Silt	% Clay
●	MW-17B	38.0 -	4.75	0.205	0.023	0.002	0.0	63.1	22.6	14.2

PROJECT: BROAD RIVER AMOCO

SITE: SOUTH CAROLINA

Terracon

521 Clemson Road
Columbia, South Carolina

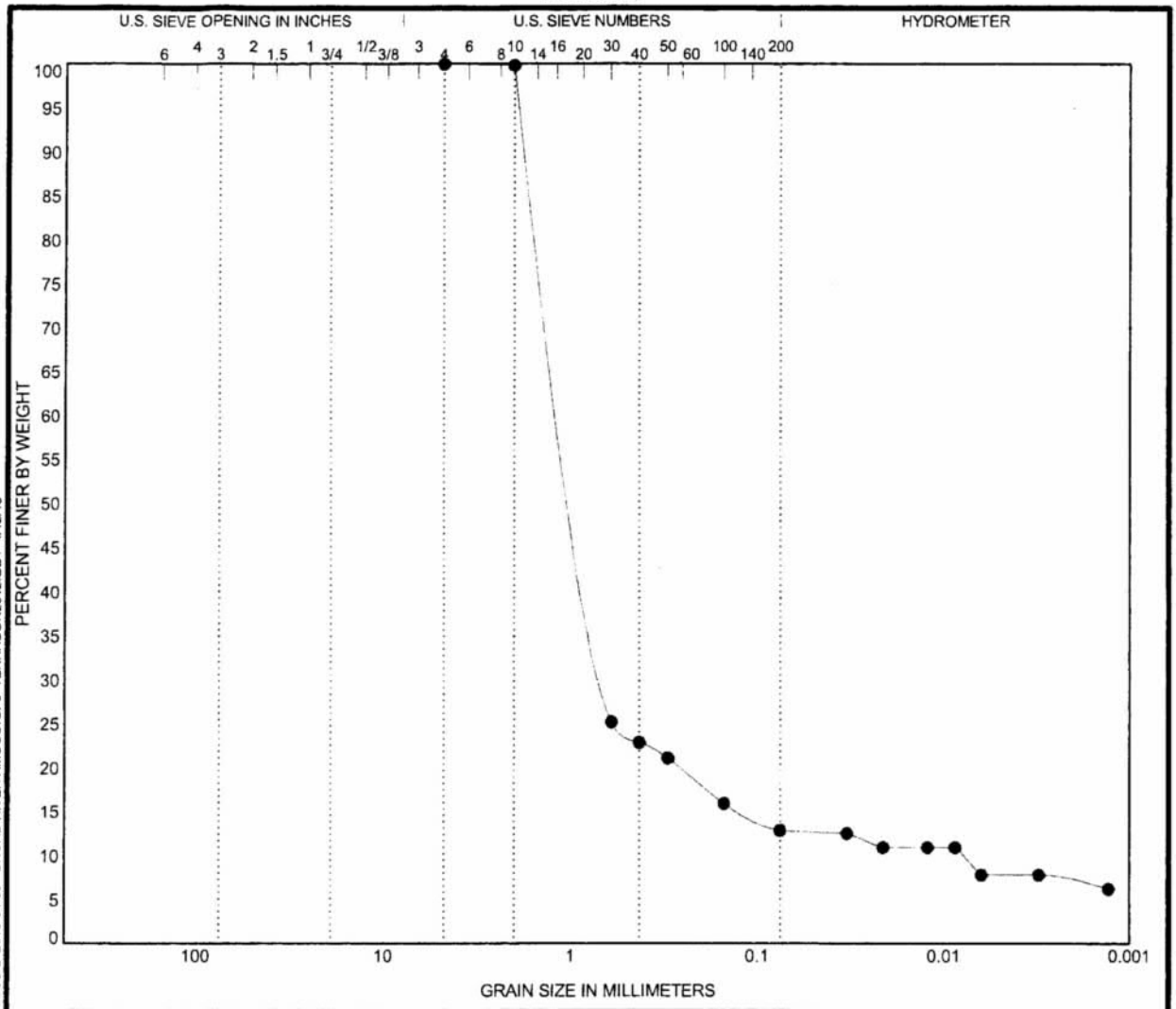
PROJECT NUMBER: 73075016

CLIENT: ACCESS ANALYTICAL

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 2013-04-08 - BROAD RIVER AMOCO.GPJ TERRACON2012.GDT 4/12/13

GRAIN SIZE DISTRIBUTION

ASTM D422



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth (ft)	USCS Classification	LL	PL	PI	Cc	Cu
●	DMW-2	62.0 -					50.67	133.32

	Boring ID	Depth (ft)	D_{100}	D_{60}	D_{30}	D_{10}	% Gravel	% Sand	% Silt	% Clay
●	DMW-2	62.0 -	4.75	1.052	0.649	0.008	0.0	87.2	5.0	7.8

PROJECT: BROAD RIVER AMOCO

SITE: SOUTH CAROLINA

Terracon

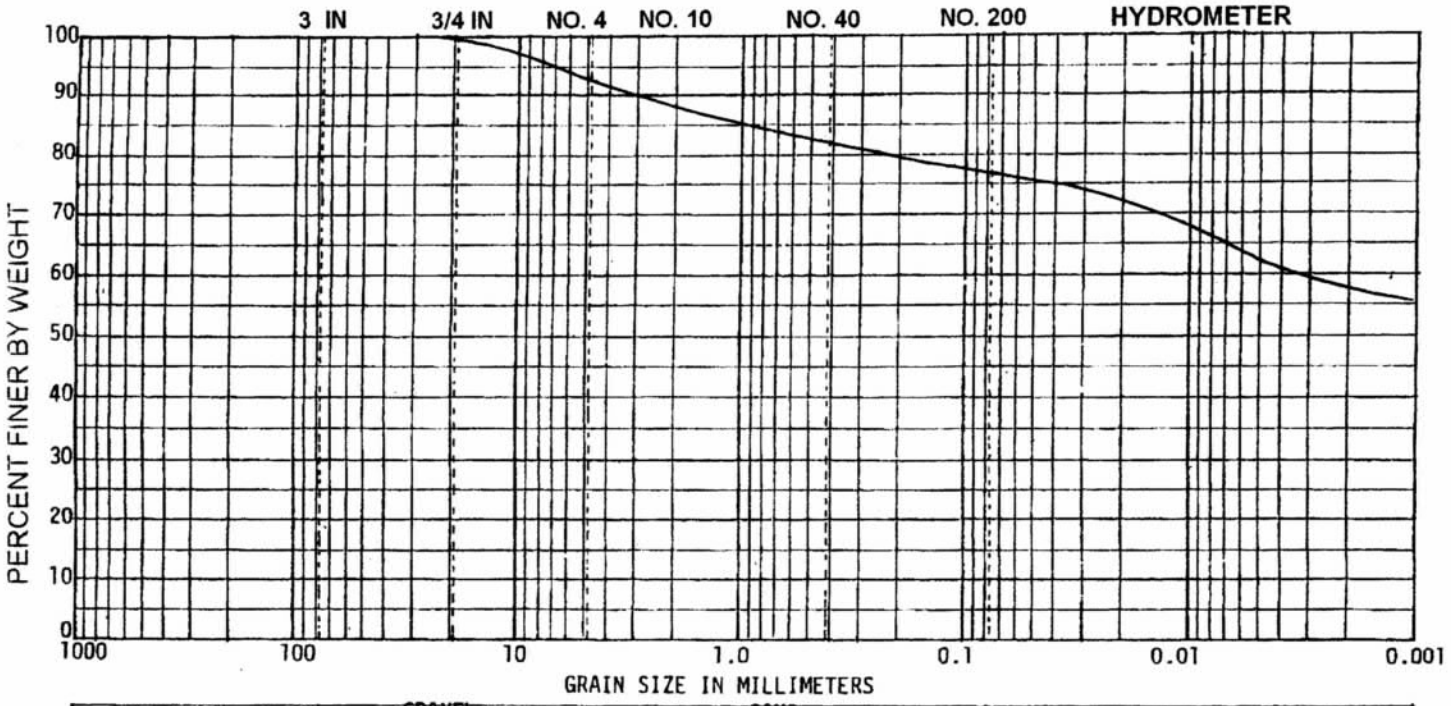
521 Clemson Road
Columbia, South Carolina

PROJECT NUMBER: 73075016

CLIENT: ACCESS ANALYTICAL

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 2013-04-08 - BROAD RIVER AMOCO.GPJ TERRACON2012.GDT 4/12/13

U.S. STANDARD SIEVE SIZE



COBBLES	GRAVEL		SAND			SILT OR CLAY
	Coarse	Fine	Coarse	Medium	Fine	

SAMPLE	DEPTH	CLASSIFICATION	NAT WC	LL	PL	PI
SB-1		Tan Fine SAND with Rock				

GRAIN SIZE DISTRIBUTION

Access Analytical
Project Number: 111054

Broad River BP

GEO-SYSTEMS DESIGN & TESTING, INC.
GEOTECHNICAL SERVICES AND MATERIALS TESTING

UST#11946 - SCBO Advertisement

Susan

SOUTH CAROLINA BUSINESS OPPORTUNITIES

Published by Materials Management Office – R. Voight Shealy, Director

December 2, 2013

Volume 33, Issue 95

UST 314eeh DOCKETING

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A Listing, Published Twice Per Week, of Proposed Procurements in Construction, Information Technology, Supplies & Services As Well As Other Information of Interest to the Business Community.

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Sealed Bids Listed in This Publication Will Be Received at the Time, Place & Date Indicated in the Announcements & Then Be Publicly Opened & Read Aloud. The State/Owner Reserves the Right to Reject Any Or All Bids & to Waive Technicalities.

ARCHITECT / ENGINEERING SERVICES

REQUEST FOR PROPOSALS

Project Name: DESIGN SERVICES FOR DEVELOPMENT OF A MINOR LEAGUE BASEBALL STADIUM
Location: North Augusta, SC
Description: The City of North Augusta, South Carolina is seeking to hire a qualified architectural firm to provide design services for the construction of a minor league baseball stadium within the City. The stadium is anticipated to be a state of the art, family friendly venue with the flexibility to host a variety of sports & community events, in addition to serving as the home field for the Augusta GreenJackets Professional Baseball Club. The team is the minor league low "A" affiliate of the San Francisco Giants. The City is partnering with Agon Sports & Entertainment, in its capacity as an owner & the operator & manager of the team, to design & build the stadium. Agon will assist the City in the selection of the design team. The total budget for the Stadium is estimated to be approximately $25 million.
Anticipated Construction Cost Range: Total budget $25M
Resume Deadline/Time: 12/18/13 – 5:00pm
Number of Copies: 10
Agency/Owner: City of North Augusta, SC
Name & Title of Agency Coordinator: B. Todd Glover, City Administrator
Address: 100 Georgia Ave., North Augusta, SC 29841
Phone: (803) 441-4202
Email: tglover@northaugusta.net
Website: The RFP can be accessed at www.northaugusta.net. Click on "Bid Notices" on the left hand side of the page.

ENGINEERING SERVICES FOR ANDERSON COUNTY WASTEWATER DEPARTMENT

Anderson County is receiving sealed bids for Professional Engineering Services for the Anderson County Wastewater Department, Bid# 14-018, on Wednesday, January 8, 2014, at 11:00am. Sealed bids are to be turned in to the Anderson County Purchasing Department, 101 S. Main St., Anderson, SC 29624, in Room 115.

Interested parties may visit the Anderson County Purchasing at www.andersoncountysc.org under the area of contracts & bids to request information, or contact the Anderson County Purchasing Office at (864) 260-4019.

CONSTRUCTION

Invitation for Construction Bids

Please verify requirements for non-State agency advertisements by contacting the agency / owner.

Projects expected to cost less than $50,000 are listed under the Minor Construction heading.

I.D.C. SEED PROJECT

Project Name: S.I.M.T. PARKING LOT CONNECTOR
Project Number: H59-D756-PD
Project Location: Florence-Darlington Technical College, Florence
Bid Security Required: Yes
Performance Bond Required: Yes
Payment Bond Required: Yes
Description of Project: A paved road connector between rear parking lots adjacent to Southeastern Institute of Manufacturing & Technology (SIMT) facility in Florence. This project also will be used as a seed project for choosing three lowest contractors for an IDC for paving. Lowest contractor also will be awarded the paving contract for this project. Contractor may be subject to performance appraisal at close of project.
Construction Cost Range: $45,000 - $55,000
Architect/Engineer: Ervin Engineering
A/E Contact: Joe Ervin
A/E Address: 341 West Evans St., Florence, SC 29501
A/E E-mail: jse@ervinengineering.com
A/E Telephone: (843) 662-4941
A/E Fax: (843) 662-7148
Note: All questions & correspondence concerning this Invitation to Bid shall be addressed to the A/E.
Bidding Documents/Plans May Be Obtained From: Ervin Engineering
Plan Deposit: $25.00, non-refundable
Note: Only those bidding documents / plans obtained from the aforementioned source are official. Bidders rely on copies of bidding documents / plans obtained from any other source at their own risk.
Bidding Documents/Plans Are Also on File for Viewing Purposes Only At: Florence-Darlington Tech. IDC project manuals are available electronically at no charge by E-mailing Toni Richardson, FDTC Procurement Specialist, at toni.richardson@fdtc.edu - provide name, company information, address, phone number & E-mail address for purposes of issuing any addenda
Pre-Bid Conf.: Not mandatory
Pre-Bid Date/Time: 12/16/13 – 10:00 am
Place: FDTC, Office of Physical Plant Facilities
Agency/Owner: Florence-Darlington Technical College
Agency Procurement Officer: Angela Jordan, Director of Purchasing
Address: 2715 West Lucas St., Florence, SC 29501
E-mail: angela.jordan@fdtc.edu
Telephone: (843) 661-8341
Fax: (843) 661-8342
Bid Closing Date/Time: 1/6/14 – 2:00 pm
Place: FDTC, Purchasing Office, Room 5212 A
Hand Deliver Bids To: Florence-Darlington Tech, Attn.: Angela Jordan, Purchasing Office, Room 5212 A,

No Bidder May Withdraw The Bid within 45 days after the actual date of the opening & thereof.

The Owner Reserves The Right To Waive any informalities or to reject any or all bids.

Engineers: URS Corporation, 101 Research Dr., Columbia, SC 29203, Attn: Mr. Michael Lambrecht, P.E., (803) 254-4400

Owner: Laurens County Development Corporation, PO Box 427, Laurens, SC 29360, Attn: Mr. Marvin Moss, (864) 939-0580

EAST McBEE AVENUE STREETSCAPE IMPROVEMENTS FOR CITY OF GREENVILLE

INVITATION FOR BIDS
IFB NO. 14-3430

The City Of Greenville Is Requesting Sealed Bids for streetscape improvement work along East McBee Avenue in accordance with the City's Design & Specification Manual & SCDOT Standard Specifications for Highway Construction, Edition 2007. All work shall be completed by March 21, 2014

The Project Is Located at the corner of East McBee Avenue & Falls Street; specifically, the frontage of the new 98 East McBee residential development. Existing curb & gutter, sidewalk & asphalt are to be demolished & replaced with approximately 730 linear feet of new curb & gutter, 475 square yards of sidewalk & 4,350 square feet of decorative concrete pavers. Other associated work includes: decorative retaining walls, storm drainage work, pedestrian & decorative street lighting system; irrigation system, landscaping & installation of street furnishings.

A Mandatory Pre-Bid Conference Will Be Held at 10:00am, ET, December 5, 2013, in the First Floor Conference Room in City Hall, 206 S. Main Street, Greenville SC 29601.

A Certified Check, Cashier's Check Or Bid Bond in the amount of five percent (5%) of the bid made payable to the City of Greenville will be required to accompany each bid. Performance & payment bonds will be required of the successful bidder after acceptance of offer by the City.

Bid Packet May Be Obtained Online At http://www.greenvillesc.gov/OMB/BidsRfps.aspx (Drawings are only available on a CD) or from the City of Greenville Purchasing Division:

- 7th floor, City Hall, 206 South Main St., Greenville, SC 29601
- PO Box 2207, Greenville, SC 29602
- Maribel Diaz, (864) 467-4547
- mdiaz@greenvillesc.gov

There Is A $50 Non-Refundable Fee for the CD. Contact Sheryl Hobbs, Revenue Technician, to pay by telephone at (864) 467-4537 or by email at shobbs@greenvillesc.gov.

Sealed Bids Will Be Received in the City of Greenville's Purchasing Division, until 2:00pm, ET, December 17, 2013. At said place & time, & promptly thereafter all sealed bids that have been duly received will be publicly opened & read aloud.

Deadline For Questions: 12/10/13 – 2:00pm.

READVERTISEMENT TO CLARIFY LANDSCAPE ARCHITECT'S INFORMATION

Project: PROPOSED SITE WORK FOR SALUDA SHOALS PARK ATHLETIC COMPLEX (IRMO) & EPTINGS CAMP PARK (CHAPIN)

Owner: Irmo Chapin Recreation Commission, 5605 Bush River Road Columbia, SC 29212

Purpose: The Irmo Chapin Recreation Commission is pre-qualifying site work contractors for two (2) proposed parks and/or additions;

1. Saluda Shoals Park Athletic Complex will be a 4-6 soccer field, 10 tennis court complex with all related roads, parking, utility infrastructure & maintenance complex.
2. Eptings Camp Park is a new proposed park on Eptings Camp Road near Chapin. This park will include 4 baseball fields, splash pad, roads, parking, utility infrastructure & maintenance complex.

Each park is in the 3-6 million dollar ranges. This submittal is for pre-qualifications for contractors specializing in site work interested in bidding one or both parks. It is anticipated that both parks will be bid in January 2014 approximately 2 weeks apart.

Qualification Forms: Contractors specializing in site work requesting to bid on one or both of these projects shall submit AIA documents A305.1986 "Contractor's Qualifications Statement". In order to be considered a qualified site work contractor, submittals must demonstrate relevant experience. Special consideration will be given to projects constructed in proximity to these projects. The contractor should also provide experience in dealing with projects which encountered rock or rocky soils. Submittals must include photos & references of these projects demonstrating experience with similar projects as described above. Completed forms must be received by December 18, 2013, by 5:00pm, to be considered. Please submit the forms in a sealed envelope marked "Confidential" with the firm's name clearly legible on the form along with the project title.

Landscape Architect: Please direct questions to Kenneth B Simmons Associates, Inc., LLC, 3135 Millwood Ave., Columbia, SC 29205, (803) 254-3791, ksimmons@kbsala.com

Contact: Submit the completed form & all required attachments to Mr. Jay Downs, Irmo Chapin Recreation Commission, 5605 Bush River Road, Columbia, SC 29212, (803) 772-1228, jdowns@icrc.net. Submit forms prior to December 18, 2013, at 5:00pm.

CONSULTANT / PROFESSIONAL SERVICES

REQUEST FOR PROPOSAL

Description: TOLL CONSULTING SERVICES FOR S.C.D.O.T.
Solicitation Number: 5400007001
Submit Offer By: 1/8/14 – 3:00 pm
Purchasing Agency: SC Department of Transportation, Room 101, 955 Park St., Columbia, SC 29201
Buyer: Daniel W. Covey, CPPO, CPPB
E-mail: coveydw@scdot.org
Phone: (803) 737-0933
Download Solicitation From: http://webprod.cio.sc.gov/SCSolicitationWeb/solicitationAttachment.do?solicitnumber=5400007001

ENVIRONMENTAL REMEDIATION

Description: CORRECTIVE ACTION OF A PETROLEUM RELEASE FROM REGULATED UNDERGROUND STORAGE TANKS, BROAD RIVER AMOCO, PERMIT #11946
Solicitation Number: SN11946-O/O
Submit Offer By: 1/15/14 – 4:30pm, ET
Purchasing Agency: SC Department of Health & Environmental Control, 2600 Bull St., Columbia, SC 29201
Program Contact: Lee A. Monts
Phone: (803) 898-0668
Download Solicitation From: http://www.scdhec.gov/environment/lwm/usthome/OObid.htm

UST
JAN 15 2014
DIVISION

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

I. FINANCIAL APPROVAL FORM

A. ACCEPTANCE and DELIVERY STATEMENT

In compliance with the solicitation and subject to all conditions thereof, the Offeror agrees, if selected by the UST Owner/Operator within 30 days from the date of financial approval form submittal, to complete the corrective action as specified at the price set forth for the site as stated below. For the purpose of this submittal and possible acceptance of financial approval, I certify that this company understands the nature of the release(s) and the geologic conditions at the site as documented in the technical file and this solicitation. **Any quantities listed in the corrective action method(s) below are estimates and changes to those quantities or to the listed method(s) will not affect the financial approval amount.** Additionally, I certify that this company understands that acceptance is based on total cost to treat the area of concern.

EMERALD, INC.
Offeror (Print)

67
UST Site Rehabilitation Contractor Certification #

William C. McClary
Registered Professional Name (Print)

Registered Professional Signature (required)

P.G. ☒ P.E. ☐ (check appropriate box)

Professional Certification # 2386

B. CORRECTIVE ACTION SOLICITATION RESPONSE

Please respond to the following questions for UST Permit # 11946, Broad River Amoco, 4335 Broad River Rd., Columbia, SC:

1. State and briefly describe the corrective action method(s) or technology(ies) that will be discussed in detail in the CAP to achieve completion in five years, should financial approval occur. Attach an additional sheet if necessary. Aggressive Fluid Vapor Recovery events will be conducted to remove free product from the site.

2. The Corrective Action Completion Time, in months, to complete the corrective action from the date of corrective action plan implementation until the final corrective action goal has been achieved and maintained for 2 consecutive quarters is 60 months. All activities must be completed within 5 years of the date of financial approval unless otherwise approved in writing by the Agency.

3. The Corrective Action Cost, in whole dollars, regardless of the type, quantity, or duration of the permitted technology applied, to treat the area of concern shown in the Appendix such that FPP thicknesses do not exceed 0.01' at any point in the area of concern; complete all associated monitoring and post-corrective action verification; prepare all plans, reports, and correspondence; obtain and meet all terms and conditions of all required permits and licenses; design, install, monitor, operate, maintain, and when completed, properly abandon or remove all assessment and corrective action components; and complete other items outlined in this solicitation is:
$149,380.00

11946
ACA Bids
-Susan 32 tech

JAN 15 2014
DIVISION

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

I. FINANCIAL APPROVAL FORM

A. ACCEPTANCE and DELIVERY STATEMENT

In compliance with the solicitation and subject to all conditions thereof, the Offeror agrees, if selected by the UST Owner/Operator within 90 days from the date of financial approval form submittal, to complete the corrective action as specified at the price set forth for the site as stated below. For the purpose of this submittal and possible acceptance of financial approval, I certify that this company understands the nature of the release(s) and the geologic conditions at the site as documented in the technical file and this solicitation. **Any quantities listed in the corrective action method(s) below are estimates and changes to those quantities or to the listed method(s) will not affect the financial approval amount.** Additionally, I certify that this company understands that acceptance is based on total cost to treat the area of concern.

Enviro-Test Services
Offeror (Print)

14
UST Site Rehabilitation Contractor Certification #

Michael L. Faris
Registered Professional Name (Print)

Michael L. Faris
Registered Professional Signature (required)

P.G. ☑ P.E. ☐ (check appropriate box)

Professional Certification # 2379

B. CORRECTIVE ACTION SOLICITATION RESPONSE

Please respond to the following questions for UST Permit # 11946, Broad River Amoco, 4335 Broad River Rd., Columbia, SC:

1. State and briefly describe the corrective action method(s) or technology(ies) that will be discussed in detail in the CAP to achieve completion in five years, should financial approval occur. Attach an additional sheet if necessary.

2. The Corrective Action Completion Time, in months, to complete the corrective action from the date of corrective action plan implementation until the final corrective action goal has been achieved and maintained for 2 consecutive quarters is 36 months. All activities must be completed within 5 years of the date of financial approval unless otherwise approved in writing by the Agency.

3. The Corrective Action Cost, in whole dollars, regardless of the type, quantity, or duration of the permitted technology applied, to treat the area of concern shown in the Appendix such that FPP thicknesses do not exceed 0.01' at any point in the area of concern; complete all associated monitoring and post-corrective action verification; prepare all plans, reports, and correspondence; obtain and meet all terms and conditions of all required permits and licenses; design, install, monitor, operate, maintain, and when completed, properly abandon or remove all assessment and corrective action components; and complete other items outlined in this solicitation is:

$ 372,000.50

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

UST
JAN 15 2014
DIVISION

I. FINANCIAL APPROVAL FORM

A. ACCEPTANCE and DELIVERY STATEMENT

In compliance with the solicitation and subject to all conditions thereof, the Offeror agrees, if selected by the UST Owner/Operator within 90 days from the date of financial approval form submittal, to complete the corrective action as specified at the price set forth for the site as stated below. For the purpose of this submittal and possible acceptance of financial approval, I certify that this company understands the nature of the release(s) and the geologic conditions at the site as documented in the technical file and this solicitation. **Any quantities listed in the corrective action method(s) below are estimates and changes to those quantities or to the listed method(s) will not affect the financial approval amount.** Additionally, I certify that this company understands that acceptance is based on total cost to treat the area of concern.

Envirorisk Consultants, Inc.
Offeror (Print)

428
UST Site Rehabilitation Contractor Certification #

Kenneth Summerour
Registered Professional Name (Print)

Registered Professional Signature (required)

P.G. ☑ P.E. ☐ (check appropriate box)

Professional Certification # 3742

B. CORRECTIVE ACTION SOLICITATION RESPONSE

Please respond to the following questions for UST Permit # 11946, Broad River Amoco, 4335 Broad River Rd., Columbia, SC:

1. State and briefly describe the corrective action method(s) or technology(ies) that will be discussed in detail in the CAP to achieve completion in five years, should financial approval occur. Attach an additional sheet if necessary.
   Soil excavation followed by surfactant injection and subsequent extraction.
2. The Corrective Action Completion Time, in months, to complete the corrective action from the date of corrective action plan implementation until the final corrective action goal has been achieved and maintained for 2 consecutive quarters is 24 months. All activities must be completed within 5 years of the date of financial approval unless otherwise approved in writing by the Agency.

3. The Corrective Action Cost, in whole dollars, regardless of the type, quantity, or duration of the permitted technology applied, to treat the area of concern shown in the Appendix such that FPP thicknesses do not exceed 0.01' at any point in the area of concern; complete all associated monitoring and post-corrective action verification; prepare all plans, reports, and correspondence; obtain and meet all terms and conditions of all required permits and licenses; design, install, monitor, operate, maintain, and when completed, properly abandon or remove all assessment and corrective action components; and complete other items outlined in this solicitation is:
   $ 275,500.00

South Carolina Department of Health and Environmental Control

Be it known that

Envirorisk Consultants, Inc.

has fulfilled the legal requirements
and is certified as a

Class I

Underground Storage Tank Site Rehabilitation Contractor

and has been granted

Certification No. 428

Issued this 25th day of September 2012

M P Mehta

Mihir Mehta, P.E., CPM, Director
Underground Storage Tank Management Division

South Carolina
Board of Registration for Geologist

Be it Known that

Kenneth Summerour

Has fulfilled the legal requirements
and is duly registered as a

Professional Geologist

and has been granted
Registration Number 2114

Given under our hand and Seal this 15th day of May 1997

R. Craig Kennedy
Chairman of the Board

Kandall Bryant
Assistant Deputy Director

D H E C

PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

MR FREDERICK CECCHINI
4335 BROAD RIVER RD
COLUMBIA SC 29210-4009

JAN 2 2 2014

UST 33466 DOCKETING

Re: **ACA Contractor Selection**
Broad River Amoco, 4335 Broad River Rd., Columbia, SC
UST Permit # 11946
Release reported January 4, 2011
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank (UST) Program of the South Carolina Department of Health and Environmental Control has reviewed the Corrective Action Solicitation Responses resulting from the Corrective Action Solicitation. The cost for active corrective action activities will be established in the amount of $149,380.00. Copies of the corrective action solicitation responses are enclosed for your review. A "Corrective Action Solicitation Response Summary" form is also enclosed for you to specify your choice of contractor. Any Class I Certified Underground Storage Tank Contractor may perform the necessary activities at the established price. Please return the "Corrective Action Solicitation Response Summary" form by **February 6, 2014** in order for the necessary financial approval to be made.

On all correspondence regarding this site, please reference UST Permit #11946. If you have any questions, please contact me by phone at (803) 898-0614, by fax at (803) 898-0673, or via email at fulmersb@dhec.sc.gov.

Sincerely,

Susan B. Fulmer

Susan B. Fulmer, P.G., Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Corrective Action Solicitation Response Summary form
Corrective Action Solicitation Responses received from 3 contractors

cc: Technical File (w/ enc)

CORRECTIVE ACTION SOLICITATION RESPONSE SUMMARY

SOUTH CAROLINA

Department of Health and Environmental Control

Underground Storage Tank Program

UST Permit # 11946 Facility Name Broad River Amoco

1. Completed Corrective Action Solicitation Response Forms are attached from three contractors.

Emerald, Inc.	$149,380.00	60 months	AFVR
Envirorisk Consultants, Inc.	$275,500.00	24 months	Excavation, surfactant injection, extraction
Enviro-Test Services	$372,000.50	36 months	No technology provided (incomplete form)

2. Based on a review of the corrective action responses, I select (please name):

I understand that the SUPERB Account will compensate for reasonable costs up to $149,380.00 regardless of the proposed cost of the contractor selected by me.

3. Compensation from the SUPERB Account should be paid to: (please check one)

☐ UST Owner/ Operator

☐ SC Certified Site Rehabilitation Contractor named above in Item 2

4. List any anticipated changes to the site in the near future: (e.g. sale, UST removal, etc.)

5. Additional Comments: (Attach additional page(s) if required)

UST Owner/ Operator Name

Address

Telephone Number ( ) **FAX Number** ( )

Signature **Printed or Typed Name** **Title**

Date Signed

CORRECTIVE ACTION SOLICITATION RESPONSE SUMMARY

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

UST JAN 15 2014 DIVISION

I. FINANCIAL APPROVAL FORM

A. ACCEPTANCE and DELIVERY STATEMENT

In compliance with the solicitation and subject to all conditions thereof, the Offeror agrees, if selected by the UST Owner/Operator within 30 days from the date of financial approval form submittal, to complete the corrective action as specified at the price set forth for the site as stated below. For the purpose of this submittal and possible acceptance of financial approval, I certify that this company understands the nature of the release(s) and the geologic conditions at the site as documented in the technical file and this solicitation. **Any quantities listed in the corrective action method(s) below are estimates and changes to those quantities or to the listed method(s) will not affect the financial approval amount.** Additionally, I certify that this company understands that acceptance is based on total cost to treat the area of concern.

EMERALD, INC.
Offeror (Print)

67
UST Site Rehabilitation Contractor Certification #

William C. McClary
Registered Professional Name (Print)

Registered Professional Signature (required)

P.G. ☒ P.E. ☐ (check appropriate box)

Professional Certification # 2386

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Please respond to the following questions for UST Permit # 11946, Broad River Amoco, 4335 Broad River Rd., Columbia, SC:

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$149,380.00

PH

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

UST
JAN 15 2014
DIVISION

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Envirorisk Consultants, Inc.
Offeror (Print)

428
UST Site Rehabilitation Contractor Certification #

Kenneth Summerour
Registered Professional Name (Print)

Registered Professional Signature (required)

P.G. ☑ P.E. ☐ (check appropriate box)

Professional Certification # 3742

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   $ 275,500.00

JAN 15 2014 DIVISION

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

I. FINANCIAL APPROVAL FORM

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Enviro-Test Services
Offeror (Print)

14
UST Site Rehabilitation Contractor Certification #

Michael L. Faris
Registered Professional Name (Print)

Michael L. Faris
Registered Professional Signature (required)

P.G. ☑ P.E. ☐ (check appropriate box)

Professional Certification # 2379

B. CORRECTIVE ACTION SOLICITATION RESPONSE

Please respond to the following questions for UST Permit # 11946, Broad River Amoco, 4335 Broad River Rd., Columbia, SC:

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2. The Corrective Action Completion Time, in months, to complete the corrective action from the date of corrective action plan implementation until the final corrective action goal has been achieved and maintained for 2 consecutive quarters is 36 months. All activities must be completed within 5 years of the date of financial approval unless otherwise approved in writing by the Agency.

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$ 372,000.50

Susan

UST DOCKETING

UST JAN 3 1 2014 DIVISION

CORRECTIVE ACTION SOLICITATION RESPONSE SUMMARY

SOUTH CAROLINA

Department of Health and Environmental Control

Underground Storage Tank Program

UST Permit # 11946 Facility Name Broad River Amoco

1. Completed Corrective Action Solicitation Response Forms are attached from three contractors.

Emerald, Inc.	$149,380.00	60 months	AFVR
Envirorisk Consultants, Inc.	$275,500.00	24 months	Excavation, surfactant injection, extraction
Enviro-Test Services	$372,000.50	36 months	No technology provided (incomplete form)

2. Based on a review of the corrective action responses, I select (please name):

x Enviro-Test Services

I understand that the SUPERB Account will compensate for reasonable costs up to $149,380.00 regardless of the proposed cost of the contractor selected by me.

3. Compensation from the SUPERB Account should be paid to: (please check one)

[ ] UST Owner/ Operator

[XXX] SC Certified Site Rehabilitation Contractor named above in Item 2

4. List any anticipated changes to the site in the near future: (e.g. sale, UST removal, etc.)

5. Additional Comments: (Attach additional page(s) if required)

UST Owner/ Operator Name Frederick W. Cecchini

Address 429 Press Linder Rd.
Columbia, S.C. 29212

Telephone Number (803) 781-6629 **FAX Number** ( )803-749-0331

(803) 238-2143

Signature | F.W. Cecchini | Owner
Printed or Typed Name | Title

1-31-14
Date Signed

CORRECTIVE ACTION SOLICITATION RESPONSE SUMMARY

D H E C

PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

MR FREDERICK CECCHINI
4335 BROAD RIVER RD
COLUMBIA SC 29210-4009

FEB 0 5 2014

Re: **Corrective Action Award**
Broad River Amoco, 4335 Broad River Rd., Columbia, SC
UST Permit # 11946; CA # 46916
Release Reported January 4, 2011
Corrective Action Solicitation Response Summary Form received January 31, 2014
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) has received your Corrective Action Solicitation Response Summary Form and understands that you have selected Enviro-Test Services as the environmental contractor to perform corrective action activities at the referenced site. **By responding to the solicitation and/or agreeing to conduct the cleanup for the tank owner or operator, Enviro-Test Services is deemed to understand the specifications, terms, and conditions of the solicitation.** Therefore, Enviro-Test Services is hereby provided financial approval to perform corrective action activities at the referenced facility.

Per the solicitation requirements, the Quality Assurance Project Plan (QAPP) for the Initial Monitoring Report must be submitted within 15 days of the financial approval (on or before February 20, 2014), the Corrective Action Plan with a QAPP Addendum for corrective action must be submitted within 30 days of financial approval (on or before March 7, 2014), and the Initial Monitoring Report must be submitted within 45 days of the QAPP approval date. Please coordinate with each landowner for access and keep any inconveniences to the affected landowners to a minimum.

All Corrective Actions are subject to the conditions and specifications as outlined in the Corrective Action Solicitation. Although payment will be issued from the SUPERB Account, the relationship between you and Enviro-Test Services is crucial for the success of the corrective action. **The UST Management Division highly recommends that a written contractual agreement be developed between your company and Enviro-Test Services. The Division, as the coordinator, will not be a party to any contractual obligations between RP, Enviro-Test Services, subcontractors, or any third party.** The Division's role of coordinator for this corrective action does not imply a contractual obligation from the Agency.

A cost agreement has been established in the amount of $149,380.00. Compensation will be in accordance with the pay for performance schedule outlined below. Future invoices and/or other criteria included therein must comply with current SUPERB criteria per Section 44-2-20(2) and the referenced bid special conditions. The accepted price quotation is considered final and will not be increased for any reason (e.g., unanticipated iron fouling of a system, wells clogging

because of biological activity or sediments, increased subcontractor costs, loss of utilities, modification to the system to meet the remediation goals, etc.) with the exception of unforeseen geologic circumstances or identification of additional chemicals of concern (CoC) from another release. Per the referenced price quotation specification, an invoice will be submitted at each payment milestone using the enclosed invoice form as follows:

- $59,752.00 within 90 days following receipt of an invoice and documentation that the Contractor has completed Corrective Action Plan implementation and;

- $14,938.00 once 60% of the total free-phase product thickness above 0.01' in the Site-Specific Target Level (SSTL) wells and gauging points presented in the Corrective Action Solicitation is removed;

- $14,938.00 once 90% of the total free-phase product thickness above 0.01' in the SSTL wells and gauging points presented in the Corrective Action Solicitation is removed;

- $14,938.00 once 100% of the total free-phase product thickness above 0.01' in the SSTL wells and gauging points presented in the Corrective Action Solicitation is removed and verified following two consecutive quarters with all corrective action activities completely ceased prior to payment eligibility. Achievement of this goal must be verified by gauging conducted by the Agency (to be completed during the 2nd 100% verification quarter); and

- $44,814.00 once 100% of the total free-phase product thickness above 0.01' in the SSTL wells and gauging points presented in the Corrective Action Solicitation is removed, assessment and corrective action components (e.g., piping, wells, trenches, etc.) have been removed from the site or properly abandoned (see Solicitation Items IV.B.11-14. for more details), and the facility and associated adjacent properties have been restored to the condition that existed prior to assessment and corrective action (Solicitation Item IV.B. 13.)

On all correspondence regarding this site, please reference UST Permit # 11946. If you have any questions, please contact me by phone at (803) 898-0614, by fax at (803) 898-0673, or by email at fulmersb@dhec.sc.gov.

Sincerely,

Susan B. Fulmer, P.G., Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

Enc: Cost Agreement

cc: Enviro-Test Services, PO Box 2237, Irmo, SC 29063 (w/ enc)
Technical File (w/ enc)

Approved Cost Agreement 46916

Facility: 11946 BROAD RIVER AMOCO
FULMERSB
PO Number:

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
22 CORRECTIVE ACTION						
	FP ONLY FREE PRODUCT ONLY	1F	CAM/TI AND/OR OPERATIONAL	1.0000	149,380.00	59,752.00
		2F	60% REMOVAL OF FREE PRODUCT	1.0000	149,380.00	14,938.00
		3F	90% REMOVAL OF FREE PRODUCT	1.0000	149,380.00	14,938.00
		4F	100% REMOVAL OF FREE PRODUCT	1.0000	149,380.00	14,938.00
		5F	100% REMOVAL OF FP AND CA SYST	1.0000	149,380.00	44,814.00
				Total Amount		149,380.00

Appendix B: Contractor Addendum

RECEIVED
FEB 19 2014
SC Department of Health and Environmental Control

A1 Title and Approval Page

Quality Assurance Project Plan
Addendum to the SC DHEC UST Programmatic QAPP
For
Broad River Amoco; UST Permit #11946; CA #46916

4335 Broad River Rd., Columbia, SC

UST
FEB 19 2014
DIVISION

Prepared by: Michael Faris
Principal Geologist, Enviro-Test Services, Inc.

Date: 2/18/14

Enviro-Test Services, Inc., Cert. #14

UST
DOCKETING
36ked

Approvals

✓ Susan Fulmer, P.G. SC DHEC Project Manager	Signature	Date
Terry L. Teate Site Rehabilitation Contractor	Terry L. Teate Signature	Date 2-19-14
Michael Faris, P.G. Contractor QA Manager	Michael Faris Signature	Date 2/19/14
Ashley B. Amick Laboratory Director, Access Analytical, Inc.	 Signature	Date 02/19/14
Scott Bailey Laboratory Director, GCAL	Signed by: Brenda Mathews Date: Wed Feb 19 2014 08:[illegible] GCAL Signature	Date 02/19/14

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A3 Distribution List

Name	Title	License # / Expiration Date	Organization/ Address	Telephone Number	Fax Number	Email Address
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Enviro-Test Services Inc.	Site Rehabilitation Contractor	SC Contractor #14 / 2015	Enviro-Test Services, Inc. P.O. Box 2237 Irmo, SC 29063	803-413-4936		terryteate@ gmail.com
Terry Teate	Field Manager / Well Driller	SC LLR Certification #1242 (A) / 1995	Enviro-Test Services, Inc. P.O. Box 2237 Irmo, SC 29063	803-413-4936		terryteate@ gmail.com
Michael Faris, P.G.	Project QA Manager	PG # 2379 6/30/15	Enviro-Test Services, Inc. P.O. Box 2237 Irmo, SC 29063	803 269-3913		mfaris@ sc.rr.com
Tyler Felder	Field Technician	OSHA 5/15/14	Enviro-Test Services, Inc. P.O. Box 2237 Irmo, SC 29063	803-413-4936		rfelder@ gmail.com
Ashley B. Amick	Laboratory Director, Access	SCDHEC Certified Lab #32575001 /	Access Analytical, Inc. 7478 Carlisle St. Irmo, SC 29063	803- 781-4243	803-781-4303	aamick@ axs-inc.com
Scott Bailey	Laboratory Director, GCAL	SCDHEC Certified Lab #73006001 /	GCAL 7979 GSRI Rd. Baton Rouge, LA 70820	225 769-4900	225 767-5717	scott.bailey@ gcal.com

Table 1A Addendum Distribution List

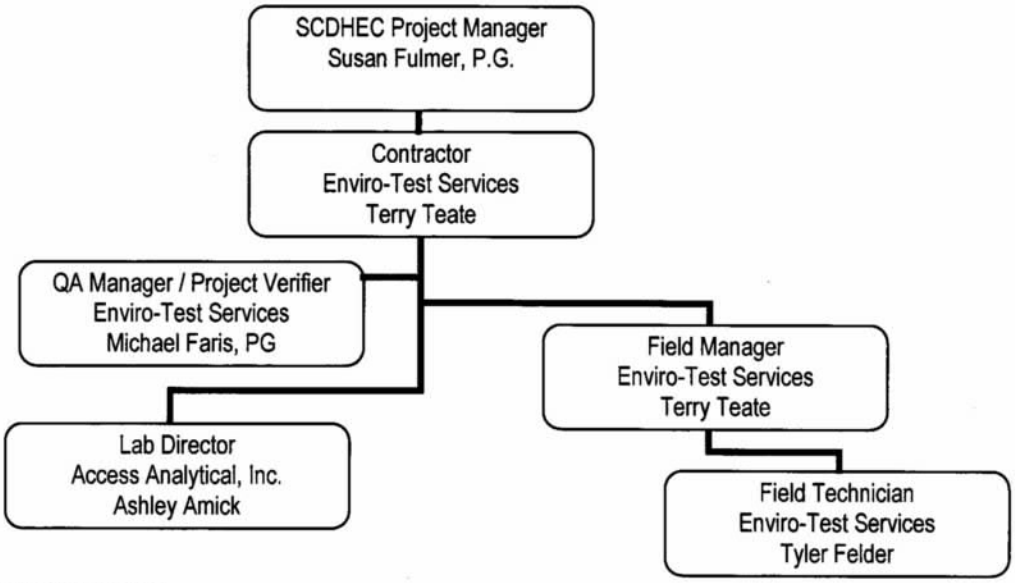


Figure 1A Organizational Chart

Role Descriptions:

SCDHEC Project Manager: Project Managers are responsible for direct oversight of contractors conducting assessment and site rehabilitation of releases at UST sites. Project managers perform day-to-day review of plans and reports related to site rehabilitation activities on their assigned sites. These reviews include verification and analysis of data submitted to the UST Management Division by site rehabilitation contractors and analytical laboratories and recommendations for future work. Project Managers are responsible for the review of and approval of the site-specific QAPPs to ensure compliance with the UST Master QAPP. The Project Managers are also responsible for validating the Project Data.

Site Rehabilitation Contractor: The role of the Contractor (ETS) is to manage and coordinate field and office activities in order to complete all phases of the project. This includes, but is not limited to, preparation of a Quality Assurance Project Plan Contractor Addendum, property access, oversight of field activities, data analysis and interpretation, validating and verifying project data, and preparation of a report. Enviro-Test is a Class One Site Rehabilitation Contractor.

Contractor QA Manager: The Contractor Quality Assurance Manager (ETS) is responsible for the oversight of all quality assurance activities associated with this project, including independent review the field data and laboratory analytical data. The QA Manager will resolve any issues when corrective actions are needed to address data quality issues.

Field Manager: Responsibilities of the Field Manager (ETS) include, but are not limited to, preparation of field files detailing the project description and necessary tasks for the field crewman, oversight of field activities conducted by the well driller and technician, onsite data collection and decision making, verification of the collected field and laboratory analytical data, and report preparation.

Field Technician: The Field Technician (ETS) will collect field data and soil and groundwater samples for laboratory analysis, as well as for onsite qualitative and quantitative analyses. The field technician will be responsible for duties such as calibration and verification of field meters, equipment decontamination, sample collection and integrity, chain of custody, and collection of field data.

Lab Director: The Analytical Laboratory (Access Analytical) will receive water samples from the site rehabilitation contractor, perform the requested analyses, and provide analytical reports. The analytical laboratory is certified by the SCDHEC Office of Laboratory Certification in accordance with Regulation R.61-81 for the analytical methods performed. The Lab Director will verify the Quality Assurance information prior to report submittal to the Consultant.

A4 Problem Definition/Background

Discuss the background (as much as is known) of the site and appropriate historical information, and why this site is being assessed.

The subject site is located in northwest Richland County in Columbia, South Carolina and is situated on the southwest side of Broad River Road, a five-lane local thoroughfare. The site is comprised of approximately 0.85 acres and is currently owned and operated as a petroleum retail facility, convenience store and restaurant (Broad River BP).

The subject property is bounded by Broad River Road to the northeast, then by the South Carolina Law Enforcement Division (SLED). The adjacent property to the southeast is a nail and beauty salon. The adjacent property to the southwest is commercially utilized as a nursery school and day care (Play Pal Day Care). The Play Pal Day Care facility encompasses two properties fronting Dothan Road. The subject property is bounded to the northwest by Dothan Road and a commercially utilized property beyond (MDC Associates, an apparent mechanical engineering firm). The commercial usage of the subject property and adjacent properties is expected to remain the same in the future.

A 1939 aerial photograph from the Richland County Geographic Information System (GIS) shows that the subject property was utilized for agriculture and was partially wooded. Broad River Road appears as a two-lane road. Information available through the Richland County Assessor's Office indicates the property was owned by B.O. Derrick in 1955 and a 1959 aerial photograph indicates that the property had apparently been developed as a petroleum retail facility. Subsequently, the property was acquired by Associated Oils of South Carolina, Inc. in February 1988, and the previous UST system (B.O. Derrick) was properly closed, as reported to the SCDHEC in 1989. Reportedly, the closure included proper abandonment by removal of one 2,000-gallon UST and one 3,000-gallon UST. Additionally, the property redevelopment activities of 1988 and 1989 reportedly included the demolition of pre-existing structures and construction of the existing store building, dispenser islands and UST system. Subsequently, the property was acquired by Mr. Frederick N. Cecchini in June 1997, and Mr. Cecchini remains the current owner.

UST #	Product	te Installed	Currently in use (Yes or No)	If not in use, Date Removed
1	Gasoline (2,000 gallon)	(?)	No	1989
2	Gasoline (3,000 gallon)	(?)	No	1989
3	Diesel (3,000 gallon)	1989	Yes	-
4	Gasoline Unleaded (3,000 gallon)	1989	Yes	-
5	Gasoline Plus (3,000 gallon)	1989	Yes	-
6	Gasoline Plus (8,000 gallon)	1989	Yes	-
7	Gasoline Super (8,000 gallon)	1989	Yes	-
8	Kerosene (1,000 gallon)	1989	Yes	-

Reportedly, no soil samples were collected for analysis at the time of proper abandonment of the previous UST system as reported to SCDHEC in 1989. In December 2010, a Phase II Subsurface Investigation was performed by Partner Engineering and Science, Inc. of El Segundo, California. The Phase II investigation included the installation of four soil borings and a Temporary Monitoring Well Permit (Approval No. 4053) was obtained from the SCDHEC for the purpose of groundwater sample collection. Reportedly, the soil borings extended to terminal depths of 26 feet below land surface (BLS) utilizing direct push penetration technology with continuous soil sample collection. Drilling refusal was encountered in all four soil borings before groundwater was encountered; therefore, no groundwater samples were collected for laboratory analysis. Eight soil samples (two from each soil boring) were submitted for laboratory analysis for Volatile Organic Compounds (VOC) and Polynuclear Aromatic Hydrocarbons (PAH). The laboratory analytical results indicated the detection of various VOC and PAH chemical compounds at concentrations deemed reportable to the SCDHEC.

An Initial Groundwater Assessment (IGWA) was completed by Enviro-Test Services, Inc. during January, 2011 and an IGWA report was submitted on February 4, 2011. On January 20, 2011, the soil boring for monitoring well MW-1 was installed. The soil sample from the 10 to 15 feet sampling interval yielded the highest PID reading of 1,782 ppm and accordingly was submitted for laboratory analysis for BTEX, MTBE, naphthalene, PAH and lead. Moderately elevated concentrations of toluene, ethylbenzene, xylenes and naphthalene were detected in the soil sample. Saturated sediments were encountered at the depth interval of 35 to 40 feet below grade level (BGL). As such, monitoring well MW-1 was installed to a depth of 40 feet BGL and was screened from 40 to 20 feet BGL. On January 21, 2011, a groundwater sample was collected from monitoring well MW-1 and laboratory analysis for BTEX, naphthalene, MTBE, PAH and lead was performed. The depth to groundwater in monitoring well MW-1 was measured from the top-of-casing to be 20.92 feet. The groundwater sample yielded COC concentrations as follows: benzene (929 ug/l), toluene (10,300 ug/l), ethylbenzene (684 ug/l), MTBE (243 ug/l) and naphthalene (922 ug/l). Following review of the IGWA report, the SCDHEC requested a Tier I Assessment in correspondence dated February 7, 2011.

Field activities for the Tier I Assessment were commenced on February 24 and 25, 2011 with the completion of soil borings SB-1 through SB-9. Laboratory analysis of soil samples for BTEX, MTBE and PAH yielded elevated concentrations of benzene and naphthalene above RBSL in soil borings SB-1 (10 ft), SB-2 (5 ft), SB-3 (8 ft) and 5 (6 ft) which were installed proximal to the existing UST basin (SB-1 and SB-2) and product pipeline/dispenser islands (SB-3 and SB-5). Monitoring wells MW-2, MW-3 and MW-4 were completed on February 25, 2011 and were subsequently sampled on March 5, 2011. Laboratory analysis of the groundwater samples yielded concentrations of benzene as follows: MW-1 (1,760 ug/l), MW-2 (1,650 ug/l), MW-3 (9.93 ug/l) and MW-4 (1,830 ug/l). Additionally, concentrations of MTBE were also detected in wells MW-2 (3,420 ug/l) and MW-4 (3,100 ug/l). Naphthalene by EPA method 8260 was detected in wells MW-1 (4,070J ug/l), MW-2 (462J ug/l) and MW-4 (598 ug/l). Also, elevated concentrations of toluene were detected in wells MW-1 (16,400 ug/l) and MW-2 (3,230 ug/l) and ethylbenzene in wells MW-1 (1,270 ug/l) and MW-4 (1,270 ug/l). A Tier I Assessment Report was submitted to SCDHEC on April 8, 2011.

Subsequent to review of the Tier I Assessment Report, the Technical Project Manager and Section Manager, as applicable, expressed concern regarding the depth of the screened interval of each monitoring well in relation to the measured groundwater levels due to the fact that none of the monitoring wells were bracketing the water table of the site surficial aquifer.

Enviro-Test Services, Inc. stated that during soil boring and monitoring well installations no saturated sediments were encountered until the 35 to 40-ft depth interval of drilling at each well location; therefore, the monitoring wells were installed at depths somewhat deeper than preferable. Also, during drilling activities for installation of monitoring well MW-4, where elevated COC's were later detected in the March 5, 2011 groundwater sample, no petroleum hydrocarbon odors or elevated PID readings were noted to be present in apparent vadose soils; however, upon encountering saturated soils at approximately 35 feet, strong odors and elevated PID readings were readily apparent. Consequently, the Technical Project Manager decided that an additional monitoring well (MW-5) should be installed at a shallower, bracketing depth to determine the availability of groundwater for sample collection in what appeared to be unsaturated, vadose soils. Accordingly, on May 27, 2011 monitoring well MW-5 was installed to a depth of 20 feet, with a 10-ft screen at a location adjacent to the north corner of the existing convenience store building. The infiltration of groundwater was noted to be exceedingly slow; as such, groundwater was allowed to seep into the well casing for several days. On June 3, 2011, the depth to groundwater was measured at 13.80 feet and free product (gasoline) of a degraded appearance was measured at 13.68 feet (a free product thickness of 0.12 feet). Again, on June 20, 2011, depth to the groundwater was measured at 14.05 feet and free product at 13.75 feet (a free product thickness of 0.30 feet). These findings were submitted to the DHEC Project Manager on June 20, 2011.

Based on the results of the Tier I Assessment, a Tier II directive was issued by DHEC so the horizontal and vertical extent of the contaminant plume could be fully delineated. This site is currently in the assessment section of the UST Program in order to continue to evaluate the horizontal and vertical extent of the contaminant plume.

The most recent assessment at the site was a Tier II Assessment conducted by ARM Environmental Services, Inc. on behalf of Enviro-Test Services, Inc. in 2012 and 2013. The results of the assessment were detailed in a report dated May 28, 2013. During the Tier II, it was determined that elevated concentrations of several Chemicals of Concern are present at the site and on adjacent property. Monitoring wells MW-1, MW-17B, DMW-1 and DMW-2, as well as recovery wells RW-2 and RW-4 contain various dissolved-phase CoC, including benzene, toluene, ethylbenzene, xylenes, naphthalene, MTBE, 1,2-DCA, and/or EDB at concentrations greater than their respective RBSLs. Additionally, free-phase product was present in MW-2, MW-4, MW-5, RW-1, RW-3, and RW-5 during this assessment.

Based on the results of the Tier II Assessment, it appears that the contaminant plume has been defined horizontally in multiple stratigraphic layers. It is apparent that groundwater can be found in several stratified layers or zones at the site. The most shallow groundwater was generally intersected between 15' - 20' bgl and was very slow to accumulate in the boreholes. The soils became more clayey (a silty clay) and mostly dry beginning at approximately 25' bgs. The second layer or zone of water encountered was typically found at an approximate depth of 35'-40' bgl and was under significant hydraulic pressure. There appears to be an aquitard comprised of mostly dry silty clay between the two above-described zones of water across the area of study. Because the contaminants have been identified at both depths in and near the source area, there clearly is transmissivity between the two layers. Therefore, the silty clay is not considered a true aquiclude, but is acting at least as a partially confining unit.

Groundwater appeared to be flowing generally to the northwest at the time of the assessment. However, based on the geography of the site and surrounding properties, the significant hydraulic pressure in the second water-bearing zone, and the contaminant distribution, it appears that groundwater and contaminants have migrated toward the west/southwest overall since the release occurred. This site is currently in the corrective action section of the UST Program in order to undergo active corrective action to remediate the free-phase product from the site.

Please answer the following: Does this project fall under UST or Brownfields area?

SUPERB qualified UST site

A5 Project/Task Description

1. ***Summarize what is known about the work to be done. This can be a short sentence indicating what the Scope of this project is (see Master QAPP Section A6).***

   The scope of work to be completed for this project is active corrective action.

2. ***The work will begin within*** 15 days ***after QAPP approval and sampling should be complete by*** 45 days after QAPP approval issuance .

3. ***Are there are time or resource constraints? Include those factors that may interfere with the tentative schedule.***

   ETS is not aware of any time or resource constraints for this project. However, unexpected factors that may interfere with the schedule include vehicle failure, equipment failure, inclement weather, instrument failure, and difficulty obtaining access to off-site private properties.

A6 Data Quality Objectives (DQOs) and Data Quality Indicators (DQIs)

Detail the geographical area that is to be part of the project. Maps should be included to show not only the topography and the geographical area of the State, but also to show more detail of the site itself including property lines.

The site is located in Columbia, in Richland County, SC. Please see attached topographic site location map and site plan.

A7 Training and Certificates

Required training and licenses:

Terry Teate of Enviro-Test Services, Inc. is responsible to ensuring that personnel participating in this project receive the proper training. All training records will be stored in the following location: secure digital copy on Enviro-Test server, as well as in personnel files located in locked file cabinet. Server and file cabinet are located onsite at Enviro-Test office.

It is understood that training records will be produced if requested by SC DHEC.

The Following Laboratory(ies) will be used for this Project:

Commercial Lab(s)

Full Name of the Laboratory Access Analytical, Inc.
Name of Lab Director Ashley B. Amick
SC DHEC Certification Number 32575001

Full Name of the Laboratory GCAL (Note: partner / sub lab for Access)
Name of Lab Director Scott Bailey
SC DHEC Certification Number 73006001

Parameters this Lab will analyze for this project:

Benzene, toluene, ethylbenzene, xylenes, naphthalene, methyl tertiary butyl ether, 1,2-dichloroethane, 8 oxygenates with ethanol by EPA approved analytical method 8206B; ethylene dibromide by EPA approved analytical method 8011.

Please note: SC DHEC may require that the contractor submit some or all of the Laboratory's SOPs as part of this QAPP.

A8 Documents and Records

Personnel will receive the most current version of the QAPP Addendum via: (Check all that apply)

_x_US Mail ____Courier ____Hand delivered

Other (please specify):_____

Record	Produced By	Hardcopy/ Electronic	Storage Location For how long?	Archival
Instrument Raw Data	Laboratory	Hardcopy and Electronic	Hardcopy: Offsite 7years Electronic: External hard drive 10 years	Yes
Lab Report	Laboratory	Electronic	External hard drive 10 years	Yes
Field Data and Assessment Report	Enviro-Test Services, Inc.	Hardcopy and Electronic	Hardcopy: Onsite for 5 years Electronic: Onsite and offsite for 10 years	Yes

Table 4A Record Identification, Storage, and Disposal

Section B Measurement/Data Acquisition

B1 Sampling Process/Experimental Design

Item	Start Date	End Date	Comments
Approval of QAPP Contractor Adden.	15 days after submittal to DHEC	120 days after cost approval (CA)	In accordance with Programmatic QAPP, R.2.
Schedule Fieldwork	15 days after QAPP	20 days after QAPP	In accordance with Prog. QAPP, R.2.
Mobilize to Site	20 days after QAPP	20 days after QAPP	In accordance with Prog. QAPP, R.2.
Locate, Gauge, Purge, Sample	20 days after QAPP	20 days after QAPP	In accordance with Prog. QAPP, R.2.
Deliver Samples to Lab	22 days after QAPP	22 days after QAPP	In accordance with Prog. QAPP, R.2.
Analysis of Samples at Lab	27 days after QAPP	30 days after QAPP	In accordance with Prog. QAPP, R.2.
Receipt of Lab Report	32 days after QAPP	35 days after QAPP	In accordance with Prog. QAPP, R.2.
Preparation of Final Report	35 days after QAPP	45 days after QAPP	In accordance with Prog. QAPP, R.2.
Report Submitted to DHEC and O/O	45 days after QAPP	45 days after QAPP	In accordance with Prog. QAPP, R.2.

Table 3A Sampling Activities

B2 Sampling Methods

Please note: The contractor must follow sampling protocols as given in the UST QAPP.

***Estimate* the number of samples of each matrix that are expected to be collected:**

Soil	_____
Groundwater from monitoring wells	44
From Drinking/Irrigation water wells	_____
From surface water features	_____
Duplicate samples	3
Field Blanks	2
Trip Blanks	1
Total number of Water samples	50 (inc. trip & field blanks & duplicates)

The samples will be (check as many as apply): ____Homogenized ____Split (GRAB)

If any of the above are circled please indicate how will it be done and the equipment needed.

Sampling Procedure / Protocols:

Gauging, Purging, Sampling:

Upon arrival at the site the sampling crew will locate the monitoring wells associated with the release by visual observation based on the site base map, and by metal detector if necessary. The wells will be opened and fluid levels will be gauged with a decontaminated electronic water level / product interface probe. The water level / product interface probe will be cleaned between wells by washing in a laboratory detergent solution (Alconox), followed by rinses with tap water and analyte-free water. If contamination is expected or observed, the water level / product interface probe tip will also be sprayed with isopropyl alcohol and the rinsed a final time with analyte-free water. After cleaning, it will be placed in a clean plastic bag. Fluid levels will be recorded on field data sheets in indelible ink to the nearest 0.01 feet.

Monitoring and recovery wells were last gauged and sampled in early March 2013. Therefore, only wells that were not sampled within the past year or wells whose static water levels are not bracketed by their well screens will be purged. The wells will be purged with a low-flow pump with disposable tubing or with disposable bailers and disposable colorless nylon bailer twine. When using disposable bailers, the bailer will be lowered slowly into the water column, allowed to fill and

carefully withdrawn from the well. When using a low-flow pump, the well will be purged at a rate that does not excessively agitate the recharge water. Prior to purging, the well volume of each well will be calculated using the diameter of the well, the static water level and the total depth of the well.

Temperature, pH, specific conductivity, dissolved oxygen, and turbidity will be measured and recorded throughout the purging process and purging will continue until these parameters have stabilized, typically in three to five well volumes. Stabilization occurs when pH measurements remain constant within 0.1 Standard Unit (SU), or reproducible to within 0.1 (SU), specific conductance varies no more that 10 percent, the temperature is constant for at least three consecutive readings, and the turbidity has stabilized or is below 10 Nephelometric Turbidity Units (NTU). Samples will be collected immediately after the purging process is complete. If the well is purged to dryness, samples will be collected as soon as the well has recharged enough to fill all of the required sample containers. The purging meters will be calibrated according to manufacturer's specifications prior to the commencement of purging and the calibration will be checked at least once during each day and at the end of the purging activities. The purging meters will be recalibrated if, at any time, there is a discrepancy between the meters' readings and the approved standard. If a monitoring well contains free product, the well will not be purged. Purging data will be recorded on field data sheets in indelible ink.

Groundwater samples will then be collected from all monitoring wells into pre-labeled, laboratory-prepared sample containers utilizing disposable polyethylene hand bailers with disposable colorless nylon bailer twine. The bailer will be slowly lowered into the water column until just filled, and then slowly removed from the well. The contents will then be emptied into the appropriate sample containers. Purging parameters will again be measured and recorded immediately after sample collection at each well. If a monitoring well contains free product, the well will not be sampled. A field blank will be collected during each day of sampling.

Laboratory-prepared trip blanks will be included with each insulated sample cooler to ensure cross-contamination is not occurring between the collected groundwater samples. One field blank will be collected using laboratory provided analyte–free water for each day of sampling. One duplicate sample will be collected for every batch of twenty (20) samples or less. In order to further ensure sample integrity, samples will be immediately placed on ice in an insulated cooler upon collection and entered into chain of custody.

Purge water will either be discarded approximately 20 feet downgradient of the well or be containerized and managed as investigation derived waste, depending on contaminant levels in the water to be determined on a site specific basis.

Will Sampling Equipment have to be cleaned and decontaminated or is everything disposable?

The following sampling equipment will need to be decontaminated between wells: water level / interface probe and any cleanable portions of purge meters as applicable, low flow submersible pump. All other sampling equipment is disposable.

If sampling equipment must be cleaned please give a detailed description of how this is done and the disposal of by-products from the cleaning and decontamination.

All sampling equipment will be decontaminated utilizing hand equipment and cleaning solutions. The cleaning solutions will include: tap water (potable water), laboratory grade phosphate-free soap (Liquinox or Alconox), pesticide-grade isopropanol, analyte-free water (de-ionized water). The cleaning solutions will be stored in their original containers until needed in order to ensure their integrity. Clean plastic squeeze bottles (Teflon for the isopropanol) will be utilized for dispensing the various supplies during cleaning.

The following procedures will be used for all sampling equipment used to collect samples undergoing trace organic analyses:

1. Clean with tap water and soap using a brush if necessary to remove particulate matter and surface films.
2. Rinse thoroughly with tap water
3. Rinse thoroughly with analyte free water
4. Rinse thoroughly with solvent
5. Remove the equipment from the decontamination area and cover with plastic

Equipment stored overnight will be wrapped in aluminum foil and covered with clean, unused plastic.

The following procedure will be used for the electronic water level indicator / interface probe:

1. Wash with soap and tap water
2. Rinse with tap water
3. Rinse with analyte free water

At the completion of site activities, the wash and rinse water will be collected in 55-gallon drums. By products from cleaning will be contained in metal 55-gallon drums along with purge water generated during the sampling event. The drums will be stored in a secure location until the required waste profiling, transportation, and disposal process is completed for the waste(s).

Identify any equipment and support facilities needed. This may include such things as Fed-ex to ship the samples, a Geoprobe, field analysis done by another contractor (who must be certified), and electricity to run sampling equipment.

Typical equipment for sampling monitoring wells will be needed. Equipment required: truck, water/product level meter, pH/specific conductivity/temperature meter with spare pH tip and calibration supplies, dissolved oxygen meter with spare DO membranes and calibration supplies, extra batteries for meters, disposable hand bailers, low flow submersible pump, disposable tubing, colorless nylon bailer twine, powder free nitrile gloves, pre-labeled sample bottles with preservative(s) appropriate for the required analyses provided by laboratory in insulated cooler, ice, field notebook and permanent pens/markers, field file with necessary maps, historical data, contact info., chain of custody and field data sheets, decontamination supplies, 5-gallon plastic buckets, 55-gallon steel drum(s), hand tools and key(s) for entry into well vaults and drums, trash bag(s), metal detector.

Crandall of Lexington, South Carolina will be utilized as the disposal facility for any development and purge water and/or by products from decontamination generated by ETS during this scope of work.

Address the actions to be taken when problems occur in the field, and the person responsible for taking corrective action and how the corrective action will be documented.

Failure	Response	Documentation	Individual Responsible
Inclement weather	Postpone the job until weather permits	Document in the field notebook	Terry Teate and Michael Faris
Water Level / Product Meter failure	Replace battery. If still not fully functional, get replacement meter from office before proceeding.	Document in the field notebook	Terry Teate and Michael Faris
Purge meter failure (pH, temp, spec. conductivity)	Replace pH probe or spec. conductivity probe and/or batteries if possible, then recalibrate. If still not within proper calibration, get replacement meter from office before proceeding	Document in the field notebook and on purge meter calibration sheet(s)	Terry Teate and Michael Faris
Purge meter failure (DO)	Replace DO membrane and/or batteries if possible, then recalibrate. If still not within calibration, get replacement from office before proceeding	Document in the field notebook and on purge meter calibration sheet(s)	Terry Teate and Michael Faris

Failure	Response	Documentation	Individual Responsible
Purge meter failure (turbidity)	Clean and/or replace sample cuvet. Replace batteries. Recalibrate. If still not within calibration, get replacement form office before proceeding	Document in the field notebook and on purge meter calibration sheet(s)	Terry Teate and Michael Faris
Mislabeled bottles from laboratory	Re-label bottles	Document in the field notebook	Terry Teate and Michael Faris
Wells damaged or inaccessible	Contact DHEC PM	Document in the field notebook / Photograph if possible	Terry Teate and Michael Faris

Table 4A Field Corrective Action

B3 Sample Handling and Custody

1. ***How will the samples get from the Site to the Lab to ensure holding requirements are met?***

   The samples will be maintained on ice in an insulated cooler during collection onsite and during transport. The cooler will be sealed during transport from the site to the Enviro-Test office. A laboratory courier will pick up and deliver the samples under chain of custody to the laboratory within less than 24 hours of sample collection.

   Once samples are received from client by Access they are temp checked for compliance using a NIST traceable thermometer and the temperature is recorded on the COC. Samples are then kept on ice until they are shipped out (normally samples are shipped on the same day they are received by Access). Samples are shipped according to the established SOP that Access has for environmental sample shipment. This SOP addresses temperature control issues and specifies how samples are to be packed so that they remain between 0-6 degrees C while in transit to the receiving lab (GCAL).

2. ***If sample preservation procedures differ from the UST Programmatic QAPP, please provide details.***

   The sample preservation procedures will be in compliance with the UST Programmatic QAPP.

3. ***If chain of custody procedures differ from the UST Programmatic QAPP, please provide details.***

   The chain of custody procedures will be in compliance with the UST Programmatic QAPP.

B4 Analytical Methods

1. ***Identify the SOPs which will be used to analyze the samples, the method which the SOP references and the equipment or instrumentation that is needed:***

Parameter	SOP ID*	Method Referenced	Equipment	Comments
pH	Field Purge Meters SOP	9040C	Field mutlimeter	Hanna 871936
temperature	Field Purge Meters SOP	SM-2550B	Field mutlimeter	Hanna 871936
Specific conductivity	Field Purge Meters SOP	9050A	Field mutlimeter	Hanna 871936
Dissolved oxygen	Field Purge Meters SOP	SM-4500 OG	Field meter	YSI 58
turbidity	Field Purge Meters SOP	SM-2130B	Field meter	Hanna HI 98703
BTEX+Naph+MTBE +Oxygenates	S-VO-002	8260B	GC/MS	
PAHs	S-SV-021	8270D	GC/MS	
EDB	S-SV-012	8011	GC	
Lead, T.	S-IM-022	6010C	ICP	
Ferrous Iron	S-IN-009	SM 3500-FED	Spectrophotometer	
Nitrate	S-IN-042	353.2	Auto-analyzer/Leachate	
Sulfate	S-IN-010	300.0	Ion Chromatograph	
Methane	S-VO-004	RSK-175	GC	
TOC	S-IN-030	Walkley-Black	N/A	
DRO - TPH	S-SV-001	8015C	GC	

Table 5A Analytical SOPs and Referenced Methods

- **This can be a full name of a SOP, an abbreviation, or a number. In the latter two cases, the abbreviation or number must be associated with the full name of the SOP. See also Table 8A SOP Abbreviation Key.**

B5 Quality Control Requirements:

All QC will follow the requirements laid out in Section B5 of the UST Programmatic QAPP.

B6 Field Instrument and Equipment Testing, Inspection and Maintenance

1. *Identify all field and laboratory equipment needing periodic maintenance, the schedule for this, and the person responsible. Not the availability and location of spare parts.*

Instrument	Serial Number	Type of Maintenance	Frequency	Parts needed/Location	Person responsible
Water level / interface probe	06-01466	Check battery level & electronics, sensing probe tip and/or prism; and quality of measuring tape / replace/repair as necessary	weekly	Spare batteries and spare sensing probe tip repair kit with tape pigtail located inside metal cabinet in sample equipment room at ETS office	Terry Teate and Michael Faris
DO meter	510	Check DO membrane / replace if necessary	Periodic – according to manufact. specs	Inside metal cabinet in sample equipment room at ETS office	Terry Teate and Michael Faris
pH / specific conductivity / temperature meter	871936	Clean and check pH bulb and spec. conductivity probe for wear / replace if necessary	Periodic – according to manufact. specs	.Inside metal cabinet in sample equipment room at ETS office	Terry Teate and Michael Faris
Turbidity meter	08511753	Clean and check cuvets for wear, replace if necessary	Periodic – according to manufact. specs	.Inside metal cabinet in sample equipment room at ETS office	Terry Teate and Michael Faris
GC/MS for VOCs	Various	Cleaning and Calibration	Daily	Various / most at lab. Other parts purchased from Equipment Vendor	Analyst, Department Supervisors
GC for EDB	Various	Cleaning and Calibration	Daily	Various / most at lab. Other parts purchased from Equipment Vendor	Analyst, Department Supervisors
GC/MS for PAHs	Various	Cleaning and Calibration	Daily	Various / most at lab. Other parts purchased from Equipment Vendor	Analyst, Department Supervisors
ICP for Lead	Various	Cleaning and Calibration	Daily	Various / most at lab. Other parts purchased from Equipment Vendor	Analyst, Department Supervisors

Instrument	Serial Number	Type of Maintenance	Frequency	Parts needed/Location	Person responsible
IC for Nitrate / Sulfate	Various	Cleaning and Calibration	Daily	Various / most at lab. Other parts purchased from Equipment Vendor	Analyst, Department Supervisors
GC for Methane	Various	Cleaning and Calibration	Daily	Various / most at lab. Other parts purchased from Equipment Vendor	Analyst, Department Supervisors
Spectrophotometer for Ferrous Iron	Various	Cleaning and Calibration	Daily	Various / most at lab. Other parts purchased from Equipment Vendor	Analyst, Department Supervisors

Table 6A Instrument and Equipment Maintenance

B7 Instrument Calibration and Frequency

1. *Identify equipment, tools, and instruments for field or lab work that should be calibrated and the frequency.*
2. *Describe how the calibrations should be performed and documented, indicating test criteria and standards or certified equipment.*
3. *Identify how deficiencies should be resolved and documented. Identify the person responsible for corrective action.*

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference*
Water level / interface probe	The tape will be compared against an invar steel surveyors chain	Per manufacturers specifications (ORS)	0.01 feet per 10 feet of tape length	Replace tape if not within acceptance criteria	Terry Teate and Michael Faris	Sampling SOP
DO meter	Enter elevation and expected salinity for geographic area, then calibrate to DO standard	Daily calibration	Within 5% of DO standard	Recalibration or instrument maintenance	Field Technician, PM if necessary	Sampling SOP
pH / specific conductivity / temperature meter	Immerse pH probe in singles packets of pH 4.0, 7.0, 10.0, with rinses in between	Daily calibration	Pass / fail according to automatic meter calibration	Recalibration or instrument maintenance	Field Technician, PM if necessary	Sampling SOP

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference*
Turbidity meter	Place standard (<0.1, 15, 100 NTU) in cuvet and measure	Daily calibration	Within 10% of each standard	Recalibration or instrument maintenance	Field Technician, PM if necessary	Sampling SOP
HP or Agilent GC/MS for VOCs	Once a BFB Tune and initial calibration meet criteria then a BFB Tune and continuing calibration verification (CCV) is performed every 12hrs.	CCV performed every 12 hours	Calibrates within Acceptable Range (See SOP for specific info)	If the CCV fails criteria a new initial calibration is performed. Also, see section 4.7 of lab QAP for detailed corrective action procedures.	Laboratory Department Supervisor / Analyst	Method 8260B GCMSV-003 r22
Agilent GC for EDB via 8011	Once an initial calibration meets criteria then a CCV is performed at the beginning of analysis and every 10 samples.	Daily, at beginning of analysis and then every 10 samples.	Calibrates within Acceptable Range (See SOP for specific info)	If the CCV fails criteria a new initial calibration is performed. Also, see section 4.7 of lab QAP for detailed corrective action procedures.	Laboratory Department Supervisor/ Analyst	Method 8011 – GC 034 r6
HP or Agilent GC/MS for SVOCs / PAHs	Once a DFTPP Tune and initial calibration meet criteria then a DFTPP Tune and continuing calibration verification (CCV) is performed every 12hrs.	CCV performed every 12 hours	Calibrates within Acceptable Range	If the CCV fails it is re-injected prior to performing a new calibration	Laboratory Department Supervisor/ Analyst	GCMSSV-004 r5
ICP for Lead	One point plus a zero performed daily and meet criteria CCV	CCV performed at beginning, after every 10 samples and at closing	Calibrates within acceptable range	If the CCV fails criteria, it can be reanalyzed once prior to a new calibration being performed	Laboratory Department Supervisor/ Analyst	MET-010 r18

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference*
IC for Nitrate / Sulfate	Once an initial calibration meets criteria then a ICV and low level check is performed	CCV performed at beginning, after every 10 samples and at closing	Calibrates within acceptable range	If the CCV fails criteria, it can be reanalyzed once prior to a new calibration being performed	Laboratory Department Supervisor/ Analyst	WL-042 r15
GC for Methane	Once an initial calibration meets criteria then a CCV is performed at the beginning of analysis and every 10 samples.	Daily, at beginning of analysis and then every 10 samples.	Calibrates within Acceptable Range	If the CCV fails it is re-injected prior to performing a new calibration	Laboratory Department Supervisor/ Analyst	GC-024 r6
Spectrophotometer for Fe++	Once an initial calibration meets criteria then a ICV and low level check is performed	CCV performed at beginning, after every 10 samples and at closing	Calibrates within acceptable range	If the CCV fails criteria, it can be reanalyzed once prior to a new calibration being performed	Laboratory Department Supervisor/ Analyst	WL-047 r5
HP or Agilent GC/MS for SVOCs / PAHs	Once a DFTPP Tune and initial calibration meet criteria then a DFTPP Tune and continuing calibration verification (CCV) is performed every 12hrs.	CCV performed every 12 hours	Calibrates within Acceptable Range	If the CCV fails it is re-injected prior to performing a new calibration	Laboratory Department Supervisor/ Analyst	GCMSSV-004 r5

Table 7A Instrument Calibration Criteria and Corrective Action

*** This can be a full name of a SOP, an abbreviation, or a number. In the latter two cases, the abbreviation or number must be associated with the full name of the SOP. See also Table 8A SOP Abbreviation Key.**

B8 Inspection/Acceptance Requirements for Supplies and Consumables

The procedures for storage, handling and transport of supplies/consumables will be in accordance with the UST Programmatic QAPP

B9 Data Acquisition Requirements (Non-Direct Measurements)

1. *Identify data sources, for example, computer databases or literature files, or models that should be accessed or used.*
2. *Describe the intended use of this information and the rationale for their selection, i.e., its relevance to project.*
3. *Indicate the acceptance criteria for these data sources and/or models.*

Data Source	Used for	Justification for use in this project	Comments
Tier II Assessment, Broad River Amoco, by ARM Environmental Services Inc.; May 28, 2013	Summary and comparison of historical analytical data; top of casing elevation, water level, well construction, etc.	This most recent assessment report has a summary of known groundwater analytical data and monitoring well construction information relevant to this scope of work.	This report was reviewed and entered into record by SC DHEC in June of 2013. See Section A5 for additional information on site history

Table 8A Non-Direct Measurements

4. *Identify key resources/support facilities needed.*

Lab courier for transport of samples from Enviro-Test to laboratory for processing

B10 Data Management

1. ***Describe the data management scheme from field to final use and storage.***

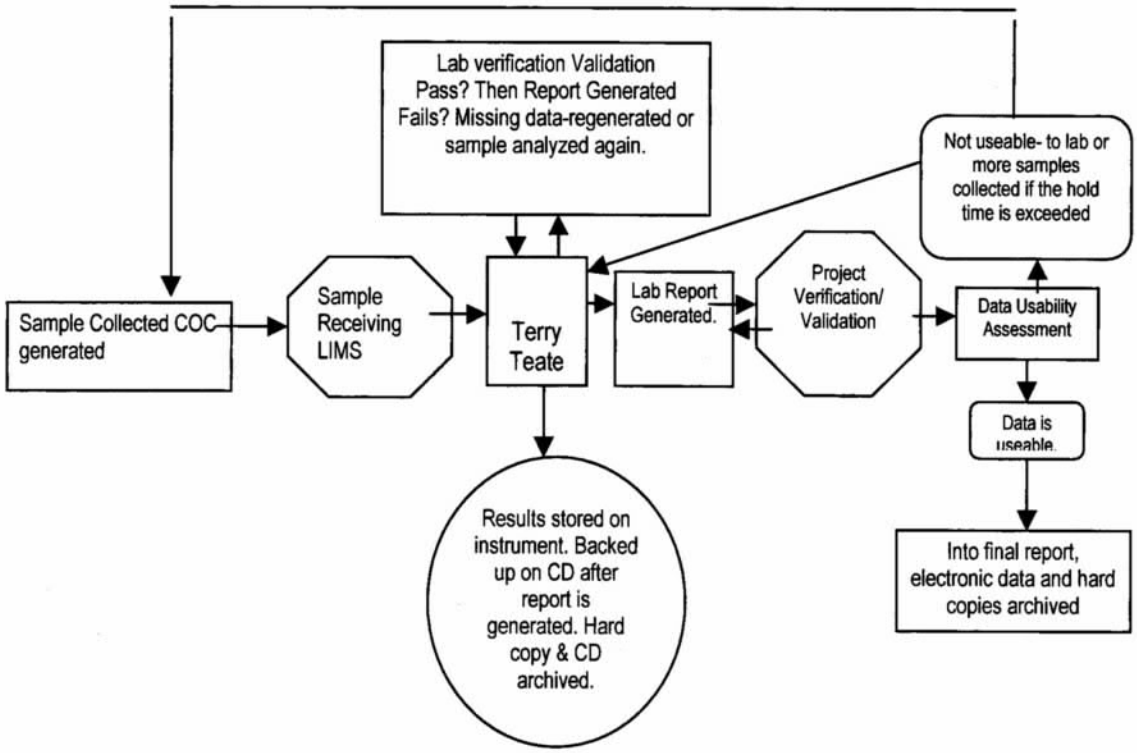


Figure 2 Data Management Scheme

2. ***How does the lab and field staff ensure that no unauthorized changes are made to the chain of custody, sampling notebooks, laboratory notebooks and computer records?***

The chain of custody has an attached carbon copy, in which the field staff keeps one copy after the laboratory picks up samples (in lieu of a carbon copy, in some cases, the chain of custody is photocopied at the time the samples are relinquished by the field staff to the laboratory representative). This original is used to determine if any changes are made to the COC after laboratory receipt. All COCs are reviewed by the laboratory during receipt of samples and submittal of final report. Looking for inappropriate changes to the COC is in the scope of both laboratory reviews. The Laboratory Quality Assurance/Quality Control Department oversees adherence to and review of these programs. The Enviro-Test Project Manager and QA Officer also review both copies of the COCs during report preparation in order to determine if there are any discrepancies.

All field notes are recorded in engineering-style field notebooks and on field data sheets in indelible ink in order to ensure that no unauthorized changes are made to the sampling notes. Any corrections made to the notes during collection shall be crossed out so as to remain visible and initialed at the time of the change.

All computer records received from the laboratory are in an un-editable / scanned format. All computer records generated and maintained by Enviro-Test will be stored on a limited-access secure server located in the Enviro-Test office in order to ensure that no unauthorized changes are made to the records. Additionally, a password protected nightly onsite backup, as well as a bi-weekly off-site backup, are completed in order to prevent loss of data in case of a computer malfunction.

3. ***How does the lab ensure that there are no errors in samples records including times when sample information is compiled, data calculated and/or transmitted.***

The use of a Laboratory Information Management System (LIMS) is employed. The LIMS database is reviewed daily by laboratory management. Furthermore, the database is backed up daily to prevent the loss of data in the event of a system malfunction. Documentation of these procedures is provided in laboratory SOP S-AD-003, LIMS.

4. ***How will the data be archived once the report is produced? How can it be retrieved? (This applies to both electronic and hard copies).***

The laboratory QA/QC department maintains and archives hardcopy data offsite. Electronic data is maintained and archived by the laboratory IT systems manager.

A hard copy of field data, correspondence, and reports compiled by Enviro-Test are archived in the locked Enviro-Test warehouse for at least five years. All records are scanned and a digital copy of each is stored and backed-up in a non-editable format on the Enviro-Test server as well as in a secure offsite location. Hard copies and digital archives maintained by Enviro-Test can only be accessed by authorized Enviro-Test employees with appropriate security credentials.

Section C Assessment and Oversight

C1 Assessment and Response Actions

1. ***The Contractor is supposed to observe field personnel daily during sampling activities to ensure samples are collected and handled properly and report problems to DHEC within 24 hours. Please state who is responsible for doing this and what observations will be made. Will this person have the authority to stop work if severe problems are seen?***

   Internal field audits will be performed on a daily basis by Terry Teate of Enviro-Test Services Inc. If any significant problems or deviations from the QAPP are noted, work may be stopped to resolve the issues. Terry Teate will have the authority to stop work, if necessary. The SCDHEC Technical Project Manager will be notified of the issues within 24 hours of any such occurrence

2. ***The SCDHEC UST QAPP states that the Lab will receive an Offsite Technical System Audit. For this project, what assessments will be done on the Commercial Lab(s) that are being used—other than their certification audit? When or how often are these done? Who will the results be given to and who has the ability to stop work if problems are severe?***

   -RESPONSE:

   I. Access Analytical, Inc. is an SCDHEC certified lab for field parameters. Access participates in annual proficiency testing (PT) audit studies in order to maintain its DHEC certification. The audit samples are provided by Wibby Environmental who is a producer of analytical standards and unknown audit samples. Wibby Environmental is an approved vendor for the SCDHEC laboratory certification group (see www.scdhec.gov/environment/envserv/lcptrequirements.htm for a list of approved vendors). Access does not hold other certifications as it is not required for this work.

   II. GCAL is certified by DHEC and numerous other states. In addition to the applicable SCDHEC certifications GCAL also participates in the following:

   - Louisiana Environmental Laboratory Accreditation Program – This assessment is conducted every two years. During that assessment the lab is assessed to the TNI Standards and the Louisiana Department of Environmental Qualities certification regulations. Theses assessment is based on the ISO 17025 requirements and ISO 17011 requirements as found in the TNI standards.

   - DOD certification – This assessment is scheduled every two years and is completed by ACLASS. The assessment is based on the DOD QSM requirements.

   - The lab performs 2 PT studies every year.

- California ELAP – requires an assessment every two years and is conducted by the state's assessors. The assessment is to verify compliance with the requirements of the state of California.

- Arizona – requires an assessment every year and is conducted by the state's assessment team. The assessment is to verify compliance with the requirements of the state of Arizona.

- North Carolina – at the time of application standard operating procedures, quality assurance project plan, and PT results are submitted for review. Assessments are conducted every two years.

- Client Assessments – GCAL's clients can and do require assessment using a third party assessor such as Environmental Standards. The contracted assessment team verifies that GCAL is meeting the requirements of the clients contract and is compliant with EPA requirements and compliant with state regulations.

When or how often are these done?

- REPONSE: Answer to this question is included in the above response.

Who will the results be given to and who has the ability to stop work if problems are severe?

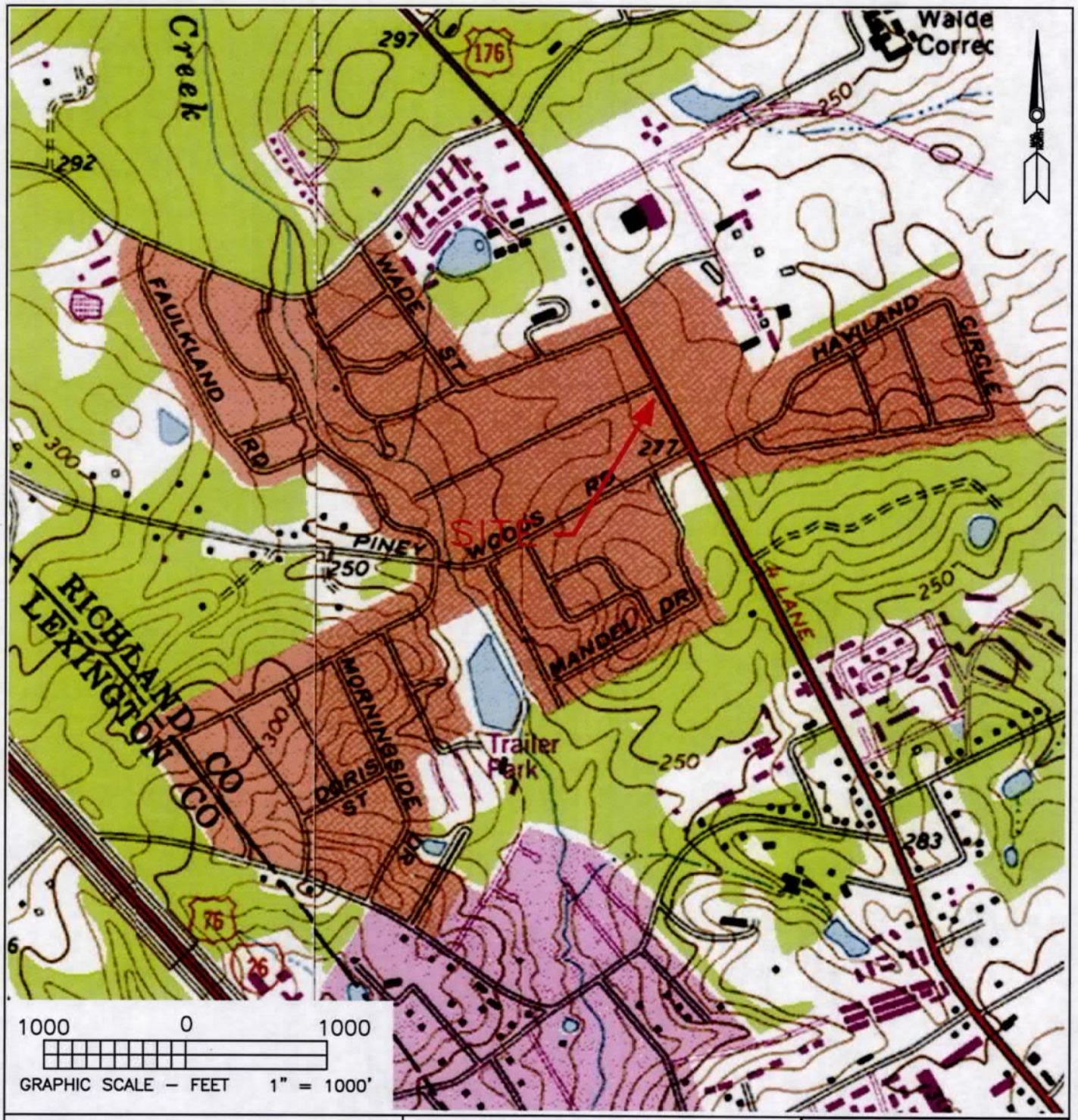
- RESPONSE: The results of the audits are reviewed by the associated regulating bodies. Any of these organizations have the right to cease work being done which falls under their program area if sufficient deficiencies are found.

C2 Reports to Management

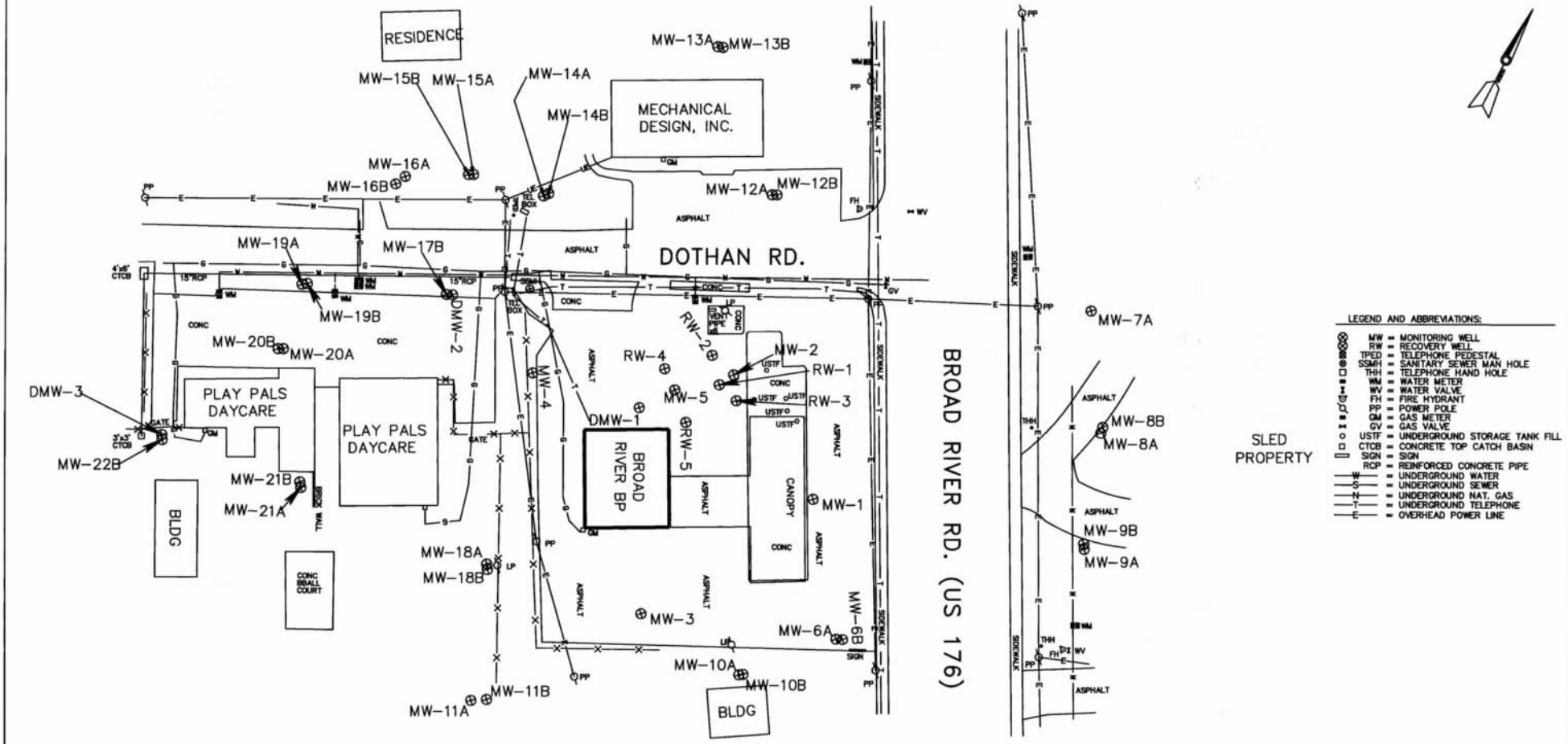
See the SC DHEC UST Programmatic QAPP (UST Master QAPP).

Section D Data Validation and Usability

See the SC DHEC UST Programmatic QAPP (UST Master QAPP).



PROJECT: INITIAL MONITORING – CORR. ACTION BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: SITE LOCATION MAP	*FIGURE 1* DATE: FEBRUARY 2014
ENVIRO-TEST SERVICES	REFERENCE: U.S.G.S. TOPOGRAPHIC MAP (7.5 MINUTE SERIES) COLUMBIA NORTH – 1972, REV. 1990 SOUTH CAROLINA QUADRANGLE	LEGEND:



PROJECT: INITIAL MONITORING - CORR. ACTION BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: SITE BASE MAP	**FIGURE 2**
		DATE: FEBRUARY 2014
ENVIRO-TEST SERVICES	REFERENCE:	NOTES:

Access Analytical - Chain of Custody Record

LAB USE ONLY

Sales Order #_____ **PO #**_____ **Access Quote #** _____

Project Work Order #_____

Laboratory ID: _____

Company Name:

Report To:

Address:

City: State: Zip:

Phone: Fax:

Email:

Project ID:

Sampled By:

Sample ID/Description	Date Collected:	Time Collected:	Type: (grab or composite)	Matrix: (see codes)	Program Area (see codes)	TOTAL # of containers	# of containers collected per analysis	Preservative: (*see codes)	Container Type: (*see codes)

↓ REQUESTED LAB ANALYSIS: ↓

ACCESS ANALYTICAL, INC.

7478 Carlisle Street
Irmo, SC 29063

Phone: (803) 781-4243
Fax: 781-4303

www.axs-inc.com

***Preservative Codes** *(place corresponding # in block above analysis field)*:
0 = None, **1** = HCL, **2** = HNO_3, **3** = H_2SO_4, **4** = NaOH, **5** = $Na_2S_2O_3$, **6** = Method 5035 set w/ $NaHSO_4$ & CH_3OH, **7** = NaOH/ZnOAC, **8** = H_3PO_4

***Matrix Codes** *(place corresponding code in matrix column)*:
GW = ground water, **WW** = waste water, **DW** = drinking water, **S** = soil, **SL** = sludge, **A** = air, **IW** = industrial waste, **WO** = waste oil, **OT** = other *(specify in comments section)*

***Program Area Codes:** **CWA** = Clean Water Act (for wastewaters), **SDWA** = Safe Drinking Water Act (for drinking waters), **SHW** = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

***Container Type:** **G** = Glass, **P** = Plastic

NOTES / COMMENTS

(if sample is a composite please use space below to note start/finish times & dates)

Turnaround Time:

___ Standard
___ RUSH*
*Date Required:_____
(For rush work, results emailed/faxed by end of business day on date required)

Project Location:
___SC
___NC
___Other
(specify) _____

Relinquished By:	Received By:	Date (mm-dd-yy)	Time (24HR)	Samples Rec'd on Ice	Sample Temp. Upon Receipt (°C):	
				___Y ___N	_____(°C)	_____(N/A)
				___Y ___N	_____(°C)	_____(N/A)
				___Y ___N	_____(°C)	_____(N/A)
				___Y ___N	_____(°C)	_____(N/A)

See Reverse for Terms and Conditions

Original Copy - Returned w/Report
Yellow Copy - Access File Copy
Pink Copy - Client Copy

D H E C

PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

MR FREDERICK CECCHINI
4335 BROAD RIVER RD
COLUMBIA SC 29210-4009

MAR 0 5 2014

UST 3 Mech DOCKETING

Re: **QAPP Addendum Approval**
Broad River Amoco, 4335 Broad River Rd., Columbia, SC
UST Permit # 11946; CA # 46916
Release Reported January 4, 2011
QAPP Contractor Addendum received February 19, 2014
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) has reviewed and approves the Quality Assurance Program Plan (QAPP) Addendum for the initial sampling event at Broad River Amoco. Groundwater sampling activities should begin immediately upon receipt of this letter. All work should be conducted in accordance with the UST QAPP and must be conducted in compliance with all applicable regulations. A copy of the UST QAPP is available online at http://www.scdhec.gov/environment/lwm/usthome/Qapp.htm.

Groundwater samples should be collected and analyzed for the parameters outlined in Table 1 of the bid solicitation appendix. Analyses should be in accordance with Appendix E of the QAPP to include duplicate samples, field and trip blanks.

In accordance with the QAPP, a weekly status report of the project should be provided via e-mail. If any quality assurance problems arise, your contractor must contact the Division within 24 hours via phone or e-mail. In addition, a discussion of the problem(s) encountered, including quality assurance problems, the actions taken, and the results must be included in the final report submitted to the UST Management Division.

The Initial Monitoring Report, including contractor checklist (QAPP Appendix K), is due on or before **April 21, 2014.** The report submitted at the completion of these activities should include the required information outlined in the QAPP and in the bid solicitation. As stated in Solicitation Item IV.B.4, the report should include color photographs with date stamp of the facility/site and surrounding properties to provide documentation of the condition of the facility/site prior to implementation of any corrective action activities. Copies of the initial monitoring report must be distributed in accordance with Solicitation Item III.A.8. Please note that all applicable South Carolina certification requirements apply to the services and report preparation. All site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

The Agency grants pre-approval for transportation of virgin petroleum impacted soil and groundwater from the referenced site to a permitted treatment facility. The transport and disposal must be conducted in accordance with the QAPP. If the chemical of concern (CoC) concentrations based on laboratory analysis are below risk-based screening levels (RBSLs), please contact the project manager for approval to dispose of soil and/or groundwater on site. The SUPERB Account will not reimburse for transportation or treatment of soil and/or groundwater with concentrations below RBSLs.

On all correspondence regarding this site, please reference UST Permit # 11946. If you have any questions regarding this correspondence, please contact me by telephone at (803) 898-0614, by fax at (803) 898-0673, or by e-mail at fulmersb@dhec.sc.gov.

Sincerely,

Susan B. Fulmer, P.G., Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: QAPP Contractor Addendum Signature Page

cc: Enviro-Test Services, PO Box 2237, Irmo, SC 29063 (w/ enc)
Technical File (w/ enc)

Appendix B: Contractor Addendum

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FEB 19 2014
SC Department of Health and Environmental Control

A1 Title and Approval Page

Quality Assurance Project Plan
Addendum to the SC DHEC UST Programmatic QAPP
For
Broad River Amoco; UST Permit #11946; CA #46916

4335 Broad River Rd., Columbia, SC

UST
FEB 19 2014
DIVISION

Prepared by: Michael Faris
Principal Geologist, Enviro-Test Services, Inc.

Date: 2/18/14

Enviro-Test Services, Inc., Cert. #14

UST
3/4/14
DOCKETING

Approvals

✓ Susan Fulmer, P.G.
SC DHEC Project Manager — Signature — Date 3/4/14

Terry L. Teate
Site Rehabilitation Contractor — Signature — Date 2-19-14

Michael Faris, P.G.
Contractor QA Manager — Signature — Date 2/19/14

Ashley B. Amick
Laboratory Director, Access Analytical, Inc. — Signature — Date 02/19/14

Scott Bailey
Laboratory Director, GCAL — Signature — Date 02/19/14

Signed by: Brenda Mathews Jr.
Date: Wed Feb 19 2014 08:14:30

✓DF 3/4/14
SCANNED

ENVIRO-TEST SERVICES

April 15, 2014

RECEIVED
MAY 06 2014
SC Department of Health and Environmental Control

Lee Monts, Hydrogeologist
Underground Storage Tank Section
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

UST 38tech DOCKETING

UST MAY 06 2014 DIVISION

Re: Initial Monitoring Report
Broad River Amoco
4335 Broad River Rd., Columbia
Richland County, South Carolina
UST Permit #11946; CA #46916

Dear Mr. Monts;

Enviro-Test Services, Inc. (ETS) has completed the Initial Monitoring activities associated with the corrective action requested for the Broad River Amoco site located in Columbia, South Carolina. The pertinent information regarding this assessment, including conclusions, is presented on the following pages and in the attached Figures, Tables, and Appendices.

Based on the analytical data collected during this assessment, it is apparent that free-phase petroleum product is present and has increased in thickness north of the store building on the property. Based on the data collected during this initial monitoring report, the extent of free-phase and dissolved-phase groundwater contaminant plumes appear to remain defined.

If you should have any questions regarding the results of this assessment, or should you need additional information, please do not hesitate to contact our office.

Sincerely,
Enviro-Test Services, Inc.
Contractor Certification #14

Michael L. Faris, P.G. (#237
Hydrogeologist

MICHAEL L. FARIS REGISTERED No. 2379 SOUTH CAROLINA PROFESSIONAL GEOLOGIST

Terry L. Teate
President, Sr. Project Manager

cc: Fredrick Cecchini

Background

The subject site is located in northwest Richland County in Columbia, South Carolina and is situated on the southwest side of Broad River Road, a five-lane local thoroughfare. The site is comprised of approximately 0.85 acres and is currently owned and operated as a petroleum retail facility, convenience store and restaurant (Broad River BP).

A 1939 aerial photograph from the Richland County Geographic Information System (GIS) shows that the subject property was utilized for agriculture and was partially wooded. Broad River Road appears as a two-lane road. Information available through the Richland County Assessor's Office indicates the property was owned by B.O. Derrick in 1955 and a 1959 aerial photograph indicates that the property had apparently been developed as a petroleum retail facility. Subsequently, the property was acquired by Associated Oils of South Carolina, Inc. in February 1988, and the previous UST system (B.O. Derrick) was properly closed, as reported to the SCDHEC in 1989. Reportedly, the closure included proper abandonment by removal of one 2,000-gallon UST and one 3,000-gallon UST. Additionally, the property redevelopment activities of 1988 and 1989 reportedly included the demolition of pre-existing structures and construction of the existing store building, dispenser islands and UST system. Subsequently, the property was acquired by Mr. Frederick N. Cecchini in June 1997, and Mr. Cecchini remains the current owner.

UST #	Product	Date Installed	Currently in use (Yes or No)	If not in use, Date Removed
1	Gasoline (2,000 gallon)	(?)	No	1989
2	Gasoline (3,000 gallon)	(?)	No	1989
3	Diesel (3,000 gallon)	1989	Yes	-
4	Gasoline Unleaded (3,000 gallon)	1989	Yes	-
5	Gasoline Plus (3,000 gallon)	1989	Yes	-
6	Gasoline Plus (8,000 gallon)	1989	Yes	-
7	Gasoline Super (8,000 gallon)	1989	Yes	-
8	Kerosene (1,000 gallon)	1989	Yes	-

Reportedly, no soil samples were collected for analysis at the time of proper abandonment of the previous UST system as reported to SCDHEC in 1989. In December 2010, a Phase II Subsurface Investigation was performed by Partner Engineering and Science, Inc. of El Segundo, California. The Phase II investigation included the installation of four soil borings and a Temporary Monitoring Well Permit (Approval No. 4053) was obtained from the SCDHEC for the purpose of groundwater sample collection. Reportedly, the soil borings extended to terminal depths of 26 feet below land surface (BLS) utilizing direct push penetration technology with continuous soil sample collection.

Drilling refusal was encountered in all four soil borings before groundwater was encountered; therefore, no groundwater samples were collected for laboratory analysis. Eight soil samples (two from each soil boring) were submitted for laboratory analysis for Volatile Organic Compounds (VOC) and Polynuclear Aromatic Hydrocarbons (PAH). The laboratory analytical results indicated the detection of various VOC and PAH chemical compounds at concentrations deemed reportable to the SCDHEC.

An Initial Groundwater Assessment (IGWA) was completed by Enviro-Test Services, Inc. during January, 2011 and an IGWA report was submitted on February 4, 2011. On January 20, 2011, the soil boring for monitoring well MW-1 was installed. The soil sample from the 10 to 15 feet sampling interval yielded the highest PID reading of 1,782 ppm and accordingly was submitted for laboratory analysis for BTEX, MTBE, naphthalene, PAH and lead. Moderately elevated concentrations of toluene, ethylbenzene, xylenes and naphthalene were detected in the soil sample. Saturated sediments were encountered at the depth interval of 35 to 40 feet below grade level (BGL). As such, monitoring well MW-1 was installed to a depth of 40 feet BGL and was screened from 40 to 20 feet BGL. On January 21, 2011, a groundwater sample was collected from monitoring well MW-1 and laboratory analysis for BTEX, naphthalene, MTBE, PAH and lead was performed. The depth to groundwater in monitoring well MW-1 was measured from the top-of-casing to be 20.92 feet. The groundwater sample yielded COC concentrations as follows: benzene (929 ug/l), toluene (10,300 ug/l), ethylbenzene (684 ug/l), MTBE (243 ug/l) and naphthalene (922 ug/l). Following review of the IGWA report, the SCDHEC requested a Tier I Assessment in correspondence dated February 7, 2011.

Field activities for the Tier I Assessment were commenced on February 24 and 25, 2011 with the completion of soil borings SB-1 through SB-9. Laboratory analysis of soil samples for BTEX, MTBE and PAH yielded elevated concentrations of benzene and naphthalene above RBSL in soil borings SB-1 (10 ft), SB-2 (5 ft), SB-3 (8 ft) and 5 (6 ft) which were installed proximal to the existing UST basin (SB-1 and SB-2) and product pipeline/dispenser islands (SB-3 and SB-5). Monitoring wells MW-2, MW-3 and MW-4 were completed on February 25, 2011 and were subsequently sampled on March 5, 2011. Laboratory analysis of the groundwater samples yielded concentrations of benzene as follows: MW-1 (1,760 ug/l), MW-2 (1,650 ug/l), MW-3 (9.93 ug/l) and MW-4 (1,830 ug/l). Additionally, concentrations of MTBE were also detected in wells MW-2 (3,420 ug/l) and MW-4 (3,100 ug/l). Naphthalene by EPA method 8260 was detected in wells MW-1 (4,070J ug/l), MW-2 (462J ug/l) and MW-4 (598 ug/l). Also, elevated concentrations of toluene were detected in wells MW-1 (16,400 ug/l) and MW-2 (3,230 ug/l) and ethylbenzene in wells MW-1 (1,270 ug/l) and MW-4 (1,270 ug/l). A Tier I Assessment Report was submitted to SCDHEC on April 8, 2011.

Subsequent to review of the Tier I Assessment Report, the Technical Project Manager and Section Manager, as applicable, expressed concern regarding the depth of the screened interval of each monitoring well in relation to the measured groundwater levels due to the fact that none of the monitoring wells were bracketing the water table of the site surficial aquifer.

Enviro-Test Services, Inc. stated that during soil boring and monitoring well installations no saturated sediments were encountered until the 35 to 40-ft depth interval of drilling at each well location; therefore, the monitoring wells were installed at depths somewhat deeper than preferable. Also, during drilling activities for installation of monitoring well MW-4, where elevated COC's were later detected in the March 5, 2011 groundwater sample, no petroleum hydrocarbon odors or elevated PID readings were noted to be present in apparent vadose soils; however, upon encountering saturated soils at approximately 35 feet, strong odors and elevated PID readings were readily apparent. Consequently, the Technical Project Manager decided that an additional monitoring well (MW-5) should be installed at a shallower, bracketing depth to determine the availability of groundwater for sample collection in what appeared to be unsaturated, vadose soils. Accordingly, on May 27, 2011 monitoring well MW-5 was installed to a depth of 20 feet, with a 10-ft screen at a location adjacent to the north corner of the existing convenience store building. The infiltration of groundwater was noted to be exceedingly slow; as such, groundwater was allowed to seep into the well casing for several days. On June 3, 2011, the depth to groundwater was measured at 13.80 feet and free product (gasoline) of a degraded appearance was measured at 13.68 feet (a free product thickness of 0.12 feet). Again, on June 20, 2011, depth to the groundwater was measured at 14.05 feet and free product at 13.75 feet (a free product thickness of 0.30 feet). These findings were submitted to the DHEC Project Manager on June 20, 2011.

Based on the results of the Tier I Assessment, a Tier II was requested. The Tier II was completed in 2013, with a report dated May 28, 2013, and the horizontal and vertical extent of the contaminant plume was delineated. This site is currently in the corrective action section of the UST Program in order to remove the free-phase product associated with the release contaminant plume.

The subject property is bounded by Broad River Road to the northeast, then by the South Carolina Law Enforcement Division (SLED). The adjacent property to the southeast is a nail and beauty salon. The adjacent property to the southwest is commercially utilized as a nursery school and day care (Play Pal Day Care). The Play Pal Day Care facility encompasses two properties fronting Dothan Road. The subject property is bounded to the northwest by Dothan Road and a commercially utilized property beyond (MDC Associates, an apparent mechanical engineering firm). The commercial usage of the subject property and adjacent properties is expected to remain the same in the future.

Site Geography

In general, the site is located on the west side of a topographically ridge extending southeast to northwest. Broad River Road lies at or near the crest of the apparent topographic ridge. Storm water runoff on the east side of the ridge ultimately flows into the Broad River located approximately 2 miles east of the site. On the west side of the ridge, storm water runoff flows toward Stoop Creek located approximately 1,650 feet to the southwest (near the southwest dead end of Dothan Road). From this point, Stoop Creek flows southward approximately 2.6 miles before emptying into the Saluda River.

In the general vicinity, numerous surface water features are evident on the USGS topographic map including several unnamed creeks (apparently spring fed) and several small to medium-sized surface water impoundments. In relative close proximity to the site, three surface water features are apparent on the west side of the topographic ridge and three on the east side of the topographic ridge. These surface water features are visibly apparent of Figure 1, a topographic site location map. On the west side of the topographic ridge, located approximately 1,430 feet to the northwest is a small pond with an estimated surface elevation of 265 feet MSL, approximately 1,680 feet to the southwest is the aforementioned Stoop Creek (estimated surface elevation of 233 feet MSL) and approximately 2,370 feet to the south-southeast is an apparent spring-fed creek (estimated surface elevation of 252 feet MSL at depicted point of emergence). On the east side of the topographic ridge, located approximately 1,240 feet to the northeast is an apparent spring-fed creek (estimated surface elevation of 248 feet MSL at the depicted point of emergence), approximately 1,820 feet to the east-northeast is an apparent spring-fed creek (estimated surface elevation of 230 feet MSL at the depicted point of emergence) and approximately 2,480 feet to the southeast is an apparent incised, spring-fed creek (estimated surface elevation of 235 feet MSL at the depicted point of emergence). Estimated surface elevations were obtained via the Richland County GIS utilizing a topographic option depicting contour intervals of two feet. For purposes of estimation, the depicted contours are deemed to be reasonably reliable.

According to the USGS Topographic Quadrangle Map of *Columbia North, South Carolina*, dated 1972 and revised in 1990, the elevation of the site is approximately 275 feet above mean sea level (MSL). The topography surrounding the site is relatively flat toward the north and east, but slopes downward toward the west/southwest. The topography in the general vicinity of the site slopes downward toward the west/southwest. A Topographic Site Location Map is included as Figure 1.

Regional Geology and Hydrogeology

The Broad River Amoco (BP) lies within the Lower Piedmont Physiographic Provence in close proximity and northwest of the contact zone, the "fall line", with the Upper Coastal Plain Physiographic Provence. The dominant rock types of the general area are related to the Carolina Slate Belt and specifically the Precambrian to Early Cambrian, Persimmon Fork Formation which is comprised primarily of green-gray to blue-gray, moderately metamorphosed, felsic volcanic (metavolcanic) tuffs and to a lesser extent mafic metavolcanic tuffs. These rocks occur as very weathered to moderately weathered outcrops in the site study area and are most often visible at areas of excavation related to road and building construction.

In the general vicinity, the uppermost aquifer generally occurs under unconfined conditions and receives water from precipitation, which infiltrates the unsaturated surface soils and migrates downward to the saturated zone. Underlying the uppermost aquifer is the fractured bedrock aquifer in which groundwater occurs in fractures, joints and faults. The fractured bedrock aquifer is often an important water resource for rural residences and commercial and light industrial properties at areas where municipal water supply is unavailable or unfeasible. Well yields are typically 1 to 350 gpm in the crystalline and metamorphic rocks with the larger yields located in areas of intensely fractured metamorphic rocks.

Site Geology and Hydrogeology

Based on the data collected during the Tier I and Tier II Assessments, it is apparent that groundwater can be found in several stratified layers or zones at the site. The most shallow water encountered at the site was generally found between 15' - 20' below ground level. This shallow water was very slow to accumulate in the boreholes. Typically it took at least several days to over a week for the water levels to come to equilibrium. It is likely that this most shallow water is present in small volume in the sandy clayey silt due to localized recharge, perching, and soil capillarity. The soils become more clayey (a silty clay) and mostly dry beginning at approximately 25' bgl. The second layer or zone of water encountered in the subsurface was typically found at an approximate depth of 35'-40'. The water in this second water-bearing zone was under significant hydraulic pressure and immediately entered the boreholes and rose upward many feet in the boreholes/wells.

The two layers of water are clearly connected as contamination has been identified at both depths during this Tier II investigation. There appears to be an aquitard comprised of mostly dry silty clay (with a small % of sand) between the two above-described zones of water across the area of study. Because the contaminants have been identified at both depths in and near the source area, there clearly is transmissivity between the two layers. Therefore, the silty clay is not considered a true aquiclude, but is acting at least as a partially confining unit.

Summary of Findings

Gauging

On March 6, 2014, ETS personnel located and gauged all monitoring wells and recovery wells associated with the release. Prior to the initiation of any gauging, purging or sampling activities, clean plastic sheeting was placed on the ground surface around each well in order to provide a clean work area. Each well was opened and gauged with a decontaminated electronic water level indicator to the nearest 0.01-foot. Fluid levels and total depths of the monitoring wells were recorded on field data sheets in indelible ink. Monitoring wells MW-2, MW-4, and MW-5 contained 1.42 feet, 2.24 feet, and 7.63 feet of free-phase product respectively. Recovery wells RW-1, RW-3, and RW-5 contained 6.68 feet, 0.06 feet, and 0.30 feet of free-phase product, respectively.

MW-13A was found to contain an insufficient volume of water to collect a sample. Monitoring wells MW-16A and MW-16B were previously abandoned at the request of the DHEC assessment section project manager.

Groundwater flow direction(s) of the water table / perched aquifer and second water bearing zone were determined to be generally toward the northwest. The general groundwater flow direction calculated from the three telescoping deep wells was determined to be toward the north / northeast. The current potentiometric data are summarized in Table 2. Generalized Potentiometric Surface Maps, displaying groundwater elevations at each well and groundwater flow directions for the water table aquifer, second water bearing zone, and telescoping well screened intervals are included as Figure 5A, 5B, and 5C, respectively.

Purging

All of the monitoring wells not bracketing the static water table were purged prior to sampling. Prior to purging, the well volumes were calculated using the diameter of the well, the static water level and the total depth of the well. The wells were purged with disposable hand bailers and disposable colorless nylon bailer twine. The bailers were lowered slowly into the water column, allowed to fill and carefully withdrawn from the wells.

Temperature, pH, specific conductivity, dissolved oxygen, and turbidity were measured and recorded throughout the purging process and purging continued until these parameters stabilized, typically in three to five well volumes. Stabilization occurs when pH measurements remain constant within 0.1 Standard Unit (SU), or reproducible to within 0.1 (SU), specific conductance varies no more that 10 percent, the temperature is constant for at least three consecutive readings and the turbidity has stabilized. Wells purged to dryness were considered sufficiently purged. Samples were collected immediately after the purging process was complete if sufficient volume was present.

Prior to commencement of purging, the purging meters were calibrated according to manufacturer's specifications. Also, the meters' calibration was checked mid-way through and after the purging activities. The calibration checks indicated that the meters remained calibrated within the acceptable ranges of the meters' standards throughout the purging activities. The purging data were recorded on field data sheets in indelible ink. The Monitoring Well Purging Data Sheets are included in Appendix B.

Groundwater Sampling

No groundwater samples were collected from MW-2, MW-4, MW-5, RW-1, RW-3, or RW-5 due to the presence of free-phase product. Groundwater samples were collected from the other monitoring and recovery wells associated with the release and placed into pre-labeled, laboratory-prepared sample containers utilizing disposable polyethylene hand bailers with disposable colorless nylon bailer twine. The bailers were slowly lowered into the water column until just filled, and then slowly removed from the wells. The contents were then emptied into the appropriate sample containers.

Purging parameters were again measured and recorded immediately after sample collection at each well. In order to further ensure sample integrity, samples were immediately placed on ice in an insulated cooler upon collection and entered into chain of custody. Field blanks were collected at the completion of each day of sampling activities. Laboratory-prepared trip blanks were included with the insulated sample coolers to ensure cross-contamination did not occur between the collected groundwater samples.

Duplicate samples were collected from monitoring wells MW-20B (Duplicate 1) and DMW-2 (Duplicate 2).

The groundwater samples were submitted to Shealy Environmental Services, Inc., a South Carolina certified laboratory (certification #32010), for analysis of BTEX, naphthalene, MTBE and 1,2-dichloroethane (1,2-DCA) by EPA method 8260B, and for EDB by EPA method 8011. Groundwater samples were also analyzed for the following eight oxygenates: di-isopropyl ether (DIPE), ethanol, ethyl tert-butyl alcohol (ETBA), ethyl tert-butyl either (ETBE), tert-amyl alcohol (TAA), tert-amyl methyl either (TAME), tert-butyl alcohol (TBA) and tert-butyl formate (TBF).

The laboratory analytical results from this assessment (current) are tabulated in Table 3. Results from previous groundwater sampling events are tabulated with the data from this assessment (current and historical) in Table 4. CoC detected at concentrations above the RBSLs established by SCDHEC are indicated in bold type. The complete laboratory analytical results, including chain-of-custody documentation, are included as Appendix B. A Groundwater CoC Site Map, indicating the March 2013 CoC concentrations in the groundwater at each monitoring well, is included as Figure 4.

Disposal

A total of 110 gallons of contaminated purge water and decontamination fluids were collected during this assessment. The fluids are awaiting disposal at an approved facility. The waste manifest will be forwarded as soon as it is received from the waste facility.

Disposal manifests for all of the contaminated purge water and decontamination fluids are included in Appendix G.

Contractor Checklist

The SCDHEC QAPP Contractor Checklist is included in Appendix K.

Site Photographs

Photographs of the subject site and surrounding property conditions are included in Appendix L.

Conclusions and Recommendations

Based on the data collected during this assessment, it appears that elevated concentrations of several Chemicals of Concern remain present at the site and on adjacent property. Additionally, free-phase product was present in greater thickness than in the Tier II gauging and sampling event in MW-2, MW-4, MW-5, RW-1, RW-3, and RW-5 during this assessment.

Based on the results of this assessment, it appears that the contaminant plume remains defined horizontally in multiple stratigraphic layers. As detailed above, it is apparent that groundwater can be found in several stratified layers or zones at the site. The most shallow groundwater was generally intersected between 15' - 20' bgl and was very slow to accumulate in the boreholes. The soils are more clayey (a silty clay) and mostly dry beginning at approximately 25' bgs. The second layer or zone of water encountered was typically found at an approximate depth of 35'-40' bgl and was under significant hydraulic pressure. There appears to be an aquitard comprised of mostly dry silty clay between the two above-described zones of water across the area of study. Because the contaminants have been identified at both depths in and near the source area, there clearly is transmissivity between the two layers. Therefore, the silty clay is not considered a true aquiclude, but is acting at least as a partially confining unit.

It is recommended that aggressive fluid vapor recovery (AFVR) events should begin as the initial component of the active corrective action process.

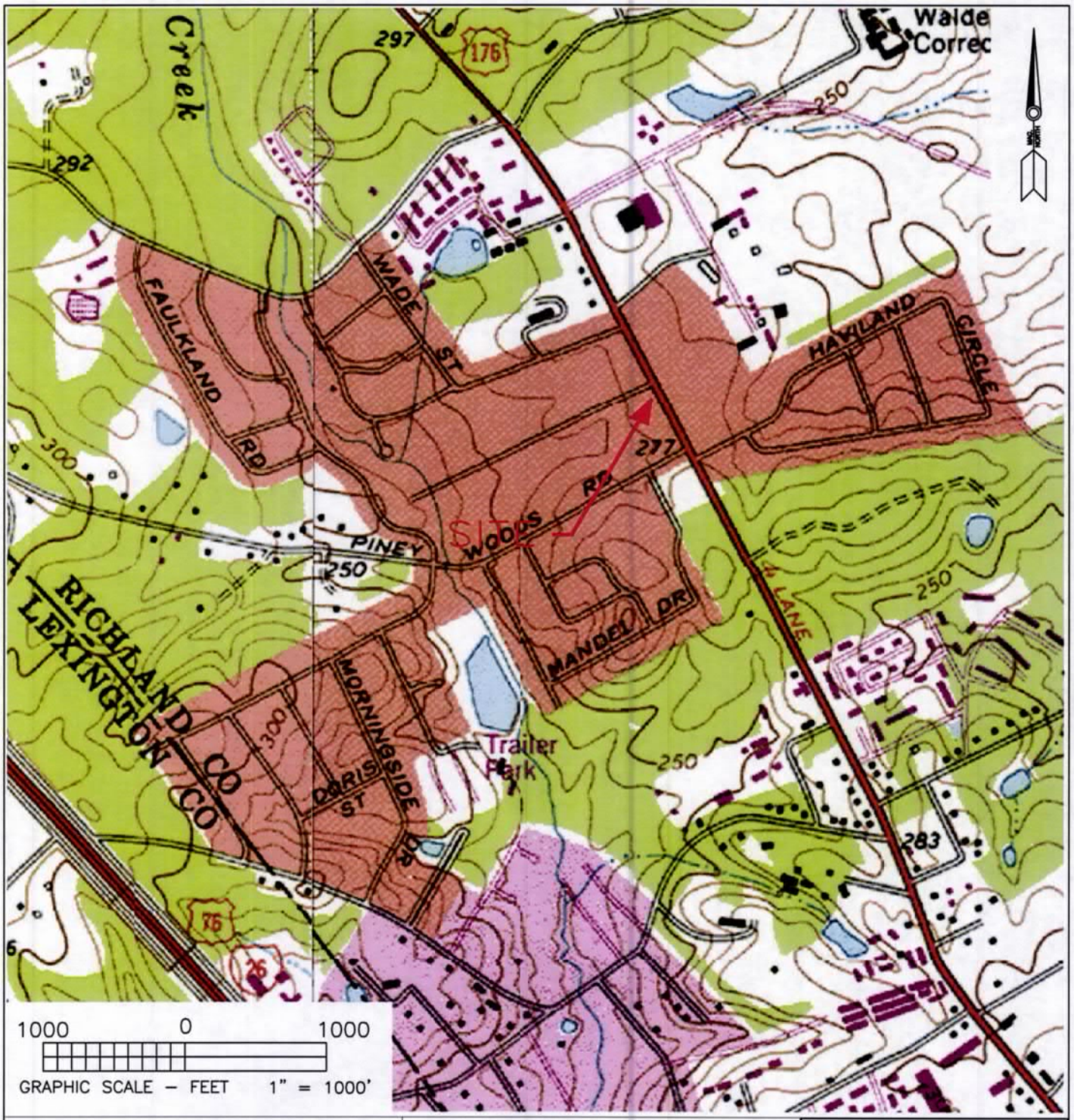
References

Maybin and Nystrom, 1997, revised by Willoughby, Howard and Nystrom, 2005. Generalized Geologic Map of South Carolina; South Carolina Department of Natural Resources Geological Survey.

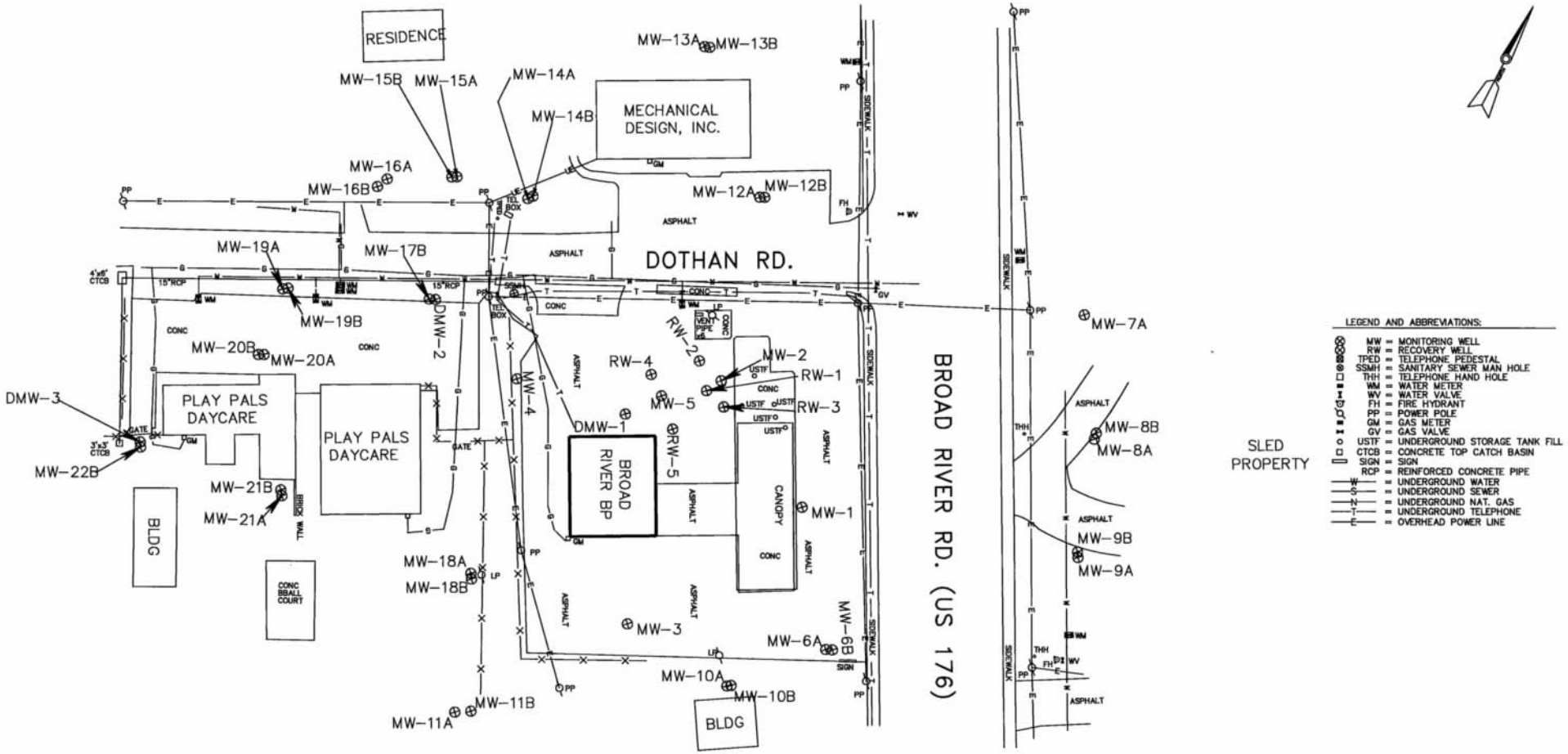
USGS Open-File Report 2005-1323, Preliminary integrated geologic map databases for the United States: Alabama, Florida, Georgia, Mississippi, North Carolina, and South Carolina, http://pubs.usgs.gov/of/2005/1323/

FIGURES

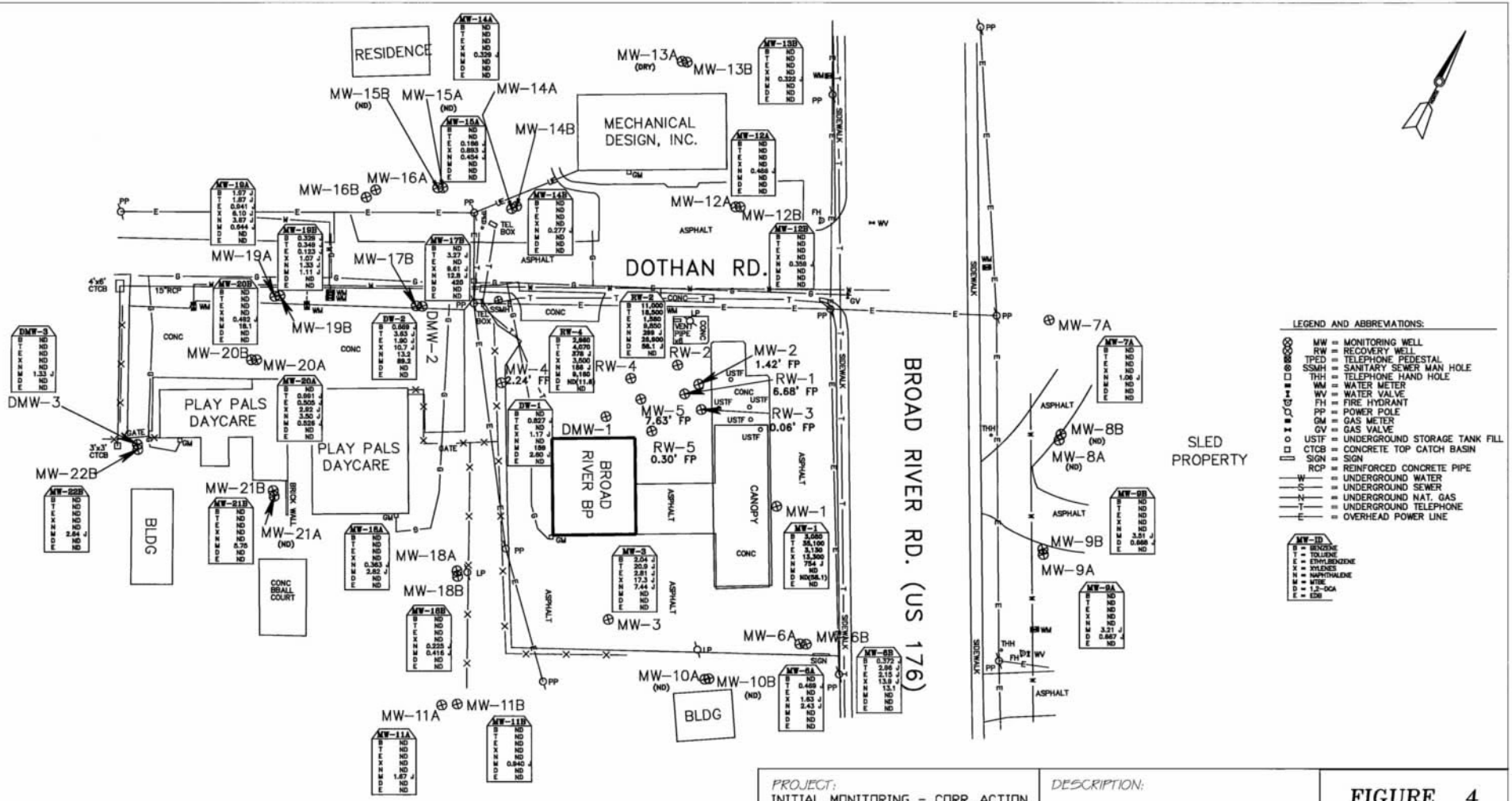
Figure 1 – Site Location Map (Topographic)
Figure 2 – Site Base Map
Figure 3 – Not Included
Figure 4 – Groundwater CoC Map
Figure 5A – Potentiometric Map (Shallow)
Figure 5B – Potentiometric Map (Deep)



PROJECT: INITIAL MONITORING – CORR. ACTION BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: SITE LOCATION MAP	*FIGURE 1* DATE: MARCH 2014
ENVIRO-TEST SERVICES	REFERENCE: U.S.G.S. TOPOGRAPHIC MAP (7.5 MINUTE SERIES) COLUMBIA NORTH – 1972, REV. 1990 SOUTH CAROLINA QUADRANGLE	LEGEND:



PROJECT: INITIAL MONITORING - CORR. ACTION BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: SITE BASE MAP	**FIGURE 2** DATE: MARCH 2014
ENVIRO-TEST SERVICES	REFERENCE:	NOTES:



PROJECT:
INITIAL MONITORING - CORR. ACTION
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
COC SITE MAP
(GROUNDWATER)

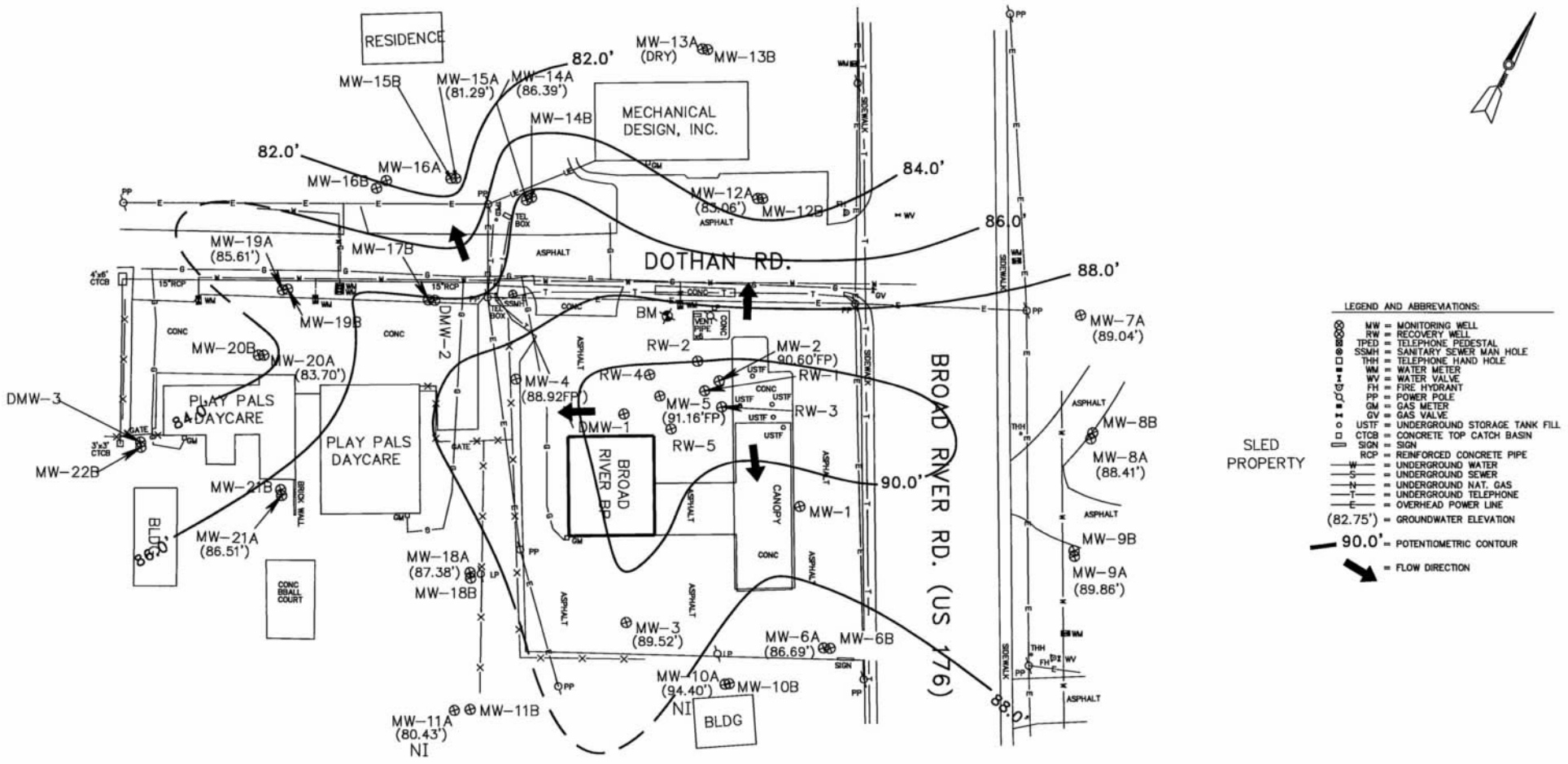
FIGURE 4

SAMPLE DATE:
MARCH 2014

ENVIRO-TEST SERVICES

REFERENCE:
BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, NAPHTHALENE, MTBE, 1,2-DCA & EDB CONCENTRATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL IN ug/L.

NOTES:
(ND) = NOT DETECTED
FP = FREE PRODUCT (thickness in feet)



PROJECT:
INITIAL MONITORING - CORR. ACTION
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
GENERALIZED
POTENTIOMETRIC SURFACE MAP
(SHALLOW ZONE)

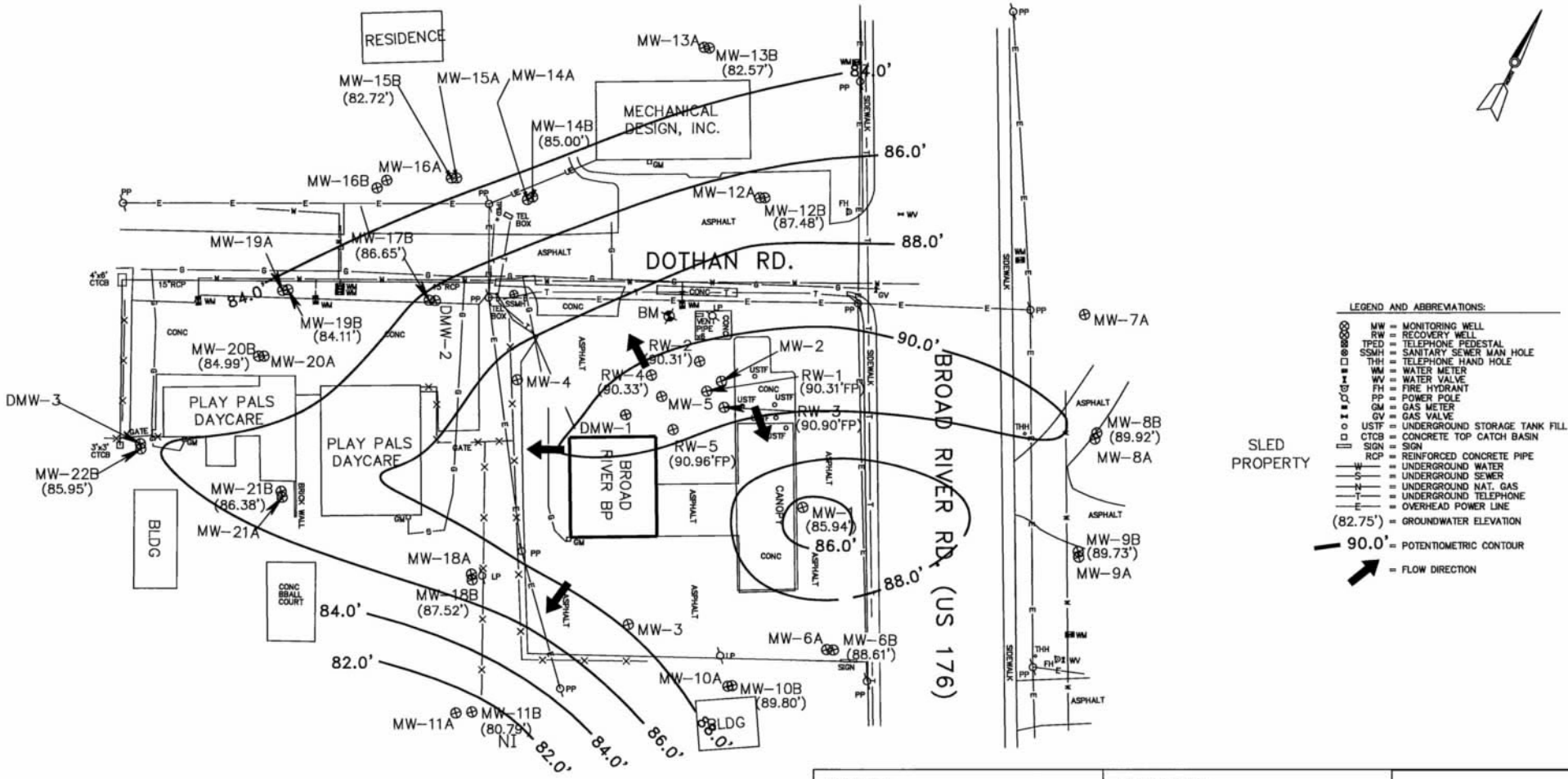
FIGURE 5A

SAMPLE DATE:
MARCH 2014

ENVIRO-TEST SERVICES

REFERENCE:
GROUNDWATER ELEVATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL. CONTOURS ARE AT 2.0' INTERVALS.

NOTES:
NI = NOT INCLUDED
FP = WATER LEVEL CORRECTED FOR FREE PRODUCT



PROJECT:
INITIAL MONITORING – CORR. ACTION
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
GENERALIZED
POTENTIOMETRIC SURFACE MAP
(INTERMEDIATE ZONE)

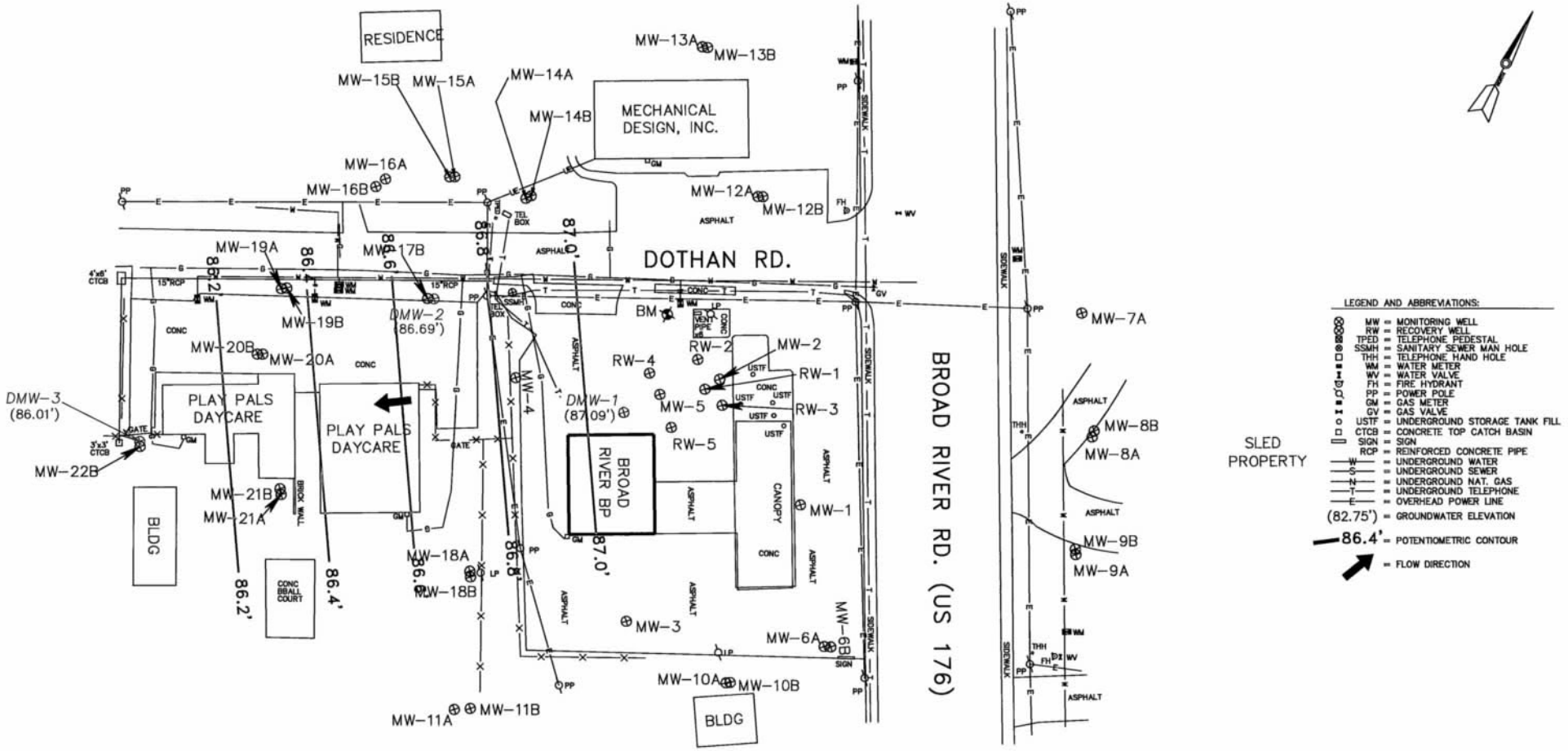
FIGURE 5B

SAMPLE DATE:
MARCH 2014

ENVIRO-TEST SERVICES

REFERENCE:
GROUNDWATER ELEVATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL. CONTOURS ARE AT 2.0' INTERVALS.

NOTES:
NI = NOT INCLUDED
FP = WATER LEVEL CORRECTED FOR FREE PRODUCT



PROJECT:
INITIAL MONITORING - CORR. ACTION
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
GENERALIZED POTENTIOMETRIC SURFACE MAP (DEEP)

FIGURE 5C

SAMPLE DATE:
MARCH 2014

ENVIRO-TEST SERVICES

REFERENCE:
GROUNDWATER ELEVATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL. CONTOURS ARE AT 0.2' INTERVALS.

NOTES:
NI = NOT INCLUDED

TABLES

Table 1 – Not Included
Table 2 – Potentiometric Data
Table 3 – Current Analytical Data
Table 4 – Current & Historical Analytical Data

APPENDICES

A. Not Included
B. Purging Data Sheets & Laboratory Analytical Data
C. Not Included
D. Not Included
E. Not Included
F. Not Included
G. Disposal Manifest
H. Not Included
I. Not Included
J. Not Included
K. SCDHEC Contractor Checklist
L. Site Photographs

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and March 5 through 7, 2014

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-1	1/21/2011	40.0	20.0 - 40.0	101.84	20.92	N/A	N/A	N/A	80.92
	3/5/2011	40.0	20.0 - 40.0	101.84	14.45	N/A	N/A	N/A	87.39
	3/5/2013	40.0	20.0 - 40.0	101.84	18.62	N/A	N/A	N/A	83.22
	3/6/2014	40.0	20.0 - 40.0	101.84	15.90	N/A	N/A	N/A	85.94
MW-2	3/5/2011	28.0	18.0 - 28.0	101.13	13.50	N/A	N/A	N/A	87.63
	3/6/2013	28.0	18.0 - 28.0	101.13	17.66	16.32	1.34	16.70	84.43
	3/5/2014	28.0	18.0 - 28.0	101.13	11.57	10.15	1.42	10.53	90.60
MW-3	3/5/2011	31.0	21.0 - 31.0	101.09	13.72	N/A	N/A	N/A	87.37
	3/6/2013	31.0	21.0 - 31.0	101.09	17.94	N/A	N/A	N/A	83.15
	3/7/2014	31.0	21.0 - 31.0	101.09	11.57	N/A	N/A	N/A	89.52
MW-4	3/5/2011	25.0	15.0 - 25.0	97.02	9.15	N/A	N/A	N/A	87.87
	3/6/2013	25.0	15.0 - 25.0	97.02	12.41	10.10	2.31	10.75	86.27
	3/5/2014	25.0	15.0 - 25.0	97.02	9.74	7.50	2.24	8.10	88.92
MW-5	6/20/2011	20.0	10.0 - 20.0	101.34	14.05	13.75	0.30	13.83	87.51
	3/6/2013	20.0	10.0 - 20.0	101.34	19.63	16.80	2.83	17.59	83.75
	3/5/2014	20.0	10.0 - 20.0	101.34	15.75	8.12	7.63	10.18	91.16
MW-6A	3/6/2013	25.5	15.5 - 25.5	101.84	18.00	N/A	N/A	N/A	83.84
	3/5/2014	25.5	15.5 - 25.5	101.84	15.15	N/A	N/A	N/A	86.69
MW-6B	3/6/2013	38.5	28.5 - 38.5	101.91	18.05	N/A	N/A	N/A	83.86
	3/5/2014	38.5	28.5 - 38.5	101.91	13.30	N/A	N/A	N/A	88.61
MW-7A	3/6/2013	24.0	14.0 - 24.0	100.04	16.60	N/A	N/A	N/A	83.44
	3/5/2014	24.0	14.0 - 24.0	100.04	11.00	N/A	N/A	N/A	89.04
MW-8A	3/6/2013	23.0	13.0 - 23.0	100.45	16.84	N/A	N/A	N/A	83.61
	3/5/2014	23.0	13.0 - 23.0	100.45	12.04	N/A	N/A	N/A	88.41

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and March 5 through 7, 2014

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-8B	3/6/2013	37.5	27.5 - 37.5	100.37	16.60	N/A	N/A	N/A	83.77
	3/5/2014	37.5	27.5 - 37.5	100.37	10.45	N/A	N/A	N/A	89.92
MW-9A	3/6/2013	23.0	13.0 - 23.0	101.36	18.61	N/A	N/A	N/A	82.75
	3/6/2014	23.0	13.0 - 23.0	101.36	11.50	N/A	N/A	N/A	89.86
MW-9B	3/6/2013	31.5	21.5 - 31.5	101.38	17.60	N/A	N/A	N/A	83.78
	3/6/2014	31.5	21.5 - 31.5	101.38	11.65	N/A	N/A	N/A	89.73
MW-10A	3/6/2013	17.5	7.5 - 17.5	97.20	11.05	N/A	N/A	N/A	86.15
	3/6/2014	17.5	7.5 - 17.5	97.20	2.80	N/A	N/A	N/A	94.40
MW-10B	3/6/2013	39.0	29.0 - 39.0	97.34	13.87	N/A	N/A	N/A	83.47
	3/6/2014	39.0	29.0 - 39.0	97.34	7.54	N/A	N/A	N/A	89.80
MW-11A	3/6/2013	20.0	10.0 - 20.0	89.93	10.52	N/A	N/A	N/A	79.41
	3/6/2014	20.0	10.0 - 20.0	89.93	9.50	N/A	N/A	N/A	80.43
MW-11B	3/6/2013	35.0	29.0 - 39.0	90.26	10.30	N/A	N/A	N/A	79.96
	3/6/2014	35.0	29.0 - 39.0	90.26	9.47	N/A	N/A	N/A	80.79
MW-12A	3/6/2013	20.0	10.0 - 20.0	99.26	13.95	N/A	N/A	N/A	85.31
	3/6/2014	20.0	10.0 - 20.0	99.26	16.20	N/A	N/A	N/A	83.06
MW-12B	3/6/2013	36.5	26.5 - 36.5	99.35	16.72	N/A	N/A	N/A	82.63
	3/6/2014	36.5	26.5 - 36.5	99.35	11.87	N/A	N/A	N/A	87.48
MW-13A	3/25/2013	22.0	12.0 - 22.0	98.70	19.80	N/A	N/A	N/A	78.90
	3/5/2014	22.0	12.0 - 22.0	98.70	N/A	N/A	N/A	N/A	N/A
MW-13B	3/6/2013	33.5	23.5 - 33.5	98.69	19.88	N/A	N/A	N/A	78.81
	3/6/2014	33.5	23.5 - 33.5	98.69	16.12	N/A	N/A	N/A	82.57
MW-14A	3/6/2013	20.0	10.0 - 20.0	97.49	14.52	N/A	N/A	N/A	82.97
	3/6/2014	20.0	10.0 - 20.0	97.49	11.10	N/A	N/A	N/A	86.39
MW-14B	3/6/2013	38.5	28.5 - 38.5	97.45	17.27	N/A	N/A	N/A	80.18
	3/6/2014	38.5	28.5 - 38.5	97.45	12.45	N/A	N/A	N/A	85.00

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and March 5 through 7, 2014

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-15A	3/25/2013	17.0	7.0 - 17.0	96.87	16.01	N/A	N/A	N/A	80.86
	3/6/2014	17.0	7.0 - 17.0	96.87	15.58	N/A	N/A	N/A	81.29
MW-15B	3/6/2013	40.0	30.0 - 40.0	96.82	17.60	N/A	N/A	N/A	79.22
	3/6/2014	40.0	30.0 - 40.0	96.82	14.10	N/A	N/A	N/A	82.72
MW-16A	3/25/2013	18.0	8.0 - 18.0	95.95	16.21	N/A	N/A	N/A	79.74
	3/5/2014	18.0	8.0 - 18.0	95.95	N/A	N/A	N/A	N/A	N/A
MW-16B	3/6/2013	37.0	27.0 - 37.0	95.68	16.75	N/A	N/A	N/A	78.93
	3/5/2014	37.0	27.0 - 37.0	95.68	N/A	N/A	N/A	N/A	N/A
MW-17B	3/6/2013	39.5	29.5 - 39.5	92.69	9.05	N/A	N/A	N/A	83.64
	3/5/2014	39.5	29.5 - 39.5	92.69	6.04	N/A	N/A	N/A	86.65
MW-18A	3/6/2013	13.0	3.0 - 13.0	88.20	0.85	N/A	N/A	N/A	87.35
	3/5/2014	13.0	3.0 - 13.0	88.20	0.82	N/A	N/A	N/A	87.38
MW-18B	3/6/2013	35.0	25.0 - 35.0	88.30	1.05	N/A	N/A	N/A	87.25
	3/5/2014	35.0	25.0 - 35.0	88.30	0.78	N/A	N/A	N/A	87.52
MW-19A	3/6/2013	15.0	5.0 - 15.0	91.63	7.95	N/A	N/A	N/A	83.68
	3/5/2014	15.0	5.0 - 15.0	91.63	6.02	N/A	N/A	N/A	85.61
MW-19B	3/6/2013	34.0	24.0 - 34.0	91.69	8.35	N/A	N/A	N/A	83.34
	3/5/2014	34.0	24.0 - 34.0	91.69	7.58	N/A	N/A	N/A	84.11
MW-20A	3/6/2013	15.0	5.0 - 15.0	88.67	5.05	N/A	N/A	N/A	83.62
	3/5/2014	15.0	5.0 - 15.0	88.67	4.97	N/A	N/A	N/A	83.70
MW-20B	3/6/2013	35.0	25.0 - 35.0	88.61	4.11	N/A	N/A	N/A	84.50
	3/5/2014	35.0	25.0 - 35.0	88.61	3.62	N/A	N/A	N/A	84.99
MW-21A	3/6/2013	12.0	2.0 - 12.0	87.16	0.85	N/A	N/A	N/A	86.31
	3/5/2014	12.0	2.0 - 12.0	87.16	0.65	N/A	N/A	N/A	86.51
MW-21B	3/6/2013	35.0	25.0 - 35.0	87.23	1.35	N/A	N/A	N/A	85.88
	3/5/2014	35.0	25.0 - 35.0	87.23	0.85	N/A	N/A	N/A	86.38

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and March 5 through 7, 2014

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-22B	3/6/2013	35.0	25.0 - 35.0	87.40	2.10	N/A	N/A	N/A	85.30
	3/5/2014	35.0	25.0 - 35.0	87.40	1.45	N/A	N/A	N/A	85.95
RW-1	3/6/2013	40.0	20.0 - 40.0	101.21	17.26	17.11	0.15	17.15	84.06
	3/5/2014	40.0	20.0 - 40.0	101.21	15.78	9.10	6.68	10.90	90.31
RW-2	3/6/2013	40.0	20.0 - 40.0	100.96	16.96	N/A	N/A	N/A	84.00
	3/5/2014	40.0	20.0 - 40.0	100.96	10.65	N/A	N/A	N/A	90.31
RW-3	3/6/2013	41.0	21.0 - 41.0	101.44	17.41	17.36	0.05	17.37	84.07
	3/5/2014	41.0	21.0 - 41.0	101.44	10.58	10.52	0.06	10.54	90.90
RW-4	3/6/2013	40.5	20.5 - 40.5	100.83	16.73	N/A	N/A	N/A	84.10
	3/7/2014	40.5	20.5 - 40.5	100.83	10.50	N/A	N/A	N/A	90.33
RW-5	3/6/2013	38.5	18.5 - 38.5	101.62	17.64	17.58	0.06	17.6	84.02
	3/5/2014	38.5	18.5 - 38.5	101.62	10.88	10.58	0.30	10.66	90.96
DMW-1	3/6/2013	65.0	60.0 - 65.0	101.16	18.21	N/A	N/A	N/A	82.95
	3/7/2014	65.0	60.0 - 65.0	101.16	14.07	N/A	N/A	N/A	87.09
DMW-2	3/6/2013	65.0	60.0 - 65.0	92.63	9.40	N/A	N/A	N/A	83.23
	3/7/2014	65.0	60.0 - 65.0	92.63	5.94	N/A	N/A	N/A	86.69
DMW-3	3/6/2013	65.0	60.0 - 65.0	87.41	2.10	N/A	N/A	N/A	85.31
	3/5/2014	65.0	60.0 - 65.0	87.41	1.40	N/A	N/A	N/A	86.01

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 3 – Current Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB
RBSLs	N/A	5	1,000	700	10,000	25	40	5 (MCL)	0.05
MW-1	3/6/2014	**3,080**	**35,100**	**3,130**	**13,300**	**754J**	ND(38.5)	**ND(58.1)**	ND(0.00630)
MW-2	3/5/2014	**1.42' Free Product**							
MW-3	3/7/2014	2.04J	20.9J	2.81J	17.3J	7.44J	ND(0.770)	ND(1.16)	ND(0.00630)
MW-4	3/5/2014	**2.24' Free Product**							
MW-5	3/5/2014	**7.63' Free Product**							
MW-6A	3/5/2014	ND(0.111)	0.469J	ND(0.109)	1.63J	2.43J	ND(0.077)	ND(0.116)	ND(0.00630)
MW-6B	3/5/2014	0.372J	2.96J	2.15J	13.9J	13.1	ND(0.077)	ND(0.116)	ND(0.00630)
MW-7A	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	1.06J	ND(0.077)	ND(0.116)	ND(0.00630)
MW-8A	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00630)
MW-8B	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00630)
MW-9A	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.21J	0.667J	ND(0.00630)
MW-9B	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.51J	0.668J	ND(0.00630)
MW-10A	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00630)
MW-10B	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00630)
MW-11A	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.67J	ND(0.116)	ND(0.00630)
MW-11B	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	0.940J	ND(0.116)	ND(0.00630)
MW-12A	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.486J	ND(0.077)	ND(0.116)	ND(0.00630)
MW-12B	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.359J	ND(0.077)	ND(0.116)	ND(0.00630)
MW-13A	3/5/2014	Insufficient Water							
MW-13B	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.322J	ND(0.077)	ND(0.116)	ND(0.00630)
MW-14A	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.329J	ND(0.077)	ND(0.116)	ND(0.00630)
MW-14B	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.277J	ND(0.077)	ND(0.116)	ND(0.00630)

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**
MW-15A	3/6/2014	ND(0.111)	ND(0.122)	0.166J	0.893J	0.454J	ND(0.077)	ND(0.116)	ND(0.00630)
MW-15B	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00630)
MW-16A	3/5/2014	Abandoned							
MW-16B	3/5/2014	Abandoned							
MW-17B	3/5/2014	ND(1.11)	3.27J	ND(1.09)	9.61J	12.8J	**420**	ND(1.16)	ND(0.00630)
MW-18A	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.363J	2.82J	ND(0.116)	ND(0.00630)
MW-18B	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.225J	0.416J	ND(0.116)	ND(0.00630)
MW-19A	3/5/2014	1.97J	1.87J	0.941J	6.10J	3.67J	0.644J	ND(0.116)	ND(0.00630)
MW-19B	3/5/2014	0.329J	0.349J	0.123J	1.07J	1.33J	1.11J	ND(0.116)	ND(0.00630)
MW-20A	3/5/2014	ND(0.111)	0.991J	0.505J	2.92J	3.50J	0.526J	ND(0.116)	ND(0.00630)
MW-20B	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.492J	18.1	ND(0.116)	ND(0.00630)
MW-21A	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00630)
MW-21B	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	5.75	ND(0.116)	ND(0.00630)
MW-22B	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	2.64J	ND(0.116)	ND(0.00630)
RW-1	3/5/2014	**6.68' Free Product**							
RW-2	3/5/2014	**11,000**	**18,500**	**1,580**	9,850	**299J**	**26,900**	**58.1J**	ND(0.00630)
RW-3	3/5/2014	**0.06' Free Product**							
RW-4	3/7/2014	**2,960**	**4,070**	378J	3,500	**186J**	**9,160**	**ND(11.6)**	ND(0.00630)
RW-5	3/5/2014	**0.30' Free Product**							
DMW-1	3/7/2014	ND(0.111)	0.827J	ND(0.109)	1.17J	ND(0.176)	**159**	2.60J	ND(0.00630)
DMW-2	3/7/2014	0.669J	3.63J	1.90J	10.7J	13.2	**89.2**	ND(0.232)	ND(0.00630)
DMW-3	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.33J	ND(0.116)	ND(0.00630)

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**
Duplicate 1 (MW-20B)	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	18.5	ND(0.116)	ND(0.00630)
Duplicate 2 (DMW-2)	3/7/2014	0.768J	3.88J	1.67J	9.79J	11.9	**96.9**	ND(0.232)	ND(0.00630)
Field Blank 1	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00630)
Field Blank 2	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00630)
Field Blank 3	3/7/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00630)
Trip Blank 1	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	NA
Trip Blank 2	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current Groundwater Analytical Data
--8 Oxygenates--
Broad River Amoco; UST Permit #11946
March 5 through March 7, 2014

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	---	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW-1	3/6/2014	ND(118)	ND(62,500)	ND(18,800)	ND(117)	ND(4,270)	ND(120)	ND(145)	ND(243)
MW-2	3/5/2014	**1.42' Free Product**							
MW-3	3/7/2014	ND(2.36)	ND(1,250)	ND(376)	ND(2.34)	ND(10.1)	ND(2.40)	ND(2.90)	ND(4.87)
MW-4	3/5/2014	**2.24' Free Product**							
MW-5	3/5/2014	**7.63' Free Product**							
MW-6A	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-6B	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-7A	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-8A	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-8B	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-9A	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-9B	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-10A	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-10B	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-11A	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	2.92J	ND(0.487)
MW-11B	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-12A	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-12B	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-13A	3/5/2014	Insufficient Water							
MW-13B	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-14A	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-14B	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)

Note: All units expressed in µg/L (PPB) N/A - Not Analyzed
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current Groundwater Analytical Data
--8 Oxygenates--
Broad River Amoco; UST Permit #11946
March 5 through March 7, 2014

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	---	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW-15A	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	0.290U	ND(0.487)
MW-15B	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	0.290U	ND(0.487)
MW-16A	3/5/2014	Abandoned							
MW-16B	3/5/2014	Abandoned							
MW-17B	3/5/2014	4.68J	ND(1,250)	ND(376)	ND(2.34)	422	ND(2.40)	1120	ND(4.87)
MW-18A	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-18B	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-19A	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	7.86J	ND(0.240)	15.2	ND(0.487)
MW-19B	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	6.04J	ND(0.487)
MW-20A	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-20B	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-21A	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-21B	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-22B	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
RW-1	3/5/2014	**6.68' Free Product**							
RW-2	3/5/2014	ND(59.0)	ND(31,200)	ND(9,400)	ND(58.5)	16900	110J	13900	ND(122)
RW-3	3/5/2014	**0.06' Free Product**							
RW-4	3/7/2014	ND(23.6)	ND(12,500)	ND(3,760)	ND(23.4)	5550	53.3J	2930	ND(48.7)
RW-5	3/5/2014	**0.30' Free Product**							
DMW-1	3/7/2014	3.59J	ND(125)	ND(37.6)	ND(0.234)	2300	ND(0.240)	125	ND(0.487)
DMW-2	3/7/2014	0.867J	ND(250)	ND(75.2)	ND(0.468)	120	ND(0.480)	340	ND(0.974)
DMW-3	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)

Note: All units expressed in µg/L (PPB) N/A - Not Analyzed
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current Groundwater Analytical Data
--8 Oxygenates--
Broad River Amoco; UST Permit #11946
March 5 through March 7, 2014

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	---	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Duplicate 1 (MW-20B)	3/6/2013	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
Duplicate 2 (DMW-2)	3/6/2013	0.951J	ND(250)	ND(75.2)	ND(0.468)	117	ND(0.480)	324	ND(0.974)
Field Blank 1	3/6/2013	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	4.37J	ND(0.487)
Field Blank 2	3/7/2013	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	3.85J	ND(0.487)
Field Blank 3	3/8/2013	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	3.75J	ND(0.487)
Trip Blank 1	3/8/2013	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
Trip Blank 2	3/8/2013	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)

Note: All units expressed in µg/L (PPB) N/A - Not Analyzed
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5, 2011 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-1	3/5/2011	**1,760**	**18,400**	**1,270**	5,140	**4,070J**	<83.9	<121	<0.0032	**18**
	3/8/2013	**2,480**	**12,800**	**1,550**	5,650	**623**	**70.8 J**	**ND (11.6)**	ND (0.0039)	14 J
	3/6/2014	**3,080**	**35,100**	**3,130**	**13,300**	**754J**	ND(38.5)	**ND(58.1)**	ND(0.0063)	NA
MW-2	3/5/2011	**1,650**	**3,230**	422	2,190	**462J**	**3,420**	<12.1	**1.42**	<15
	3/6/2013	**1.34' Free Product**								
	3/5/2014	**1.42' Free Product**								
MW-3	3/5/2011	<15	10.4	9.52	30.6	4.74J	7.91	<0.121	<0.0032	<15
	3/8/2013	0.417 J	1.05	0.408 J	1.72 J	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/7/2014	2.04J	20.9J	2.81J	17.3J	7.44J	ND(0.770)	ND(1.16)	ND(0.0063)	NA
MW-4	3/5/2011	**1,830**	198	**1,270**	3,160	**598**	**3,100**	<12.1	<0.0032	<15
	3/6/2013	**2.31' Free Product**								
	3/5/2014	**2.24' Free Product**								
MW-5	6/20/2011	**0.30' Free Product**								
	3/6/2013	**2.83' Free Product**								
	3/5/2014	**7.63' Free Product**								
MW-6A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	13 J
	3/5/2014	ND(0.111)	0.469J	ND(0.109)	1.63J	2.43J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-6B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	**19**
	3/5/2014	0.372J	2.96J	2.15J	13.9J	13.1	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-7A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	1.06J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-8A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	6.8 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5, 2011 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	N/A	5	1,000	700	10,000	25	40	5 (MCL)	0.05	15 (Action Level)
MW-8B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-9A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.62	0.642 J	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.21J	0.667J	ND(0.0063)	NA
MW-9B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.79	0.675 J	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.51J	0.668J	ND(0.0063)	NA
MW-10A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-10B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-11A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.00	ND (0.116)	ND (0.0039)	11 J
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.67J	ND(0.116)	ND(0.0063)	NA
MW-11B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.12	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	0.940J	ND(0.116)	ND(0.0063)	NA
MW-12A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.486J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-12B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.359J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-13A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	7.8 J
	3/5/2014	Insufficient Water								
MW-13B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.322J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-14A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.329J	ND(0.077)	ND(0.116)	ND(0.0063)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5, 2011 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-14B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.277J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-15A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	5.3 J
	3/6/2014	ND(0.111)	ND(0.122)	0.166J	0.893J	0.454J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-15B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-16A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	**35**
	3/5/2014	Abandoned								
MW-16B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	Abandoned								
MW-17B	3/6/2013	**6.58**	2.47	1.1 J	3.87 J	ND (0.352	**244**	ND (0.232)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(1.11)	3.27J	ND(1.09)	9.61J	12.8J	**420**	ND(1.16)	ND(0.0063)	NA
MW-18A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.42	ND (0.116)	ND (0.0039)	**590**
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.363J	2.82J	ND(0.116)	ND(0.0063)	NA
MW-18B	3/6/2013	ND (0.111)	0.459 J	ND (0.109)	2.03 J	ND (0.176)	0.841 J	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.225J	0.416J	ND(0.116)	ND(0.0063)	NA
MW-19A	3/6/2013	0.566 J	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	1.97J	1.87J	0.941J	6.10J	3.67J	0.644J	ND(0.116)	ND(0.0063)	NA
MW-19B	3/6/2013	0.253 J	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	0.329J	0.349J	0.123J	1.07J	1.33J	1.11J	ND(0.116)	ND(0.0063)	NA
MW-20A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.15	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	0.991J	0.505J	2.92J	3.50J	0.526J	ND(0.116)	ND(0.0063)	NA
MW-20B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.25	ND (0.116)	ND (0.0039)	8.77 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.492J	18.1	ND(0.116)	ND(0.0063)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5, 2011 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-21A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	12 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-21B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.34	ND (0.116)	ND (0.0039)	6.8 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	5.75	ND(0.116)	ND(0.0063)	NA
MW-22B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.83	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	2.64J	ND(0.116)	ND(0.0063)	NA
RW-1	3/6/2013	**0.15' Free Product**								
	3/5/2014	**6.68' Free Product**								
RW-2	3/8/2013	**9,420**	**12,800**	**2,030**	**11,000**	**565 J**	**9100**	**224 J**	**1.65**	ND (3.8)
	3/5/2014	**11,000**	**18,500**	**1,580**	9,850	**299J**	**26,900**	**58.1J**	ND(0.0063)	NA
RW-3	3/6/2013	**0.05' Free Product**								
	3/5/2014	**0.06' Free Product**								
RW-4	3/8/2013	**3,390**	**1,730**	**977**	4,900	**210 J**	**4,460**	**ND (5.81)**	ND (0.0039)	12 J
	3/7/2014	**2,960**	**4,070**	378J	3,500	**186J**	**9,160**	**ND(11.6)**	ND(0.0063)	NA
RW-5	3/6/2013	**0.06' Free Product**								
	3/5/2014	**0.30' Free Product**								
DMW-1	3/8/2013	**507**	ND (1.22)	ND (1.09	ND (0.179)	ND (1.76)	**131**	**14.2 J**	ND (0.0039)	ND (3.8)
	3/7/2014	ND(0.111)	0.827J	ND(0.109)	1.17J	ND(0.176)	**159**	2.60J	ND(0.0063)	NA
DMW-2	3/6/2013	4.12	0.548 J	ND (0.109)	0.805 J	ND (0.176)	**153**	ND (0.116)	ND (0.0039)	ND (3.8)
	3/7/2014	0.669J	3.63J	1.90J	10.7J	13.2	**89.2**	ND(0.232)	ND(0.0063)	NA
DMW-3	3/6/2013	0.281 J	0.497 J	ND (0.109)	ND (0.179	ND (0.176)	1.76	ND (0.116)	ND (0.0039)	**120**
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.33J	ND(0.116)	ND(0.0063)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

APPENDIX B

PURGING DATA SHEETS & LABORATORY ANALYTICAL DATA

Monitoring Well
Purging Data Sheet

Date: 3/6/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: _____

Well Data

Well Number: MW1 Diameter (in): 2" Well Volume (gal): 3.9

Total Depth: 40.0 Static Water Level: 15.90 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		3.9	7.8	11.7					
Time (military)									
pH (standard units)	5.25	5.01	4.87	4.79					4.85
Specific Cond. (µS/cm)	60.4	60.2	59.8	60.2					60.5
Water Temp (°C)	22.3	21.9	21.8	21.8					21.9
Turbidity (mild, moderate, strong)	26.7	1000+	589	260					240
Dissolved Oxygen	2.67	2.87	2.31	2.04					1.99

Sample Collection Time: 1408

Remarks: _____

Monitoring Well
Purging Data Sheet

Date: 3/7/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: _____

Well Data

Well Number: MW-3 Diameter (in): 2" Well Volume (gal): 3.1

Total Depth: 31.0 Static Water Level: 11.57 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		3.1	6.2	9.3					
Time (military)	~~0.12~~	~~0.07~~							
pH (standard units)	6.12	6.07							
Specific Cond. (µS/cm)	283	280							
Water Temp (°C)	19.3	18.9							
Turbidity (mild, moderate, strong)	20.5	273							
Dissolved Oxygen	1.47	2.06							

Sample Collection Time: 0920

Remarks: dry @ 3 gallons, slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/5/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd.; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather:

Well Data

Well Number: MW-6A Diameter (in): 2" Well Volume (gal): 1.7

Total Depth: 25.5 Static Water Level: 15.15 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1.7	3.4						
Time (military)									
pH (standard units)	5.36	5.20	5.17						
Specific Cond. (µS/cm)	63.5	60.2	60.0						
Water Temp (°C)	19.5	20.0	19.8						
Turbidity (mild, moderate, strong)	16.0	942	1000+						
Dissolved Oxygen	3.20	3.67	3.82						

Sample Collection Time: 0835

Remarks: dry @ 3.0 gallons, slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/5/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: _____

Well Data

Well Number: MW-7A Diameter (in): 2" Well Volume (gal): 2.1

Total Depth: 24.0 Static Water Level: 11.00 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2.1	4.2	6.4					
Time (military)									
pH (standard units)	5.43	5.32							
Specific Cond. (µS/cm)	169	98.2							
Water Temp (°C)	18.2	18.1							
Turbidity (mild, moderate, strong)	1000+	1000+							
Dissolved Oxygen	5.43	4.89							

Sample Collection Time: 1557

Remarks: dry @ 2.5 gallons, slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/5/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: _____

Well Data

Well Number: MW-8A Diameter (in): 2" Well Volume (gal): ~~1.8~~ 1.8

Total Depth: 23.0 Static Water Level: 12.04 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1.8	~~3.6~~ 2.0	~~5.4~~					
Time (military)									
pH (standard units)	5.63	6.55	5.73						
Specific Cond. (µS/cm)	32.6	30.5	34.3						
Water Temp (°C)	19.9	20.1	20.0						
Turbidity (mild, moderate, strong)	17.2	73.5	652						
Dissolved Oxygen	3.45	3.84	3.92						

Sample Collection Time: 1632

Remarks: dry @ 2.0 gallons, slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/5/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd.; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather:

Well Data

Well Number: MW-8B Diameter (in): 2" Well Volume (gal): 4.7

Total Depth: 37.5 Static Water Level: 10.45 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		4.7	~~8.4~~ 5.0	~~5.1~~					
Time (military)									
pH (standard units)	4.98	4.76	4.85						
Specific Cond. (µS/cm)	42.5	41.2	42.2						
Water Temp (°C)	21.2	21.1	21.2						
Turbidity (mild, moderate, strong)	8.3	863	1000+						
Dissolved Oxygen	3.63	3.94	3.85						

Sample Collection Time: 1658

Remarks: dry @ 5.0 gallons; slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/6/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: _____

Well Data

Well Number: MW-9A Diameter (in): 2" Well Volume (gal): 1.9

Total Depth: 23.0 Static Water Level: 11.50 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1.9	~~3.8~~ 2.0						
Time (military)									
pH (standard units)	4.52	4.89	4.72						
Specific Cond. (µS/cm)	5.5	64.8	60.3						
Water Temp (°C)	20.1	20.0	20.6						
Turbidity (mild, moderate, strong)	22.3	117	896						
Dissolved Oxygen	3.68	3.94	4.21						

Sample Collection Time: 0847

Remarks: dry @ 2nd gallon ; slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/6/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather:

Well Data

Well Number: MW-9B Diameter (in): 2" Well Volume (gal): 2.6

Total Depth: 31.5 Static Water Level: 11.65 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2.6	5.2	7.8					
Time (military)									
pH (standard units)	5.63	5.28							
Specific Cond. (µS/cm)	63.2	59.4							
Water Temp (°C)	20.5	20.2							
Turbidity (mild, moderate, strong)	6.2	1000+							
Dissolved Oxygen	2.97	2.86							

Sample Collection Time: 0859

Remarks: dry @ 2.6 gallons ; slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/6/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather:

Well Data

Well Number: MW-10A Diameter (in): 2" Well Volume (gal): 2.4

Total Depth: 17.5 Static Water Level: 2.80 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2.4	4.8	7.2					
Time (military)									
pH (standard units)	5.80	5.67							
Specific Cond. (µS/cm)	152.1	148.9							
Water Temp (°C)	18.2	18.1							
Turbidity (mild, moderate, strong)	8.7	116							
Dissolved Oxygen	4.53	4.46							

Sample Collection Time: 1358

Remarks: dry @ 2.5 gallons ; slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/6/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: _____

Well Data

Well Number: MW-10B Diameter (in): 2" Well Volume (gal): 5.1

Total Depth: 39.0 Static Water Level: 7.54 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		5.1	10.2	15.3					
Time (military)									
pH (standard units)	6.18	6.17							
Specific Cond. (µS/cm)	163.2	162.5							
Water Temp (°C)	18.9	19.0							
Turbidity (mild, moderate, strong)	265	1000+							
Dissolved Oxygen	2.43	1.98							

Sample Collection Time: 1430

Remarks: dry @ 5.0 gallons ; slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/6/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather:

Well Data

Well Number: MW-11A Diameter (in): 2" Well Volume (gal): 1.7

Total Depth: 20.0 Static Water Level: 9.50 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1.7	3.4						
Time (military)									
pH (standard units)	6.11	6.12							
Specific Cond. (µS/cm)	356	345							
Water Temp (°C)	16.8	16.7							
Turbidity (mild, moderate, strong)	45.2	415							
Dissolved Oxygen	3.10	3.48							

Sample Collection Time: 0940

Remarks: dry @ 20 gallons ; slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/6/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd.; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: _____

Well Data

Well Number: MW-11B Diameter (in): 2" Well Volume (gal): 4.1

Total Depth: 35.0 Static Water Level: 9.47 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		4.1	8.2						
Time (military)									
pH (standard units)	5.38	5.35							
Specific Cond. (µS/cm)	136.5	130.4							
Water Temp (°C)	16.8	17.4							
Turbidity (mild, moderate, strong)	693	542							
Dissolved Oxygen	2.81	2.69							

Sample Collection Time: 1002

Remarks: dry @ 4.1 gallons, slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/6/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather:

Well Data

Well Number: MW-12B Diameter (in): 2" Well Volume (gal): 4.0

Total Depth: 36.5 Static Water Level: 11.87 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		4.0	8.0	12.0					
Time (military)									
pH (standard units)	5.62	5.48							
Specific Cond. (µS/cm)	63.4	59.5							
Water Temp (°C)	22.1	22.3							
Turbidity (mild, moderate, strong)	147.2	1000+							
Dissolved Oxygen	2.82	2.67							

Sample Collection Time: 1050

Remarks: dry @ 5.0 gallons ; slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/6/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: _____

Well Data

Well Number: MW-13B Diameter (in): 2" Well Volume (gal): 2.8

Total Depth: 33.5 Static Water Level: 16.12 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2.8	5.6	8.4					
Time (military)									
pH (standard units)	6.63	6.89							
Specific Cond. (µS/cm)	115.6	114.3							
Water Temp (°C)	19.5	19.2							
Turbidity (mild, moderate, strong)	63.1	1000+							
Dissolved Oxygen	3.82	3.61							

Sample Collection Time: 1118

Remarks: dry @ 2.8 gallons ; slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/6/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather:

Well Data

Well Number: MW-14B Diameter (in): 2" Well Volume (gal): 4.2

Total Depth: 38.5 Static Water Level: 12.45 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		4.2	8.4						
Time (military)									
pH (standard units)	5.97	5.83							
Specific Cond. (µS/cm)	176.8	173.2							
Water Temp (°C)	18.3	18.5							
Turbidity (mild, moderate, strong)	17.5	623							
Dissolved Oxygen	2.67	2.04							

Sample Collection Time: 1218

Remarks: dry @ 4.2 gallons ; slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/6/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: _____

Well Data

Well Number: MW-15B Diameter (in): 2" Well Volume (gal): 4.2

Total Depth: 40.0 Static Water Level: 14.10 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		4.2	8.4						
Time (military)									
pH (standard units)	5.62	5.48	5.25						
Specific Cond. (µS/cm)	132.5	131.1	128.6						
Water Temp (°C)	16.5	18.7	19.0						
Turbidity (mild, moderate, strong)	4.13	42.1	53.6						
Dissolved Oxygen	1.96	2.05	2.11						

Sample Collection Time: 1319

Remarks: dry @ ~ 8.5 gallons ; slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/5/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather:

Well Data

Well Number: MW-17R Diameter (in): 2" Well Volume (gal): 5.5 ~~17~~

Total Depth: 39.5 Static Water Level: 6.04 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		5.5 ~~17~~	11.0 ~~34~~	~~51~~ 16.5					
Time (military)									
pH (standard units)	5.92	5.76	5.78	5.81					
Specific Cond. (µS/cm)	198.2	199.5	168.4	167.4					
Water Temp (°C)	19.8	20.2	20.4	20.2					
Turbidity (mild, moderate, strong)	3.47	40.5	456	1000+					
Dissolved Oxygen	4.86	4.32	4.91	4.65					

Sample Collection Time: 0930

Remarks: dry @ 16.5 ; moderately slow to recover

Monitoring Well
Purging Data Sheet

Date: 3/5/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd.; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather:

Well Data

Well Number: MW-18A Diameter (in): 2" Well Volume (gal): 2.0

Total Depth: 13.0 Static Water Level: 0.82 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2.0	4.0	6.0					
Time (military)									
pH (standard units)	6.10	6.09							
Specific Cond. (µS/cm)	306	366							
Water Temp (°C)	16.3	16.4							
Turbidity (mild, moderate, strong)	6.79	1000+							
Dissolved Oxygen	2.18	2.19							

Sample Collection Time: 0949

Remarks: dry @ 2.0 gallons; slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/5/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather:

Well Data

Well Number: MW-18B Diameter (in): 2" Well Volume (gal): 5.6

Total Depth: 35.0 Static Water Level: 0.78 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		5.6	11.2	16.8					
Time (military)									
pH (standard units)	6.13	6.54	6.48						
Specific Cond. (µS/cm)	406	409	423						
Water Temp (°C)	15.3	16.9	17.4						
Turbidity (mild, moderate, strong)	16.8	19.5	46.3						
Dissolved Oxygen	1.93	2.41	2.38						

Sample Collection Time: 1015

Remarks: dry @ ~11 gallons ; moderately slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/5/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: _____

Well Data

Well Number: MW-19B Diameter (in): 2" Well Volume (gal): 4.3

Total Depth: 34.0 Static Water Level: 7.58 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		4.3	8.6	12.9					
Time (military)									
pH (standard units)	6.21	6.19							
Specific Cond. (µS/cm)	346	345							
Water Temp (°C)	20.1	20.5							
Turbidity (mild, moderate, strong)	43.7	101							
Dissolved Oxygen	2.13	2.22							

Sample Collection Time: 1057

Remarks: dry @ 4.5 gallons / slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/5/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather:

Well Data

Well Number: MW-20A Diameter (in): 2" Well Volume (gal): 1.6

Total Depth: 15.0 Static Water Level: 4.97 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1.6	3.2	4.8					
Time (military)									
pH (standard units)	5.86	5.89							
Specific Cond. (µS/cm)	171.6	180.1							
Water Temp (°C)	18.2	16.9							
Turbidity (mild, moderate, strong)	16.3	9.98							
Dissolved Oxygen	4.13	4.83							

Sample Collection Time: 1122

Remarks: dry @ ~20 gallons ; slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/5/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: _____

Well Data

Well Number: MW-30B Diameter (in): 2" Well Volume (gal): 5.1

Total Depth: 35.0 Static Water Level: 3.62 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		5.1	10.2	15.3					
Time (military)									
pH (standard units)	5.98	5.96	5.78	5.81					5.79
Specific Cond. (µS/cm)	115.0	118.6	123.2	119.1					120.2
Water Temp (°C)	16.4	17.8	19.1	19.2					19.2
Turbidity (mild, moderate, strong)	14.3	78.9	362	247					245
Dissolved Oxygen	1.43	1.85	1.51	1.59					1.58

Sample Collection Time: 1151

Remarks: _____

Monitoring Well
Purging Data Sheet

Date: 3/5/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd.; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: _____

Well Data

Well Number: MW-21A Diameter (in): 2" Well Volume (gal): 1.8

Total Depth: 12.0 Static Water Level: 0.65 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1.8	3.6	5.4					
Time (military)									
pH (standard units)	5.98	5.65	5.53	5.56					5.60
Specific Cond. (µS/cm)	98.5	105.2	110.5	97.8					98.3
Water Temp (°C)	14.6	15.2	15.5	15.4					15.3
Turbidity (mild, moderate, strong)	4.76	33.8	108.5	273					268
Dissolved Oxygen	4.56	4.89	4.58	4.91					4.99

Sample Collection Time: 1216

Remarks: _____

Monitoring Well
Purging Data Sheet

Date: 3/5/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: _____

Well Data

Well Number: MW-29B Diameter (in): 2" Well Volume (gal): 5.6

Total Depth: 35.0 Static Water Level: 0.85 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		5.6	11.2	16.8					
Time (military)									
pH (standard units)	6.38	6.09	6.08	6.06					6.05
Specific Cond. (µS/cm)	105.9	112.3	104.4	99.9					100.6
Water Temp (°C)	14.3	16.8	17.9	18.1					18.1
Turbidity (mild, moderate, strong)	23.1	26.7	89.9	101.6					122.1
Dissolved Oxygen	3.69	2.99	3.25	3.30					3.32

Sample Collection Time: 1240

Remarks: _____

Monitoring Well
Purging Data Sheet

Date: 3/5/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: _____

Well Data

Well Number: MW-22B Diameter (in): 2" Well Volume (gal): 5.5

Total Depth: 35.0 Static Water Level: 1.45 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		5.5	11.0	16.5					
Time (military)									
pH (standard units)	5.26	5.99	5.95	5.94					5.95
Specific Cond. (µS/cm)	203.2	208.1	199.8	196.3					197.8
Water Temp (°C)	13.6	14.8	17.1	17.6					17.6
Turbidity (mild, moderate, strong)	158	162	174	183					191
Dissolved Oxygen	2.26	2.01	1.96	1.94					1.90

Sample Collection Time: 1318

Remarks: _____

Monitoring Well
Purging Data Sheet

Date: 3/5/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: _____

Well Data

Well Number: RW-2 Diameter (in): 4" Well Volume (gal): 19.2

Total Depth: 40.0 Static Water Level: 10.65 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		19.2	25.0	30.0	35.0				
Time (military)									
pH (standard units)	5.61	5.55							
Specific Cond. (µS/cm)	208.	217							
Water Temp (°C)	21.6	22.2							
Turbidity (mild, moderate, strong)	483	171							
Dissolved Oxygen	2.35	1.97							

Sample Collection Time: 1351

Remarks: dry @ ~22 gallons ; slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/7/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather:

Well Data

Well Number: RW-4 Diameter (in): 4" Well Volume (gal): 19.6

Total Depth: 40.5 Static Water Level: 10.50 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		19.6	25.0	30.0	35.0				
Time (military)									
pH (standard units)	5.65	5.48	5.63						
Specific Cond. (µS/cm)	198	203	201						
Water Temp (°C)	19.2	21.1	21.6						
Turbidity (mild, moderate, strong)	75.5	81.5	196						
Dissolved Oxygen	2.44	2.41	2.56						

Sample Collection Time: 0955

Remarks: dry @ ~ 25 gallons ; slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/7/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: _____

Well Data

Well Number: DMW-1 Diameter (in): 2" Well Volume (gal): 8.3

Total Depth: 65.0 Static Water Level: 14.07 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		8.3	16	20	25				
Time (military)									
pH (standard units)	7.98	7.65	7.83						
Specific Cond. (µS/cm)	568	585	610						
Water Temp (°C)	17.5	17.3	18.0						
Turbidity (mild, moderate, strong)	4.52	16.3	18.5						
Dissolved Oxygen	2.98	1.97	2.61						

Sample Collection Time: 1032

Remarks: dry @ ~ 10 gallons ; slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/7/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: _____

Well Data

Well Number: DMW-2 Diameter (in): 2" Well Volume (gal): 9.6

Total Depth: 65.0 Static Water Level: 5.94 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		10.0	15.0	20	25	30			
Time (military)									
pH (standard units)	10.18	10.25	—						
Specific Cond. (µS/cm)	278	256							
Water Temp (°C)	20.0	20.6							
Turbidity (mild, moderate, strong)	1.45	201							
Dissolved Oxygen	2.53	2.42							

Sample Collection Time: 1438

Remarks: dry @ ~10 gallons ; slow recovery

Monitoring Well
Purging Data Sheet

Date: 3/5/14

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd ; Columbia, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: _____

Well Data

Well Number: DMW-3 Diameter (in): 2" Well Volume (gal): 10.4

Total Depth: 65.0 Static Water Level: 1.40 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		10.4	15	20	25	30			
Time (military)									
pH (standard units)	10.53	10.81	10.98						
Specific Cond. (µS/cm)	814	762	757						
Water Temp (°C)	15.2	16.8	15.9						
Turbidity (mild, moderate, strong)	147.2	980	1000+						
Dissolved Oxygen	3.61	3.40	2.67						

Sample Collection Time: 1519

Remarks: dry @ ~15 gallons ; slow recovery

ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT
Enviro-Test Services
P.O. Box 2237
Irmo, SC 29063

ATTENTION
Terry Teate

PROJECT ID
Broad River BP#11946

LABORATORY REPORT NUMBER
214031249

DATE
03/20/2014

Primary Data Review By

Authorized Signature

Secondary Data Review By

Ashley B. Amick
Project Manager, Access Analytical, Inc.
aamick@accessanalyticalinc.com

PLEASE NOTE:

- **Unless otherwise noted, all analysis on this report performed at Gulf Coast Analytical Labs (GCAL), 7979 Innovation Park Dr., Baton Rouge, LA 70820.**
- **GCAL is SCDHEC certified laboratory # 73006, NCDENR certified lab # 618, GA certified lab # LA-01955, NELAP certified laboratory # 01955**
- Local support services for this project are provided by Access Analytical, Inc.. Access Analytical is a representative of GCAL serving clients in the SC/NC/GA areas. All questions regarding this report should be directed to your local Access Analytical representative at 803.781.4243 or toll free at 888.315.4243.

NELAP CERTIFICATE NUMBER 01955
DOD ELAP CERTIFICATE NUMBER L13-190

ANALYTICAL RESULTS

PERFORMED BY

GULF COAST ANALYTICAL LABORATORIES, INC.
7979 Innovation Park Dr.
Baton Rouge, LA 70820

Report Date 03/20/2014

GCAL Report 214031249

Deliver To	Enviro-Test Services P.O. Box 2237 Irmo, SC 29063 803-732-5770
Attn	Terry Teate

Project Broad River BP#11946

CASE NARRATIVE

Client: Access Analytical **Report:** 214031249

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the sample cross-reference page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

VOLATILES MASS SPECTROMETRY

In the EPA 8260B analysis, samples 21403124901 (MW-1), 21403124902 (MW-3), 21403124920 (17B), 21403124930 (MW-RW-2), 21403124931 (RW-4), 21403124933 (DMW-2), 21403124936 (DUPLICATE 2) and 21403124932 (DMW-1) had to be diluted to bracket the concentration of target compounds within the calibration range of the instrument. The dilution is reflected in elevated detection limits.

In the EPA 8260B analysis for analytical batches 527652 and 527661, Naphthalene was detected at an estimated concentration in the method blank. This is probable laboratory contamination.

Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

Common Abbreviations Utilized in this Report

ND	Indicates the result was Not Detected at the specified RDL
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
RDL	Reporting Detection Limit
00:00	Reported as a time equivalent to 12:00 AM

Reporting Flags Utilized in this Report

J	Indicates the result is between the MDL and RDL
U	Indicates the compound was analyzed for but not detected
B	Indicates the analyte was detected in the associated Method Blank

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with the NELAC standard and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.

Karen Meiermeyer

Authorized Signature
GCAL REPORT 214031249

THIS REPORT CONTAINS 65 PAGES.

Report Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124901	MW-1	Water	03/06/2014 14:08	03/12/2014 10:45
21403124902	MW-3	Water	03/07/2014 09:20	03/12/2014 10:45
21403124903	MW-6A	Water	03/05/2014 08:35	03/12/2014 10:45
21403124904	MW-6B	Water	03/05/2014 08:55	03/12/2014 10:45
21403124905	MW-7A	Water	03/05/2014 15:57	03/12/2014 10:45
21403124906	MW-8A	Water	03/05/2014 16:32	03/12/2014 10:45
21403124907	MW-8B	Water	03/05/2014 16:58	03/12/2014 10:45
21403124908	MW-9A	Water	03/06/2014 08:42	03/12/2014 10:45
21403124909	MW-9B	Water	03/06/2014 08:59	03/12/2014 10:45
21403124910	MW-10A	Water	03/06/2014 13:52	03/12/2014 10:45
21403124911	10B	Water	03/06/2014 14:30	03/12/2014 10:45
21403124912	11B	Water	03/06/2014 10:02	03/12/2014 10:45
21403124913	12A	Water	03/06/2014 10:28	03/12/2014 10:45
21403124914	12B	Water	03/06/2014 10:50	03/12/2014 10:45
21403124915	13B	Water	03/06/2014 11:18	03/12/2014 10:45
21403124916	14A	Water	03/06/2014 11:47	03/12/2014 10:45
21403124917	14B	Water	03/06/2014 12:18	03/12/2014 10:45
21403124918	15A	Water	03/06/2014 12:44	03/12/2014 10:45
21403124919	15B	Water	03/06/2014 13:19	03/12/2014 10:45
21403124920	17B	Water	03/05/2014 09:30	03/12/2014 10:45
21403124921	MW-18A	Water	03/05/2014 09:49	03/12/2014 10:45
21403124922	MW-18B	Water	03/05/2014 10:15	03/12/2014 10:45
21403124923	MW-19A	Water	03/05/2014 10:38	03/12/2014 10:45
21403124924	MW-19B	Water	03/05/2014 10:57	03/12/2014 10:45
21403124925	MW-20A	Water	03/05/2014 11:22	03/12/2014 10:45
21403124926	MW-20B	Water	03/05/2014 11:51	03/12/2014 10:45
21403124927	MW-21A	Water	03/05/2014 12:16	03/12/2014 10:45
21403124928	MW-21B	Water	03/05/2014 12:40	03/12/2014 10:45
21403124929	MW-22B	Water	03/05/2014 13:18	03/12/2014 10:45
21403124930	MW-RW-2	Water	03/05/2014 13:51	03/12/2014 10:45
21403124931	RW-4	Water	03/07/2014 09:55	03/12/2014 10:45
21403124932	DMW-1	Water	03/07/2014 10:32	03/12/2014 10:45
21403124933	DMW-2	Water	03/07/2014 14:38	03/12/2014 10:45
21403124934	DMW-3	Water	03/05/2014 15:19	03/12/2014 10:45
21403124935	DUPLICATE 1	Water	03/05/2014 11:58	03/12/2014 10:45
21403124936	DUPLICATE 2	Water	03/07/2014 14:40	03/12/2014 10:45
21403124937	FIELD BLANK 1	Water	03/05/2014 12:20	03/12/2014 10:45
21403124938	FIELD BLANK 2	Water	03/06/2014 12:00	03/12/2014 10:45
21403124939	FIELD BLANK 3	Water	03/06/2014 12:50	03/12/2014 10:45
21403124940	TRIP BLANK 1	Water	03/05/2014 00:00	03/12/2014 10:45
21403124941	TRIP BLANK 2	Water	03/05/2014 00:00	03/12/2014 10:45
21403124942	11A	Water	03/06/2014 09:40	03/12/2014 10:45

Summary of Compounds Detected

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124901	MW-1	Water	03/06/2014 14:08	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
75-85-4	tert-amyl alcohol (TAA)	4270J	10000	507	ug/L
71-43-2	Benzene	3080	2500	55.5	ug/L
108-88-3	Toluene	35100	2500	60.9	ug/L
100-41-4	Ethylbenzene	3130	2500	54.5	ug/L
1330-20-7	Xylene (total)	13300	7500	89.4	ug/L
91-20-3	Naphthalene	754J	2500	88.0	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124902	MW-3	Water	03/07/2014 09:20	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	2.04J	50.0	1.11	ug/L
108-88-3	Toluene	20.9J	50.0	1.22	ug/L
100-41-4	Ethylbenzene	2.81J	50.0	1.09	ug/L
1330-20-7	Xylene (total)	17.3J	150	1.79	ug/L
91-20-3	Naphthalene	7.44J	50.0	1.76	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124903	MW-6A	Water	03/05/2014 08:35	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
108-88-3	Toluene	0.469J	5.00	0.122	ug/L
1330-20-7	Xylene (total)	1.63J	15.0	0.179	ug/L
91-20-3	Naphthalene	2.43J	5.00	0.176	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124904	MW-6B	Water	03/05/2014 08:55	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	0.372J	5.00	0.111	ug/L
108-88-3	Toluene	2.96J	5.00	0.122	ug/L
100-41-4	Ethylbenzene	2.15J	5.00	0.109	ug/L
1330-20-7	Xylene (total)	13.9J	15.0	0.179	ug/L
91-20-3	Naphthalene	13.1	5.00	0.176	ug/L

Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124905	MW-7A	Water	03/05/2014 15:57	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
91-20-3	Naphthalene	1.06J	5.00	0.176	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124908	MW-9A	Water	03/06/2014 08:42	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	3.21J	5.00	0.077	ug/L
107-06-2	1,2-Dichloroethane	0.667J	5.00	0.116	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124909	MW-9B	Water	03/06/2014 08:59	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	3.51J	5.00	0.077	ug/L
107-06-2	1,2-Dichloroethane	0.668J	5.00	0.116	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124912	11B	Water	03/06/2014 10:02	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	0.940J	5.00	0.077	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124913	12A	Water	03/06/2014 10:28	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
91-20-3	Naphthalene	0.486J	5.00	0.176	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124914	12B	Water	03/06/2014 10:50	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
91-20-3	Naphthalene	0.359J	5.00	0.176	ug/L

Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124915	13B	Water	03/06/2014 11:18	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
91-20-3	Naphthalene	0.322J	5.00	0.176	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124916	14A	Water	03/06/2014 11:47	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
91-20-3	Naphthalene	0.329J	5.00	0.176	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124917	14B	Water	03/06/2014 12:18	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
91-20-3	Naphthalene	0.277J	5.00	0.176	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124918	15A	Water	03/06/2014 12:44	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
100-41-4	Ethylbenzene	0.166J	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.893J	15.0	0.179	ug/L
91-20-3	Naphthalene	0.454J	5.00	0.176	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124920	17B	Water	03/05/2014 09:30	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
75-65-0	t-Butanol (TBA)	1120	100	2.90	ug/L
108-20-3	diisopropyl Ether (DIPE)	4.68J	50.0	2.36	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	420	50.0	0.770	ug/L
75-85-4	tert-amyl alcohol (TAA)	422	200	10.1	ug/L
108-88-3	Toluene	3.27J	50.0	1.22	ug/L
1330-20-7	Xylene (total)	9.61J	150	1.79	ug/L
91-20-3	Naphthalene	12.8J	50.0	1.76	ug/L

Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124921	MW-18A	Water	03/05/2014 09:49	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	2.82J	5.00	0.077	ug/L
91-20-3	Naphthalene	0.363J	5.00	0.176	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124922	MW-18B	Water	03/05/2014 10:15	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	0.416J	5.00	0.077	ug/L
91-20-3	Naphthalene	0.225J	5.00	0.176	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124923	MW-19A	Water	03/05/2014 10:38	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
75-65-0	t-Butanol (TBA)	15.2	10.0	0.290	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.644J	5.00	0.077	ug/L
75-85-4	tert-amyl alcohol (TAA)	7.86J	20.0	1.01	ug/L
71-43-2	Benzene	1.97J	5.00	0.111	ug/L
108-88-3	Toluene	1.87J	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.941J	5.00	0.109	ug/L
1330-20-7	Xylene (total)	6.10J	15.0	0.179	ug/L
91-20-3	Naphthalene	3.67J	5.00	0.176	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124924	MW-19B	Water	03/05/2014 10:57	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
75-65-0	t-Butanol (TBA)	6.04J	10.0	0.290	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	1.11J	5.00	0.077	ug/L
71-43-2	Benzene	0.329J	5.00	0.111	ug/L
108-88-3	Toluene	0.349J	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.123J	5.00	0.109	ug/L
1330-20-7	Xylene (total)	1.07J	15.0	0.179	ug/L
91-20-3	Naphthalene	1.33J	5.00	0.176	ug/L

Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124925	MW-20A	Water	03/05/2014 11:22	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	0.526J	5.00	0.077	ug/L
108-88-3	Toluene	0.991J	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.505J	5.00	0.109	ug/L
1330-20-7	Xylene (total)	2.92J	15.0	0.179	ug/L
91-20-3	Naphthalene	3.50J	5.00	0.176	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124926	MW-20B	Water	03/05/2014 11:51	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	18.1	5.00	0.077	ug/L
91-20-3	Naphthalene	0.492J	5.00	0.176	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124928	MW-21B	Water	03/05/2014 12:40	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	5.75	5.00	0.077	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124929	MW-22B	Water	03/05/2014 13:18	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	2.64J	5.00	0.077	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124930	MW-RW-2	Water	03/05/2014 13:51	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	110J	1250	60.0	ug/L
75-65-0	t-Butanol (TBA)	13900	2500	72.5	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	26900	1250	19.3	ug/L
75-85-4	tert-amyl alcohol (TAA)	16900	5000	253	ug/L
71-43-2	Benzene	11000	1250	27.8	ug/L
108-88-3	Toluene	18500	1250	30.5	ug/L
100-41-4	Ethylbenzene	1580	1250	27.3	ug/L
1330-20-7	Xylene (total)	9850	3750	44.7	ug/L

Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124930	MW-RW-2	Water	03/05/2014 13:51	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
91-20-3	Naphthalene	299J	1250	44.0	ug/L
107-06-2	1,2-Dichloroethane	58.1J	1250	29.0	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124931	RW-4	Water	03/07/2014 09:55	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	53.3J	500	24.0	ug/L
75-65-0	t-Butanol (TBA)	2930	1000	29.0	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	9160	500	7.70	ug/L
75-85-4	tert-amyl alcohol (TAA)	5550	2000	101	ug/L
71-43-2	Benzene	2960	500	11.1	ug/L
108-88-3	Toluene	4070	500	12.2	ug/L
100-41-4	Ethylbenzene	378J	500	10.9	ug/L
1330-20-7	Xylene (total)	3500	1500	17.9	ug/L
91-20-3	Naphthalene	186J	500	17.6	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124932	DMW-1	Water	03/07/2014 10:32	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
75-65-0	t-Butanol (TBA)	125	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	3.59J	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	159	5.00	0.077	ug/L
108-88-3	Toluene	0.827J	5.00	0.122	ug/L
1330-20-7	Xylene (total)	1.17J	15.0	0.179	ug/L
107-06-2	1,2-Dichloroethane	2.60J	5.00	0.116	ug/L

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
75-85-4	tert-amyl alcohol (TAA)	2300	200	10.1	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124933	DMW-2	Water	03/07/2014 14:38	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
75-65-0	t-Butanol (TBA)	340	20.0	0.580	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.867J	10.0	0.472	ug/L

Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124933	DMW-2	Water	03/07/2014 14:38	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	89.2	10.0	0.154	ug/L
75-85-4	tert-amyl alcohol (TAA)	120	40.0	2.03	ug/L
71-43-2	Benzene	0.669J	10.0	0.222	ug/L
108-88-3	Toluene	3.63J	10.0	0.244	ug/L
100-41-4	Ethylbenzene	1.90J	10.0	0.218	ug/L
1330-20-7	Xylene (total)	10.7J	30.0	0.358	ug/L
91-20-3	Naphthalene	13.2	10.0	0.352	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124934	DMW-3	Water	03/05/2014 15:19	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	1.33J	5.00	0.077	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124935	DUPLICATE 1	Water	03/05/2014 11:58	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	18.5	5.00	0.077	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124936	DUPLICATE 2	Water	03/07/2014 14:40	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
75-65-0	t-Butanol (TBA)	324	20.0	0.580	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.951J	10.0	0.472	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	96.9	10.0	0.154	ug/L
75-85-4	tert-amyl alcohol (TAA)	117	40.0	2.03	ug/L
71-43-2	Benzene	0.768J	10.0	0.222	ug/L
108-88-3	Toluene	3.88J	10.0	0.244	ug/L
100-41-4	Ethylbenzene	1.67J	10.0	0.218	ug/L
1330-20-7	Xylene (total)	9.79J	30.0	0.358	ug/L
91-20-3	Naphthalene	11.9	10.0	0.352	ug/L

Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124937	FIELD BLANK 1	Water	03/05/2014 12:20	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
75-65-0	t-Butanol (TBA)	4.37J	10.0	0.290	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124938	FIELD BLANK 2	Water	03/06/2014 12:00	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
75-65-0	t-Butanol (TBA)	3.85J	10.0	0.290	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124939	FIELD BLANK 3	Water	03/06/2014 12:50	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
75-65-0	t-Butanol (TBA)	3.75J	10.0	0.290	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124942	11A	Water	03/06/2014 09:40	03/12/2014 10:45

EPA 8260B

CAS#	Parameter	Result	RDL	MDL	Units
75-65-0	t-Butanol (TBA)	2.92J	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.856J	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	1.67J	5.00	0.077	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124901	MW-1	Water	03/06/2014 14:08	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			500	03/15/2014 22:46	CEK	527652

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	120U	2500	120	ug/L
75-65-0	t-Butanol (TBA)	145U	5000	145	ug/L
108-20-3	diisopropyl Ether (DIPE)	118U	2500	118	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	38.5U	2500	38.5	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	117U	2500	117	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	18800U	50000	18800	ug/L
64-17-5	Ethanol	62500U	500000	62500	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**4270J**	**10000**	**507**	**ug/L**
762-75-4	tert-butyl formate (TBF)	243U	25000	243	ug/L
71-43-2	**Benzene**	**3080**	**2500**	**55.5**	**ug/L**
108-88-3	**Toluene**	**35100**	**2500**	**60.9**	**ug/L**
100-41-4	**Ethylbenzene**	**3130**	**2500**	**54.5**	**ug/L**
1330-20-7	**Xylene (total)**	**13300**	**7500**	**89.4**	**ug/L**
91-20-3	**Naphthalene**	**754J**	**2500**	**88.0**	**ug/L**
107-06-2	1,2-Dichloroethane	58.1U	2500	58.1	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	25000	23700	ug/L	95	78 - 130
1868-53-7	Dibromofluoromethane	25000	24000	ug/L	96	77 - 127
2037-26-5	Toluene d8	25000	24300	ug/L	97	76 - 134
17060-07-0	1,2-Dichloroethane-d4	25000	23700	ug/L	95	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527433	EPA 8011	1	03/13/2014 16:09	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124902	MW-3	Water	03/07/2014 09:20	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			10	03/15/2014 23:10	CEK	527652

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	2.40U	50.0	2.40	ug/L
75-65-0	t-Butanol (TBA)	2.90U	100	2.90	ug/L
108-20-3	diisopropyl Ether (DIPE)	2.36U	50.0	2.36	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.770U	50.0	0.770	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	2.34U	50.0	2.34	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	376U	1000	376	ug/L
64-17-5	Ethanol	1250U	10000	1250	ug/L
75-85-4	tert-amyl alcohol (TAA)	10.1U	200	10.1	ug/L
762-75-4	tert-butyl formate (TBF)	4.87U	500	4.87	ug/L
71-43-2	**Benzene**	**2.04J**	**50.0**	**1.11**	**ug/L**
108-88-3	**Toluene**	**20.9J**	**50.0**	**1.22**	**ug/L**
100-41-4	**Ethylbenzene**	**2.81J**	**50.0**	**1.09**	**ug/L**
1330-20-7	**Xylene (total)**	**17.3J**	**150**	**1.79**	**ug/L**
91-20-3	**Naphthalene**	**7.44J**	**50.0**	**1.76**	**ug/L**
107-06-2	1,2-Dichloroethane	1.16U	50.0	1.16	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	500	498	ug/L	100	78 - 130
1868-53-7	Dibromofluoromethane	500	483	ug/L	97	77 - 127
2037-26-5	Toluene d8	500	485	ug/L	97	76 - 134
17060-07-0	1,2-Dichloroethane-d4	500	489	ug/L	98	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527433	EPA 8011	1	03/13/2014 16:27	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124903	MW-6A	Water	03/05/2014 08:35	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/17/2014 18:34	KRH	527726

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	5.00	0.077	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	**Toluene**	**0.469J**	**5.00**	**0.122**	**ug/L**
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	**Xylene (total)**	**1.63J**	**15.0**	**0.179**	**ug/L**
91-20-3	**Naphthalene**	**2.43J**	**5.00**	**0.176**	**ug/L**
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48.1	ug/L	96	78 - 130
1868-53-7	Dibromofluoromethane	50	49.9	ug/L	100	77 - 127
2037-26-5	Toluene d8	50	47.5	ug/L	95	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.7	ug/L	97	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527433	EPA 8011	1	03/13/2014 16:44	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124904	MW-6B	Water	03/05/2014 08:55	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/15/2014 23:56	CEK	527652

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	5.00	0.077	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	**Benzene**	**0.372J**	**5.00**	**0.111**	**ug/L**
108-88-3	**Toluene**	**2.96J**	**5.00**	**0.122**	**ug/L**
100-41-4	**Ethylbenzene**	**2.15J**	**5.00**	**0.109**	**ug/L**
1330-20-7	**Xylene (total)**	**13.9J**	**15.0**	**0.179**	**ug/L**
91-20-3	**Naphthalene**	**13.1**	**5.00**	**0.176**	**ug/L**
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	49.3	ug/L	99	78 - 130
1868-53-7	Dibromofluoromethane	50	46.2	ug/L	92	77 - 127
2037-26-5	Toluene d8	50	50.1	ug/L	100	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	47.2	ug/L	94	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527433	EPA 8011	1	03/13/2014 17:01	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124905	**MW-7A**	Water	03/05/2014 15:57	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 00:19	CEK	527652

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	5.00	0.077	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	**Naphthalene**	**1.06J**	**5.00**	**0.176**	**ug/L**
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	49.3	ug/L	99	78 - 130
1868-53-7	Dibromofluoromethane	50	47.8	ug/L	96	77 - 127
2037-26-5	Toluene d8	50	49.2	ug/L	98	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	46.6	ug/L	93	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527433	EPA 8011	1	03/13/2014 17:18	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124906	MW-8A	Water	03/05/2014 16:32	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 00:42	CEK	527652

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	5.00	0.077	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	Naphthalene	0.176U	5.00	0.176	ug/L
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	50.9	ug/L	102	78 - 130
1868-53-7	Dibromofluoromethane	50	48.4	ug/L	97	77 - 127
2037-26-5	Toluene d8	50	50	ug/L	100	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	47.2	ug/L	94	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527433	EPA 8011	1	03/13/2014 17:35	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124907	MW-8B	Water	03/05/2014 16:58	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 01:05	CEK	527652

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	5.00	0.077	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	Naphthalene	0.176U	5.00	0.176	ug/L
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48.2	ug/L	96	78 - 130
1868-53-7	Dibromofluoromethane	50	49	ug/L	98	77 - 127
2037-26-5	Toluene d8	50	49.8	ug/L	100	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	49.3	ug/L	99	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527433	EPA 8011	1	03/13/2014 17:52	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124908	**MW-9A**	Water	03/06/2014 08:42	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 01:29	CEK	527652

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**3.21J**	**5.00**	**0.077**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	Naphthalene	0.176U	5.00	0.176	ug/L
107-06-2	**1,2-Dichloroethane**	**0.667J**	**5.00**	**0.116**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	49.5	ug/L	99	78 - 130
1868-53-7	Dibromofluoromethane	50	46.7	ug/L	93	77 - 127
2037-26-5	Toluene d8	50	50.2	ug/L	100	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.1	ug/L	96	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527433	EPA 8011	1	03/13/2014 18:26	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124909	**MW-9B**	Water	03/06/2014 08:59	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 01:52	CEK	527652

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**3.51J**	**5.00**	**0.077**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	Naphthalene	0.176U	5.00	0.176	ug/L
107-06-2	**1,2-Dichloroethane**	**0.668J**	**5.00**	**0.116**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	47.9	ug/L	96	78 - 130
1868-53-7	Dibromofluoromethane	50	49.4	ug/L	99	77 - 127
2037-26-5	Toluene d8	50	49.1	ug/L	98	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.5	ug/L	97	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527433	EPA 8011	1	03/13/2014 18:44	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124910	MW-10A	Water	03/06/2014 13:52	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 02:15	CEK	527652

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	5.00	0.077	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	Naphthalene	0.176U	5.00	0.176	ug/L
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48.7	ug/L	97	78 - 130
1868-53-7	Dibromofluoromethane	50	51.8	ug/L	104	77 - 127
2037-26-5	Toluene d8	50	50.5	ug/L	101	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50.5	ug/L	101	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527433	EPA 8011	1	03/13/2014 19:01	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124911	10B	Water	03/06/2014 14:30	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 02:38	CEK	527652

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	5.00	0.077	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	Naphthalene	0.176U	5.00	0.176	ug/L
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	50.7	ug/L	101	78 - 130
1868-53-7	Dibromofluoromethane	50	45.9	ug/L	92	77 - 127
2037-26-5	Toluene d8	50	50.7	ug/L	101	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48	ug/L	96	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527433	EPA 8011	1	03/13/2014 19:18	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124912	11B	Water	03/06/2014 10:02	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 03:01	CEK	527652

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**0.940J**	**5.00**	**0.077**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	Naphthalene	0.176U	5.00	0.176	ug/L
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48.7	ug/L	97	78 - 130
1868-53-7	Dibromofluoromethane	50	47.3	ug/L	95	77 - 127
2037-26-5	Toluene d8	50	49.8	ug/L	100	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	47.5	ug/L	95	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527433	EPA 8011	1	03/13/2014 19:35	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124913	12A	Water	03/06/2014 10:28	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 12:34	LBH	527661

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	5.00	0.077	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	**Naphthalene**	**0.486J**	**5.00**	**0.176**	**ug/L**
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	47.8	ug/L	96	78 - 130
1868-53-7	Dibromofluoromethane	50	49.6	ug/L	99	77 - 127
2037-26-5	Toluene d8	50	49.2	ug/L	98	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.9	ug/L	98	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527433	EPA 8011	1	03/13/2014 19:51	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124914	12B	Water	03/06/2014 10:50	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 12:58	LBH	527661

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	5.00	0.077	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	**Naphthalene**	**0.359J**	**5.00**	**0.176**	**ug/L**
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48.5	ug/L	97	78 - 130
1868-53-7	Dibromofluoromethane	50	48.8	ug/L	98	77 - 127
2037-26-5	Toluene d8	50	48.6	ug/L	97	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	49.6	ug/L	99	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527433	EPA 8011	1	03/13/2014 20:08	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124915	13B	Water	03/06/2014 11:18	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 13:22	JCK	527661

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	5.00	0.077	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	**Naphthalene**	**0.322J**	**5.00**	**0.176**	**ug/L**
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48	ug/L	96	78 - 130
1868-53-7	Dibromofluoromethane	50	50	ug/L	100	77 - 127
2037-26-5	Toluene d8	50	50.5	ug/L	101	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50.3	ug/L	101	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527433	EPA 8011	1	03/13/2014 20:25	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124916	14A	Water	03/06/2014 11:47	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 13:46	JCK	527661

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	5.00	0.077	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	**Naphthalene**	**0.329J**	**5.00**	**0.176**	**ug/L**
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48.6	ug/L	97	78 - 130
1868-53-7	Dibromofluoromethane	50	50.7	ug/L	101	77 - 127
2037-26-5	Toluene d8	50	49.9	ug/L	100	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50.2	ug/L	100	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527433	EPA 8011	1	03/13/2014 20:42	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124917	14B	Water	03/06/2014 12:18	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 14:10	LBH	527661

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	5.00	0.077	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	**Naphthalene**	**0.277J**	**5.00**	**0.176**	**ug/L**
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48	ug/L	96	78 - 130
1868-53-7	Dibromofluoromethane	50	50.6	ug/L	101	77 - 127
2037-26-5	Toluene d8	50	50.1	ug/L	100	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50.2	ug/L	100	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527433	EPA 8011	1	03/13/2014 20:58	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124918	15A	Water	03/06/2014 12:44	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 14:34	LBH	527661

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	5.00	0.077	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	**Ethylbenzene**	**0.166J**	**5.00**	**0.109**	**ug/L**
1330-20-7	**Xylene (total)**	**0.893J**	**15.0**	**0.179**	**ug/L**
91-20-3	**Naphthalene**	**0.454J**	**5.00**	**0.176**	**ug/L**
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	45.1	ug/L	90	78 - 130
1868-53-7	Dibromofluoromethane	50	50.3	ug/L	101	77 - 127
2037-26-5	Toluene d8	50	47.3	ug/L	95	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	49.9	ug/L	100	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527433	EPA 8011	1	03/13/2014 21:32	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124919	15B	Water	03/06/2014 13:19	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 14:58	LBH	527661

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	5.00	0.077	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	Naphthalene	0.176U	5.00	0.176	ug/L
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48.3	ug/L	97	78 - 130
1868-53-7	Dibromofluoromethane	50	50.2	ug/L	100	77 - 127
2037-26-5	Toluene d8	50	49.3	ug/L	99	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.4	ug/L	97	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527433	EPA 8011	1	03/14/2014 10:01	SMH	527630

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124920	17B	Water	03/05/2014 09:30	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			10	03/16/2014 16:57	JCK	527661

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	2.40U	50.0	2.40	ug/L
75-65-0	**t-Butanol (TBA)**	**1120**	**100**	**2.90**	**ug/L**
108-20-3	**diisopropyl Ether (DIPE)**	**4.68J**	**50.0**	**2.36**	**ug/L**
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**420**	**50.0**	**0.770**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	2.34U	50.0	2.34	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	376U	1000	376	ug/L
64-17-5	Ethanol	1250U	10000	1250	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**422**	**200**	**10.1**	**ug/L**
762-75-4	tert-butyl formate (TBF)	4.87U	500	4.87	ug/L
71-43-2	Benzene	1.11U	50.0	1.11	ug/L
108-88-3	**Toluene**	**3.27J**	**50.0**	**1.22**	**ug/L**
100-41-4	Ethylbenzene	1.09U	50.0	1.09	ug/L
1330-20-7	**Xylene (total)**	**9.61J**	**150**	**1.79**	**ug/L**
91-20-3	**Naphthalene**	**12.8J**	**50.0**	**1.76**	**ug/L**
107-06-2	1,2-Dichloroethane	1.16U	50.0	1.16	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	500	463	ug/L	93	78 - 130
1868-53-7	Dibromofluoromethane	500	512	ug/L	102	77 - 127
2037-26-5	Toluene d8	500	497	ug/L	99	76 - 134
17060-07-0	1,2-Dichloroethane-d4	500	491	ug/L	98	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527433	EPA 8011	1	03/14/2014 10:18	SMH	527630

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124921	**MW-18A**	Water	03/05/2014 09:49	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 16:10	LBH	527661

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**2.82J**	**5.00**	**0.077**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	**Naphthalene**	**0.363J**	**5.00**	**0.176**	**ug/L**
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48.1	ug/L	96	78 - 130
1868-53-7	Dibromofluoromethane	50	49.6	ug/L	99	77 - 127
2037-26-5	Toluene d8	50	50.4	ug/L	101	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	47.4	ug/L	95	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527434	EPA 8011	1	03/14/2014 10:35	SMH	527630

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124922	**MW-18B**	Water	03/05/2014 10:15	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 16:33	LBH	527661

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**0.416J**	**5.00**	**0.077**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	**Naphthalene**	**0.225J**	**5.00**	**0.176**	**ug/L**
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	47.3	ug/L	95	78 - 130
1868-53-7	Dibromofluoromethane	50	51.3	ug/L	103	77 - 127
2037-26-5	Toluene d8	50	47.4	ug/L	95	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	49.7	ug/L	99	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527434	EPA 8011	1	03/13/2014 23:28	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124923	MW-19A	Water	03/05/2014 10:38	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 17:21	JCK	527661

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	**t-Butanol (TBA)**	**15.2**	**10.0**	**0.290**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**0.644J**	**5.00**	**0.077**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**7.86J**	**20.0**	**1.01**	**ug/L**
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	**Benzene**	**1.97J**	**5.00**	**0.111**	**ug/L**
108-88-3	**Toluene**	**1.87J**	**5.00**	**0.122**	**ug/L**
100-41-4	**Ethylbenzene**	**0.941J**	**5.00**	**0.109**	**ug/L**
1330-20-7	**Xylene (total)**	**6.10J**	**15.0**	**0.179**	**ug/L**
91-20-3	**Naphthalene**	**3.67J**	**5.00**	**0.176**	**ug/L**
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	47.2	ug/L	94	78 - 130
1868-53-7	Dibromofluoromethane	50	49.6	ug/L	99	77 - 127
2037-26-5	Toluene d8	50	49.1	ug/L	98	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.6	ug/L	97	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527434	EPA 8011	1	03/13/2014 23:44	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124924	**MW-19B**	Water	03/05/2014 10:57	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 17:44	LBH	527661

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	**t-Butanol (TBA)**	**6.04J**	**10.0**	**0.290**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**1.11J**	**5.00**	**0.077**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	**Benzene**	**0.329J**	**5.00**	**0.111**	**ug/L**
108-88-3	**Toluene**	**0.349J**	**5.00**	**0.122**	**ug/L**
100-41-4	**Ethylbenzene**	**0.123J**	**5.00**	**0.109**	**ug/L**
1330-20-7	**Xylene (total)**	**1.07J**	**15.0**	**0.179**	**ug/L**
91-20-3	**Naphthalene**	**1.33J**	**5.00**	**0.176**	**ug/L**
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	47.3	ug/L	95	78 - 130
1868-53-7	Dibromofluoromethane	50	47.6	ug/L	95	77 - 127
2037-26-5	Toluene d8	50	48.8	ug/L	98	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50	ug/L	100	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527434	EPA 8011	1	03/14/2014 10:51	SMH	527630

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124925	MW-20A	Water	03/05/2014 11:22	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 18:08	LBH	527661

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**0.526J**	**5.00**	**0.077**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	**Toluene**	**0.991J**	**5.00**	**0.122**	**ug/L**
100-41-4	**Ethylbenzene**	**0.505J**	**5.00**	**0.109**	**ug/L**
1330-20-7	**Xylene (total)**	**2.92J**	**15.0**	**0.179**	**ug/L**
91-20-3	**Naphthalene**	**3.50J**	**5.00**	**0.176**	**ug/L**
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	46.2	ug/L	92	78 - 130
1868-53-7	Dibromofluoromethane	50	47.8	ug/L	96	77 - 127
2037-26-5	Toluene d8	50	49.6	ug/L	99	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.5	ug/L	97	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527434	EPA 8011	1	03/14/2014 11:08	SMH	527630

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124926	MW-20B	Water	03/05/2014 11:51	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 18:31	JCK	527661

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**18.1**	**5.00**	**0.077**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	**Naphthalene**	**0.492J**	**5.00**	**0.176**	**ug/L**
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	47.7	ug/L	95	78 - 130
1868-53-7	Dibromofluoromethane	50	50	ug/L	100	77 - 127
2037-26-5	Toluene d8	50	49.3	ug/L	99	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.9	ug/L	98	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527434	EPA 8011	1	03/14/2014 00:51	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124927	MW-21A	Water	03/05/2014 12:16	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 18:54	JCK	527661

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	5.00	0.077	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	Naphthalene	0.176U	5.00	0.176	ug/L
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	47.9	ug/L	96	78 - 130
1868-53-7	Dibromofluoromethane	50	49.3	ug/L	99	77 - 127
2037-26-5	Toluene d8	50	49.9	ug/L	100	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.3	ug/L	97	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527434	EPA 8011	1	03/14/2014 01:08	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124928	MW-21B	Water	03/05/2014 12:40	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 19:18	LBH	527661

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**5.75**	**5.00**	**0.077**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	Naphthalene	0.176U	5.00	0.176	ug/L
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48	ug/L	96	78 - 130
1868-53-7	Dibromofluoromethane	50	49.1	ug/L	98	77 - 127
2037-26-5	Toluene d8	50	48.7	ug/L	97	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.5	ug/L	97	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527434	EPA 8011	1	03/14/2014 01:26	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124929	MW-22B	Water	03/05/2014 13:18	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 19:41	KRH	527661

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**2.64J**	**5.00**	**0.077**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	Naphthalene	0.176U	5.00	0.176	ug/L
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	49.1	ug/L	98	78 - 130
1868-53-7	Dibromofluoromethane	50	49.1	ug/L	98	77 - 127
2037-26-5	Toluene d8	50	49.6	ug/L	99	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.2	ug/L	96	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527434	EPA 8011	1	03/14/2014 01:42	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124930	MW-RW-2	Water	03/05/2014 13:51	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			250	03/16/2014 20:51	JCK	527661

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	**t-amyl methyl ether (TAME)**	**110J**	**1250**	**60.0**	**ug/L**
75-65-0	**t-Butanol (TBA)**	**13900**	**2500**	**72.5**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	59.0U	1250	59.0	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**26900**	**1250**	**19.3**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	58.5U	1250	58.5	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	9400U	25000	9400	ug/L
64-17-5	Ethanol	31200U	250000	31200	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**16900**	**5000**	**253**	**ug/L**
762-75-4	tert-butyl formate (TBF)	122U	12500	122	ug/L
71-43-2	**Benzene**	**11000**	**1250**	**27.8**	**ug/L**
108-88-3	**Toluene**	**18500**	**1250**	**30.5**	**ug/L**
100-41-4	**Ethylbenzene**	**1580**	**1250**	**27.3**	**ug/L**
1330-20-7	**Xylene (total)**	**9850**	**3750**	**44.7**	**ug/L**
91-20-3	**Naphthalene**	**299J**	**1250**	**44.0**	**ug/L**
107-06-2	**1,2-Dichloroethane**	**58.1J**	**1250**	**29.0**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	12500	12200	ug/L	98	78 - 130
1868-53-7	Dibromofluoromethane	12500	12000	ug/L	96	77 - 127
2037-26-5	Toluene d8	12500	12400	ug/L	99	76 - 134
17060-07-0	1,2-Dichloroethane-d4	12500	12000	ug/L	96	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527434	EPA 8011	1	03/14/2014 11:24	SMH	527630

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124931	RW-4	Water	03/07/2014 09:55	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			100	03/16/2014 21:15	JCK	527661

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	**t-amyl methyl ether (TAME)**	**53.3J**	**500**	**24.0**	**ug/L**
75-65-0	**t-Butanol (TBA)**	**2930**	**1000**	**29.0**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	23.6U	500	23.6	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**9160**	**500**	**7.70**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	23.4U	500	23.4	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	3760U	10000	3760	ug/L
64-17-5	Ethanol	12500U	100000	12500	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**5550**	**2000**	**101**	**ug/L**
762-75-4	tert-butyl formate (TBF)	48.7U	5000	48.7	ug/L
71-43-2	**Benzene**	**2960**	**500**	**11.1**	**ug/L**
108-88-3	**Toluene**	**4070**	**500**	**12.2**	**ug/L**
100-41-4	**Ethylbenzene**	**378J**	**500**	**10.9**	**ug/L**
1330-20-7	**Xylene (total)**	**3500**	**1500**	**17.9**	**ug/L**
91-20-3	**Naphthalene**	**186J**	**500**	**17.6**	**ug/L**
107-06-2	1,2-Dichloroethane	11.6U	500	11.6	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	5000	4790	ug/L	96	78 - 130
1868-53-7	Dibromofluoromethane	5000	4530	ug/L	91	77 - 127
2037-26-5	Toluene d8	5000	4840	ug/L	97	76 - 134
17060-07-0	1,2-Dichloroethane-d4	5000	4580	ug/L	92	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527434	EPA 8011	1	03/14/2014 02:16	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124932	DMW-1	Water	03/07/2014 10:32	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/16/2014 20:04	KRH	527661

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	**t-Butanol (TBA)**	**125**	**10.0**	**0.290**	**ug/L**
108-20-3	**diisopropyl Ether (DIPE)**	**3.59J**	**5.00**	**0.236**	**ug/L**
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**159**	**5.00**	**0.077**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	**Toluene**	**0.827J**	**5.00**	**0.122**	**ug/L**
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	**Xylene (total)**	**1.17J**	**15.0**	**0.179**	**ug/L**
91-20-3	Naphthalene	0.176U	5.00	0.176	ug/L
107-06-2	**1,2-Dichloroethane**	**2.60J**	**5.00**	**0.116**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	49.9	ug/L	100	78 - 130
1868-53-7	Dibromofluoromethane	50	50.6	ug/L	101	77 - 127
2037-26-5	Toluene d8	50	49.2	ug/L	98	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	49.6	ug/L	99	71 - 127

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			10	03/17/2014 16:36	KRH	527726

CAS#	Parameter	Result	RDL	MDL	Units
75-85-4	**tert-amyl alcohol (TAA)**	**2300**	**200**	**10.1**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	500	470	ug/L	94	78 - 130
1868-53-7	Dibromofluoromethane	500	486	ug/L	97	77 - 127
2037-26-5	Toluene d8	500	463	ug/L	93	76 - 134
17060-07-0	1,2-Dichloroethane-d4	500	489	ug/L	98	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527434	EPA 8011	1	03/14/2014 02:33	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124933	DMW-2	Water	03/07/2014 14:38	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			2	03/17/2014 14:38	KRH	527726

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.480U	10.0	0.480	ug/L
75-65-0	**t-Butanol (TBA)**	**340**	**20.0**	**0.580**	**ug/L**
108-20-3	**diisopropyl Ether (DIPE)**	**0.867J**	**10.0**	**0.472**	**ug/L**
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**89.2**	**10.0**	**0.154**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.468U	10.0	0.468	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	75.2U	200	75.2	ug/L
64-17-5	Ethanol	250U	2000	250	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**120**	**40.0**	**2.03**	**ug/L**
762-75-4	tert-butyl formate (TBF)	0.974U	100	0.974	ug/L
71-43-2	**Benzene**	**0.669J**	**10.0**	**0.222**	**ug/L**
108-88-3	**Toluene**	**3.63J**	**10.0**	**0.244**	**ug/L**
100-41-4	**Ethylbenzene**	**1.90J**	**10.0**	**0.218**	**ug/L**
1330-20-7	**Xylene (total)**	**10.7J**	**30.0**	**0.358**	**ug/L**
91-20-3	**Naphthalene**	**13.2**	**10.0**	**0.352**	**ug/L**
107-06-2	1,2-Dichloroethane	0.232U	10.0	0.232	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	100	102	ug/L	102	78 - 130
1868-53-7	Dibromofluoromethane	100	98.9	ug/L	99	77 - 127
2037-26-5	Toluene d8	100	100	ug/L	100	76 - 134
17060-07-0	1,2-Dichloroethane-d4	100	96.8	ug/L	97	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527434	EPA 8011	1	03/14/2014 02:50	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124934	DMW-3	Water	03/05/2014 15:19	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/17/2014 15:49	KRH	527726

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**1.33J**	**5.00**	**0.077**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	Naphthalene	0.176U	5.00	0.176	ug/L
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	47.7	ug/L	95	78 - 130
1868-53-7	Dibromofluoromethane	50	49.6	ug/L	99	77 - 127
2037-26-5	Toluene d8	50	48	ug/L	96	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50	ug/L	100	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527434	EPA 8011	1	03/14/2014 03:06	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124935	**DUPLICATE 1**	Water	03/05/2014 11:58	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/17/2014 15:26	KRH	527726

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**18.5**	**5.00**	**0.077**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	Naphthalene	0.176U	5.00	0.176	ug/L
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48	ug/L	96	78 - 130
1868-53-7	Dibromofluoromethane	50	49.8	ug/L	100	77 - 127
2037-26-5	Toluene d8	50	48.6	ug/L	97	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.9	ug/L	98	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527434	EPA 8011	1	03/14/2014 03:40	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124936	DUPLICATE 2	Water	03/07/2014 14:40	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			2	03/17/2014 15:02	KRH	527726

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.480U	10.0	0.480	ug/L
75-65-0	**t-Butanol (TBA)**	**324**	**20.0**	**0.580**	**ug/L**
108-20-3	**diisopropyl Ether (DIPE)**	**0.951J**	**10.0**	**0.472**	**ug/L**
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**96.9**	**10.0**	**0.154**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.468U	10.0	0.468	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	75.2U	200	75.2	ug/L
64-17-5	Ethanol	250U	2000	250	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**117**	**40.0**	**2.03**	**ug/L**
762-75-4	tert-butyl formate (TBF)	0.974U	100	0.974	ug/L
71-43-2	**Benzene**	**0.768J**	**10.0**	**0.222**	**ug/L**
108-88-3	**Toluene**	**3.88J**	**10.0**	**0.244**	**ug/L**
100-41-4	**Ethylbenzene**	**1.67J**	**10.0**	**0.218**	**ug/L**
1330-20-7	**Xylene (total)**	**9.79J**	**30.0**	**0.358**	**ug/L**
91-20-3	**Naphthalene**	**11.9**	**10.0**	**0.352**	**ug/L**
107-06-2	1,2-Dichloroethane	0.232U	10.0	0.232	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	100	101	ug/L	101	78 - 130
1868-53-7	Dibromofluoromethane	100	99.4	ug/L	99	77 - 127
2037-26-5	Toluene d8	100	95.9	ug/L	96	76 - 134
17060-07-0	1,2-Dichloroethane-d4	100	99.4	ug/L	99	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527434	EPA 8011	1	03/14/2014 03:57	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124937	FIELD BLANK 1	Water	03/05/2014 12:20	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/17/2014 16:12	KRH	527726

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	**t-Butanol (TBA)**	**4.37J**	**10.0**	**0.290**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	5.00	0.077	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	Naphthalene	0.176U	5.00	0.176	ug/L
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	50.9	ug/L	102	78 - 130
1868-53-7	Dibromofluoromethane	50	50.7	ug/L	101	77 - 127
2037-26-5	Toluene d8	50	50.9	ug/L	102	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.8	ug/L	98	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527434	EPA 8011	1	03/14/2014 04:13	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124938	FIELD BLANK 2	Water	03/06/2014 12:00	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/17/2014 18:58	KRH	527726

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	**t-Butanol (TBA)**	**3.85J**	**10.0**	**0.290**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	5.00	0.077	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	Naphthalene	0.176U	5.00	0.176	ug/L
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48.8	ug/L	98	78 - 130
1868-53-7	Dibromofluoromethane	50	46.4	ug/L	93	77 - 127
2037-26-5	Toluene d8	50	50	ug/L	100	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.4	ug/L	97	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527434	EPA 8011	1	03/14/2014 04:30	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124939	FIELD BLANK 3	Water	03/06/2014 12:50	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/17/2014 16:59	KRH	527726

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	**t-Butanol (TBA)**	**3.75J**	**10.0**	**0.290**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	5.00	0.077	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	Naphthalene	0.176U	5.00	0.176	ug/L
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	49.7	ug/L	99	78 - 130
1868-53-7	Dibromofluoromethane	50	47.8	ug/L	96	77 - 127
2037-26-5	Toluene d8	50	50.8	ug/L	102	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	49	ug/L	98	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527434	EPA 8011	1	03/14/2014 04:47	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124940	TRIP BLANK 1	Water	03/05/2014 00:00	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/17/2014 17:23	KRH	527726

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	5.00	0.077	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	Naphthalene	0.176U	5.00	0.176	ug/L
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48.2	ug/L	96	78 - 130
1868-53-7	Dibromofluoromethane	50	49.4	ug/L	99	77 - 127
2037-26-5	Toluene d8	50	48.5	ug/L	97	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	49.6	ug/L	99	71 - 127

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124941	TRIP BLANK 2	Water	03/05/2014 00:00	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/17/2014 17:46	KRH	527726

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	t-Butanol (TBA)	0.290U	10.0	0.290	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	5.00	0.236	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	5.00	0.077	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	Naphthalene	0.176U	5.00	0.176	ug/L
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	50	ug/L	100	78 - 130
1868-53-7	Dibromofluoromethane	50	48.9	ug/L	98	77 - 127
2037-26-5	Toluene d8	50	49.7	ug/L	99	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48	ug/L	96	71 - 127

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21403124942	11A	Water	03/06/2014 09:40	03/12/2014 10:45

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/17/2014 18:09	KRH	527726

CAS#	Parameter	Result	RDL	MDL	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	5.00	0.240	ug/L
75-65-0	**t-Butanol (TBA)**	**2.92J**	**10.0**	**0.290**	**ug/L**
108-20-3	**diisopropyl Ether (DIPE)**	**0.856J**	**5.00**	**0.236**	**ug/L**
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**1.67J**	**5.00**	**0.077**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	5.00	0.234	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	100	37.6	ug/L
64-17-5	Ethanol	125U	1000	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	20.0	1.01	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	50.0	0.487	ug/L
71-43-2	Benzene	0.111U	5.00	0.111	ug/L
108-88-3	Toluene	0.122U	5.00	0.122	ug/L
100-41-4	Ethylbenzene	0.109U	5.00	0.109	ug/L
1330-20-7	Xylene (total)	0.179U	15.0	0.179	ug/L
91-20-3	Naphthalene	0.176U	5.00	0.176	ug/L
107-06-2	1,2-Dichloroethane	0.116U	5.00	0.116	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48.8	ug/L	98	78 - 130
1868-53-7	Dibromofluoromethane	50	50	ug/L	100	77 - 127
2037-26-5	Toluene d8	50	49.3	ug/L	99	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	49.1	ug/L	98	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/13/2014 07:00	527434	EPA 8011	1	03/14/2014 05:03	SMH	527544

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00630U	0.010	0.00630	ug/L

GC/MS Volatiles Quality Control Summary

Analytical Batch	527652	Client ID	MB527652			LCS527652			LCSD527652			
Prep Batch	N/A	GCAL ID	1293160			1293161			1293162			
		Sample Type	Method Blank			LCS			LCSD			
		Analytical Date	03/15/2014 21:36			03/15/2014 20:02			03/15/2014 20:25			
		Matrix	Water			Water			Water			
EPA 8260B		Units Result	ug/L RDL	Spike Added	Result	% R	Control Limits % R	Result	% R	RPD	RPD Limit
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	50.0	55.7	111	50 - 150	48.5	97	14	50
75-65-0	t-Butanol (TBA)	0.290U	0.290	50.0	58.8	118	50 - 150	51.2	102	14	50
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	50.0	56.1	112	50 - 150	50.5	101	11	50
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	100	52.0	52	50 - 150	52.1	52	0	50
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	50.0	54.5	109	50 - 150	50.5	101	8	50
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	2550	2570	101	50 - 150	2410	95	6	50
64-17-5	Ethanol	125U	125	25200	25600	102	50 - 150	24000	95	6	50
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	200	243	122	50 - 150	209	105	15	50
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	51.8	104	50 - 150	46.0	92	12	50
71-43-2	Benzene	0.111U	0.111	50.0	54.0	108	70 - 130	51.8	104	4	50
108-88-3	Toluene	0.122U	0.122	50.0	54.7	109	70 - 130	52.8	106	4	50
100-41-4	Ethylbenzene	0.109U	0.109	50.0	57.4	115	70 - 130	56.4	113	2	50
1330-20-7	Xylene (total)	0.179U	0.179	150	169	113	70 - 130	161	107	5	50
91-20-3	Naphthalene	1.09J	0.176	50.0	59.0	118	70 - 130	53.0	106	11	50
107-06-2	1,2-Dichloroethane	0.116U	0.116	50.0	53.9	108	70 - 130	50.7	101	6	50
Surrogate											
460-00-4	4-Bromofluorobenzene	49.7	99	50	49.3	99	78 - 130	51.2	102		
1868-53-7	Dibromofluoromethane	48.1	96	50	50	100	77 - 127	48.1	96		
2037-26-5	Toluene d8	50.9	102	50	49.8	100	76 - 134	50.3	101		
17060-07-0	1,2-Dichloroethane-d4	46.4	93	50	50.4	101	71 - 127	49.3	99		

Analytical Batch	527661	Client ID	MB527661			LCS527661			LCSD527661			
Prep Batch	N/A	GCAL ID	1293190			1293191			1293192			
		Sample Type	Method Blank			LCS			LCSD			
		Analytical Date	03/16/2014 12:11			03/16/2014 10:37			03/16/2014 11:01			
		Matrix	Water			Water			Water			
EPA 8260B		Units Result	ug/L RDL	Spike Added	Result	% R	Control Limits % R	Result	% R	RPD	RPD Limit
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	50.0	54.1	108	50 - 150	50.9	102	6	50
75-65-0	t-Butanol (TBA)	0.290U	0.290	50.0	54.7	109	50 - 150	56.4	113	3	50
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	50.0	52.1	104	50 - 150	51.1	102	2	50
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	100	50.9	51	50 - 150	52.1	52	2	50

GC/MS Volatiles Quality Control Summary

Analytical Batch	527661	Client ID	MB527661			LCS527661			LCSD527661			
Prep Batch	N/A	GCAL ID	1293190			1293191			1293192			
		Sample Type	Method Blank			LCS			LCSD			
		Analytical Date	03/16/2014 12:11			03/16/2014 10:37			03/16/2014 11:01			
		Matrix	Water			Water			Water			
EPA 8260B		Units	ug/L	Spike	Result	% R	Control	Result	% R	RPD	RPD
		Result	RDL	Added			Limits % R				Limit
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	50.0	51.4	103	50 - 150	52.1	104	1	50
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	2550	2360	93	50 - 150	2450	96	4	50
64-17-5	Ethanol	125U	125	25200	23500	93	50 - 150	24900	99	6	50
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	200	208	104	50 - 150	217	109	4	50
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	47.2	94	50 - 150	50.1	100	6	50
71-43-2	Benzene	0.111U	0.111	50.0	54.5	109	70 - 130	54.2	108	1	50
108-88-3	Toluene	0.122U	0.122	50.0	55.0	110	70 - 130	51.0	102	8	50
100-41-4	Ethylbenzene	0.109U	0.109	50.0	55.0	110	70 - 130	52.2	104	5	50
1330-20-7	Xylene (total)	0.179U	0.179	150	162	108	70 - 130	153	102	6	50
91-20-3	Naphthalene	0.604J	0.176	50.0	47.5	95	70 - 130	51.0	102	7	50
107-06-2	1,2-Dichloroethane	0.116U	0.116	50.0	52.0	104	70 - 130	53.0	106	2	50
Surrogate											
460-00-4	4-Bromofluorobenzene	48.4	97	50	53.1	106	78 - 130	50.9	102		
1868-53-7	Dibromofluoromethane	51	102	50	50.1	100	77 - 127	51.6	103		
2037-26-5	Toluene d8	51.2	102	50	50.6	101	76 - 134	50.2	100		
17060-07-0	1,2-Dichloroethane-d4	48.7	97	50	52.9	106	71 - 127	50.6	101		

Analytical Batch	527726	Client ID	MB527726			LCS527726			LCSD527726			
Prep Batch	N/A	GCAL ID	1293396			1293397			1293398			
		Sample Type	Method Blank			LCS			LCSD			
		Analytical Date	03/17/2014 13:03			03/17/2014 11:28			03/17/2014 11:51			
		Matrix	Water			Water			Water			
EPA 8260B		Units	ug/L	Spike	Result	% R	Control	Result	% R	RPD	RPD
		Result	RDL	Added			Limits % R				Limit
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	50.0	47.5	95	50 - 150	45.8	92	4	50
75-65-0	t-Butanol (TBA)	0.290U	0.290	50.0	52.8	106	50 - 150	53.4	107	1	50
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	50.0	49.5	99	50 - 150	47.3	95	5	50
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	50.0	42.6	85	50 - 150	39.4	79	8	50
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	50.0	50.4	101	50 - 150	46.0	92	9	50
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	2550	2800	110	50 - 150	2730	107	3	50
64-17-5	Ethanol	125U	125	25200	21500	85	50 - 150	23200	92	8	50
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	200	226	113	50 - 150	222	111	2	50

GC/MS Volatiles Quality Control Summary

Analytical Batch 527726	Client ID	MB527726			LCS527726			LCSD527726			
Prep Batch N/A	GCAL ID	1293396			1293397			1293398			
	Sample Type	Method Blank			LCS			LCSD			
	Analytical Date	03/17/2014 13:03			03/17/2014 11:28			03/17/2014 11:51			
	Matrix	Water			Water			Water			
EPA 8260B		**Units**	ug/L	**Spike**	**Result**		**Control**	**Result**			**RPD**
		Result	**RDL**	**Added**		**% R**	**Limits % R**		**% R**	**RPD**	**Limit**
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	46.8	94	50 - 150	43.9	88	6	50
71-43-2	Benzene	0.111U	0.111	50.0	44.0	88	70 - 130	38.2	76	14	50
108-88-3	Toluene	0.122U	0.122	50.0	44.6	89	70 - 130	41.8	84	6	50
100-41-4	Ethylbenzene	0.109U	0.109	50.0	46.4	93	70 - 130	42.9	86	8	50
1330-20-7	Xylene (total)	0.179U	0.179	150	137	91	70 - 130	128	85	7	50
91-20-3	Naphthalene	0.176U	0.176	50.0	44.7	89	70 - 130	46.5	93	4	50
107-06-2	1,2-Dichloroethane	0.116U	0.116	50.0	43.5	87	70 - 130	40.9	82	6	50
Surrogate											
460-00-4	4-Bromofluorobenzene	49.2	98	50	52	104	78 - 130	50.8	102		
1868-53-7	Dibromofluoromethane	47.9	96	50	47.4	95	77 - 127	48.9	98		
2037-26-5	Toluene d8	49.3	99	50	48.1	96	76 - 134	49.6	99		
17060-07-0	1,2-Dichloroethane-d4	47.1	94	50	47.6	95	71 - 127	46.9	94		

General Chromatography Quality Control Summary

Analytical Batch	527544	Client ID	MB527433			LCS527433			LCSD527433			
Prep Batch	527433	GCAL ID	1291882			1291883			1291884			
Prep Method	EPA 8011	Sample Type	Method Blank			LCS			LCSD			
		Prep Date	03/13/2014 07:00			03/13/2014 07:00			03/13/2014 07:00			
		Analytical Date	03/13/2014 15:15			03/14/2014 05:20			03/13/2014 15:52			
		Matrix	Water			Water			Water			
EPA 8011		Units	ug/L	Spike	Result		Control	Result			RPD
		Result	RDL	Added		% R	Limits % R		% R	RPD	Limit
106-93-4	1,2-Dibromoethane	0.00630U	0.00630	0.265	0.290	109	55 - 141	0.273	107	6	40

Analytical Batch	527544	Client ID	MB527434			LCS527434			LCSD527434			
Prep Batch	527434	GCAL ID	1291885			1291886			1291887			
Prep Method	EPA 8011	Sample Type	Method Blank			LCS			LCSD			
		Prep Date	03/13/2014 07:00			03/13/2014 07:00			03/13/2014 07:00			
		Analytical Date	03/13/2014 22:22			03/13/2014 22:38			03/13/2014 22:55			
		Matrix	Water			Water			Water			
EPA 8011		Units	ug/L	Spike	Result		Control	Result			RPD
		Result	RDL	Added		% R	Limits % R		% R	RPD	Limit
106-93-4	1,2-Dibromoethane	0.00630U	0.00630	0.257	0.212	83	55 - 141	0.262	102	21	40

LAB USE ONLY

Access Analytical - Chain of Custody Record

Sales Order # | PO # | Access Quote # | Project Work Order # | Laboratory ID: GCM1

Company Name: Enviro-Test Services
Report To: Terry Teate
Address: P.O. Box 2237
City: Irmo State: SC Zip: 29063
Phone: 803-413-4936 Fax:
Email:
Project ID: Broad River BP #11946
Sampled By: Terry Teate

Preservative (see codes): 1 — — — 1
Container Type (see codes): G — — — 1

Sample ID/Description	Date Collected	Time Collected	Type	Matrix	Program Area	Total # of containers	BTEX, MtBE 8260B	1,2 DCA	EDB 8011	8 SCOXygenates
MW-1	3-6-14	1408	G	GW	SHW	4	X	X	X	X
MW-3	3-5-14	920								
MW-6A	3-5-14	835								
MW-6B	3-5-14	855								
MW-7A	3-5-14	1557								
MW-8A	3-5-14	1632								
MW-8B	3-5-14	1658								
MW-9A	3-6-14	842								
MW-9B	3-6-14	859								
MW 10A	3-6-14	1352								

Client ID: 4565 - Access Analytical
SDG: 214031249
Due Date: 03/19/14

NOTES / COMMENTS
(if sample is a composite please use space below to note start/finish times & dates)

1 2 3 4 5 6 7 8 9 10

Turnaround Time:
✓ Standard
___ RUSH*
*Date Required:_____
(For rush work, results emailed/faxed by end of business day on date required)

Project Location:
✓ SC
___ NC
___ Other
(specify) _____

Relinquished By	Received By	Date (mm-dd-yy)	Time (24-hr)	Samples Rec'd on Ice	Sample Temp. Upon Receipt (°C)	
Terry L Teate	A Mart	3/10/14	1525	___Y ___N	5.7 (°C)	E22 (N/A)
Amart	Fedex	3/10/14	1700	___Y ___N	___(°C)	___(N/A)
FEDEX		3-12-14	10:45	___Y ___N	___(°C)	___(N/A)
				___Y ___N	___(°C)	___(N/A)

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Pg 1 of 5

See Reverse for Terms and Conditions

5035 7504 0123

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Yellow Copy - Access File Copy

ACCESS ANALYTICAL, INC.
7478 Carlisle Street
Irmo, SC 29063
Phone: (803) 781-4243
Fax: 781-4303
www.axs-inc.com

*Preservative Codes (place corresponding code in block above in order listed): 0 – None, 1 – HCl, 2 – HNO3, 3 – H2SO4, 4 – NaOH, 5 – Na2S2O3, 6 – Method 5035 vial w/ NaHSO4 & DI LOH, 7 – NaOH+ZnOAc, 8 – H3PO4

*Matrix Codes (place corresponding code in matrix column): GW – ground water, WW – waste water, DW – drinking water, S – soil, SL – sludge, A – air, IW – industrial waste, WO – waste oil, OT – other (specify in Comments section)

*Program Area Codes: CWA – Clean Water Act (for wastewater), SDWA – Safe Drinking Water Act (for drinking water), SHW – Solid and Hazardous Wastes (for soils, ground waters and wastewaters)

*Container Type: G – Glass, P – Plastic

LAB USE ONLY

Access Analytical - Chain of Custody Record

Sales Order # | PO # | Access Quote # | Project Work Order # | Laboratory ID: GCAL

Company Name: Enviro-Test
Report To: Terry Teate
Address: P.O. Box 22307
City: Irmo State: SC Zip: 29063
Phone: 803-413-4936 Fax:
Email:
Project ID: Broad River BP #11946
Sampled By: T. Tant TT

Preservative (see codes): 1 1 1 1
Container Type (see codes): G G 1 1

REQUESTED LAB ANALYSIS: BTEX, Naph, MTBE 8260B | 1,2-DCA EDB - 8011 | 8SC OxyGen Tes

Sample ID/Description	Date Collected	Time Collected	Type (grab or composite)	Matrix (see codes)	Program Area (see codes)	TOTAL # of containers			
10B	3614	1430	G	GW	SHW	4	X	X	X	X
11B	3614	1002								
12A	3614	1028								
12B	3614	1050								
13B	3614	1118								
14A	3614	1147								
14B	3614	1218								
15A	3614	1244								
15B	3614	1319								
17B	3514	930								

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18
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20

ACCESS ANALYTICAL, INC.
7478 Carlisle Street
Irmo, SC 29063
Phone: (803) 781-4243
Fax: 781-4303
www.axs-inc.com

*Preservative Codes (choose corresponding # in block above analysis field): 0 = None, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Na2SO3, 6 = Method 5035 set w/ NaHSO4 & 8260 7 = NaOH/ZnOAC, 8 = H3PO4

*Matrix Codes (choose corresponding code in matrix column): GW = ground water, WW = waste water, DW = drinking water, S = soil, SL = sludge, A = air, IW = industrial waste, WD = waste oil, OT = other (specify in comments section)

*Program Area Codes: CWA = Clean Water Act (for wastewaters), SDWA = Safe Drinking Water Act (for drinking waters), SHW = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

*Container Type: G = Glass, P = Plastic

NOTES / COMMENTS
(if sample is a composite please use space below to note start/finish times & dates)

Client ID: 4565 - Access Analytical
SDG: 214031249
Due Date: 03/19/14

Turnaround Time:
- ✓ Standard
- ___ RUSH*
- *Date Required: _____
- (For rush work, results emailed/faxed by end of business day on date required)

Project Location:
- ✓ SC
- ___ NC
- ___ Other
- (specify) _____

Relinquished By:	Received By:	Date (mm-dd-yy)	Time (24 HR)	Sample Temp Upon Receipt (°C)	
Terry L Teate	A Martin	3/10/14	1525	5.7 (°C)	002 (N/A)
A Mart-	Fedex	3/10/14	1700	___ (°C)	___ (N/A)
FEDEX		3-12-14	10:45	___ (°C)	___ (N/A)
				___ (°C)	___ (N/A)

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Pg 2 of 5

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Access Analytical - Chain of Custody Record

Sales Order #: _____ PO #: _____ Access Quote #: _____

Project Work Order #: _____

Laboratory ID: _____

Company Name: Enviro-Test

Report To: Terry Teate

Address: P.O. Box 2237

City: Irmo State: SC Zip: 29063

Phone: 803-413-4936 Fax:

Email:

Project ID: Broad River BP #11946

Sampled By:

Preservative (see codes): 1 1 1

Container Type (see codes): G 1 1

REQUESTED ANALYSIS: BTEX, Napth, MTBE 8260B | 1,2-DCA + EDB - 8011 | 6SCC-ox gen TLS

Sample ID/Description	Date Collected	Time Collected	Type*	Matrix*	Preserv.	Cont. # of containers				
MW-18A	3-5-14	949	G	GW	Sha	4	X	X	X	21
MW-18B	3-5-14	1015								22
MW-19A	3-5-14	1038								23
MW-19B	3-5-14	1057								24
MW-20A	3-5-14	1122								25
MW-20B	3-5-14	1151								26
MW-21A	3-5-14	1216								27
MW-21B	3-5-14	1240								28
MW-22B	3-5-14	1318								29
MW-RW-2	3-5-14	1357								30

ACCESS ANALYTICAL, INC.
7478 Carlisle Street
Irmo, SC 29063
Phone: (803) 781-4243
Fax: 781-4303
www.axs-inc.com

*Preservative Codes (use corresponding # on COC and on bottle): 0 = None, 1 = HCl, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Na2S2O3, 6 = Methanol, 7 = NaHSO4, 8 = CH3OH, 9 = NaOH/ZnOAC, 10 = H3PO4

*Matrix Codes (insert corresponding code in matrix column): GW = groundwater, WW = wastewater, DW = drinking water, SL = sludge, A = air, W = aqueous waste, WO = waste oil, OT = other (specify in comments section)

*Program Area Codes: CWA = Clean Water Act (for wastewaters), SDWA = Safe Drinking Water Act (for drinking waters), SHW = Solid and Hazardous Wastes (for all ground waters and waste samples)

*Container Type: V = Vial, G = Glass, P = Plastic

NOTES / COMMENTS
(if sample is a composite please use space below to note start/finish times & dates)

Client ID: 4565 - Access Analytical

SDG: 214031249

Due Date: 03/19/14

Turnaround Time:

- ✓ Standard
- ___ RUSH*

*Date Required: _____
(For rush work, results emailed/faxed by end of business day on date required)

Project Location:

- ✓ SC
- ___ NC
- ___ Other

(specify) _____

Relinquished By	Received By	Date (mm-dd-yy)	Time (24HR)	Sample Temp. Upon Receipt (°C)	
Terry L Teate	Amart -	3/10/14	1525	6.0 (°C)	E22 (N/A)
Amart -	Fedex	3/10/14	1700	___ (°C)	___ (N/A)
FEDEX		3-12-14	10:45	___ (°C)	___ (N/A)
				___ (°C)	___ (N/A)

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Sales Order #: | PO #: | Access Quote #: | Project Work Order #: | Laboratory ID:

Company Name: Enviro-Test
Report To: Terry Teate
Address: P.O. Box 2237
City: Irmo State: SC Zip: 29063
Phone: 803-413-4936 Fax:
Email:
Project ID: Broad River BP #11946
Sampled By: TT & TT

Preservative (*see codes): 1 1 1 1
Container Type (*see codes): G 1 1 1

REQUESTED LAB ANALYSIS: 8260B | BTEX Naph MTBE | 1,2-DCA | EDB - 8011 | 8-SC, Oxygenates

Sample ID/Description	Date Collected	Time Collected	Type (grab/comp)	Matrix (see codes)	Program Area (see codes)	Total # of containers					
RW-4	3-7-14	955	G	GW	SW	4	X	X	X	X	31
DMW-1	3-7-14	1032									32
DMW-2	3-7-14	1438									33
DMW 3	3-5-14	1519									34
Duplicate 1	3-5-14	1158									35
Duplicate 2	3-7-14	1440									36
Field Blank 1	3-5-14	1220		DI							37
Field Blank 2	3-6-14	1200		DI							38
Field Blank 3	3-7-14	1250		DI							39
Trip Blank 1	3-5-14			DI		1					40

*Preservative Codes: (place corresponding # in 8260 above analysis field) 0 - None, 1 - HCl, 2 - HNO3, 3 - H2SO4, 4 - NaOH, 5 - Na2S2O3, 6 - Method 5035 sod w/bisulfate, 7 - NaOH/ZnOAC, 8 - H3PO4

*Matrix Codes: (place corresponding code in matrix column) GW - ground water, WW - waste water, DW - drinking water, S - soil, SL - sludge, A - air, W - industrial waste, WO - waste oil, OT - other (specify in comments section)

*Program Area Codes: CWA - Clean Water Act (for wastewaters), SDWA - Safe Drinking Water Act (for drinking waters), SHW - Superfund Hazardous Wastes (for soil, ground waters and waste samples)

*Container Type: G - Glass, P - Plastic

NOTES / COMMENTS
(If sample is a composite please use space below to note start/finish times & dates)

Client ID: 4565 - Access Analytical
SDG: 214031249
Due Date: 03/19/14

Turnaround Time:
- [x] Standard
- [ ] RUSH*
- *Date Required: _____
- (For rush work, results emailed/faxed by end of business day on date required)

Project Location:
- [x] SC
- [ ] NC
- [ ] Other
- (specify) _____

Relinquished By:	Received By:	Date (mm/dd/yy)	Time (24HR)	Sample Temp. Upon Receipt (°C)	
Terry L Teate	amart	3/10/14	1525	6.0 (°C)	E22 (N/A)
amart	Fedex	3/10/14	1700	____(°C)	____(N/A)
FEDEX		3-12-14	10:45	____(°C)	____(N/A)
				____(°C)	____(N/A)

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Sales Order #

PO # ____ Access Quote # ____

Project Work Order #

Laboratory ID:

Company Name: Enviro-Test

Report To: Terry TeaTe

Address: P.O. Box 2237

City: Irmo State: SC Zip: 29063

Phone: 803-413-4936 Fax:

Email:

Project ID: Broad River BP #11946

Sampled By:

ACCESS ANALYTICAL, INC.
7478 Carlisle Street
Irmo, SC 29063
Phone: (803) 781-4243
Fax: 781-4303
www.axs-inc.com

Preservative: (see codes) | 1 | — | — | 1

Container Type: (see codes) | G | — | — | —

REQUESTED LAB ANALYSIS: BTEX, Naph, MTBE 8260B | 1,2-DCA | EDB-8011 | 8-SC-Oxygenate

*Preservative Codes (place corresponding # in block above analysis): 0 - None, 1 - HCL, 2 - HNO3, 3 - H2SO4, 4 - NaOH, 5 - Na2S2O3, 6 - Method 5035 kit w NaHSO4 & CH3OH, 7 - NaOH/ZnOAC, 8 - H3PO4

*Matrix Codes (place corresponding code in matrix column): GW - ground water, WW - waste water, DW - drinking water, S - soil, SL - sludge, A - air, IW - industrial waste, WO - waste oil, OT - other (specify in comments section)

*Program Area Codes: CWA - Clean Water Act (for wastewaters), SDWA - Safe Drinking Water Act (for drinking waters), SHW - Solid and Hazardous Wastes (for soils, ground waters and waste samples)

*Container Type: G - Glass, P - Plastic

Sample ID/Description	Date Collected	Time Collected	Type	Matrix	Program Area	Total # containers	BTEX, Naph, MTBE 8260B	1,2-DCA	EDB-8011	8-SC-Oxygenate	NOTES / COMMENTS (if sample is a composite please use space below to note start/finish times & dates)
Trip Blank 2	3-5-14		G	DI	Shw	2	X	X	X	X	41
11A	3-6-14	9:40	G	GW	Shw	4	X	X	TCT X	X	42

Client ID: 4565 - Access Analytical
SDG: 214031249
Due Date: 03/19/14

Turnaround Time:
✓ Standard
___ RUSH*
*Date Required: ________
*For rush work, results emailed/faxed by end of business day on date required)

Project Location:
✓ SC
___ NC
___ Other
(specify) ________

Relinquished By:	Received By:	Date (mm-dd-yy)	Time (24HR)	Sample Temp. Upon Receipt (°C):	
Terry L. Teate	A Mart	3/10/14	1525	6.0 (°C)	E22 (N/A)
A Mart	Fedex	3/10/14	1700	(°C)	(N/A)
FEDEX	[signature]	3-12-14	10:45	(°C)	(N/A)
				(°C)	(N/A)

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SAMPLE RECEIVING CHECKLIST

214031249

SAMPLE DELIVERY GROUP 214031249	
Client 4565 - Access Analytical	**Transport Method** FEDEX
Profile Number 79922	**Received By** Brown, Aaron D.
Line Item(s) 2 - Water BTEX//Naph/MTBE/ EDBby8260/Pb/PAH/EDB	**Receive Date(s)** 03/12/14

CHECKLIST	YES	NO	NA
Were all samples received using proper thermal preservation?	☑	☐	☐
When used, were all custody seals intact?	☑	☐	☐
Were all samples received in proper containers?	☑	☐	☐
Were all samples received using proper chemical preservation?	☑	☐	☐
Was preservative added to any container at the lab?	☐	☑	☐
Were all containers received in good condition?	☑	☐	☐
Were all VOA vials received with no head space?	☑	☐	☐
Do all sample labels match the Chain of Custody?	☑	☐	☐
Did the Chain of Custody list the sampling technician?	☑	☐	☐
Was the COC maintained i.e. all signatures, dates and time of receipt included?	☑	☐	☐

COOLERS

Airbill	Thermometer ID: E22	Temp(°C)
5035 7504 0123		5.7
		6.0

DISCREPANCIES

None

LAB PRESERVATIONS

None

NOTES

APPENDIX G
DISPOSAL MANIFEST(S)

[redacted]

Crandall

C 181510

[redacted]

Please print or type
(Form designed for use on elite (12 - pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . . | Manifest Document No. . . . | 2. Page 1 of

GENERATOR

3. Generator's Name and Mailing Address Enviro-Test

4. Generator's Phone ( )

5. Transporter 1 Company Name: Enviro-Test | 6. US EPA ID Number . . . . . | A. Transporter's Phone

7. Transporter 2 Company Name | 8. US EPA ID Number . . . . . | B. Transporter's Phone

9. Designated Facility Name and Site Address: Crandall Corporation, 100 Rich-Lex Dr, Lexington, SC 29072 | 10. US EPA ID Number . . . . . | C. Facility's Phone: (803) 791-4800

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt./Vol.
a. Non hazardous Waste Water	001		0110	
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Purge Water From Broad River BP
Sampling event Site # 11946

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name: Terry L Teate | Signature: Terry L Teate | Month 10 Day 05 Year 14

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Terry L Teate | Signature: Terry L Teate | Month 10 Day 05 Year 14

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month . Day . Year .

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in item 19.

Printed/Typed Name: Bud Grooms | Signature | Month 10 Day 05 Year 14

GENERATOR COPY

12-BLC-M5

APPENDIX K
SCDHEC CONTRACTOR CHECKLIST

Contractor Checklist

For each report submitted to the UST Management Division, the contractor will be required to verify that all data elements for the required scope of work have been provided. For items not required for the scope of work, the N/A box should be checked. For items required and not completed or provided, the No box should be checked and a thorough description of the reason must be provided.

Item #	Item	Yes	No	N/A
1	Is Facility Name, Permit #, and address provided?	☒	☐	☐
2	Is UST Owner/Operator name, address, & phone number provided?	☒	☐	☐
3	Is name, address, & phone number of current property owner provided?	☒	☐	☐
4	Is the DHEC Certified UST Site Rehabilitation Contractor's Name, Address, telephone number, and certification number provided?	☒	☐	☐
5	Is the name, address, telephone number, and certification number of the well driller that installed borings/monitoring wells provided?	☐	☐	☒
6	Is the name, address, telephone number, and certification number of the certified laboratory(ies) performing analytical analyses provided?	☒	☐	☐
7	Has the facility history been summarized?	☒	☐	☐
8	Has the regional geology and hydrogeology been described?	☒	☐	☐
9	Are the receptor survey results provided as required?	☐	☐	☒
10	Has current use of the site and adjacent land been described?	☒	☐	☐
11	Has the site-specific geology and hydrogeology been described?	☒	☐	☐
12	Has the primary soil type been described?	☒	☐	☐
13	Have field screening results been described?	☐	☐	☒
14	Has a description of the soil sample collection and preservation been detailed?	☐	☐	☒
15	Has the field screening methodology and procedure been detailed?	☐	☐	☒
16	Has the monitoring well installation and development dates been provided?	☐	☐	☒
17	Has the method of well development been detailed?	☐	☐	☒
18	Has justification been provided for the locations of the monitoring wells?	☐	☐	☒
19	Have the monitoring wells been labeled in accordance with the UST QAPP guidelines?	☐	☐	☒
20	Has the groundwater sampling methodology been detailed?	☒	☐	☐
21	Have the groundwater sampling dates and groundwater measurements been provided?	☒	☐	☐
22	Has the purging methodology been detailed?	☒	☐	☐
23	Has the volume of water purged from each well been provided along with measurements to verify that purging is complete?	☒	☐	☐
24	If free-product is present, has the thickness been provided?	☒	☐	☐
25	Does the report include a brief discussion of the assessment done and the results?	☒	☐	☐
26	Does the report include a brief discussion of the aquifer evaluation and results?	☐	☐	☒
27	Does the report include a brief discussion of the fate & transport models used?	☐	☐	☒

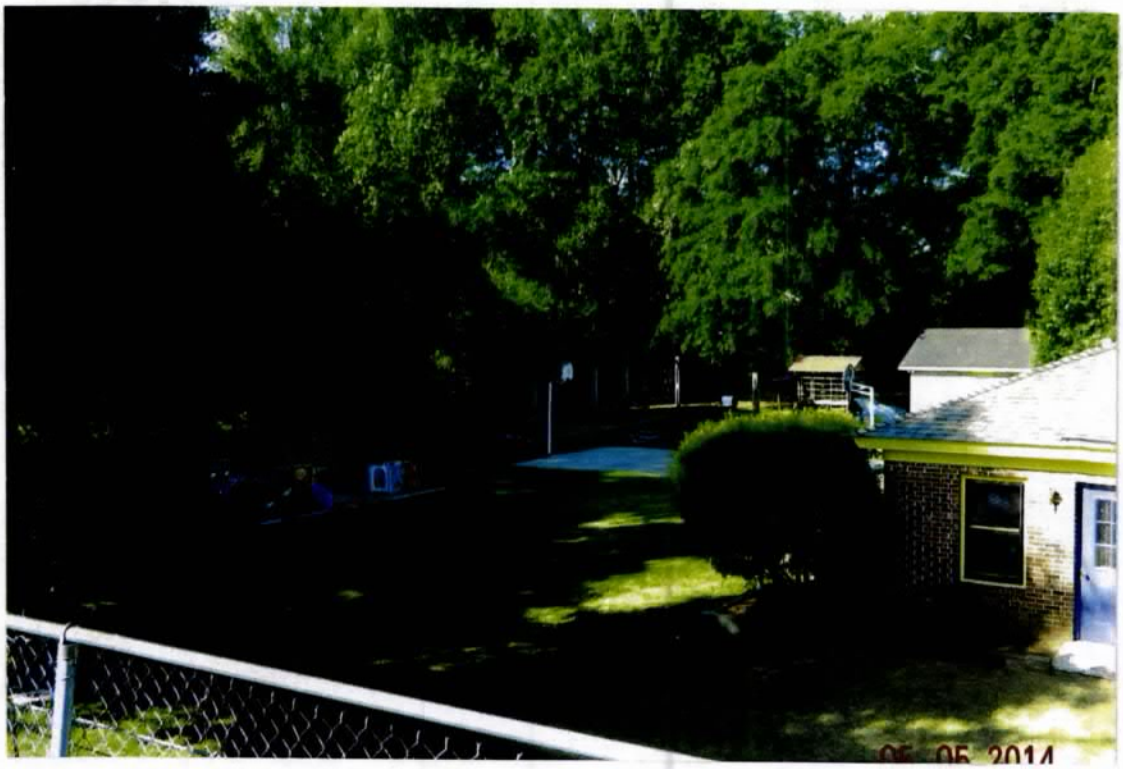
Item #	Item	Yes	No	N/A
28	Are the site-conceptual model tables included? (Tier 1 Risk Evaluation)	☐	☐	☒
29	Have the exposure pathways been analyzed? (Tier 2 Risk Evaluation)	☐	☐	☒
30	Have the SSTLs for each compound and pathway been calculated? (Tier 2 Risk Evaluation)	☐	☐	☒
31	Have recommendations for further action been provided and explained?	☐	☐	☒
32	Has the soil analytical data for the site been provided in tabular format? (Table 1)	☐	☐	☒
33	Has the potentiometric data for the site been provided in tabular format? (Table 2)	☒	☐	☐
34	Has the current and historical laboratory data been provided in tabular format?	☒	☐	☐
35	Have the aquifer characteristics been provided and summarized on the appropriate form?	☐	☐	☒
36	Have the Site conceptual model tables been included? (Tier 1 Risk Evaluation)	☐	☐	☒
37	Has the topographic map been provided with all required elements? (Figure 1)	☒	☐	☐
38	Has the site base map been provided with all required elements? (Figure 2)	☒	☐	☐
39	Have the CoC site maps been provided? (Figure 3 & Figure 4)	☒	☐	☐
40	Has the site potentiometric map been provided? (Figure 5)	☒	☐	☐
41	Have the geologic cross-sections been provided? (Figure 6)	☐	☐	☒
42	Have maps showing the predicted migration of the CoCs through time been provided? (Tier 2 Risk Evaluation)	☐	☐	☒
43	Has the site survey been provided and include all necessary elements? (Appendix A)	☐	☐	☒
44	Have the sampling logs, chain of custody forms, and the analytical data package been included with all required elements? (Appendix B)	☒	☐	☐
45	Is the laboratory performing the analyses properly certified?	☒	☐	☐
46	Has the tax map been included with all necessary elements? (Appendix C)	☐	☐	☒
47	Have the soil boring/field screening logs been provided? (Appendix D)	☐	☐	☒
48	Have the well completion logs and SCDHEC Form 1903 been provided? (Appendix E)	☐	☐	☒
49	Have the aquifer evaluation forms, data, graphs, equations, etc. been provided? (Appendix F)	☐	☐	☒
50	Have the disposal manifests been provided? (Appendix G)	☒	☐	☐
51	Has a copy of the local zoning regulations been provided? (Appendix H)	☐	☐	☒
52	Has all fate and transport modeling been provided? (Appendix I)	☐	☐	☒
53	Have copies of all access agreements obtained by the contractor been provided? (Appendix J)	☐	☐	☒
54	Has a copy of this form been attached to the final report and are explanations for any missing or incomplete data been provided?	☒	☐	☐

Explanation for missing and incomplete information?

APPENDIX L
SITE PHOTOGRAPHS

Broad River BP Site # 11946 at 4335 Broad River Rd. Columbia, SC
Existing Parking lot Damage

Broad River BP Site # 11946 Play Pals Day Care to the South of Site



Broad River BP Site # 11946 Residence and Closed Beauty Salon
East of the Site

Broad River BP Site # 11946 Mechanical Design West of the Site

Broad River BP Site # 11946 SLED Offices across Broad River Rd.
Located North of the Site

ENVIRO-TEST SERVICES

RECEIVED
MAY 06 2014
SC Department of
Health and Environmental
Control

March 22, 2014

Lee Monts, PG, Hydrogeologist
Underground Storage Tank Section
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

UST
MAY 06 2014
DIVISION
UST
DOCKETING

Re: Corrective Action Plan
Broad River Amoco
4335 Broad River Rd., Columbia
Richland County, South Carolina
UST Permit #11946; CA #46916

Dear Mr. Monts;

Enviro-Test Services, Inc. (ETS) is pleased to submit the Corrective Action Plan requested for the Broad River Amoco site located in Columbia, South Carolina. The pertinent information regarding this plan is presented on the following pages and in the attached Figures, Tables, and Appendices.

If you should have any questions regarding this plan, or should you need additional information, please do not hesitate to contact our office.

Sincerely,
Enviro-Test Services, Inc.
Contractor Certification #14

Michael L. Faris, P.G. (#2379)
Hydrogeologist

Terry L. Teate
President, Sr. Project Manager

cc: Fredrick Cecchini

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TABLE 1 - Site and Adjoining Property Owners
TABLE 2 - Site Potentiometric Data
TABLE 3 - Site Laboratory Analytical Results (Groundwater)
TABLE 4 - Site Specific Target Levels (SSTL)

FIGURES

FIGURE 1 - Site Location Map - USGS Topographic Map
FIGURE 2 - Site Base Map
FIGURE 3 - Potentiometric Map - (Shallow)
FIGURE 4 - Potentiometric Map - (Intermediate)
FIGURE 5 - Potentiometric Map - (Deep)
FIGURE 6 - Groundwater COC Map
FIGURE 7 - Typical AFVR Recovery / Extraction Well Schematic
FIGURE 8 - Typical Injection Well Schematic

APPENDICES

APPENDIX A - Guidelines for Minimization of Potential Exposure Hazard during AFVR
APPENDIX B - Hydraulic Fracturing – Schematics and Design Options
APPENDIX C - Air Sparging / Soil Vapor Extraction – Mechanical Equipment Specifications
APPENDIX D - Underground Injection Control Permit Application -Air Sparging
APPENDIX E - FMC Environmental / PeroxyChem Klosur® In-Situ Chemical Oxidation
APPENDIX F - Underground Injection Control Permit Application – In-Situ Chemical Oxidant

1.0 EXECUTIVE SUMMARY

1.1 Site Description

The subject site is located in northwest Richland County in Columbia, South Carolina and is situated on the southwest side of Broad River Road, a five-lane local thoroughfare. The site is comprised of approximately 0.85 acres and is currently owned and operated as a petroleum retail facility, convenience store and restaurant (Broad River BP). A topographic site location map is included as Figure 1.

A 1939 aerial photograph from the Richland County Geographic Information System (GIS) shows that the subject property was utilized for agriculture and was partially wooded. Broad River Road appears as a two-lane road. Information available through the Richland County Assessor's Office indicates the property was owned by B.O. Derrick in 1955 and a 1959 aerial photograph indicates that the property had apparently been developed as a petroleum retail facility. Subsequently, the property was acquired by Associated Oils of South Carolina, Inc. in February 1988, and the previous UST system (B.O. Derrick) was properly closed, as reported to the SCDHEC in 1989.

Reportedly, the closure included proper abandonment by removal of one 2,000-gallon UST and one 3,000-gallon UST. Additionally, the property redevelopment activities of 1988 and 1989 reportedly included the demolition of pre-existing structures and construction of the existing store building, dispenser islands and UST system. Subsequently, the property was acquired by Mr. Frederick N. Cecchini in June 1997, and Mr. Cecchini remains the current owner.

A tabular summary of the UST systems removed and currently in use at the site are provided on the following page.

UST #	Product	Date Installed	Currently in use (Yes or No)	If not in use, Date Removed
1	Gasoline (2,000 gallon)	(?)	No	1989
2	Gasoline (3,000 gallon)	(?)	No	1989
3	Diesel (3,000 gallon)	1989	Yes	-
4	Gasoline Unleaded (3,000 gallon)	1989	Yes	-
5	Gasoline Plus (3,000 gallon)	1989	Yes	-
6	Gasoline Plus (8,000 gallon)	1989	Yes	-
7	Gasoline Super (8,000 gallon)	1989	Yes	-
8	Kerosene (1,000 gallon)	1989	Yes	-

The subject property is bounded by Broad River Road to the northeast, then by the South Carolina Law Enforcement Division (SLED). The adjacent property to the southeast is a nail and beauty salon. The adjacent property to the southwest is commercially utilized as a nursery school and day care (Play Pal Day Care). The Play Pal Day Care facility encompasses two properties fronting Dothan Road. The subject property is bounded to the northwest by Dothan Road and a commercially utilized property beyond (MDC Associates, an apparent mechanical engineering firm). The commercial usage of the subject property and adjacent properties is expected to remain the same in the future. A summary of the ownership and tax map information for the subject property and adjoining properties is included in Table 1.

Site Geography

In general, the site is located on the west side of a topographically ridge extending southeast to northwest. Broad River Road lies at or near the crest of the apparent topographic ridge. Storm water runoff on the east side of the ridge ultimately flows into the Broad River located approximately 2 miles east of the site. On the west side of the ridge, storm water runoff flows toward Stoop Creek located approximately 1,650 feet to the southwest (near the southwest dead end of Dothan Road). From this point, Stoop Creek flows southward approximately 2.6 miles before emptying into the Saluda River.

In the general vicinity, numerous surface water features are evident on the USGS topographic map including several unnamed creeks (apparently spring fed) and several small to medium-sized surface water impoundments. In relative close proximity to the site, three surface water features are apparent on the west side of the topographic ridge and three on the east side of the topographic ridge. These surface water features are visibly apparent of Figure 1, a topographic site location map. On the west side of the topographic ridge, located approximately 1,430 feet to the northwest is a small pond with an estimated surface elevation of 265 feet MSL, approximately 1,680 feet to the southwest is the aforementioned Stoop Creek (estimated surface elevation of 233 feet MSL) and approximately 2,370 feet to the south-southeast is an apparent spring-fed creek (estimated surface elevation of 252 feet MSL at depicted point of emergence). On the east side of the topographic ridge, located approximately 1,240 feet to the northeast is an apparent spring-fed creek (estimated surface elevation of 248 feet MSL at the depicted point of emergence), approximately 1,820 feet to the east-northeast is an apparent spring-fed creek (estimated surface elevation of 230 feet MSL at the depicted point of emergence) and approximately 2,480 feet to the southeast is an apparent incised, spring-fed creek (estimated surface elevation of 235 feet MSL at the depicted point of emergence). Estimated surface elevations were obtained via the Richland County GIS utilizing a topographic option depicting contour intervals of two feet. For purposes of estimation, the depicted contours are deemed to be reasonably reliable.

According to the USGS Topographic Quadrangle Map of Columbia North, South Carolina, dated 1972 and revised in 1990, the elevation of the site is approximately 275 feet above mean sea level (MSL). The topography surrounding the site is relatively flat toward the north and east, but slopes downward toward the west/southwest. The topography in the general vicinity of the site slopes downward toward the west/southwest. A Topographic Site Location Map is included as Figure 1.

1.2 Site Assessment History

Reportedly, no soil samples were collected for analysis at the time of proper abandonment of the previous UST system as reported to SCDHEC in 1989. In December 2010, a Phase II Subsurface Investigation was performed by Partner Engineering and Science, Inc. of El Segundo, California. The Phase II investigation included the installation of four soil borings and a Temporary Monitoring Well Permit (Approval No. 4053) was obtained from the SCDHEC for the purpose of groundwater sample collection. Reportedly, the soil borings extended to terminal depths of 26 feet below land surface (BLS) utilizing direct push penetration technology with continuous soil sample collection.

Drilling refusal was encountered in all four soil borings before groundwater was encountered; therefore, no groundwater samples were collected for laboratory analysis. Eight soil samples (two from each soil boring) were submitted for laboratory analysis for Volatile Organic Compounds (VOC) and Polynuclear Aromatic Hydrocarbons (PAH). The laboratory analytical results indicated the detection of various VOC and PAH chemical compounds at concentrations deemed reportable to the SCDHEC.

An Initial Groundwater Assessment (IGWA) was completed by Enviro-Test Services, Inc. during January, 2011 and an IGWA report was submitted on February 4, 2011. On January 20, 2011, the soil boring for monitoring well MW-1 was installed. The soil sample from the 10 to 15 feet sampling interval yielded the highest PID reading of 1,782 ppm and accordingly was submitted for laboratory analysis for BTEX, MTBE, naphthalene, PAH and lead. Moderately elevated concentrations of toluene, ethylbenzene, xylenes and naphthalene were detected in the soil sample. Saturated sediments were encountered at the depth interval of 35 to 40 feet below grade level (BGL). As such, monitoring well MW-1 was installed to a depth of 40 feet BGL and was screened from 40 to 20 feet BGL.

On January 21, 2011, a groundwater sample was collected from monitoring well MW-1 and laboratory analysis for BTEX, naphthalene, MTBE, PAH and lead was performed. The depth to groundwater in monitoring well MW-1 was measured from the top-of-casing to be 20.92 feet. The groundwater sample yielded COC concentrations as follows: benzene (929 ug/l), toluene (10,300 ug/l), ethylbenzene (684 ug/l), MTBE (243 ug/l) and naphthalene (922 ug/l).

Following review of the IGWA report, the SCDHEC requested a Tier I Assessment in correspondence dated February 7, 2011. Field activities for the Tier I Assessment were commenced on February 24 and 25, 2011 with the completion of soil borings SB-1 through SB-9. Laboratory analysis of soil samples for BTEX, MTBE and PAH yielded elevated concentrations of benzene and naphthalene above RBSL in soil borings SB-1 (10 ft), SB-2 (5 ft), SB-3 (8 ft) and 5 (6 ft) which were installed proximal to the existing UST basin (SB-1 and SB-2) and product pipeline/dispenser islands (SB-3 and SB-5).

Monitoring wells MW-2, MW-3 and MW-4 were completed on February 25, 2011 and were subsequently sampled on March 5, 2011. Laboratory analysis of the groundwater samples yielded concentrations of benzene as follows: MW-1 (1,760 ug/l), MW-2 (1,650 ug/l), MW-3 (9.93 ug/l) and MW-4 (1,830 ug/l). Additionally, concentrations of MTBE were also detected in wells MW-2 (3,420 ug/l) and MW-4 (3,100 ug/l). Naphthalene by EPA method 8260 was detected in wells MW-1 (4,070J ug/l), MW-2 (462J ug/l) and MW-4 (598 ug/l). Also, elevated concentrations of toluene were detected in wells MW-1 (16,400 ug/l) and MW-2 (3,230 ug/l) and ethylbenzene in wells MW-1 (1,270 ug/l) and MW-4 (1,270 ug/l). A Tier I Assessment Report was submitted to SCDHEC on April 8, 2011.

Subsequent to review of the Tier I Assessment Report, the Technical Project Manager and Section Manager, as applicable, expressed concern regarding the depth of the screened interval of each monitoring well in relation to the measured groundwater levels due to the fact that none of the monitoring wells were bracketing the water table of the site surficial aquifer.

Enviro-Test Services, Inc. stated that during soil boring and monitoring well installations no saturated sediments were encountered until the 35 to 40-ft depth interval of drilling at each well location; therefore, the monitoring wells were installed at depths somewhat deeper than preferable. Also, during drilling activities for installation of monitoring well MW-4, where elevated COC's were later detected in the March 5, 2011 groundwater sample, no petroleum hydrocarbon odors or elevated PID readings were noted to be present in apparent vadose soils; however, upon encountering saturated soils at approximately 35 feet, strong odors and elevated PID readings were readily apparent.

Consequently, the Technical Project Manager decided that an additional monitoring well (MW-5) should be installed at a shallower, bracketing depth to determine the availability of groundwater for sample collection in what appeared to be unsaturated, vadose soils. Accordingly, on May 27, 2011 monitoring well MW-5 was installed to a depth of 20 feet, with a 10-ft screen at a location adjacent to the north corner of the existing convenience store building. The infiltration of groundwater was noted to be exceedingly slow; as such, groundwater was allowed to seep into the well casing for several days.

On June 3, 2011, the depth to groundwater was measured at 13.80 feet and free product (gasoline) of a degraded appearance was measured at 13.68 feet (a free product thickness of 0.12 feet). Again, on June 20, 2011, depth to the groundwater was measured at 14.05 feet and free product at 13.75 feet (a free product thickness of 0.30 feet). These findings were submitted to the DHEC Project Manager on June 20, 2011.

Based on the results of the Tier I Assessment, a Tier II was requested. The Tier II was completed in 2013, with a report dated May 28, 2013, and the horizontal and vertical extent of the contaminant plume was evaluated. This site is currently in the corrective action section of the UST Program in order to remove the free-phase product associated with the release.

1.3 Regulatory Directive

In correspondence dated February 5, 2014, Enviro-Test Services, Inc. was awarded the Corrective Action Award from the SCDHEC to perform corrective action of the above-referenced petroleum release at the Broad River Amoco site (UST Permit #11946). The site is located at 4335 Broad River Rd. in Columbia, South Carolina in Richland County. The cost agreement was issued through the authority promulgated in the South Carolina Underground Storage Tank Control Regulations, R.61-92 Part 280, and the SUPERB Site Rehabilitation and Fund Access Regulations, R.61-98. This Corrective Action Plan (CAP) has been prepared in general accordance with the SCDHEC Quality Assurance Program Plan (QAPP), dated April 2013, and the Corrective Action Solicitation (CAS) document, in which are presented the terms and conditions for incremental payment in achieving various levels of contaminant mass reduction. In the CAS document are outlined the required methodologies for calculating and reporting source reduction in regard to the assigned Site Specific Target Levels (SSTLs) for free-phase product at each compliance monitoring / recovery well location. All field activities will be conducted in compliance with the QAPP and the Annual Contractor Quality Assurance Plan (ACQAP) for Enviro-Test Services, Inc. as approved by and on record at SCDHEC.

1.4 Objective

The objective of the corrective action at the Broad River Amoco site is to prevent significant further migration and to remove measurable thickness of free-phase product that has been detected in several of the monitoring and recovery wells associated with the release such that the assigned SSTLs thicknesses (<0.01 feet) for each specified monitoring and recovery well can be successfully achieved. To this extent, a phased approach is proposed that will include several corrective action methodologies in which an initial methodology will first be employed and the results evaluated prior progressing to the next proposed methodology. The evaluation of each corrective action methodology will be based on the results of quarterly monitoring of free product levels at key compliance wells. As the overall corrective action progresses, several corrective action methodologies may be employed and operated concurrently. Enviro-Test Services, Inc. understands that as a condition of corrective action plan approval and implementation, "the use of monitoring wells for injection, extraction or free-phase ·product recovery purposes is not allowed," as specified in Section B "Performance Requirements," 2. "Corrective Action Plan" of the CAS document.

1.5 Remediation Methodolody

Enviro-Test Services, Inc. intends to utilize up to five methods for free-phase product reduction, independently, in conjunction and/or as needed, to achieve successful corrective action:

1) Aggressive Fluid Vacuum Recovery (AFVR) from extraction/recovery well points;
2) Direct Excavation of source zone soils;
3) Hydraulic Fracturing of aquifer in order to aid in product extraction;
4) Soil Vapor Extraction;
5) Injection of in-situ chemical oxidant solution into multiple injection well points.

2.0 GEOLOGY / HYDROGEOLOGY

2.1 Regional

The Broad River Amoco (BP) lies within the Lower Piedmont Physiographic Provence in close proximity and northwest of the contact zone, the "fall line", with the Upper Coastal Plain Physiographic Provence. The dominant rock types of the general area are related to the Carolina Slate Belt and specifically the Precambrian to Early Cambrian, Persimmon Fork Formation which is comprised primarily of green-gray to blue-gray, moderately metamorphosed, felsic volcanic (metavolcanic) tuffs and to a lesser extent mafic metavolcanic tuffs. These rocks occur as very weathered to moderately weathered outcrops in the site study area and are most often visible at areas of excavation related to road and building construction.

In the general vicinity, the uppermost aquifer generally occurs under unconfined conditions and receives water from precipitation, which infiltrates the unsaturated surface soils and migrates downward to the saturated zone. Underlying the uppermost aquifer is the fractured bedrock aquifer in which groundwater occurs in fractures, joints and faults. The fractured bedrock aquifer is often an important water resource for rural residences and commercial and light industrial properties at areas where municipal water supply is unavailable or unfeasible. Well yields are typically 1 to 350 gpm in the crystalline and metamorphic rocks with the larger yields located in areas of intensely fractured metamorphic rocks.

2.2 Site Specific

Based on the data collected during the Tier I and Tier II Assessments, it is apparent that groundwater can be found in several stratified layers or zones at the site. The most shallow water encountered at the site was generally found between 15' - 20' below ground level. This shallow water was very slow to accumulate in the boreholes. Typically it took at least several days to over a week for the water levels to come to equilibrium. It is likely that this most shallow water is present in small volume in the sandy clayey silt due to localized recharge, perching, and soil capillarity. The soils become more clayey (a silty clay) and mostly dry beginning at approximately 25' bgl. The second layer or zone of water encountered in the subsurface was typically found at an approximate depth of 35'-40'. The water in this second water-bearing zone was under significant hydraulic pressure and immediately entered the boreholes and rose upward many feet in the boreholes/wells.

The two layers of water are clearly connected as contamination has been identified at both depths during this Tier II investigation. There appears to be an aquitard comprised of mostly dry silty clay (with a small % of sand) between the two above-described zones of water across the area of study. Because the contaminants have been identified at both depths in and near the source area, there clearly is transmissivity between the two layers. Therefore, the silty clay is not considered a true aquiclude, but is acting at least as a partially confining unit.

3.0 PROPOSED CORRECTIVE ACTION METHODOLOGY

3.1 Overview

Migration of free phase product appears to be limited based on assessment and monitoring information. Also, assessment and monitoring information suggest limitation of groundwater migration of dissolved phase constituents. Thus, reduction of the free-phase product should assure the reduction of subsurface impact.

Possible free product recovery technologies and methods were evaluated during an initial alternatives screening process. The proposed corrective action technologies and methodologies and their applicability to the site based on a review of the attributes and logistics of installation and operation, technical likelihood of success, and economic concerns are discussed below.

3.2 Aggressive Fluid Vapor Recovery (AFVR)

The remediation activities will commence with implementation of Aggressive Fluid Vapor Recovery (AFVR). The AFVR efforts will utilize a liquid-ring vacuum pump capable of maintaining a vacuum of 27-inches Hg. The AFVR methodology is a total-fluid and vapor recovery process. The attention will be focused in the area of the free-phase product identified during the Tier II Assessment. Enviro-Test Services, Inc. specifically intends to concentrate AFVR efforts on recovery wells RW-1, RW-2, RW-3, RW-4, and RW-5 as a part of this proposed corrective action methodology. Additional recovery/extraction wells (approximately 5 to 10 wells) will be installed as needed at various locations along the axis of the contaminant plume in the source area, and areas downgradient where product has been detected and/or is suspected. Enviro-Test Services, Inc. will perform AFVR until approximately 10,000 gallons of total fluid have been recovered. At that juncture, the effectiveness of the AVFR efforts will be evaluated, possibly sooner depending on recovery rate of the aquifer.

At each vacuum point a non-collapsible vacuum hose, drop tube, or stinger will be extended into the groundwater to a depth to be determined onsite. The stinger will be sealed at the top of each well with an appropriately sized rubber seal or plumbers plug.

Any additional recovery/extraction wells deemed necessary or advantageous to product removal will be constructed of 4-inch diameter, schedule 40 PVC well screen (with 0.010-inch slot openings) and casing. The wells will be designed to bracket the same water bearing formation as the existing recovery wells and are proposed to be installed to a maximum total depth of approximately 40.0 feet each, though the recovery wells may be installed to a more shallow total depth. A typical well construction schematic drawing is included as Figure 7.

- **Disposal of Recovered Soil**

Soil cuttings exhibiting contamination will be properly disposed of at Crandall Corporation, Inc. in Lexington, South Carolina and manifests documenting proper disposal will be provided to the SCDHEC.

- **Disposal of Recovered Groundwater**

The vacuum pump apparatus is equipped with a 1,500-gallon total fluid recovery tank. Recovered fluid will be properly disposed of at one of the following facilities: Crandall, Inc. in Lexington, Hydrotime in Columbia, VLS in Mauldin, and/or U.S. Water Recovery in Mt. Holly, South Carolina. Manifests documenting proper disposal will be provided to the SCDHEC as needed.

- **Air Emissions**

In order to determine the volume of non-methanogenic petroleum carbon vapor generated during AFVR activities, measurements of volatile organic vapors, air flow, temperature, and humidity will be collected from the exhaust stack at regular intervals. Air emission rates are anticipated to be "de minimus" and therefore should be below Bureau of Air Quality permitting requirements.

- **Minimization of Exposure Hazards to Onsite Personnel**

A procedural guideline designed to minimize potential exposure hazards to onsite personnel, employees of the store, and the general public during AFVR efforts is included in Appendix A.

3.3 Direct Excavation

Excavation is typically used for free-phase product recovery where free product has accumulated in a relatively small and accessible area, or where the low hydraulic conductivity of native soils makes traditional extraction methods impractical or less effective and allows excavation to and somewhat below the saturated depth possible without pumping or shoring.

The direct excavation method allows rapid removal of impact through mechanical means, with onsite or off-site treatment. To avoid generation of sludge or surface water runoff, excavation would only be conducted in the unsaturated zone unless areas for conducting filter pressing and sediment settling, possibly followed by water treatment are available. Other considerations include access and economic considerations of possible generation of large volumes of material to be treated and/or transported.

- **Disposal of Recovered Soil**

Should excavation be conducted, bulk excavated soil exhibiting contamination will be either treated onsite and placed back into the excavation pit or properly manifested, transported, and disposed of at one of several land farms such as those located in southern North Carolina, such as Soil Technologies, Inc., Oakhill Farms, or Carlisle Farms. Manifests documenting proper disposal of the tonnage will be provided to the SCDHEC should off-site transport and disposal be implemented.

3.4 Hydraulic-Fracturing to Aid in Product Extraction

Hydraulic fracturing is a technology with great potential of increasing recovery of separate phase hydrocarbons (non-aqueous phase liquids, or NAPLs). If AFVR does not appear to be extracting free-phase product at a sufficient rate, several additional recovery wells may be installed utilizing hydraulic fracturing methodologies.

The subject property is characterized by relatively low permeability clayey silts and silty clays, which likely contain macropores. These macropores where present, formed by root traces, burrows and soil fractures, readily trap NAPLs within the shallow clay soils. This trapping mechanism allows NAPLs to act as long-term sources of groundwater contamination. Hydraulic fracturing forms sand-filled lenses within the clays, effectively linking the trapped NAPL and providing a pathway for NAPL extraction. Research has demonstrated that hydraulic fracturing of shallow soils is feasible but requires the right equipment and well design.

The key to maximizing the recoverable volume of NAPL from low permeability sediments is to remove the fluid slowly to maintain lateral continuity of the NAPL.

Hydraulic fracturing is a technology that is potentially well suited for applications at NAPL sites. Hydraulic fracturing forms sand-filled lenses that can link NAPL trapped within macro- pores and pools and provide a direct pathway for fluids to reach the recovery well. Data show that, compared to conventional vertical wells, hydrofractured wells can increase NAPL recovery by an order of magnitude or greater. Fracture enhanced recovery systems can achieve quicker mass removal over a larger area with fewer wells. A conceptual model of NAPL trapping is included in Appendix B

- **Methods**

Several procedures have been adopted which make the process of creating fractures more efficient and cost effective. A schematic of the equipment and procedures employed for fracturing/recovery well installation activities is included in Appendix B. Rather than use specially constructed equipment, these procedures utilize a standard hollow stem auger drilling rig, high pressure washer, a grout mixer and related equipment readily provided by a quality environmental drilling company. The generalized procedures for creating a hydraulic fracture are as follows:

- Drill pilot borehole, identify fracture target interval (e.g., NAPL saturated zone),
- Using pressure washer, fitted with a 90 degree nozzle, notch the borehole wall at the desired fracture depth,
- Install an inflatable packer just above the notch,
- Blend biodegradable drilling mud and propant (20/40 graded sand) in the grout mixer,
- Pump mud and propant downhole under pressure,
- Monitor pressure gauge and flow rate during initiation and propagation of fracture.

Utilizing hollow stem augers can also provide additional benefits. In some cases, it is not possible to adequately seal packers placed against an extremely soft or saturated clays. Without a tight seal, a fracture may propagate up around the packer and allow the fracturing fluid to flow into the borehole above the packer. If this occurs, the augers can be effectively screwed into the clay forming a strong seal with the soils. The packer is then set inside the augers, preventing the vertical upward cross circuiting and creating a successful fracture. Several additional design options for hydraulically fractured recovery wells are included in Appendix B.

3.5 Air Sparging / Soil Vapor Extraction

Based on the evaluation of effectiveness the three previously proposed corrective action methodologies, Enviro-Test Services, Inc. proposes as the next corrective action methodology, if deemed necessary, the implementation of an Air Sparging / Soil Vapor Extraction system. The recommended corrective action system of air sparging with vapor extraction has proven potentially effective at other corrective action sites with similar geologic and contaminant characteristics. In selecting a viable corrective action method, a primary factor in achieving successful aquifer remediation is the realization that the majority of the contamination exists sorbed to the saturated soils. The detected COC in groundwater are only a symptom of the real problem. Numerous studies have been reported in the literature reporting the results of distribution studies. Felton, et. al. 1992, reports that for a petroleum spill in a sandy soil, only 0.5% of the total mass of contamination is in the ground water, 31.5% is sorbed in the unsaturated soils and 68% is sorbed to the saturated soils. Leonard, et. al. 1992, reports that for hydrocarbon solvents in sand, 5% is dissolved in groundwater, and 75% of the remaining 95% is in the saturated zone soils. These distributions are typical of hydrocarbons in shallow, aquifers.

In-situ air sparging has proven to be an effective remedial technique for removing contaminants sorbed to saturated soils. The air sparging technique enhances diffusion of the sorbed organic contaminants through a rising air mass, which is injected through well points at the base of the surficial aquifer. The injected air rises and disperses through the pore spaces of the saturated soils, whereby contaminants sorbed to the soil particles are treated with a flowing gaseous phase media. The injected air mass together with the acquired volatilized organic COC are then captured via the vapor extraction network of well points and/or horizontal trenches.

3.5.1 Air Sparging Injection Well PointsNapor Extraction Well Points

Because of the various physical features that limit access, the proposed air sparging/vapor extraction system, if implemented, is designed as several clusters of air sparge injection points with associated vapor extraction well points. Usually, vapor extraction well points are proposed at sites where the water table of the site surficial aquifer is relatively deep, such as twenty feet or more; whereas, horizontal trenches are the standard recommendation for shallower water tables. However, because of the depth of the product and static water table encountered at the, the installation vapor extraction trenches to a centrally located vacuum pump is less than practical. As such, each vapor extraction well point, if deemed necessary, will be constructed as a shallow well point approximately 20.0 feet in depth, with schedule 40 PVC wells screen and casing, or to a depth that will minimize the vacuum intake on the product / water interface.

The screen length will be approximately five to ten feet in length with 0.010-inch slot openings (Figure 7). Similarly, under the same rationale, trenching to air sparging well points from a centrally located blower unit is again not practical given the depth of the contaminant plume and the cultural and physical barriers. As such, along the axis of the contaminant plume, the "V' shaped clusters of injection wells, that may be installed for reagent source injection, may also be utilized for air sparging using a portable air sparging/vapor extraction unit system. The shallow vapor extraction wells will be installed at the overlapping intersection of the projected radii of influence (15-20 feet) of two typical air sparging injection wells arranged linearly. Approximately 8 to 10 injection wells will be located at each injection well cluster.

3.5.2 Air Sparging Injection Pressure

The injection pressure must overcome the static water column, the overburden pressure and entrance losses through the sparging points and pipe and fitting friction losses. Based on ground water elevation data, the static water column at this site estimated to be 10 to 15 feet, depending on the depth of the aquitard unit. As such, injection pressure is calculated as follows: 15 FT/2.31 PSI/FT = 6.49 PSI. This value is conservatively rounded upward to 7 PSI to assure adequate injection pressure for the duration of system operation.

3.5.3 Injection Flow Rate

Air flow rates generally vary between 3 - 10 PSI per sparge well point depending on the permeability of the soil. An air flow of 7 CFM per point will be used for equipment sizing purposes. The total air flow, therefore, will be approximately 7 CFM/point x 10 points = 70 CFM. An Underground Injection Control Permit Application is included in Appendix D.

3.5.4 Injection Radius of Influence

An injection radius of influence of approximately 15-20 feet is estimated based on an injection depth averaging 15 feet below the surface of the water table. The estimated injection radius of influence is based on previous experience at similar geologic/hydrogeologic conditions and supporting literature by Felton (et al, 1992) and Leonard (et al, 1992).

3.5.5 Air Sparge Mechanical Equipment

A model DR-823 Rotron regenerative blower will be used to supply approximately 7 cfm to each of approximately 10 sparging points. The Rotron 823 is rated to provide 135 cfm at somewhat over 7.0 psig. Ten well points each using 7 cfm each require 70 cfm, therefore the model 823 is adequate to supply each injection well cluster and up to six additional injection wells (totaling 16) can feasibly be added to each cluster. Specifications for the Rotron 823 are included in Appendix C.

3.5.6 Vacuum Extraction Mechanical Equipment

If deemed necessary, approximately 8 to 10 shallow vacuum extraction well points will be installed at each injection well cluster. A vacuum extraction well point will be installed at the overlapping intersection of two typical air sparging injection wells, arranged linearly. A Rotron model EN707 explosion proof regenerative vacuum blower will be installed to provide vacuum extraction. This model blower is rated to provide 250 cfm at 30 inches of water or 175 cfm at 75 inches of water. The blower will be optimized to provide the best combination of suction and flow rate without excessively loading down the motor. It is expected ambient air will be added to the air stream to prevent drag on the blower. Specifications for the Rotron model EN707 are included in Appendix C. The total flow rate is estimated to be 80 CFM. The discharge stack will be 6 feet at the exhaust point of the Rotron model EN707 vacuum blower.

3.6 Injection of Reagents: Sodium Persulfate, Surfactants

Based on the results of the AFVR effort and any hydraulic fracturing and / or excavation effort, the next corrective action methodology proposed for implementation, in conjunction and/or concurrently, is the injection of in-situ chemical oxidant reagents. Use of such materials after removal of the majority of free phase mass by other means can be effective as a 'polishing' technology. This methodology will likely incorporate sodium persulfate injections with a chelated iron catalyst. The sodium persulfate most likely utilized will be the Klosure® product produced by FMC Environmental Solutions / PeroxyChem and Dissolvine® E-FE-13 iron catalyst also by FMC Environmental Solutions / PeroxyChem. Detailed descriptions and MSDS sheets for each of the above listed products are included in Appendix E.

Other chemical oxidant products and/or activators or catalysts may be used in lieu of those detailed above based on available chemical efficiencies and associated costs and logistics of subsurface delivery at the time of utilization. Prior to the use of chemical oxidation products, if utilized, Enviro-Test Services will likely have soil from the site analyzed for soil oxidant demand. The natural soil oxidant demand must generally be met before a significant percentage of the remedial compound can effectively mineralize the target contaminants.

Additionally, if free-phase product remains difficult to desorb from the soil matrices, surfactants or co-solvents may be considered. These remedial compounds can act to reduce sorption effects and release significantly more product material from the subsurface soil matrix, thus, the recoverable amounts of product can be effectively increased. In the event these compounds are considered due to inadequate free product removal system performance, concurrence from the SCDHEC project manager will be sought regarding specific products and methodologies prior to implementation.

3.6.1 Reagent Source Injection Well Points

Injection well points will need to be installed as a part of the remediation effort should Enviro-Test Services deem reagent injection necessary. Approximately 10 injection well points will be incorporated into the reagent injection corrective action methodology if used. Possibly, additional injection wells will be required for installation at locations along the axis of the contaminant plume, with more numerous injection points expected for installation proximal to the source area of COC. Additional injection well points may be subsequently installed based on evaluation of effectiveness as the corrective action progresses. Along the axis of the contaminant plume, the injection wells will be installed in "V" shaped pattern including in the area of the leading edge of the free-phase product plume. Monitoring wells or recovery wells will not be used for reagent source injection if it is implemented. The injection well points will be constructed of 1 or 2-inch diameter schedule 40 PVC well and casing. The well screen will be constructed of 5 ft. to 10 ft. in length with 0.010 slot openings (Figure 8). Each well and casing will installed to approximately 5 to 10 feet below the top of the water table, depending on the depth at which the underlying aquitard is encountered. The volume of the injectate employed in the system will be based on evaluation of effectiveness as corrective action progresses. An Underground Injection Control Permit Application is included in Appendix F.

3.6.2 Technical Support

FMC Environmental Solutions / PeroxyChem, Inc. offers a preponderance of technical support and site-specific recommendations for implementation of their chemicals. They recommend that their technical office be provided with information concerning the site hydrogeologic framework and the dynamics of the contaminant plume so that a plan of implementation can be formulated based on their expertise with the chemical system. Additionally, they often recommend that a pilot system be implemented to provide an indication of the overall effectiveness of the treatment prior to any long-term agreement for application. As such, prior to implementation of the reagent source injection, technical assistance from FMC / PeroxyChem will most likely be requested. As such, the proposed implementation of reagent injection of this corrective action plan is subject to change. The SCDHEC will be notified of any change in this regard by addendum prior to any implementation.

4.0 EVALUATION OF CORRECTIVE ACTION EFFECTIVNESS

4.1 Gauging, Groundwater Sampling and Analysis

Site Specific Target Levels (SSTLs) have been assigned for monitoring wells MW-1, MW-2, MW-4, and MW-5, and recovery wells RW-1, RW-2, RW-3, RW-4, and RW-5. The SSTLs for each of the listed wells consist of reduction of measurable free-phase product to less than 0.01 feet. The SSTLs are summarized in Table 4. As the corrective action progresses, comprehensive groundwater gauging and sampling will be performed annually to provide a basis for evaluation of the effectiveness of corrective action. The groundwater samples will be analyzed for the benzene, toluene, ethylbenzene, xylenes, naphthalene, methyl tertiary butyl ether, 1,2-dichloroethane, and oxygenates. A comprehensive groundwater sampling event will be performed at the approximate anniversary date of the corrective action commencement and each anniversary thereafter for the duration of the corrective action effort as detailed in the CAS. Gauging and groundwater sample collection will be performed in accordance with the requirements outlined in the Quality Assurance Project Plan, dated April 2013, and in the approved QAPP Appendix B Contractor Addendum for the site completed by Enviro-Test Services, Inc., dated February 18, 2014.

4.1.2 Evaluation Reporting and Addenda

The results of the periodic gauging and annual groundwater sampling efforts will be utilized to evaluate the effectiveness of the proposed corrective action methodologies. The gauged product thicknesses will be compared to the assigned SSTLs to evaluate the corrective action progress. Based on the evaluation, recommendations may be formulated to increase effectiveness of the corrective action. The recommendations will be submitted to the SCDHEC as an addendum to the approved corrective action plan. Should the implemented corrective action, as approved, fall short of anticipated success, the recommendations will possibly include expansion of AFVR, direct excavation, reagent injection, and/or air sparge/soil vapor extraction with the installation of additional well points and increased application of the respective methodology. Possibly, other methodologies will be proposed.

5.0 SITE RESTORATION

Upon notification by SCDHEC that the corrective action goals have been achieved, the corrective action system including injection, recovery / extraction and monitoring wells, etc. will be removed from the site in accordance with the requirements outlined in the CAS document. All injection, extraction and monitoring wells and injection wells will be abandoned in accordance with South Carolina Well Standards and Regulations R.61-71 by a South Carolina certified driller. Additionally, the SCDHEC will be notified of any final disposal of any contaminated soil and/or groundwater.

6.0 SCHEDULE OF IMPLENTATION

Following the required public notification period, the implementation of corrective action will commence. Monitoring reports will be submitted during the course of the corrective action in accordance with the requirements outlined in the CAS. The duration of corrective action is estimated to be 30 months followed by the 6 month verification period. As such, Enviro-Test Services, Inc. estimates a 36-month (3-year) duration for the corrective action at the subject site.

7.0 PROFESSIONAL STATEMENT

As a requirement in the CAS document for corrective action at the Broad River Amoco site, 4335 Broad River Rd., Columbia, South Carolina, Richland County (UST Permit #11946), this Corrective Action Plan for the above listed site is required to be sealed by a qualified Professional Geologist or Engineer registered in the State of South Carolina. Enviro-Test Services, Inc. retained the services of Michael L. Faris (SC P.G. #2379) to prepare this Corrective Action Plan for the above referenced site based on the information contained in the Corrective Action Solicitation (CAS) document as provided by Enviro-Test Services, Inc. As a condition of being retained by Enviro-Test Services, Inc., all services rendered by Michael L. Faris in preparation of the Corrective Action Plan have been put forth in good faith and under the umbrella of insurance secured by Enviro-Test Services, Inc. for Professional Liability, as required of Enviro-Test Services, Inc. to maintain its status as a South Carolina-Certified, Class I Site Rehabilitation Contractor. As such, Michael L. Faris, P.G. is and will be held harmless concerning implementation of the Corrective Action Plan, as approved by South Carolina Department of Health and Environmental Control (SCDHEC), including all phases of implementation, and sample and data collection for which he has no direct involvement and/or knowledge. Additionally, Michael L. Faris, P.G. is and will be held harmless for any and all information reported by others including all phases of corrective action implementation, evaluation of effectiveness, and sample and data collection. Additionally, Michael L. Faris, P.G. is and will be held harmless for any deviation from the SCDHEC approved Corrective Action Plan, including implementation, recommendations for corrective action expansion, and sample and data collection, that has not received approval from the SCDHEC by addenda. No other warranty is expressed or implied.

Michael L. Faris, P.G. (SC P.G. #2379)

8.0 REFERENCES

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TABLES

Table 1 – Site and Adjoining Property Owners
Table 2 – Site Potentiometric Data
Table 3 – Site Laboratory Analytical Results (GW)
Table 4 – Site Specific Target Levels (SSTLs)

Table 1 - Site and Adjoining Property Owners
Broad River Amoco; UST Permit #11946
March 2014

Tax Map Number	Property Address	Property Owner	Owner Address	Owner City, State Zip
R06108-04-69	4335 Broad River Rd. *(SP)*	Frederick Cecchini	4335 Broad River Rd.	Columbia, SC 29210
R06108-04-68	1252 Dothan Rd.	William Ronnie & Bonnie Saville	4509 Wade St.	Columbia, SC 29210
R06108-04-67	1246 Dothan Rd.	William Ronnie & Bonnie Saville	4509 Wade St.	Columbia, SC 29210
R06108-04-26	1257 Dothan Rd.	Rice James R Jr. & Wendy S	22 Caddis Creek Ct.	Irmo, SC 29063
R06108-04-26	4403 Broad River Rd.	MDC Associates	4403 Broad River Rd.	Columbia, SC 29210
R06108-04-25	4409 Broad River Rd.	MDC Associates	4403 Broad River Rd.	Columbia, SC 29210
R06200-03-02	4430 Broad River Rd.	State of SC General Services	300 Gervais St.	Columbia, SC 29201
R06108-04-70	4313 Broad River Rd.	Herteline Lowman	4315 Broad River Rd.	Columbia, SC 29210

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and March 5 through 7, 2014

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-1	1/21/2011	40.0	20.0 - 40.0	101.84	20.92	N/A	N/A	N/A	80.92
	3/5/2011	40.0	20.0 - 40.0	101.84	14.45	N/A	N/A	N/A	87.39
	3/5/2013	40.0	20.0 - 40.0	101.84	18.62	N/A	N/A	N/A	83.22
	3/6/2014	40.0	20.0 - 40.0	101.84	15.90	N/A	N/A	N/A	85.94
MW-2	3/5/2011	28.0	18.0 - 28.0	101.13	13.50	N/A	N/A	N/A	87.63
	3/6/2013	28.0	18.0 - 28.0	101.13	17.66	16.32	1.34	16.70	84.43
	3/5/2014	28.0	18.0 - 28.0	101.13	11.57	10.15	1.42	10.53	90.60
MW-3	3/5/2011	31.0	21.0 - 31.0	101.09	13.72	N/A	N/A	N/A	87.37
	3/6/2013	31.0	21.0 - 31.0	101.09	17.94	N/A	N/A	N/A	83.15
	3/7/2014	31.0	21.0 - 31.0	101.09	11.57	N/A	N/A	N/A	89.52
MW-4	3/5/2011	25.0	15.0 - 25.0	97.02	9.15	N/A	N/A	N/A	87.87
	3/6/2013	25.0	15.0 - 25.0	97.02	12.41	10.10	2.31	10.75	86.27
	3/5/2014	25.0	15.0 - 25.0	97.02	9.74	7.50	2.24	8.10	88.92
MW-5	6/20/2011	20.0	10.0 - 20.0	101.34	14.05	13.75	0.30	13.83	87.51
	3/6/2013	20.0	10.0 - 20.0	101.34	19.63	16.80	2.83	17.59	83.75
	3/5/2014	20.0	10.0 - 20.0	101.34	15.75	8.12	7.63	10.18	91.16
MW-6A	3/6/2013	25.5	15.5 - 25.5	101.84	18.00	N/A	N/A	N/A	83.84
	3/5/2014	25.5	15.5 - 25.5	101.84	15.15	N/A	N/A	N/A	86.69
MW-6B	3/6/2013	38.5	28.5 - 38.5	101.91	18.05	N/A	N/A	N/A	83.86
	3/5/2014	38.5	28.5 - 38.5	101.91	13.30	N/A	N/A	N/A	88.61
MW-7A	3/6/2013	24.0	14.0 - 24.0	100.04	16.60	N/A	N/A	N/A	83.44
	3/5/2014	24.0	14.0 - 24.0	100.04	11.00	N/A	N/A	N/A	89.04
MW-8A	3/6/2013	23.0	13.0 - 23.0	100.45	16.84	N/A	N/A	N/A	83.61
	3/5/2014	23.0	13.0 - 23.0	100.45	12.04	N/A	N/A	N/A	88.41

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and March 5 through 7, 2014

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-8B	3/6/2013	37.5	27.5 - 37.5	100.37	16.60	N/A	N/A	N/A	83.77
	3/5/2014	37.5	27.5 - 37.5	100.37	10.45	N/A	N/A	N/A	89.92
MW-9A	3/6/2013	23.0	13.0 - 23.0	101.36	18.61	N/A	N/A	N/A	82.75
	3/6/2014	23.0	13.0 - 23.0	101.36	11.50	N/A	N/A	N/A	89.86
MW-9B	3/6/2013	31.5	21.5 - 31.5	101.38	17.60	N/A	N/A	N/A	83.78
	3/6/2014	31.5	21.5 - 31.5	101.38	11.65	N/A	N/A	N/A	89.73
MW-10A	3/6/2013	17.5	7.5 - 17.5	97.20	11.05	N/A	N/A	N/A	86.15
	3/6/2014	17.5	7.5 - 17.5	97.20	2.80	N/A	N/A	N/A	94.40
MW-10B	3/6/2013	39.0	29.0 - 39.0	97.34	13.87	N/A	N/A	N/A	83.47
	3/6/2014	39.0	29.0 - 39.0	97.34	7.54	N/A	N/A	N/A	89.80
MW-11A	3/6/2013	20.0	10.0 - 20.0	89.93	10.52	N/A	N/A	N/A	79.41
	3/6/2014	20.0	10.0 - 20.0	89.93	9.50	N/A	N/A	N/A	80.43
MW-11B	3/6/2013	35.0	29.0 - 39.0	90.26	10.30	N/A	N/A	N/A	79.96
	3/6/2014	35.0	29.0 - 39.0	90.26	9.47	N/A	N/A	N/A	80.79
MW-12A	3/6/2013	20.0	10.0 - 20.0	99.26	13.95	N/A	N/A	N/A	85.31
	3/6/2014	20.0	10.0 - 20.0	99.26	16.20	N/A	N/A	N/A	83.06
MW-12B	3/6/2013	36.5	26.5 - 36.5	99.35	16.72	N/A	N/A	N/A	82.63
	3/6/2014	36.5	26.5 - 36.5	99.35	11.87	N/A	N/A	N/A	87.48
MW-13A	3/25/2013	22.0	12.0 - 22.0	98.70	19.80	N/A	N/A	N/A	78.90
	3/5/2014	22.0	12.0 - 22.0	98.70	N/A	N/A	N/A	N/A	N/A
MW-13B	3/6/2013	33.5	23.5 - 33.5	98.69	19.88	N/A	N/A	N/A	78.81
	3/6/2014	33.5	23.5 - 33.5	98.69	16.12	N/A	N/A	N/A	82.57
MW-14A	3/6/2013	20.0	10.0 - 20.0	97.49	14.52	N/A	N/A	N/A	82.97
	3/6/2014	20.0	10.0 - 20.0	97.49	11.10	N/A	N/A	N/A	86.39
MW-14B	3/6/2013	38.5	28.5 - 38.5	97.45	17.27	N/A	N/A	N/A	80.18
	3/6/2014	38.5	28.5 - 38.5	97.45	12.45	N/A	N/A	N/A	85.00

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and March 5 through 7, 2014

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-15A	3/25/2013	17.0	7.0 - 17.0	96.87	16.01	N/A	N/A	N/A	80.86
	3/6/2014	17.0	7.0 - 17.0	96.87	15.58	N/A	N/A	N/A	81.29
MW-15B	3/6/2013	40.0	30.0 - 40.0	96.82	17.60	N/A	N/A	N/A	79.22
	3/6/2014	40.0	30.0 - 40.0	96.82	14.10	N/A	N/A	N/A	82.72
MW-16A	3/25/2013	18.0	8.0 - 18.0	95.95	16.21	N/A	N/A	N/A	79.74
	3/5/2014	18.0	8.0 - 18.0	95.95	N/A	N/A	N/A	N/A	N/A
MW-16B	3/6/2013	37.0	27.0 - 37.0	95.68	16.75	N/A	N/A	N/A	78.93
	3/5/2014	37.0	27.0 - 37.0	95.68	N/A	N/A	N/A	N/A	N/A
MW-17B	3/6/2013	39.5	29.5 - 39.5	92.69	9.05	N/A	N/A	N/A	83.64
	3/5/2014	39.5	29.5 - 39.5	92.69	6.04	N/A	N/A	N/A	86.65
MW-18A	3/6/2013	13.0	3.0 - 13.0	88.20	0.85	N/A	N/A	N/A	87.35
	3/5/2014	13.0	3.0 - 13.0	88.20	0.82	N/A	N/A	N/A	87.38
MW-18B	3/6/2013	35.0	25.0 - 35.0	88.30	1.05	N/A	N/A	N/A	87.25
	3/5/2014	35.0	25.0 - 35.0	88.30	0.78	N/A	N/A	N/A	87.52
MW-19A	3/6/2013	15.0	5.0 - 15.0	91.63	7.95	N/A	N/A	N/A	83.68
	3/5/2014	15.0	5.0 - 15.0	91.63	6.02	N/A	N/A	N/A	85.61
MW-19B	3/6/2013	34.0	24.0 - 34.0	91.69	8.35	N/A	N/A	N/A	83.34
	3/5/2014	34.0	24.0 - 34.0	91.69	7.58	N/A	N/A	N/A	84.11
MW-20A	3/6/2013	15.0	5.0 - 15.0	88.67	5.05	N/A	N/A	N/A	83.62
	3/5/2014	15.0	5.0 - 15.0	88.67	4.97	N/A	N/A	N/A	83.70
MW-20B	3/6/2013	35.0	25.0 - 35.0	88.61	4.11	N/A	N/A	N/A	84.50
	3/5/2014	35.0	25.0 - 35.0	88.61	3.62	N/A	N/A	N/A	84.99
MW-21A	3/6/2013	12.0	2.0 - 12.0	87.16	0.85	N/A	N/A	N/A	86.31
	3/5/2014	12.0	2.0 - 12.0	87.16	0.65	N/A	N/A	N/A	86.51
MW-21B	3/6/2013	35.0	25.0 - 35.0	87.23	1.35	N/A	N/A	N/A	85.88
	3/5/2014	35.0	25.0 - 35.0	87.23	0.85	N/A	N/A	N/A	86.38

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and March 5 through 7, 2014

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-22B	3/6/2013	35.0	25.0 - 35.0	87.40	2.10	N/A	N/A	N/A	85.30
	3/5/2014	35.0	25.0 - 35.0	87.40	1.45	N/A	N/A	N/A	85.95
RW-1	3/6/2013	40.0	20.0 - 40.0	101.21	17.26	17.11	0.15	17.15	84.06
	3/5/2014	40.0	20.0 - 40.0	101.21	15.78	9.10	6.68	10.90	90.31
RW-2	3/6/2013	40.0	20.0 - 40.0	100.96	16.96	N/A	N/A	N/A	84.00
	3/5/2014	40.0	20.0 - 40.0	100.96	10.65	N/A	N/A	N/A	90.31
RW-3	3/6/2013	41.0	21.0 - 41.0	101.44	17.41	17.36	0.05	17.37	84.07
	3/5/2014	41.0	21.0 - 41.0	101.44	10.58	10.52	0.06	10.54	90.90
RW-4	3/6/2013	40.5	20.5 - 40.5	100.83	16.73	N/A	N/A	N/A	84.10
	3/7/2014	40.5	20.5 - 40.5	100.83	10.50	N/A	N/A	N/A	90.33
RW-5	3/6/2013	38.5	18.5 - 38.5	101.62	17.64	17.58	0.06	17.6	84.02
	3/5/2014	38.5	18.5 - 38.5	101.62	10.88	10.58	0.30	10.66	90.96
DMW-1	3/6/2013	65.0	60.0 - 65.0	101.16	18.21	N/A	N/A	N/A	82.95
	3/7/2014	65.0	60.0 - 65.0	101.16	14.07	N/A	N/A	N/A	87.09
DMW-2	3/6/2013	65.0	60.0 - 65.0	92.63	9.40	N/A	N/A	N/A	83.23
	3/7/2014	65.0	60.0 - 65.0	92.63	5.94	N/A	N/A	N/A	86.69
DMW-3	3/6/2013	65.0	60.0 - 65.0	87.41	2.10	N/A	N/A	N/A	85.31
	3/5/2014	65.0	60.0 - 65.0	87.41	1.40	N/A	N/A	N/A	86.01

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 3 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5, 2011 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	N/A	5	1,000	700	10,000	25	40	5 (MCL)	0.05	15 (Action Level)
MW-1	3/5/2011	**1,760**	**18,400**	**1,270**	5,140	**4,070J**	<83.9	<121	<0.0032	**18**
	3/8/2013	**2,480**	**12,800**	**1,550**	5,650	**623**	**70.8 J**	**ND (11.6)**	ND (0.0039)	14 J
	3/6/2014	**3,080**	**35,100**	**3,130**	**13,300**	**754J**	ND(38.5)	**ND(58.1)**	ND(0.0063)	NA
MW-2	3/5/2011	**1,650**	**3,230**	422	2,190	**462J**	**3,420**	<12.1	**1.42**	<15
	3/6/2013	**1.34' Free Product**								
	3/5/2014	**1.42' Free Product**								
MW-3	3/5/2011	<15	10.4	9.52	30.6	4.74J	7.91	<0.121	<0.0032	<15
	3/8/2013	0.417 J	1.05	0.408 J	1.72 J	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/7/2014	2.04J	20.9J	2.81J	17.3J	7.44J	ND(0.770)	ND(1.16)	ND(0.0063)	NA
MW-4	3/5/2011	**1,830**	198	**1,270**	3,160	**598**	**3,100**	<12.1	<0.0032	<15
	3/6/2013	**2.31' Free Product**								
	3/5/2014	**2.24' Free Product**								
MW-5	6/20/2011	**0.30' Free Product**								
	3/6/2013	**2.83' Free Product**								
	3/5/2014	**7.63' Free Product**								
MW-6A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	13 J
	3/5/2014	ND(0.111)	0.469J	ND(0.109)	1.63J	2.43J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-6B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	**19**
	3/5/2014	0.372J	2.96J	2.15J	13.9J	13.1	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-7A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	1.06J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-8A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	6.8 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5, 2011 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	N/A	5	1,000	700	10,000	25	40	5 (MCL)	0.05	15 (Action Level)
MW-8B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-9A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.62	0.642 J	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.21J	0.667J	ND(0.0063)	NA
MW-9B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.79	0.675 J	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.51J	0.668J	ND(0.0063)	NA
MW-10A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-10B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-11A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.00	ND (0.116)	ND (0.0039)	11 J
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.67J	ND(0.116)	ND(0.0063)	NA
MW-11B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.12	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	0.940J	ND(0.116)	ND(0.0063)	NA
MW-12A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.486J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-12B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.359J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-13A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	7.8 J
	3/5/2014	Insufficient Water								
MW-13B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.322J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-14A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.329J	ND(0.077)	ND(0.116)	ND(0.0063)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5, 2011 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	N/A	5	1,000	700	10,000	25	40	5 (MCL)	0.05	15 (Action Level)
MW-14B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.277J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-15A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	5.3 J
	3/6/2014	ND(0.111)	ND(0.122)	0.166J	0.893J	0.454J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-15B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-16A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	**35**
	3/5/2014	Abandoned								
MW-16B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	Abandoned								
MW-17B	3/6/2013	**6.58**	2.47	1.1 J	3.87 J	ND (0.352	**244**	ND (0.232)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(1.11)	3.27J	ND(1.09)	9.61J	12.8J	**420**	ND(1.16)	ND(0.0063)	NA
MW-18A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.42	ND (0.116)	ND (0.0039)	**590**
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.363J	2.82J	ND(0.116)	ND(0.0063)	NA
MW-18B	3/6/2013	ND (0.111)	0.459 J	ND (0.109)	2.03 J	ND (0.176)	0.841 J	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.225J	0.416J	ND(0.116)	ND(0.0063)	NA
MW-19A	3/6/2013	0.566 J	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	1.97J	1.87J	0.941J	6.10J	3.67J	0.644J	ND(0.116)	ND(0.0063)	NA
MW-19B	3/6/2013	0.253 J	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	0.329J	0.349J	0.123J	1.07J	1.33J	1.11J	ND(0.116)	ND(0.0063)	NA
MW-20A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.15	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	0.991J	0.505J	2.92J	3.50J	0.526J	ND(0.116)	ND(0.0063)	NA
MW-20B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.25	ND (0.116)	ND (0.0039)	8.77 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.492J	18.1	ND(0.116)	ND(0.0063)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5, 2011 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-21A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	12 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-21B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.34	ND (0.116)	ND (0.0039)	6.8 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	5.75	ND(0.116)	ND(0.0063)	NA
MW-22B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.83	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	2.64J	ND(0.116)	ND(0.0063)	NA
RW-1	3/6/2013	**0.15' Free Product**								
	3/5/2014	**6.68' Free Product**								
RW-2	3/8/2013	**9,420**	**12,800**	**2,030**	**11,000**	**565 J**	**9100**	**224 J**	**1.65**	ND (3.8)
	3/5/2014	**11,000**	**18,500**	**1,580**	9,850	**299J**	**26,900**	**58.1J**	ND(0.0063)	NA
RW-3	3/6/2013	**0.05' Free Product**								
	3/5/2014	**0.06' Free Product**								
RW-4	3/8/2013	**3,390**	**1,730**	**977**	4,900	**210 J**	**4,460**	**ND (5.81)**	ND (0.0039)	12 J
	3/7/2014	**2,960**	**4,070**	378J	3,500	**186J**	**9,160**	**ND(11.6)**	ND(0.0063)	NA
RW-5	3/6/2013	**0.06' Free Product**								
	3/5/2014	**0.30' Free Product**								
DMW-1	3/8/2013	**507**	ND (1.22)	ND (1.09	ND (0.179)	ND (1.76)	**131**	**14.2 J**	ND (0.0039)	ND (3.8)
	3/7/2014	ND(0.111)	0.827J	ND(0.109)	1.17J	ND(0.176)	**159**	2.60J	ND(0.0063)	NA
DMW-2	3/6/2013	4.12	0.548 J	ND (0.109)	0.805 J	ND (0.176)	**153**	ND (0.116)	ND (0.0039)	ND (3.8)
	3/7/2014	0.669J	3.63J	1.90J	10.7J	13.2	**89.2**	ND(0.232)	ND(0.0063)	NA
DMW-3	3/6/2013	0.281 J	0.497 J	ND (0.109)	ND (0.179	ND (0.176)	1.76	ND (0.116)	ND (0.0039)	**120**
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.33J	ND(0.116)	ND(0.0063)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

UST # 11946, Broad River Amoco
Richland County

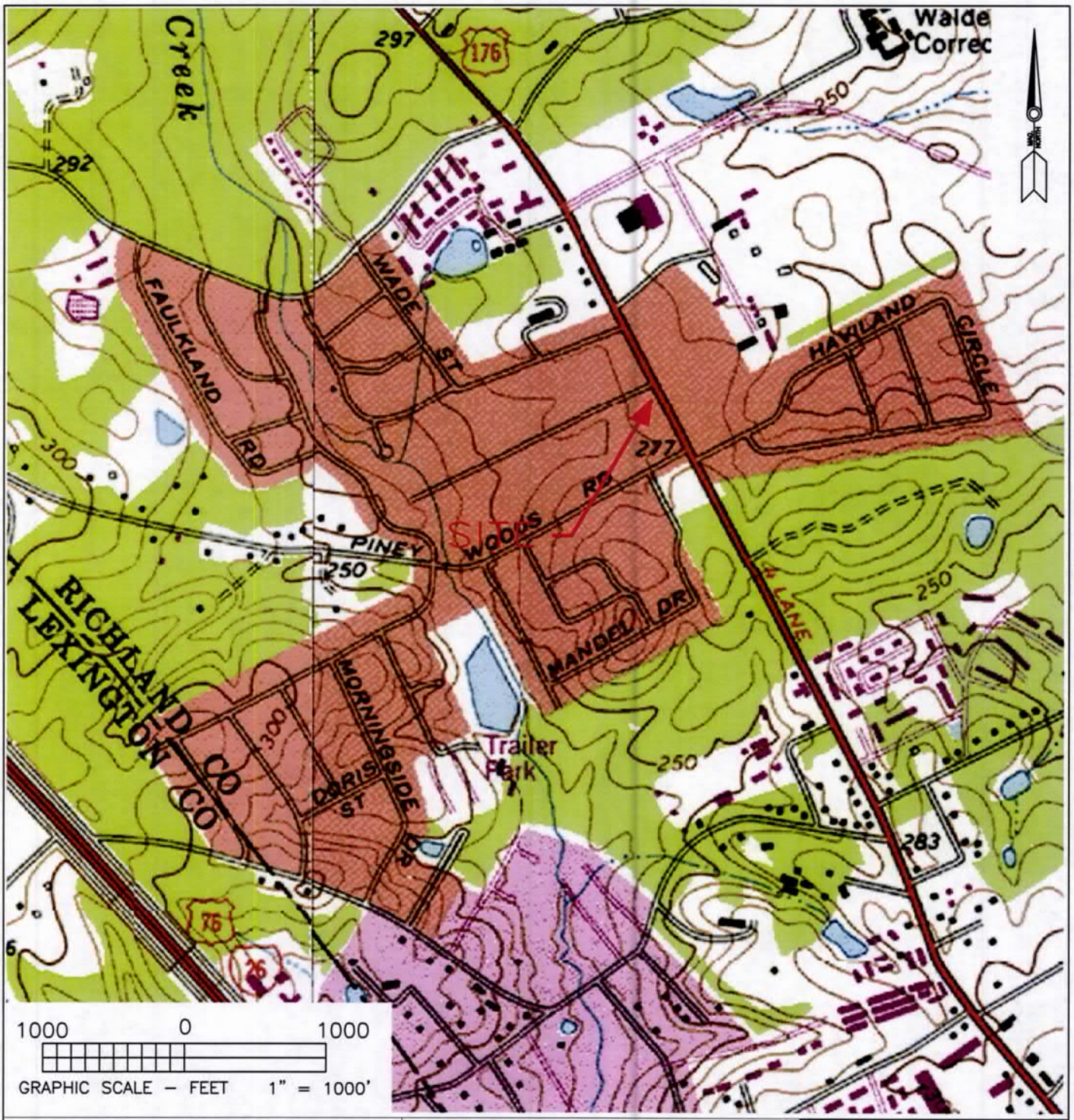
Table 4: Site-Specific Target Levels

Site-specific target levels (SSTLs) for interim payment under this solicitation.

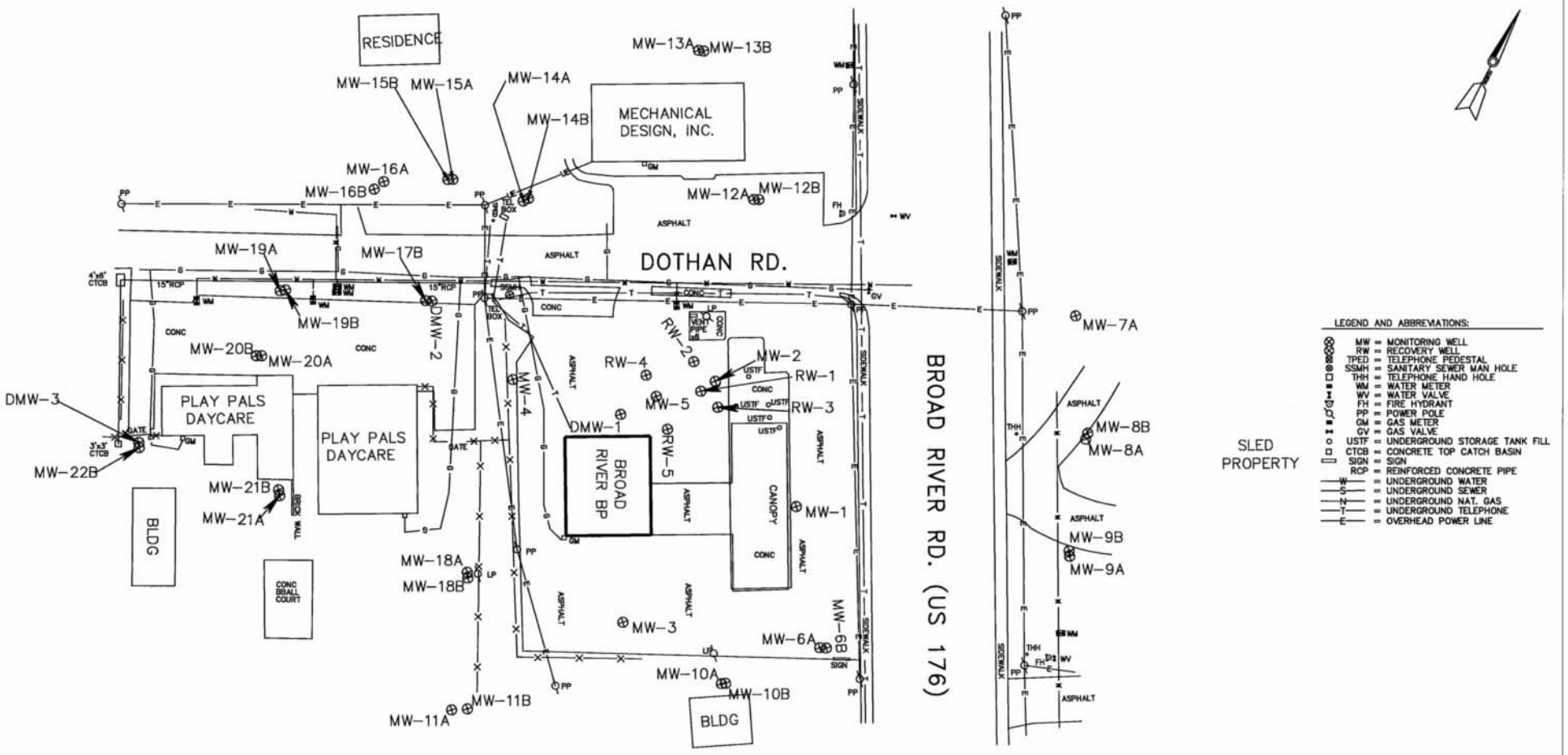
Monitoring Well	Free Product Thickness (feet)
MW-1	<0.01'
MW-2	<0.01'
MW-4	<0.01'
MW-5	<0.01'
RW-1	<0.01'
RW-2	<0.01'
RW-3	<0.01'
RW-4	<0.01'
RW-5	<0.01'
Total Initial Thickness	15.28'
Total SSTL Thickness	<0.09'
Total Initial Thickness Above SSTL	15.19'

FIGURES

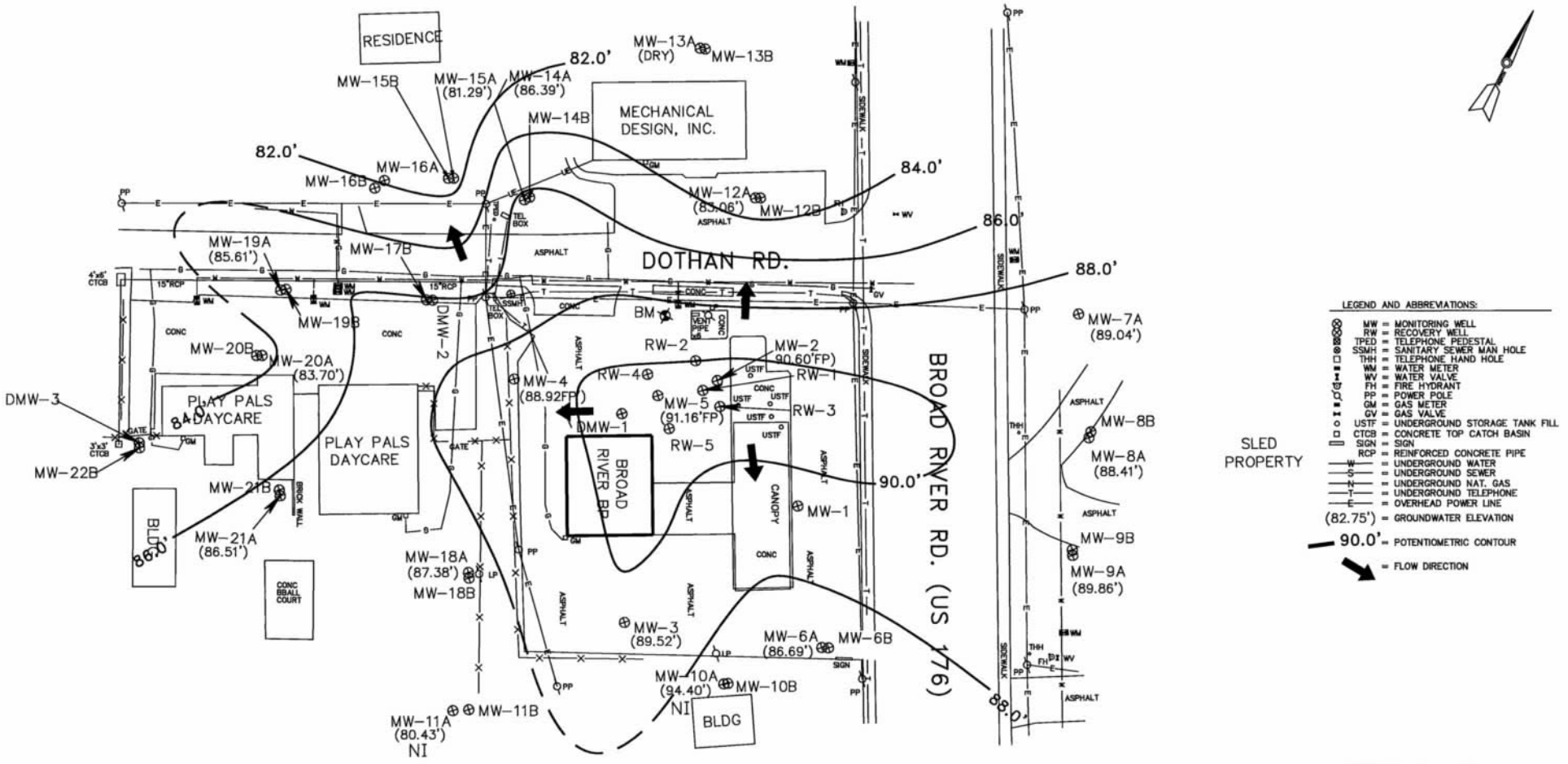
Figure 1 – Site Location Map (Topographic)
Figure 2 – Site Base Map
Figure 3 – Potentiometric Map (Shallow)
Figure 4 – Potentiometric Map (Intermediate)
Figure 5 – Potentiometric Map (Deep)
Figure 6 – Groundwater CoC Map
Figure 7 – Typical AFVR Recovery Well Schematic
Figure 8 – Typical Injection Well Schematic



PROJECT: CORRECTIVE ACTION PLAN BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: SITE LOCATION MAP	*FIGURE 1* DATE: MARCH 2014
ENVIRO-TEST SERVICES	REFERENCE: U.S.G.S. TOPOGRAPHIC MAP (7.5 MINUTE SERIES) COLUMBIA NORTH - 1972, REV. 1990 SOUTH CAROLINA QUADRANGLE	LEGEND:



PROJECT: CORRECTIVE ACTION PLAN BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: SITE BASE MAP	**FIGURE 2**
		DATE: MARCH 2014
ENVIRO-TEST SERVICES	REFERENCE:	NOTES:



PROJECT:
CORRECTIVE ACTION PLAN
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
GENERALIZED
POTENTIOMETRIC SURFACE MAP
(SHALLOW ZONE)

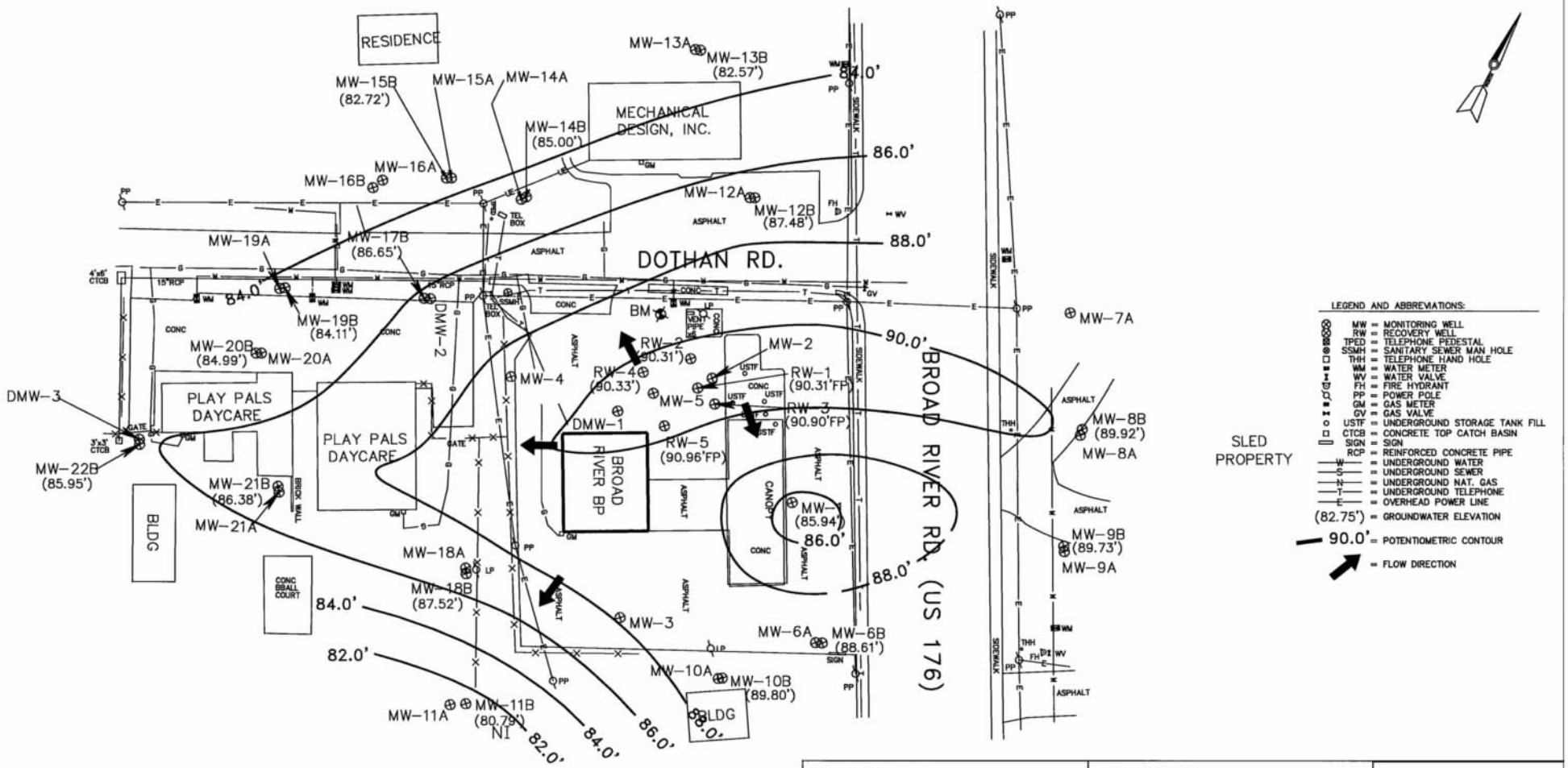
FIGURE 3

SAMPLE DATE:
MARCH 2014

ENVIRO-TEST SERVICES

REFERENCE:
GROUNDWATER ELEVATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL. CONTOURS ARE AT 2.0' INTERVALS.

NOTES:
NI = NOT INCLUDED
FP = WATER LEVEL CORRECTED FOR FREE PRODUCT



PROJECT:
CORRECTIVE ACTION PLAN
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
GENERALIZED
POTENTIOMETRIC SURFACE MAP
(INTERMEDIATE ZONE)

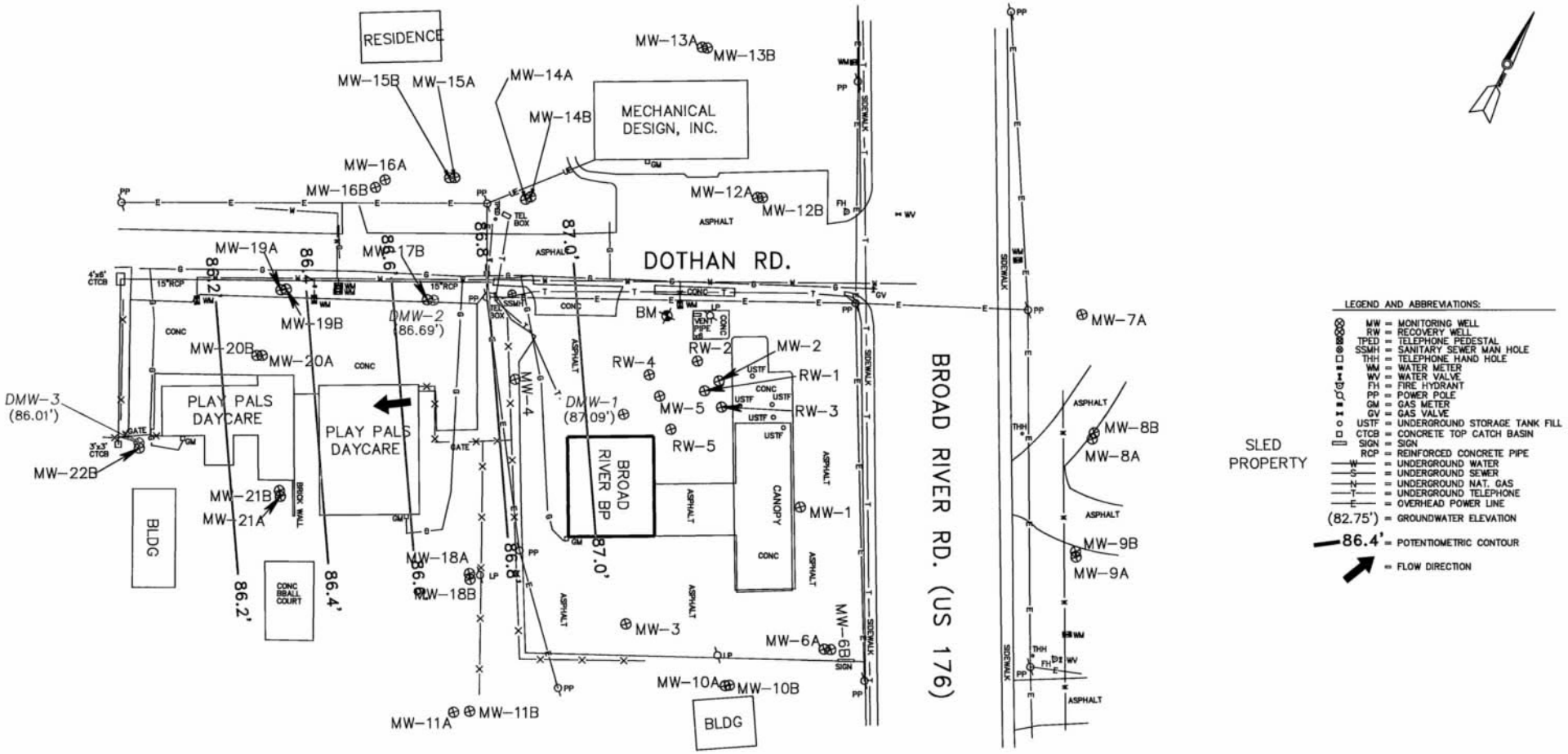
FIGURE 4

SAMPLE DATE:
MARCH 2014

ENVIRO-TEST SERVICES

REFERENCE:
GROUNDWATER ELEVATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL. CONTOURS ARE AT 2.0' INTERVALS.

NOTES:
NI = NOT INCLUDED
FP = WATER LEVEL CORRECTED FOR FREE PRODUCT



PROJECT:
CORRECTIVE ACTION PLAN
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
GENERALIZED POTENTIOMETRIC SURFACE MAP (DEEP)

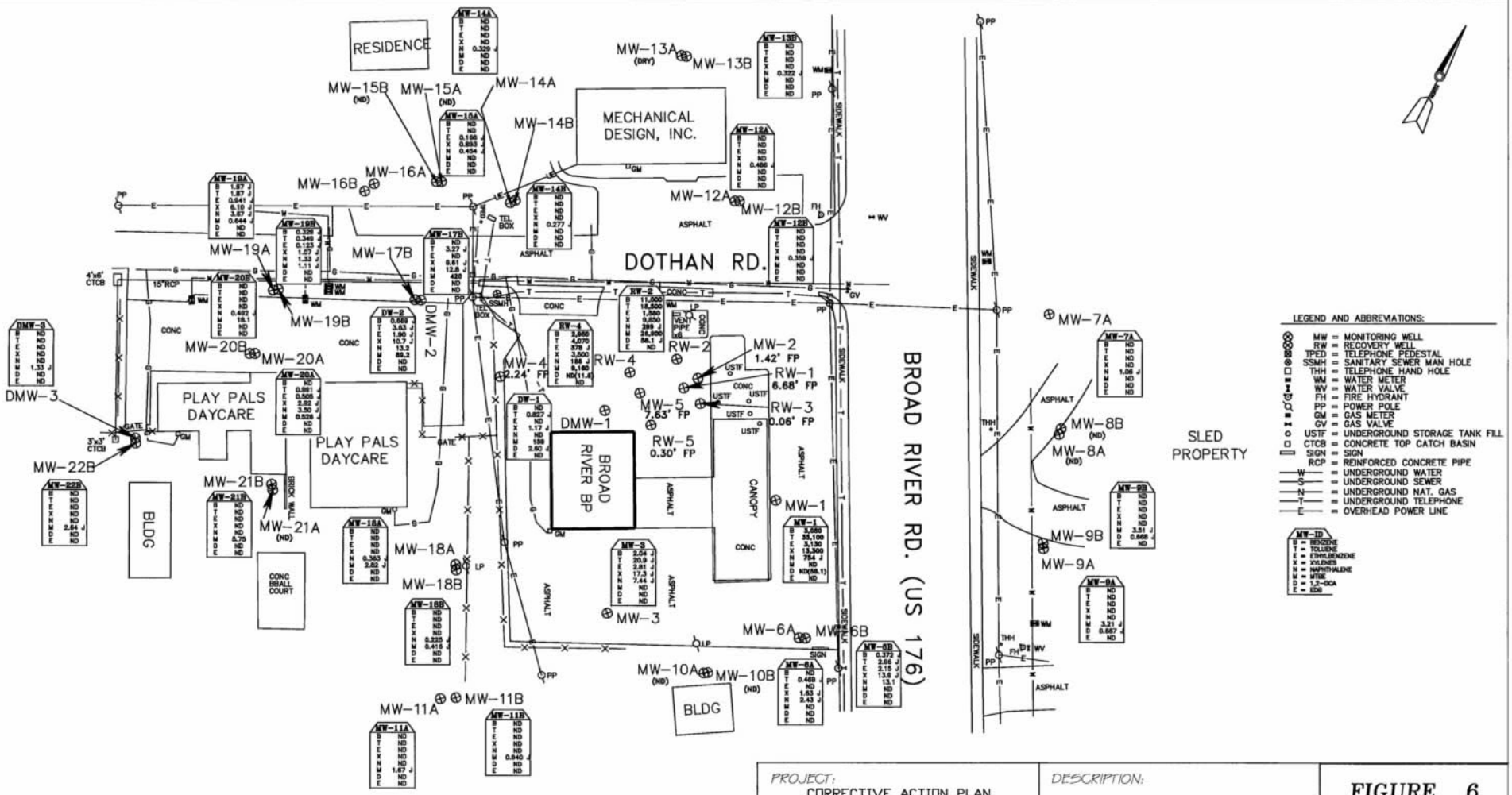
FIGURE 5

SAMPLE DATE:
MARCH 2014

ENVIRO-TEST SERVICES

REFERENCE:
GROUNDWATER ELEVATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL. CONTOURS ARE AT 0.2' INTERVALS.

NOTES:
NI = NOT INCLUDED



PROJECT:
CORRECTIVE ACTION PLAN
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
COC SITE MAP
(GROUNDWATER)

FIGURE 6

SAMPLE DATE:
MARCH 2014

ENVIRO-TEST SERVICES

REFERENCE:
BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, NAPHTHALENE, MTBE, 1,2-DCA & EDB CONCENTRATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL IN ug/L.

NOTES:
(ND) = NOT DETECTED
FP = FREE PRODUCT
(thickness in feet)

Figure 7 - Recovery Well Construction Schematic

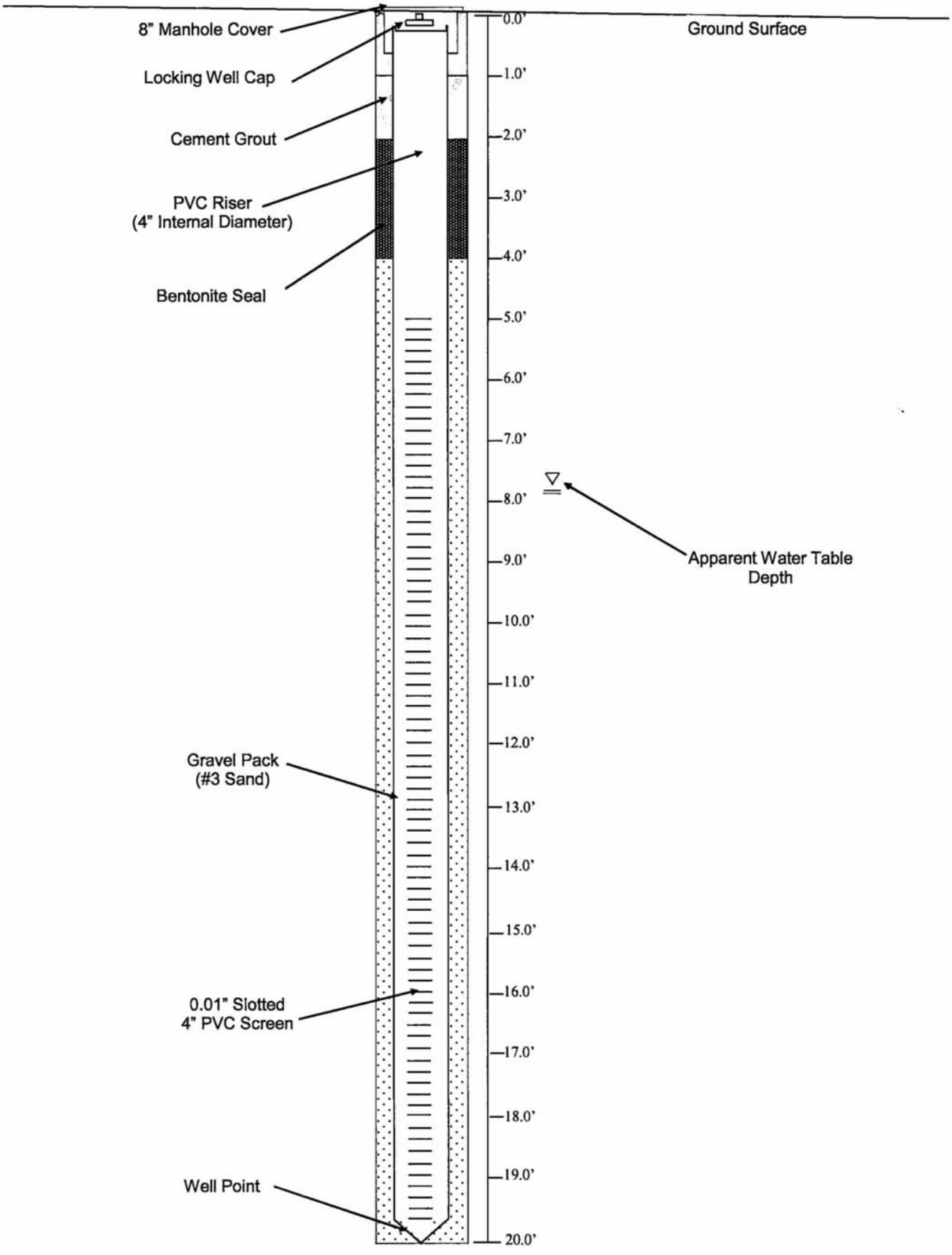
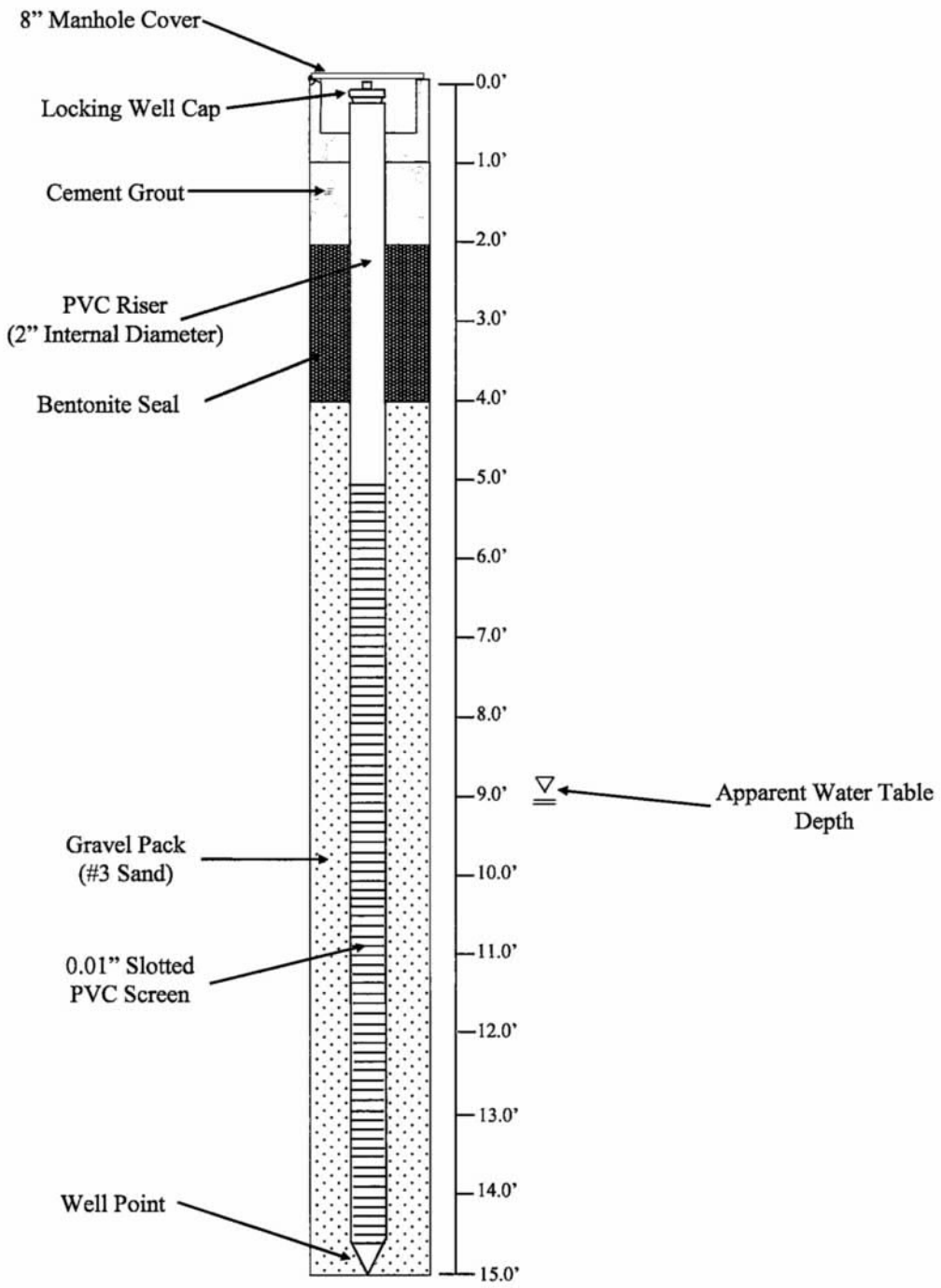


Figure 8 - Injection Well Construction Schematic



APPENDICES

A. Guidelines for Minimization of Potential Exposure Hazard during AFVR

B. Hydraulic Fracturing - Schematics and Design Options

C. Air Sparging / Soil Vapor Extraction - Mechanical Equipment Specifications

D. Underground Injection Control Permit Application - Air Sparging

E. FMC Environmental / Peroxychem Klosur® In-Situ Chemical Oxidation

F. Underground Injection Control Permit Application - In-Situ Chemical Oxidant

APPENDIX A

GUIDELINES FOR MINIMIZATION OF POTENTIAL EXPOSURE HAZARD DURING AFVR

Appendix A

Procedural Guideline for Minimization of Potential Exposure Hazard to Onsite Personnel during Aggressive Fluid Vapor Recovery (AFVR) Efforts
Broad River Amoco, UST Permit #11946
4335 Broad River Rd.; Columbia, South Carolina, Richland County

The following potential exposure hazards that Enviro-Test Services, Inc. personnel or other citizens may face during the free-phase product removal as a part of AFVR efforts, and how these potential exposure hazards will be managed are identified and described below:

Inhalation of Volatiles

A liquid ring vacuum pump will be utilized for AFVR to remove free-phase product in several recovery / extraction wells located proximal to the former and current UST basin and dispenser islands, as well as areas down gradient, at the Broad River Amoco site. The liquid vacuum pump is capable of maintaining a vacuum of up to 28-inches of Hg. Upon activation of the vacuum pump, a vacuum is created inside the 1,500-gallon fluid recovery / reservoir tank. In maintaining this vacuum, air is constantly discharged from the vacuum fluid recovery/reservoir tank through the liquid ring vacuum pump exhaust stack. As such, anyone who may venture into the area of the discharging air (within *5* feet) may be faced with the potential for inhalation of volatile organic compounds. Enviro-Test Services, Inc. personnel will be required to stay at least eight feet away from the discharging air while performing the AFVR event. The eight-foot radius exclusion area will be identified with orange safety cones and if necessary yellow caution tape. Enviro-Test personnel who enter the exclusion area for more than 5 minutes will be required to wear a half-face respirator equipped with appropriate chemical filtration cartridges. Enviro-Test Services, Inc. personnel will be required to enter the 8-ft radius exclusion area to activate and de-activate the vacuum pump, to periodically monitor air flow with an anemometer, temperature and humidity with a thermohygrometer, air emissions with a Photo Ionization Detector Organic Vapor Analyzer (PID/OVA), and make adjustments to the system as necessary.

Under circumstances where volatile vapors are potentially migrating to personnel or citizens outside of the exclusion zone, vapor mitigation strategies and technologies will be employed to minimize or remove the potential for exposure. The exhaust gases may be passed through vapor phase granular activated carbon vessel or through a thermal or catalytic oxidizer unit prior to being released to the atmosphere when necessary.

Dermal Contact with Volatiles

Dermal contact with dissolved volatile organic compounds may be encountered when removing by hand the 1-inch diameter PVC stinger pipe or hose from wells were free product reduction efforts are being completed or when coupling and uncoupling the vacuum pump clamps and hoses, or transferring fluids to and from temporary holding tanks. Enviro-Test Services, Inc. personnel will be required to wear appropriate protective gloves of a chemical resistance level for gasoline and safety glasses or goggles while performing these work tasks.

Tripping/Rupture Hazards

During each event, flexible hoses will be coupled to the vacuum pump and will extend to each designated recovery well either singularly or by manifold to two or more wells, where applicable. As a result, one-inch, two-inch, and/or four-inch diameter vacuum hoses will be lying on the ground surface in the general work area. The hoses will be marked with orange safety cones and, if necessary, yellow caution tape in an effort to prevent tripping. Additionally, the visual cautionary efforts should prevent motorists from driving their vehicles over the hoses, which could cause a rupture. In some cases, 1-inch diameter gorilla hose will be secured between wood 2x boards to safely allow motorists to drive over the vacuum hose(s). In the event of a rupture, the liquid ring vacuum pump will be shut down immediately and the faulty hose will be replaced before resuming.

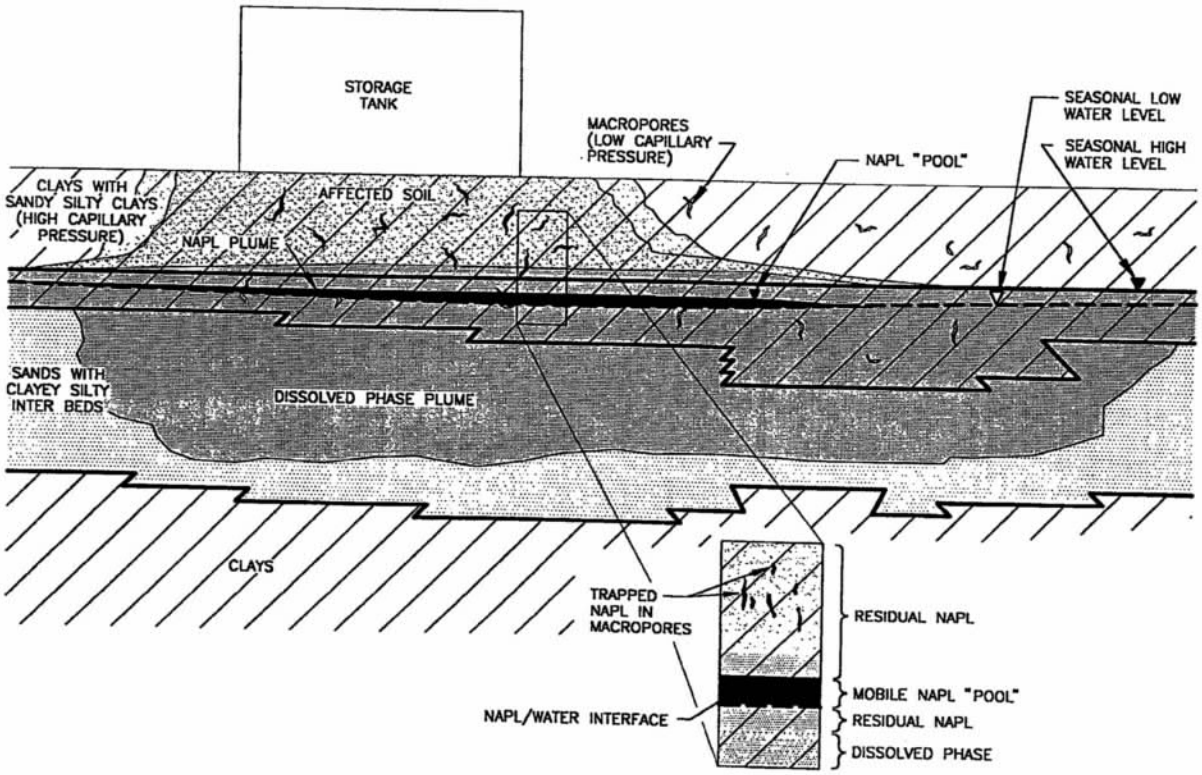
Other Citizens

Citizens other than the personnel under the employ of Enviro-Test Services, Inc. could potentially be exposed to the various hazards listed above. The visual cautionary efforts described above should prevent other citizens from coming into contact with the various hazards. Enviro-Test Services, Inc. personnel will make an effort to minimize hazards to other citizens by positioning the system truck and hoses at locations for optimum minimal exposure to other citizens. Additionally, Enviro-Test Services, Inc. personnel will be alert for any excessively curious passerby who may unknowingly put him or herself in potential harm's way. Any such citizen, or for that matter any such non-citizen, observed during an event will be politely requested to please:

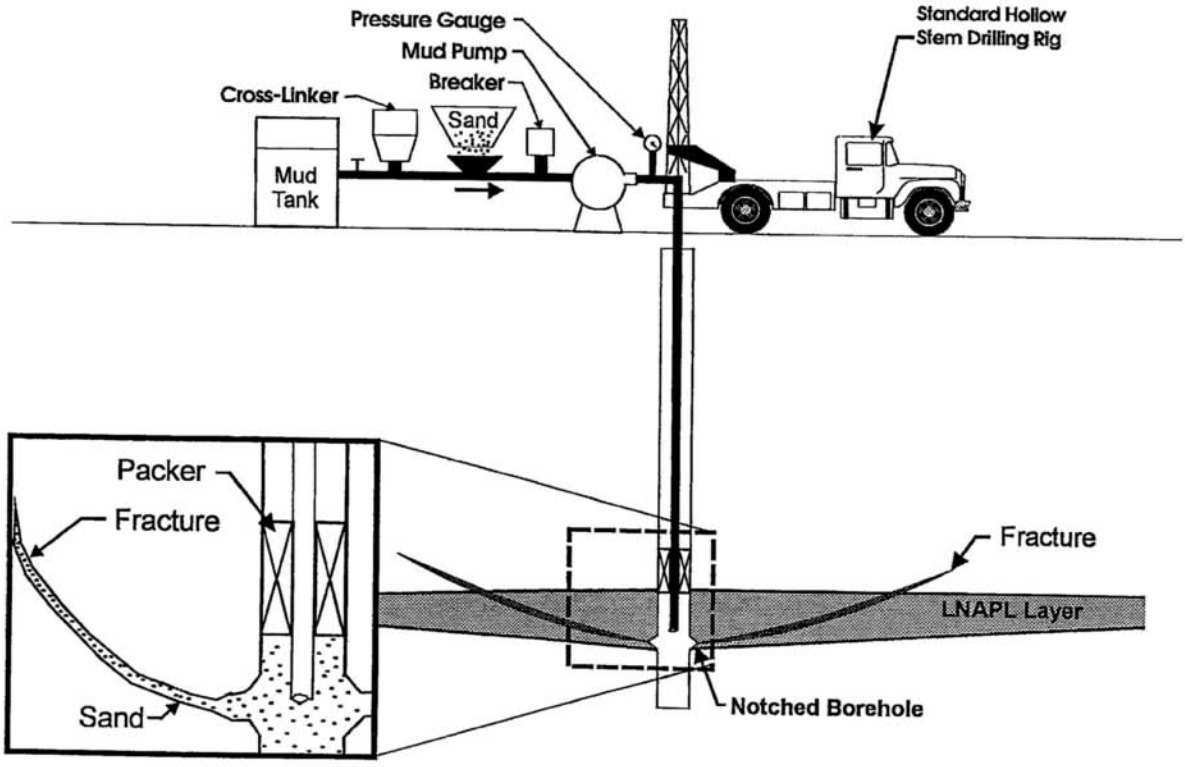
"STAND BACK ! ...Please move away from the work area!"

Signage may also be utilized as necessary to communicate the need to remain away from the exclusion area.

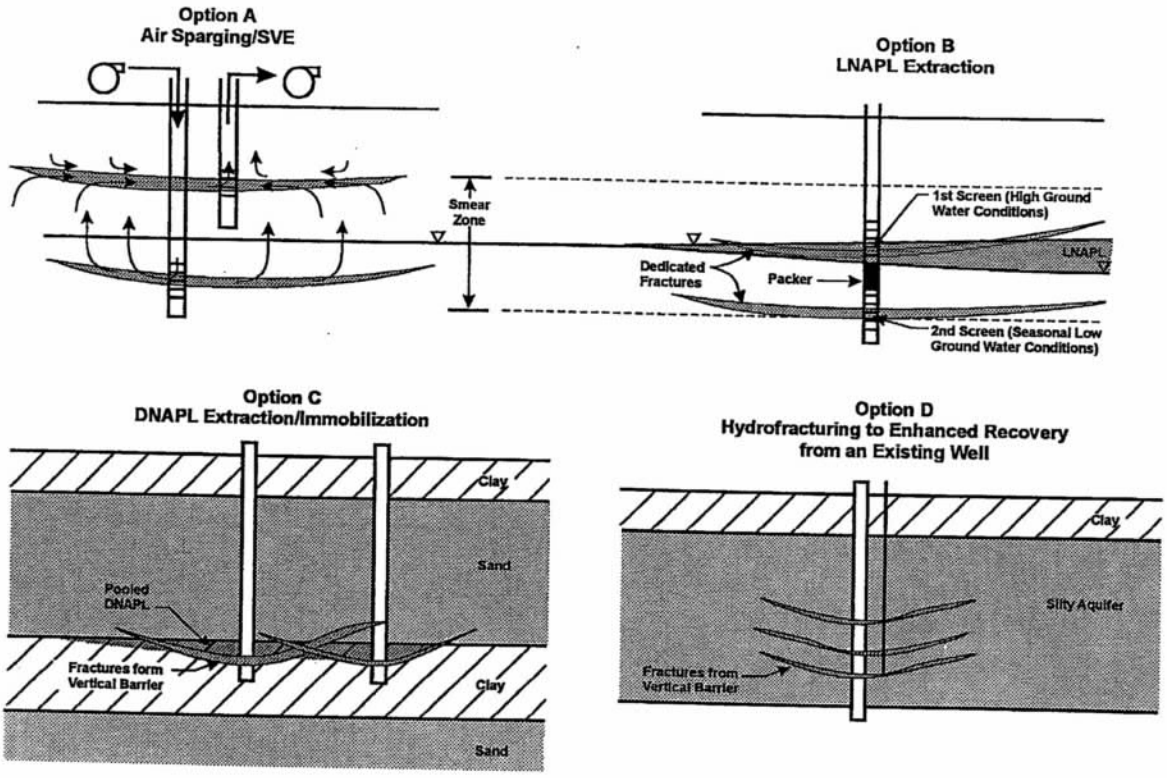
APPENDIX B
HYDRAULIC FRACTURING - SCHEMATICS AND DESIGN OPTIONS



Conceptual Model – NAPL Trapping Mechanisms



Schematic of Hydraulic Fracturing Procedure



- Design Options For Hydrofractured Wells

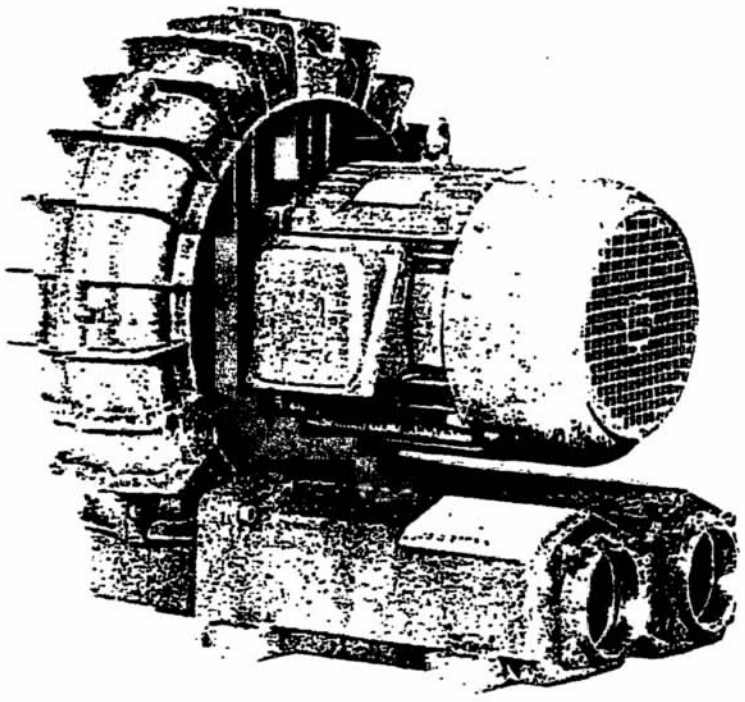
APPENDIX C

AIR SPARGING / SOIL VAPOR EXTRACTION -
MECHANICAL EQUIPMENT SPECIFICATIONS

EG&G ROTRON

DR/CP 823
High Pressure Regenerative Blower

FEATURES
- Manufactured in the USA
- CE compliant – Declaration of Conformity on file
- Maximum flow: 184 SCFM
- Maximum pressure: 250 IWG
- Maximum vacuum: 12.8" Hg
- Standard motor: 10 HP, TEFC
- Cast aluminum blower housing, dual impellers & cover; cast iron flanges (threaded)
- UL & CSA approved motor with permanently sealed ball bearings
- Inlet & outlet internal muffling
- Quiet operation within OSHA standards

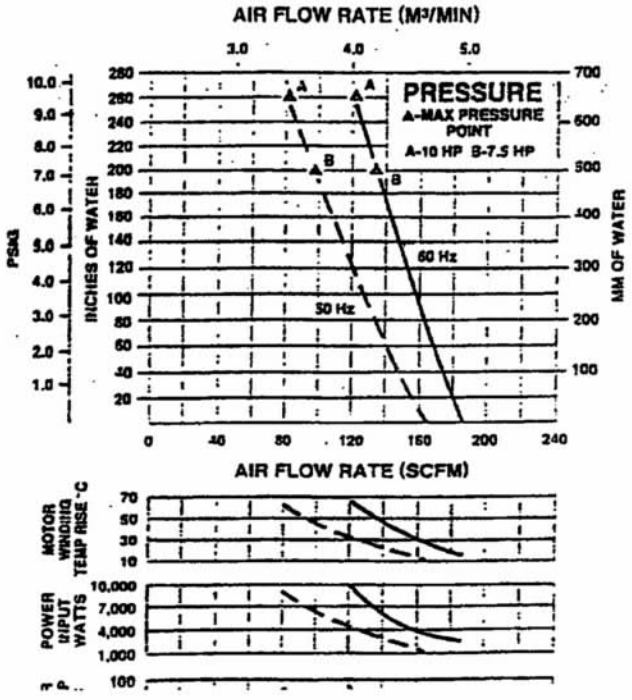


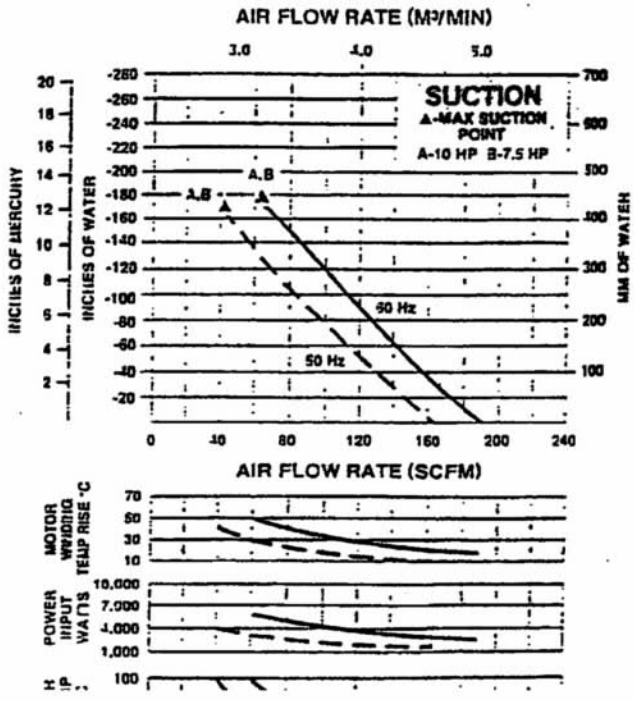
MOTOR OPTIONS
- International voltage & frequency (Hz)
- Chemical duty, high efficiency, inverter duty or industry-specific designs
- Various horsepowers for application-specific needs

BLOWER OPTIONS
- Corrosion resistant surface treatments & sealing options
- Remote drive (motorless) models
- Slip-on or face flanges for application-specific needs

ACCESSORIES (See Catalog Accessory Section)
- Flowmeters reading in SCFM
- Filters & moisture separators
- Pressure gauges, vacuum gauges & relief valves
- Switches – air flow, pressure, vacuum or temperature
- External mufflers for additional silencing
- Air knives (used on blow-off applications)

BLOWER PERFORMANCE AT STANDARD CONDITIONS





EN/CP 707
Explosion-Proof Regenerative Blower

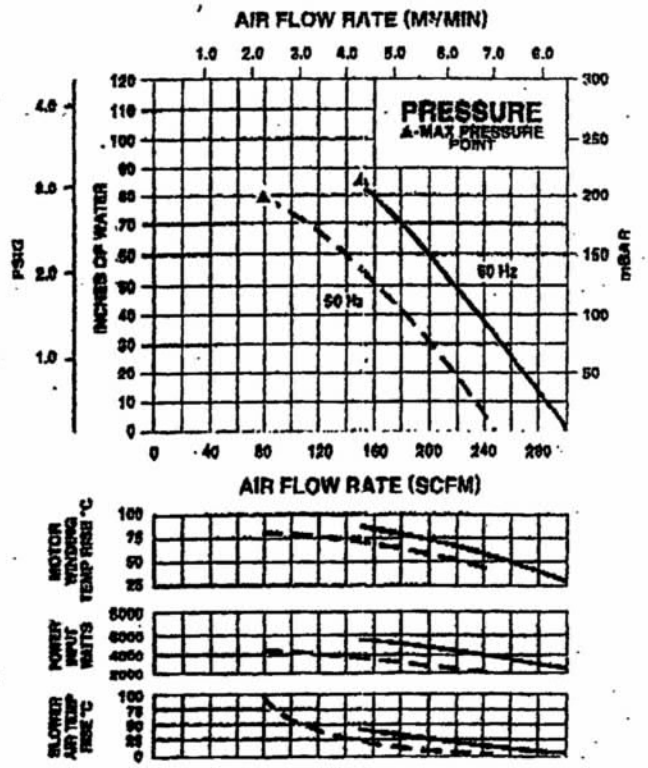
FEATURES
- Manufactured in the USA
- Maximum flow: 295 SCFM
- Maximum pressure: 85 IWG
- Maximum vacuum: 87 IWG
- Standard motor: 5.0 HP, explosion-proof
- Cast aluminum blower housing, cover, impeller & manifold; cast iron flanges (threaded); teflon lip seal
- UL & CSA approved motor with permanently sealed ball bearings for explosive gas atmospheres Class I Group D minimum
- Sealed blower assembly
- Quiet operation within OSHA standards

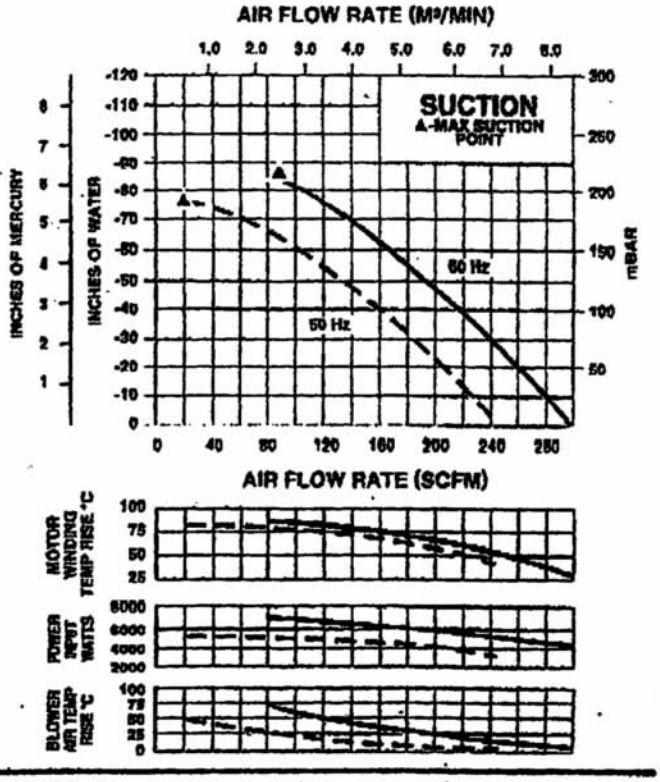
MOTOR OPTIONS
- International voltage & frequency (Hz)
- Chemical duty, high efficiency, inverter duty or industry-specific designs
- Various horsepowers for application-specific needs

BLOWER OPTIONS
- Corrosion resistant surface treatments & sealing options
- Remote drive (motorless) models
- Slip-on or face flanges for application-specific needs

ACCESSORIES (See Catalog Accessory Section)
- Flowmeters reading in SCFM
- Filters & moisture separators
- Pressure gauges, vacuum gauges & relief valves
- Switches – air flow, pressure, vacuum or temperature
- External mufflers for additional silencing
- Air knives (used on blow-off applications)

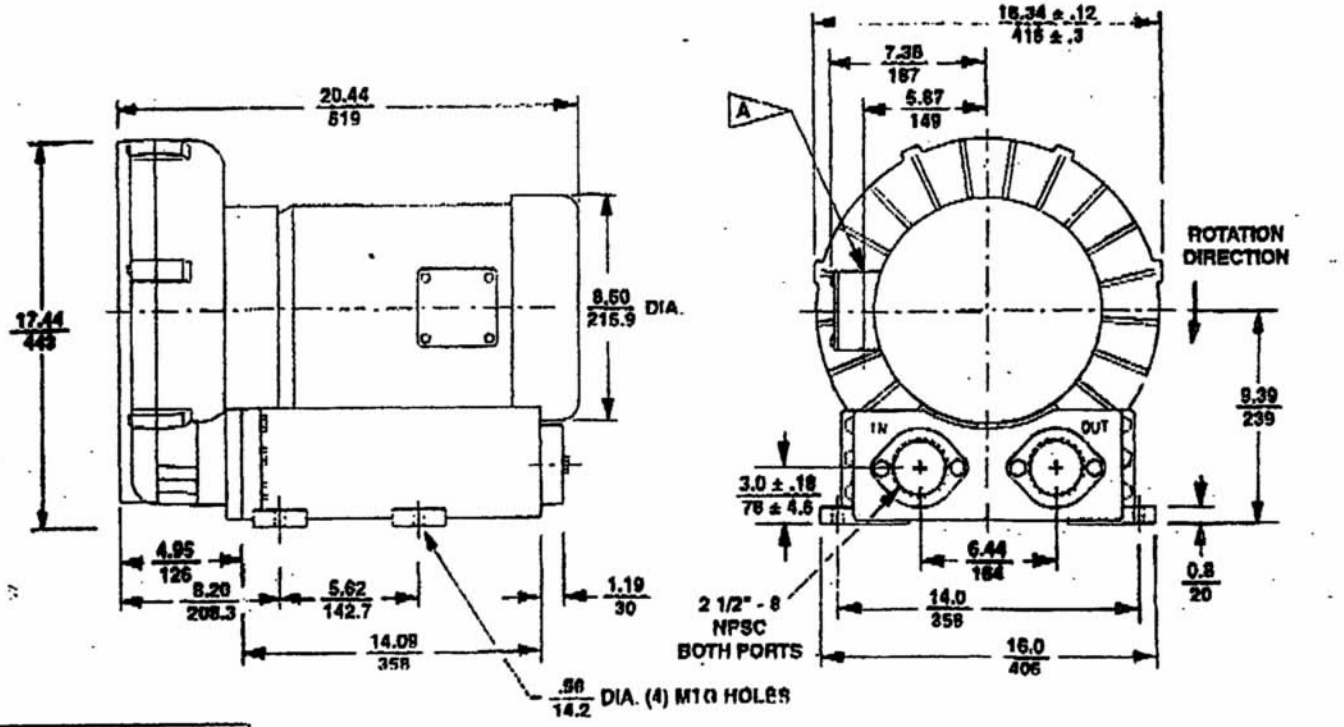
BLOWER PERFORMANCE AT STANDARD CONDITIONS





EG&G ROTRON. SAUGERTIES. N.Y. 12477 • 914/246-3401 • FAX 914/246-3802

EN/CP 707
Explosion-Proof Regenerative Blower



DIMENSIONS: IN / MM
TOLERANCES: .XX ± .1 / 2.5
(UNLESS OTHERWISE NOTED)

A 0.75" NPT CONDUIT CONNECTION AT 12 O'CLOCK POSITION

SPECIFICATIONS

MODEL	EN707F72MXL		EN707F86MXL	CP707FW72MXLR
Part No.	038710		038711	038974
Motor Enclosure – Shaft Material	Explosion-proof – CS		Explosion-proof – CS	Chem XP – SS
Horsepower	5.0		5.0	Same as EN707F72MXL – 038710 except add Chemical Processing (CP) features from catalog inside front cover
Phase – Frequency [1]	Three - 60 Hz		Three - 60 Hz	
Voltage [1]	230	460	575	
Motor Nameplate Amps	14	7	5.7	
Max. Blower Amps [2]	15.8	7.9	6.3	
Inrush Amps	152	76	61	
Starter Size	1	0	0	
Service Factor	1.0		1.0	
Thermal Protection [2]	Class B - Pilot Duty		Class B - Pilot Duty	
XP Motor Class – Group	I-D, II-F&G		I-D, II-F&G	
Shipping Weight	174 lb (79 kg)		174 lb (79 kg)	

[1] Rotron motors are designed to handle a broad range of world voltages and power supply variations. Our dual voltage 3 phase motors are factory tested and certified to operate on both: **208-230/415-460 VAC-3 ph-60 Hz and 200-220/400-440 VAC-3 ph-50 Hz.** Our dual voltage 1 phase motors are factory tested and certified to operate on both: **104-115/208-230 VAC-1 ph-60 Hz and 100-110/200-220 VAC-1 ph-50 Hz.** All voltages above can handle a ±10% voltage fluctuation. Special wound motors can be ordered for voltages outside our certified range.

[2] Maximum operating temperature: Motor winding temperature (winding rise plus ambient) should not exceed 140°C for Class F rated motors or 120°C for Class B rated motors. Blower outlet air temperature should not exceed 140°C (air temperature rise plus inlet temperature). Performance curve maximum pressure and suction points are based on a 40°C inlet and ambient temperature. Consult factory for inlet or ambient temperatures above 40°C.

[3] Maximum blower amps corresponds to the performance point at which the motor or blower temperature rise with a 40°C inlet and/or ambient temperature reaches the maximum operating temperature.

Specifications subject to change without notice. Please contact factory for specification updates.

APPENDIX D
UNDERGROUND INJECTION CONTROL PERMIT
APPLICATION - AIR SPARGING

Form I UIC	D H E C Underground Injection Control Permit Application Ground-Water Protection Division (Collected under the Authority of Title 48 Chapter I of the 1976 South Carolina Code of Laws)	I. EPA ID NUMBER	T/A	C
		U		

Read attached instructions before starting.

For OfficialUse Only

Application Approved month day year	Date Received month day year	Permit Well Number

Comments

II. Facility Name and Address	III. Owner/Operator and Address
Facility Name: Broad River Amoco	Owner/OperatorName: Frederick Cecchini
Street Address: 4335 Broad River Rd.	Street Address: 4335 Broad River Rd.
City: Columbia; State: South Carolina; Zip Code: 29210-4009	City: Columbia; State: South Carolina; Zip Code: 29210-4009

IV. Ownership Status (Select One)

☐ A. Federal ☐ B. State ☒ C. Private ☐ D. Public ☐ E. Other (Explain)

V. SIC Codes

VI. Well Status (Select A, B or C)

☐ A. Operating | Date Started *(MM/DD/YYYY)* | ☐ B. Modification/Conversion ☒ C. Proposed

VII. Type of Permit Requested - Class and Type of Well (see reverse)

A. Class(es) enter code(s)	B. Type(s) enter code(s)	C. If class is "other" or type is code 'Y', explain	D. Number of Wells per type
V.A	I		15

VIII. Location of Wells or Approximate Center of field or Project

C	A. Latitude				B. Longitude			
I	Deg	Min	Sec		Deg	Min	Sec	
	34	03	55.68		81	07	00.90	

IX. Attachments

Complete the following questions on a separate sheet(s) and number accordingly; see instructions for Classes 11, 111, and V, complete and submit on a separate sheet(s) attachments A-U as appropriate. Attach maps where required. List attachments by letter which are applicable and include with your application.

X. Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment.

A. Name (Type or Print)	Title	B. Phone No.
Michael L. Faris	Hydrogeologist	(803) 269-3913

C. Signature: Michael L. Faris

D. Date Signed (MM/DD/YYYY): 04/05/2014

DHEC2502(08/1997)

Underground Injection Control for Corrective Action Wells
Attachments to Form I UIC - DHEC 2502

Attachment A: Approximately 30 wells (possibly) will be installed for air sparging (forced injection of ambient air). The air sparging injection wells will be arranged into several clusters with each cluster consisting of 8 to 10 air sparging injection well points. Based on ground water elevation data, the static water column at this site estimated to be 10 to 15 feet, depending on the depth of the semi confining aquitard identified at the site. As such, injection pressure is calculated as follows: 15 FT/2.31 PSI/FT = 6.49 PSI. This value is conservatively rounded upward to 7 PSI to assure adequate injection pressure for the duration of system operation. An air flow of 7 CFM per point will be used for equipment sizing purposes. The total air flow, therefore, will be approximately 7 CFM/point x 10 points = 70 CFM. An injection radius of influence of approximately 15-20 feet for each air sparging injection well point is estimated based on an injection depth averaging 15 feet below the surface of the water table. A model DR-823 Rotron regenerative blower will be used to supply approximately 7 cfm to each of approximately 10 sparging points. The Rotron 823 is rated to provide 135 cfm at somewhat over 7.0 psig. Ten well points each using 7 cfm each require 70 cfm, therefore the model 823 is estimated as adequate to supply each injection well cluster and up to six additional injection wells (totaling 16) can feasibly be added to each cluster.

Along the axis of the contaminant plume, the injection wells will most likely be installed in "V" shaped pattern including in the area of the leading edge of the free product plume. The injection well points will be constructed of 1 or 2-inch diameter Schedule 40 PVC well and riser. The well screen will be constructed of 5 ft. to 10 ft. in length with 0.010-inch slot openings. Each well and riser will installed to approximately 5 to 10 feet below the top of the water table, depending on the depth at which the underlying confining clay is encountered. The duration of which the air sparging system will be employed will be based on evaluation of effectiveness as corrective action progresses.

Attachment B: A schematic drawing of a typical injection well is attached.

Attachment C: 1) The total air flow is estimated at 7 CFM per well point or 70 CFM for 10 well points at each air sparging injection well point cluster. Injection is projected to be performed at approximately 40 hours per week for a duration based on the success rate in reducing COC concentrations. The sediments of the site surficial aquifer are expected to moderately receive the injected air source. 2) Injection pressure is expected to be approximately 7 psi. 3) (see attached Table 1) 4) Laboratory analytical results of groundwater samples collected from the monitoring well network on March 2014 are summarized in Table 2 5) The length of time that the project may span is dependent on the success of COC mass reduction efforts. Project duration currently estimated at 36 months.

Underground Injection Control for Corrective Action Wells
Attachments to Form 1 UIC - DHEC 2502 (continued)

Attachment D: Initially, groundwater sampling and laboratory analysis of pertinent monitoring well(s) will be performed on an annual basis. The sampling schedule and scope will change only with notification to SCDHEC for approval.

Attachment E: SCDHEC UST Permit # 11946

Attachment F: The facility is a gasoline convenience store.

Attachment G: The location of the area of review can be viewed on Figure 1 in Attachment B. The site facility and adjacent properties are serviced with municipal water supply.

Attachment H: (See Figures 1 through 4 in Attachment B).

Attachment I: (See Figures 5 through 7 in Attachment B).

Attachment J: The site uppermost surficial aquifer is targeted to receive the air source injection.

Attachment K: The total air flow is estimated at 7 CFM per well point or 70 CFM for 10 well points at each air sparging injection well point cluster. Injection is projected to be performed at approximately 40 hours per week for a duration based on the success rate in reducing COC mass. The sediments of the site surficial aquifer are expected to moderately receive the injected air source. Injection pressure is expected to be approximately 7 psi, but may be greater.

Table 1 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and March 5 through 7, 2014

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-1	1/21/2011	40.0	20.0 - 40.0	101.84	20.92	N/A	N/A	N/A	80.92
	3/5/2011	40.0	20.0 - 40.0	101.84	14.45	N/A	N/A	N/A	87.39
	3/5/2013	40.0	20.0 - 40.0	101.84	18.62	N/A	N/A	N/A	83.22
	3/6/2014	40.0	20.0 - 40.0	101.84	15.90	N/A	N/A	N/A	85.94
MW-2	3/5/2011	28.0	18.0 - 28.0	101.13	13.50	N/A	N/A	N/A	87.63
	3/6/2013	28.0	18.0 - 28.0	101.13	17.66	16.32	1.34	16.70	84.43
	3/5/2014	28.0	18.0 - 28.0	101.13	11.57	10.15	1.42	10.53	90.60
MW-3	3/5/2011	31.0	21.0 - 31.0	101.09	13.72	N/A	N/A	N/A	87.37
	3/6/2013	31.0	21.0 - 31.0	101.09	17.94	N/A	N/A	N/A	83.15
	3/7/2014	31.0	21.0 - 31.0	101.09	11.57	N/A	N/A	N/A	89.52
MW-4	3/5/2011	25.0	15.0 - 25.0	97.02	9.15	N/A	N/A	N/A	87.87
	3/6/2013	25.0	15.0 - 25.0	97.02	12.41	10.10	2.31	10.75	86.27
	3/5/2014	25.0	15.0 - 25.0	97.02	9.74	7.50	2.24	8.10	88.92
MW-5	6/20/2011	20.0	10.0 - 20.0	101.34	14.05	13.75	0.30	13.83	87.51
	3/6/2013	20.0	10.0 - 20.0	101.34	19.63	16.80	2.83	17.59	83.75
	3/5/2014	20.0	10.0 - 20.0	101.34	15.75	8.12	7.63	10.18	91.16
MW-6A	3/6/2013	25.5	15.5 - 25.5	101.84	18.00	N/A	N/A	N/A	83.84
	3/5/2014	25.5	15.5 - 25.5	101.84	15.15	N/A	N/A	N/A	86.69
MW-6B	3/6/2013	38.5	28.5 - 38.5	101.91	18.05	N/A	N/A	N/A	83.86
	3/5/2014	38.5	28.5 - 38.5	101.91	13.30	N/A	N/A	N/A	88.61
MW-7A	3/6/2013	24.0	14.0 - 24.0	100.04	16.60	N/A	N/A	N/A	83.44
	3/5/2014	24.0	14.0 - 24.0	100.04	11.00	N/A	N/A	N/A	89.04
MW-8A	3/6/2013	23.0	13.0 - 23.0	100.45	16.84	N/A	N/A	N/A	83.61
	3/5/2014	23.0	13.0 - 23.0	100.45	12.04	N/A	N/A	N/A	88.41

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 1 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and March 5 through 7, 2014

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-8B	3/6/2013	37.5	27.5 - 37.5	100.37	16.60	N/A	N/A	N/A	83.77
	3/5/2014	37.5	27.5 - 37.5	100.37	10.45	N/A	N/A	N/A	89.92
MW-9A	3/6/2013	23.0	13.0 - 23.0	101.36	18.61	N/A	N/A	N/A	82.75
	3/6/2014	23.0	13.0 - 23.0	101.36	11.50	N/A	N/A	N/A	89.86
MW-9B	3/6/2013	31.5	21.5 - 31.5	101.38	17.60	N/A	N/A	N/A	83.78
	3/6/2014	31.5	21.5 - 31.5	101.38	11.65	N/A	N/A	N/A	89.73
MW-10A	3/6/2013	17.5	7.5 - 17.5	97.20	11.05	N/A	N/A	N/A	86.15
	3/6/2014	17.5	7.5 - 17.5	97.20	2.80	N/A	N/A	N/A	94.40
MW-10B	3/6/2013	39.0	29.0 - 39.0	97.34	13.87	N/A	N/A	N/A	83.47
	3/6/2014	39.0	29.0 - 39.0	97.34	7.54	N/A	N/A	N/A	89.80
MW-11A	3/6/2013	20.0	10.0 - 20.0	89.93	10.52	N/A	N/A	N/A	79.41
	3/6/2014	20.0	10.0 - 20.0	89.93	9.50	N/A	N/A	N/A	80.43
MW-11B	3/6/2013	35.0	29.0 - 39.0	90.26	10.30	N/A	N/A	N/A	79.96
	3/6/2014	35.0	29.0 - 39.0	90.26	9.47	N/A	N/A	N/A	80.79
MW-12A	3/6/2013	20.0	10.0 - 20.0	99.26	13.95	N/A	N/A	N/A	85.31
	3/6/2014	20.0	10.0 - 20.0	99.26	16.20	N/A	N/A	N/A	83.06
MW-12B	3/6/2013	36.5	26.5 - 36.5	99.35	16.72	N/A	N/A	N/A	82.63
	3/6/2014	36.5	26.5 - 36.5	99.35	11.87	N/A	N/A	N/A	87.48
MW-13A	3/25/2013	22.0	12.0 - 22.0	98.70	19.80	N/A	N/A	N/A	78.90
	3/5/2014	22.0	12.0 - 22.0	98.70	N/A	N/A	N/A	N/A	N/A
MW-13B	3/6/2013	33.5	23.5 - 33.5	98.69	19.88	N/A	N/A	N/A	78.81
	3/6/2014	33.5	23.5 - 33.5	98.69	16.12	N/A	N/A	N/A	82.57
MW-14A	3/6/2013	20.0	10.0 - 20.0	97.49	14.52	N/A	N/A	N/A	82.97
	3/6/2014	20.0	10.0 - 20.0	97.49	11.10	N/A	N/A	N/A	86.39
MW-14B	3/6/2013	38.5	28.5 - 38.5	97.45	17.27	N/A	N/A	N/A	80.18
	3/6/2014	38.5	28.5 - 38.5	97.45	12.45	N/A	N/A	N/A	85.00

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 1 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and March 5 through 7, 2014

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-15A	3/25/2013	17.0	7.0 - 17.0	96.87	16.01	N/A	N/A	N/A	80.86
	3/6/2014	17.0	7.0 - 17.0	96.87	15.58	N/A	N/A	N/A	81.29
MW-15B	3/6/2013	40.0	30.0 - 40.0	96.82	17.60	N/A	N/A	N/A	79.22
	3/6/2014	40.0	30.0 - 40.0	96.82	14.10	N/A	N/A	N/A	82.72
MW-16A	3/25/2013	18.0	8.0 - 18.0	95.95	16.21	N/A	N/A	N/A	79.74
	3/5/2014	18.0	8.0 - 18.0	95.95	N/A	N/A	N/A	N/A	N/A
MW-16B	3/6/2013	37.0	27.0 - 37.0	95.68	16.75	N/A	N/A	N/A	78.93
	3/5/2014	37.0	27.0 - 37.0	95.68	N/A	N/A	N/A	N/A	N/A
MW-17B	3/6/2013	39.5	29.5 - 39.5	92.69	9.05	N/A	N/A	N/A	83.64
	3/5/2014	39.5	29.5 - 39.5	92.69	6.04	N/A	N/A	N/A	86.65
MW-18A	3/6/2013	13.0	3.0 - 13.0	88.20	0.85	N/A	N/A	N/A	87.35
	3/5/2014	13.0	3.0 - 13.0	88.20	0.82	N/A	N/A	N/A	87.38
MW-18B	3/6/2013	35.0	25.0 - 35.0	88.30	1.05	N/A	N/A	N/A	87.25
	3/5/2014	35.0	25.0 - 35.0	88.30	0.78	N/A	N/A	N/A	87.52
MW-19A	3/6/2013	15.0	5.0 - 15.0	91.63	7.95	N/A	N/A	N/A	83.68
	3/5/2014	15.0	5.0 - 15.0	91.63	6.02	N/A	N/A	N/A	85.61
MW-19B	3/6/2013	34.0	24.0 - 34.0	91.69	8.35	N/A	N/A	N/A	83.34
	3/5/2014	34.0	24.0 - 34.0	91.69	7.58	N/A	N/A	N/A	84.11
MW-20A	3/6/2013	15.0	5.0 - 15.0	88.67	5.05	N/A	N/A	N/A	83.62
	3/5/2014	15.0	5.0 - 15.0	88.67	4.97	N/A	N/A	N/A	83.70
MW-20B	3/6/2013	35.0	25.0 - 35.0	88.61	4.11	N/A	N/A	N/A	84.50
	3/5/2014	35.0	25.0 - 35.0	88.61	3.62	N/A	N/A	N/A	84.99
MW-21A	3/6/2013	12.0	2.0 - 12.0	87.16	0.85	N/A	N/A	N/A	86.31
	3/5/2014	12.0	2.0 - 12.0	87.16	0.65	N/A	N/A	N/A	86.51
MW-21B	3/6/2013	35.0	25.0 - 35.0	87.23	1.35	N/A	N/A	N/A	85.88
	3/5/2014	35.0	25.0 - 35.0	87.23	0.85	N/A	N/A	N/A	86.38

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 1 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and March 5 through 7, 2014

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-22B	3/6/2013	35.0	25.0 - 35.0	87.40	2.10	N/A	N/A	N/A	85.30
	3/5/2014	35.0	25.0 - 35.0	87.40	1.45	N/A	N/A	N/A	85.95
RW-1	3/6/2013	40.0	20.0 - 40.0	101.21	17.26	17.11	0.15	17.15	84.06
	3/5/2014	40.0	20.0 - 40.0	101.21	15.78	9.10	6.68	10.90	90.31
RW-2	3/6/2013	40.0	20.0 - 40.0	100.96	16.96	N/A	N/A	N/A	84.00
	3/5/2014	40.0	20.0 - 40.0	100.96	10.65	N/A	N/A	N/A	90.31
RW-3	3/6/2013	41.0	21.0 - 41.0	101.44	17.41	17.36	0.05	17.37	84.07
	3/5/2014	41.0	21.0 - 41.0	101.44	10.58	10.52	0.06	10.54	90.90
RW-4	3/6/2013	40.5	20.5 - 40.5	100.83	16.73	N/A	N/A	N/A	84.10
	3/7/2014	40.5	20.5 - 40.5	100.83	10.50	N/A	N/A	N/A	90.33
RW-5	3/6/2013	38.5	18.5 - 38.5	101.62	17.64	17.58	0.06	17.6	84.02
	3/5/2014	38.5	18.5 - 38.5	101.62	10.88	10.58	0.30	10.66	90.96
DMW-1	3/6/2013	65.0	60.0 - 65.0	101.16	18.21	N/A	N/A	N/A	82.95
	3/7/2014	65.0	60.0 - 65.0	101.16	14.07	N/A	N/A	N/A	87.09
DMW-2	3/6/2013	65.0	60.0 - 65.0	92.63	9.40	N/A	N/A	N/A	83.23
	3/7/2014	65.0	60.0 - 65.0	92.63	5.94	N/A	N/A	N/A	86.69
DMW-3	3/6/2013	65.0	60.0 - 65.0	87.41	2.10	N/A	N/A	N/A	85.31
	3/5/2014	65.0	60.0 - 65.0	87.41	1.40	N/A	N/A	N/A	86.01

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 2 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5, 2011 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	N/A	5	1,000	700	10,000	25	40	5 (MCL)	0.05	15 (Action Level)
MW-1	3/5/2011	**1,760**	**18,400**	**1,270**	5,140	**4,070J**	<83.9	<121	<0.0032	**18**
	3/8/2013	**2,480**	**12,800**	**1,550**	5,650	**623**	**70.8 J**	**ND (11.6)**	ND (0.0039)	14 J
	3/6/2014	**3,080**	**35,100**	**3,130**	**13,300**	**754J**	ND(38.5)	**ND(58.1)**	ND(0.0063)	NA
MW-2	3/5/2011	**1,650**	**3,230**	422	2,190	**462J**	**3,420**	<12.1	**1.42**	<15
	3/6/2013	**1.34' Free Product**								
	3/5/2014	**1.42' Free Product**								
MW-3	3/5/2011	<15	10.4	9.52	30.6	4.74J	7.91	<0.121	<0.0032	<15
	3/8/2013	0.417 J	1.05	0.408 J	1.72 J	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/7/2014	2.04J	20.9J	2.81J	17.3J	7.44J	ND(0.770)	ND(1.16)	ND(0.0063)	NA
MW-4	3/5/2011	**1,830**	198	**1,270**	3,160	**598**	**3,100**	<12.1	<0.0032	<15
	3/6/2013	**2.31' Free Product**								
	3/5/2014	**2.24' Free Product**								
MW-5	6/20/2011	**0.30' Free Product**								
	3/6/2013	**2.83' Free Product**								
	3/5/2014	**7.63' Free Product**								
MW-6A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	13 J
	3/5/2014	ND(0.111)	0.469J	ND(0.109)	1.63J	2.43J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-6B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	**19**
	3/5/2014	0.372J	2.96J	2.15J	13.9J	13.1	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-7A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	1.06J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-8A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	6.8 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 2 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5, 2011 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	N/A	5	1,000	700	10,000	25	40	5 (MCL)	0.05	15 (Action Level)
MW-8B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-9A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.62	0.642 J	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.21J	0.667J	ND(0.0063)	NA
MW-9B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.79	0.675 J	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.51J	0.668J	ND(0.0063)	NA
MW-10A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-10B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-11A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.00	ND (0.116)	ND (0.0039)	11 J
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.67J	ND(0.116)	ND(0.0063)	NA
MW-11B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.12	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	0.940J	ND(0.116)	ND(0.0063)	NA
MW-12A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.486J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-12B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.359J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-13A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	7.8 J
	3/5/2014	Insufficient Water								
MW-13B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.322J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-14A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.329J	ND(0.077)	ND(0.116)	ND(0.0063)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 2 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5, 2011 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	N/A	5	1,000	700	10,000	25	40	5 (MCL)	0.05	15 (Action Level)
MW-14B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.277J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-15A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	5.3 J
	3/6/2014	ND(0.111)	ND(0.122)	0.166J	0.893J	0.454J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-15B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-16A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	**35**
	3/5/2014	Abandoned								
MW-16B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	Abandoned								
MW-17B	3/6/2013	**6.58**	2.47	1.1 J	3.87 J	ND (0.352	**244**	ND (0.232)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(1.11)	3.27J	ND(1.09)	9.61J	12.8J	**420**	ND(1.16)	ND(0.0063)	NA
MW-18A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.42	ND (0.116)	ND (0.0039)	**590**
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.363J	2.82J	ND(0.116)	ND(0.0063)	NA
MW-18B	3/6/2013	ND (0.111)	0.459 J	ND (0.109)	2.03 J	ND (0.176)	0.841 J	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.225J	0.416J	ND(0.116)	ND(0.0063)	NA
MW-19A	3/6/2013	0.566 J	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	1.97J	1.87J	0.941J	6.10J	3.67J	0.644J	ND(0.116)	ND(0.0063)	NA
MW-19B	3/6/2013	0.253 J	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	0.329J	0.349J	0.123J	1.07J	1.33J	1.11J	ND(0.116)	ND(0.0063)	NA
MW-20A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.15	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	0.991J	0.505J	2.92J	3.50J	0.526J	ND(0.116)	ND(0.0063)	NA
MW-20B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.25	ND (0.116)	ND (0.0039)	8.77 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.492J	18.1	ND(0.116)	ND(0.0063)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 2 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5, 2011 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-21A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	12 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-21B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.34	ND (0.116)	ND (0.0039)	6.8 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	5.75	ND(0.116)	ND(0.0063)	NA
MW-22B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.83	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	2.64J	ND(0.116)	ND(0.0063)	NA
RW-1	3/6/2013	**0.15' Free Product**								
	3/5/2014	**6.68' Free Product**								
RW-2	3/8/2013	**9,420**	**12,800**	**2,030**	**11,000**	**565 J**	**9100**	**224 J**	**1.65**	ND (3.8)
	3/5/2014	**11,000**	**18,500**	**1,580**	9,850	**299J**	**26,900**	**58.1J**	ND(0.0063)	NA
RW-3	3/6/2013	**0.05' Free Product**								
	3/5/2014	**0.06' Free Product**								
RW-4	3/8/2013	**3,390**	**1,730**	**977**	4,900	**210 J**	**4,460**	**ND (5.81)**	ND (0.0039)	12 J
	3/7/2014	**2,960**	**4,070**	378J	3,500	**186J**	**9,160**	**ND(11.6)**	ND(0.0063)	NA
RW-5	3/6/2013	**0.06' Free Product**								
	3/5/2014	**0.30' Free Product**								
DMW-1	3/8/2013	**507**	ND (1.22)	ND (1.09	ND (0.179)	ND (1.76)	**131**	**14.2 J**	ND (0.0039)	ND (3.8)
	3/7/2014	ND(0.111)	0.827J	ND(0.109)	1.17J	ND(0.176)	**159**	2.60J	ND(0.0063)	NA
DMW-2	3/6/2013	4.12	0.548 J	ND (0.109)	0.805 J	ND (0.176)	**153**	ND (0.116)	ND (0.0039)	ND (3.8)
	3/7/2014	0.669J	3.63J	1.90J	10.7J	13.2	**89.2**	ND(0.232)	ND(0.0063)	NA
DMW-3	3/6/2013	0.281 J	0.497 J	ND (0.109)	ND (0.179	ND (0.176)	1.76	ND (0.116)	ND (0.0039)	**120**
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.33J	ND(0.116)	ND(0.0063)	NA

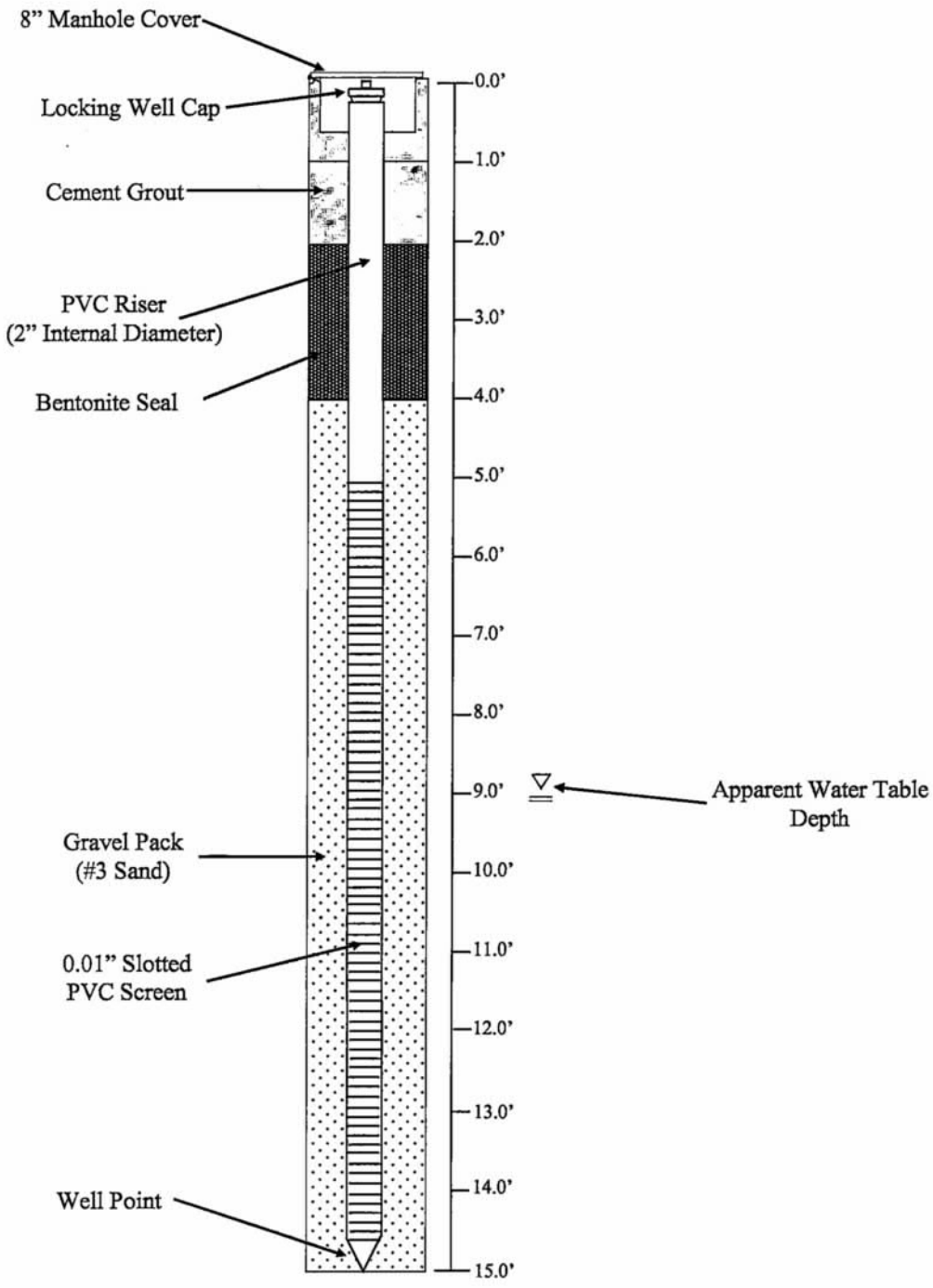
Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

ATTACHMENT B

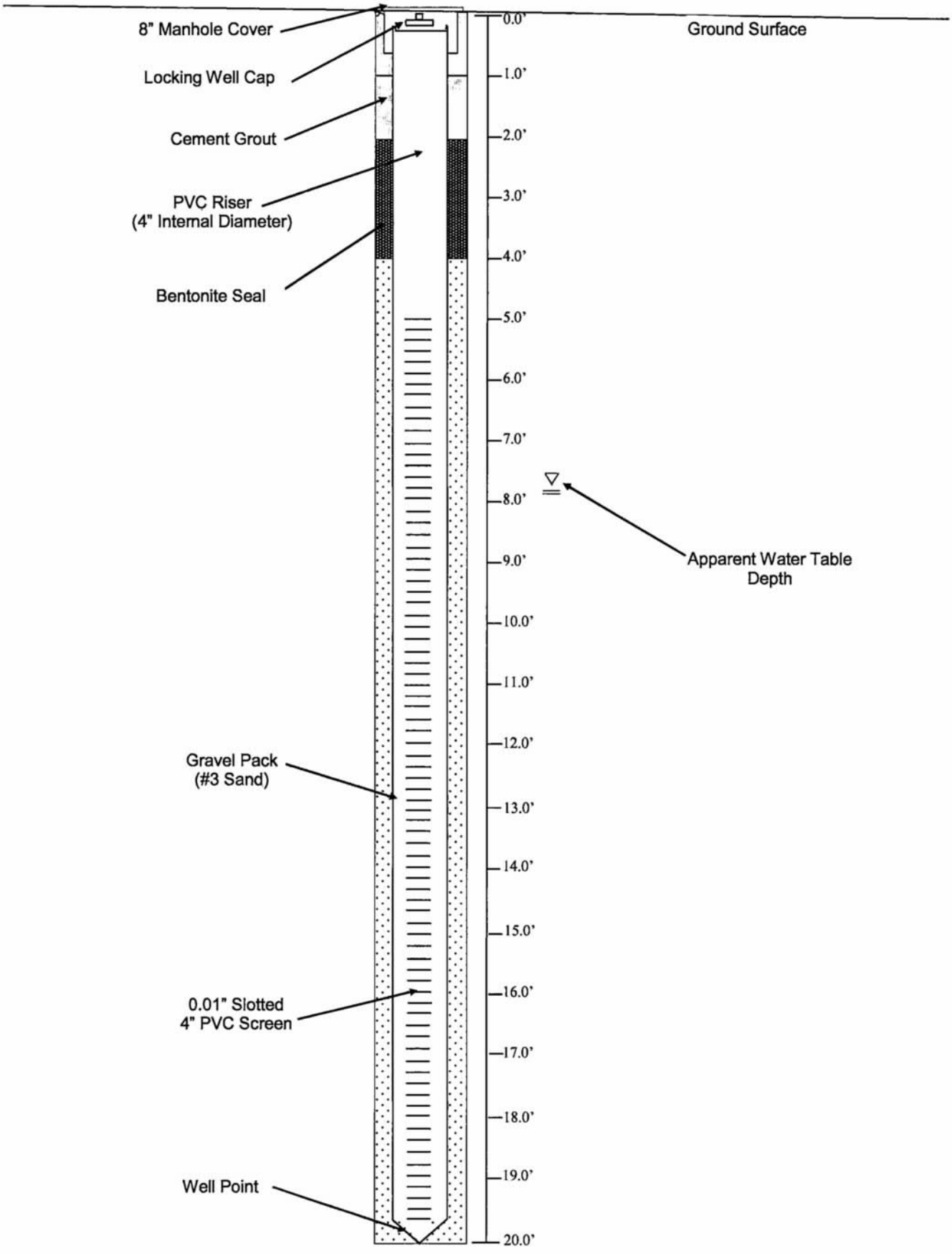
Well Construction Schematic

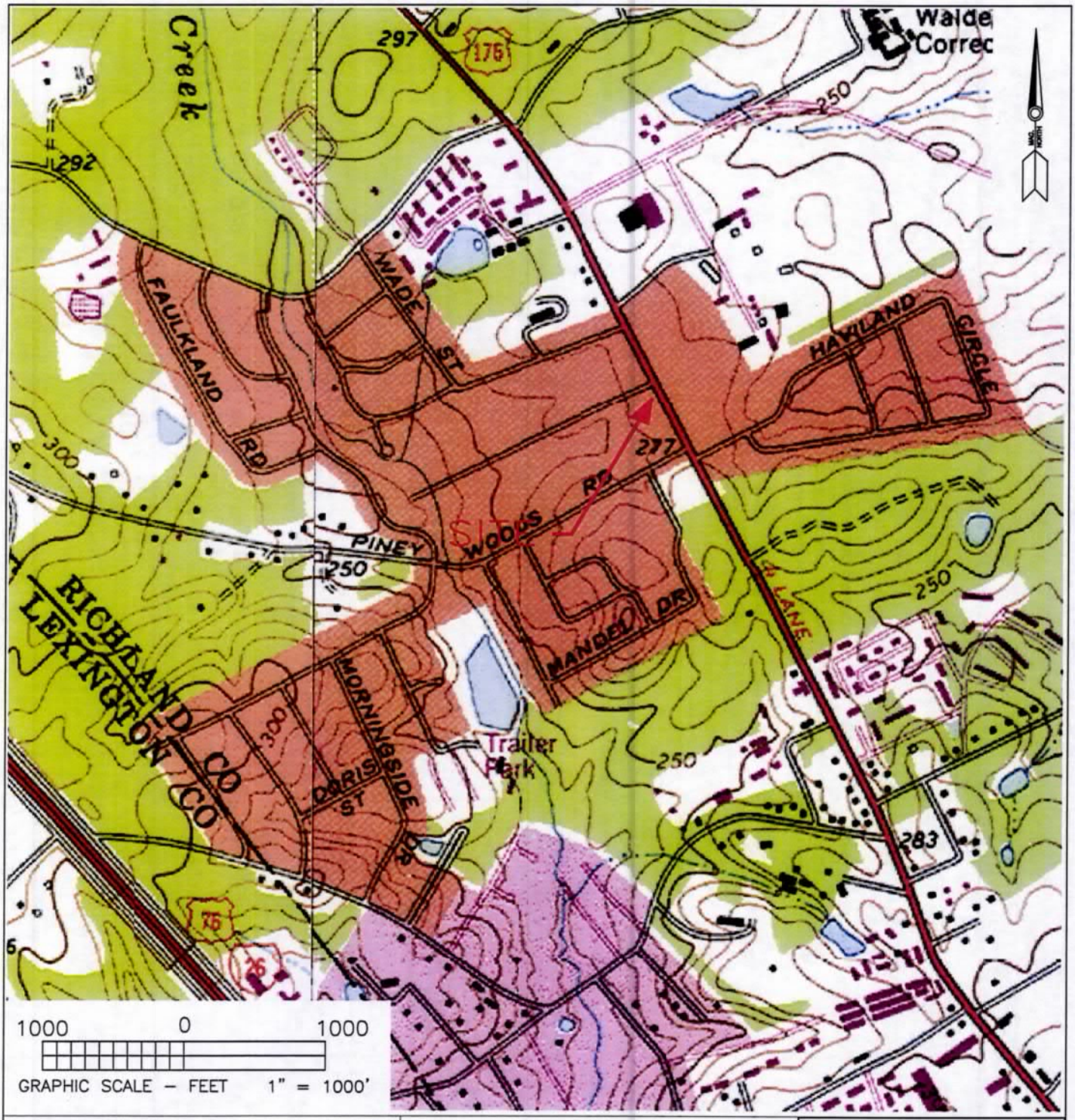
Figure 1 – Site Location Map (Topographic)
Figure 2 – Site Base Map
Figure 3 – Potentiometric Map (Shallow)
Figure 4 – Potentiometric Map (Intermediate)
Figure 5 – Geological Cross Section Base Map
Figure 6 – Geological Cross Section A-A'
Figure 7 – Geological Cross Section B-B'

Injection Well Construction Schematic

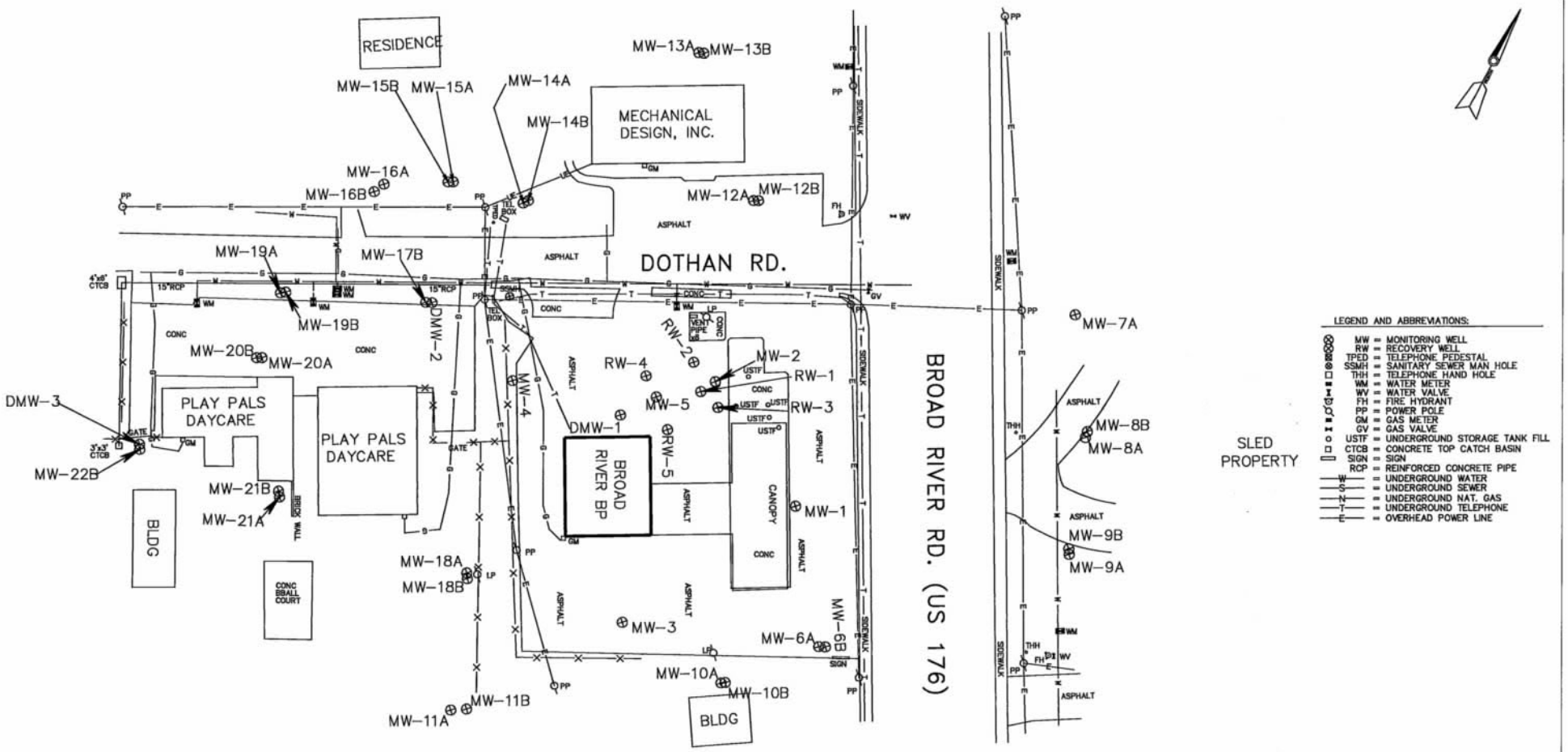


Recovery Well Construction Schematic





PROJECT: CORRECTIVE ACTION PLAN BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: SITE LOCATION MAP	*FIGURE 1* DATE: MARCH 2014
ENVIRO-TEST SERVICES	REFERENCE: U.S.G.S. TOPOGRAPHIC MAP (7.5 MINUTE SERIES) COLUMBIA NORTH - 1972, REV. 1990 SOUTH CAROLINA QUADRANGLE	LEGEND:



PROJECT:
CORRECTIVE ACTION PLAN
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
SITE BASE MAP

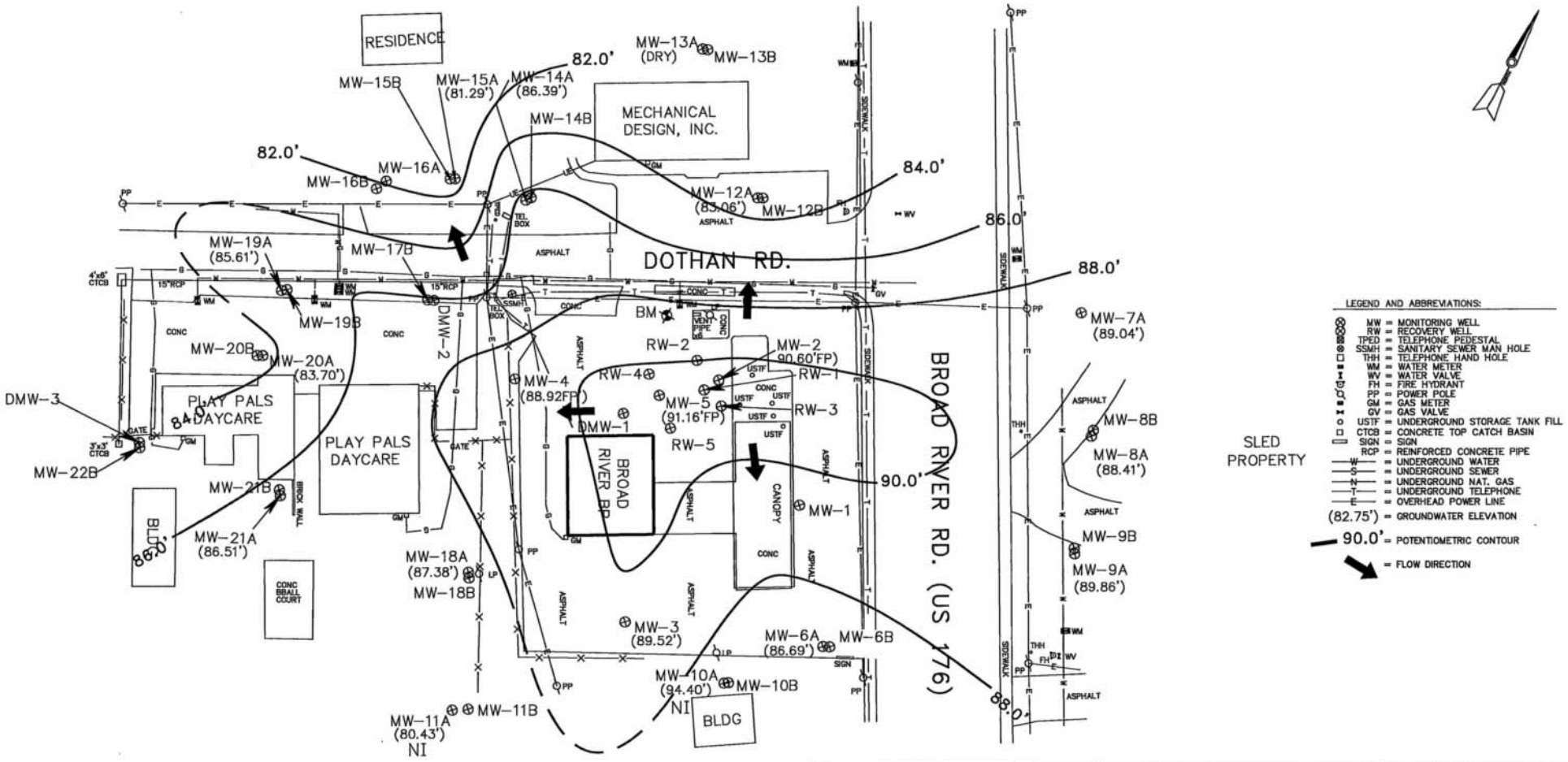
FIGURE 2

DATE:
MARCH 2014

REFERENCE:

NOTES:

ENVIRO-TEST SERVICES



PROJECT:
CORRECTIVE ACTION PLAN
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
GENERALIZED
POTENTIOMETRIC SURFACE MAP
(SHALLOW ZONE)

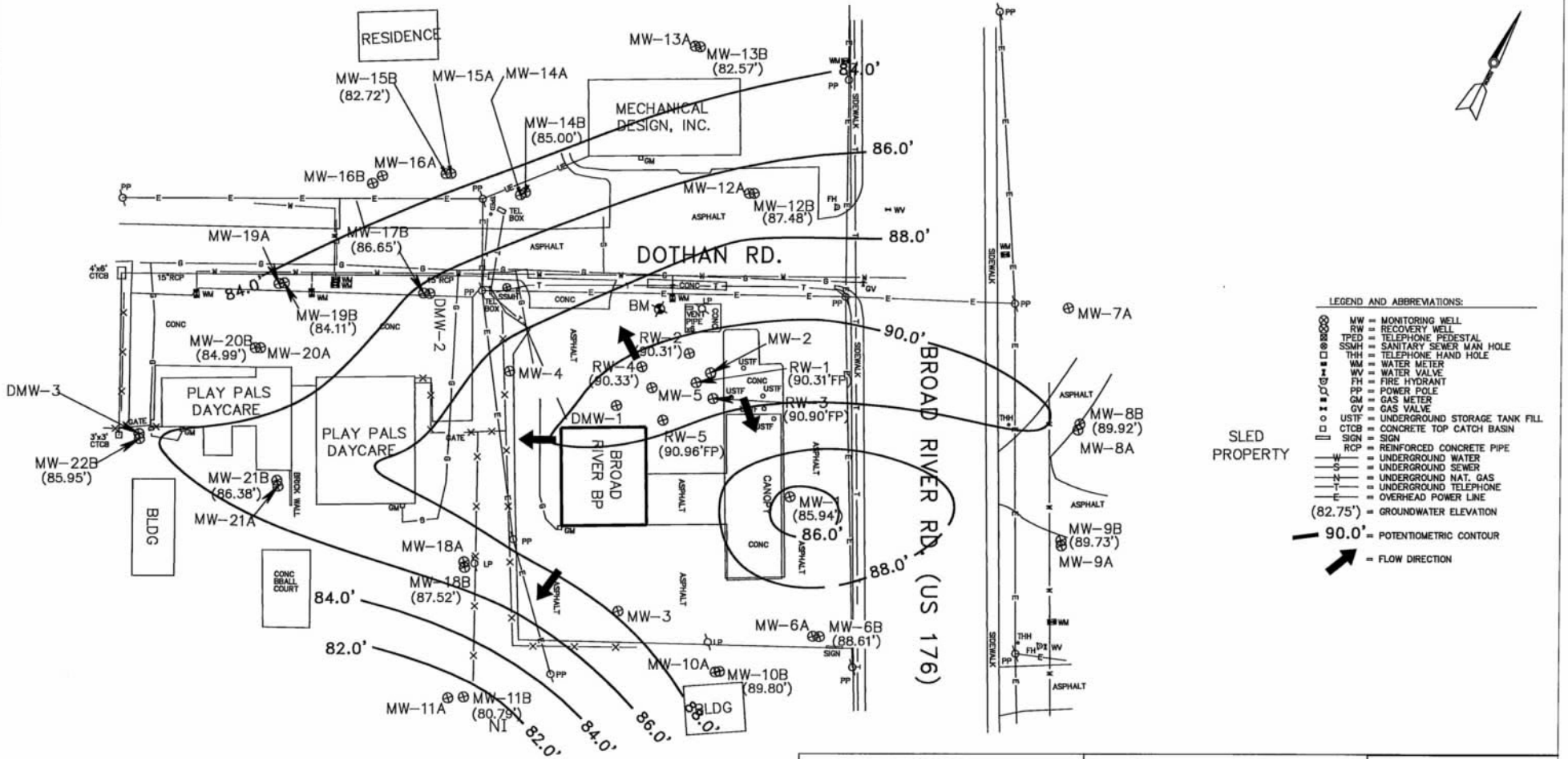
FIGURE 3

SAMPLE DATE:
MARCH 2014

ENVIRO-TEST SERVICES

REFERENCE:
GROUNDWATER ELEVATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL. CONTOURS ARE AT 2.0' INTERVALS.

NOTES:
NI = NOT INCLUDED
FP = WATER LEVEL CORRECTED FOR FREE PRODUCT



PROJECT:
CORRECTIVE ACTION PLAN
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
GENERALIZED
POTENTIOMETRIC SURFACE MAP
(INTERMEDIATE ZONE)

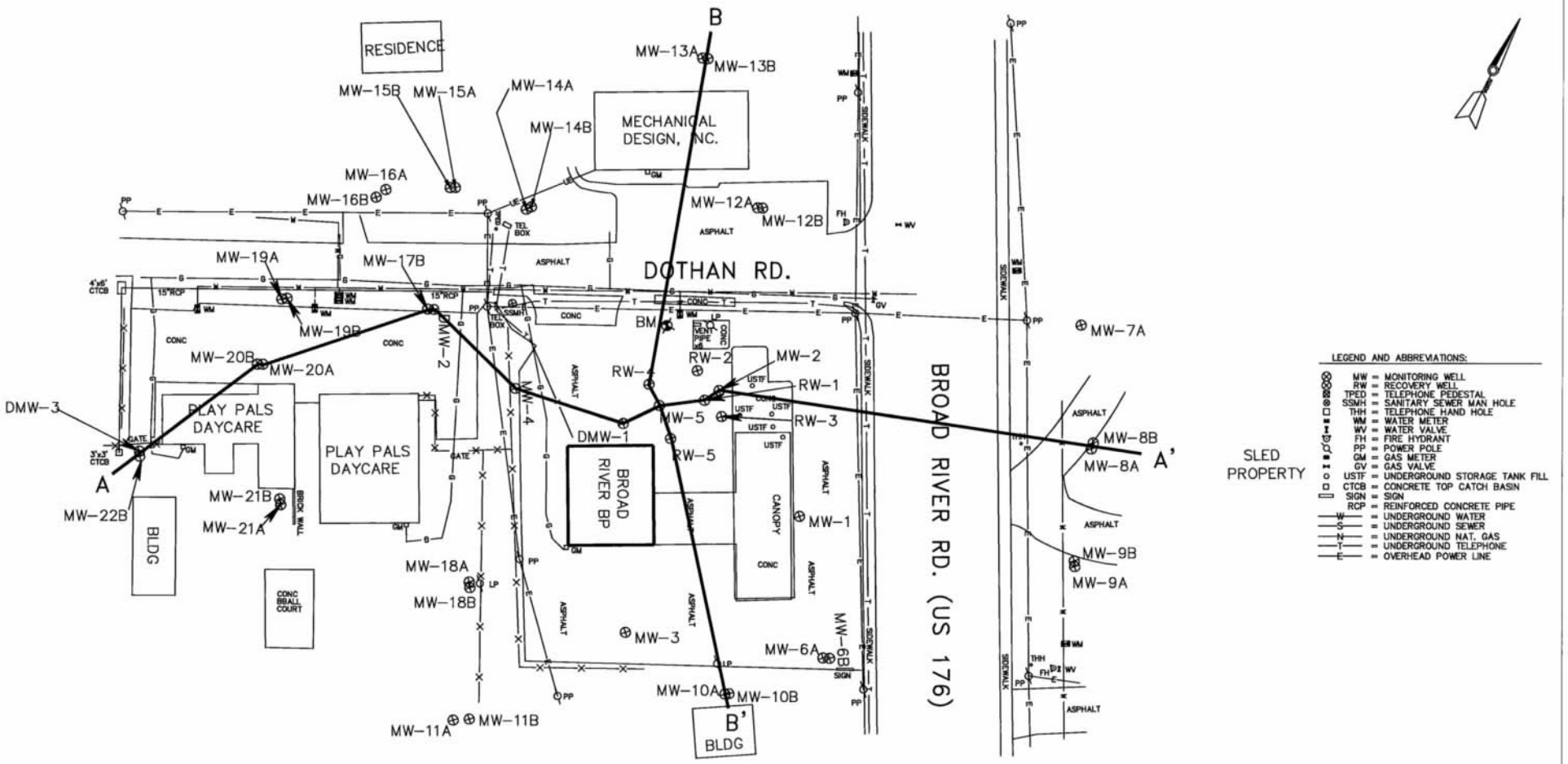
FIGURE 4

SAMPLE DATE:
MARCH 2014

ENVIRO-TEST SERVICES

REFERENCE:
GROUNDWATER ELEVATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL. CONTOURS ARE AT 2.0' INTERVALS.

NOTES:
NI = NOT INCLUDED
FP = WATER LEVEL CORRECTED FOR FREE PRODUCT



PROJECT:
CORRECTIVE ACTION PLAN
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
GEOLOGICAL CROSS SECTION
BASE MAP

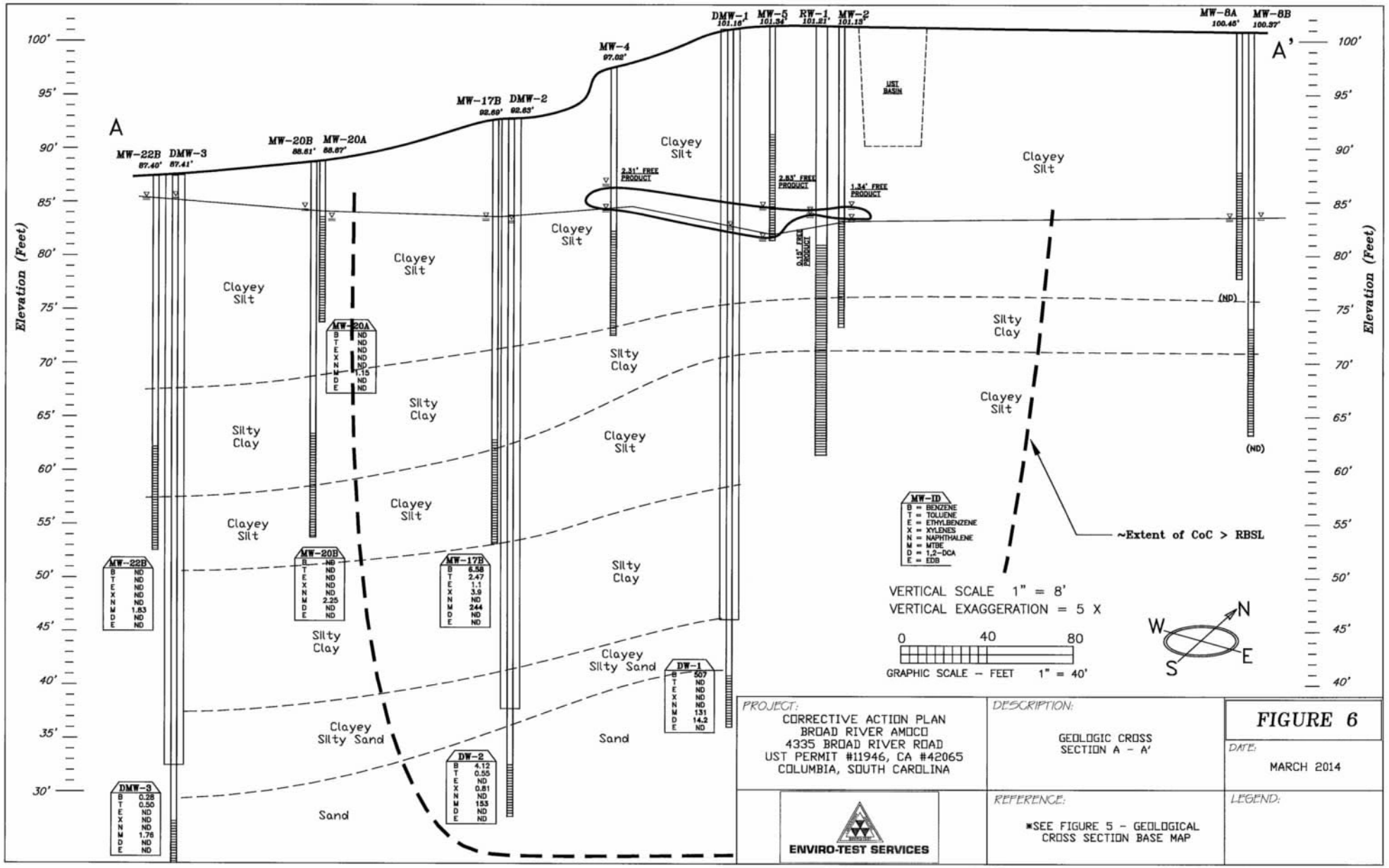
FIGURE 5

DATE:
MARCH 2014

REFERENCE:

NOTES:

ENVIRO-TEST SERVICES



PROJECT:
CORRECTIVE ACTION PLAN
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #42065
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
GEOLOGIC CROSS SECTION A – A'

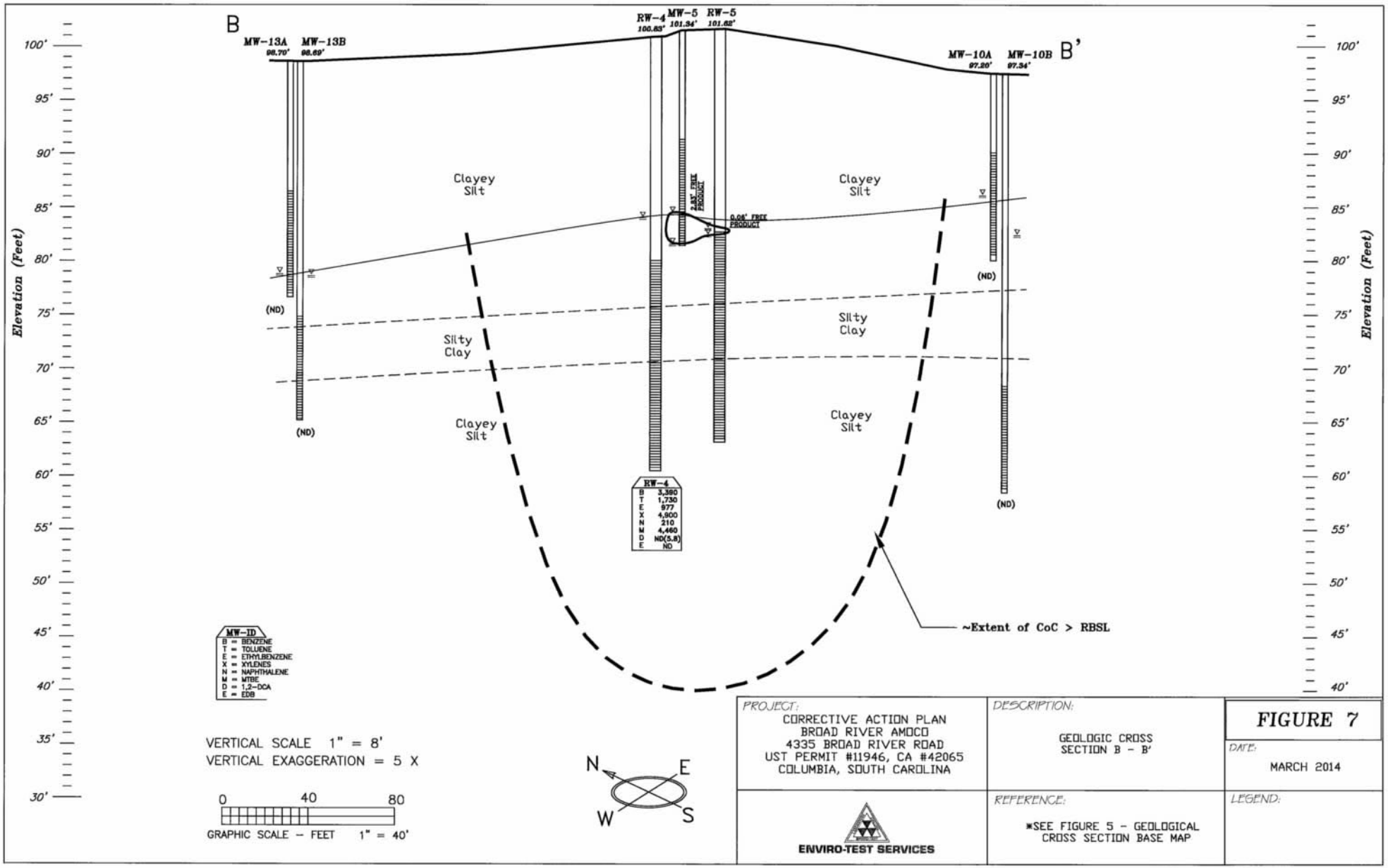
FIGURE 6

DATE:
MARCH 2014

ENVIRO-TEST SERVICES

REFERENCE:
*SEE FIGURE 5 – GEOLOGICAL CROSS SECTION BASE MAP

LEGEND:



PROJECT:
CORRECTIVE ACTION PLAN
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #42065
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
GEOLOGIC CROSS SECTION B – B'

FIGURE 7

DATE:
MARCH 2014

ENVIRO-TEST SERVICES

REFERENCE:
*SEE FIGURE 5 – GEOLOGICAL CROSS SECTION BASE MAP

LEGEND:

APPENDIX E
FMC ENVIRONMENTAL / PEROXYCHEM
KLOSUR® IN-SITU CHEMICAL OXIDATION

FMC
ENVIRONMENTAL SOLUTIONS

Klozur® Persulfate

In Situ Chemical Oxidation

The Ideal ISCO Solution to address soil and groundwater contamination

Klozur® Persulfate offers a unique combination of power and versatility. It is one of the most cost-effective technologies in the market. Klozur® Persulfate is ideal for *in situ* chemical oxidation of contaminated source zones and hot spots that require rapid treatment.

Successful field applications of Klozur® Activated Persulfate have been performed globally. These applications demonstrate the ability of Klozur activated persulfate to treat diverse organic contaminants of concern including: chlorinated ethenes (TCE, PCE, DCE and vinyl chloride), chlorinated ethanes (TCA and DCA), chlorinated methanes (carbon tetrachloride and methylene chloride), BTEX, MTBE, polyaromatic hydrocarbons (PAHs), petroleum hydrocarbons (TPHs, GRO, DRO), 1,4-dioxane and pesticides.

$$S_2O_8^{-2} \rightarrow SO_4^{\bullet -}, OH^{\bullet -}$$

Benefits include:

Power
- Multi-radical attack
- Rapid destruction of recalcitrant compounds

Versatility
- Flexible activation basted on site conditions
- Multiple methods of delivery
- Highly soluble (up to 40 wt%)

Stability
- Persistent in the subsurface, providing an extended radius of influence
- Safe to handle – does not generate heat or gas under normal use

Potential Applications:

Direct push injection

Fixed well injection

Soil blending

Examples of Contaminants of Concern

CHLORINATED SOLVENTS
PCE, TCE, DCE, VC, TCA, DCA, Methylene Chloride, Carbon Tetrachloride, Chlorobenzene

PETROLEUM
TPH, BTEX, DRO, GRO

PAHs
Creosote, MGP residuals
1,4-dioxane, MTBE, TBA, energetics,
Chlorinated pesticides

For more information and detailed case studies, please visit our website.

ADVENTUS

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SOIL & GROUNDWATER REMEDIATION

MATERIAL SAFETY DATA SHEET

Klozur®

MSDS Ref. No.: 7775-27-1-12
Date Approved: 05/13/2009
Revision No.: 5

This document has been prepared to meet the requirements of the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200 and Canada's Workplace Hazardous Materials Information System (WHMIS) requirements.

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME:	Klozur®
SYNONYMS:	Sodium Persulfate, Sodium Peroxydisulfate; Disodium Peroxydisulfate
GENERAL USE:	In situ and ex situ chemical oxidation of contaminants and compounds of concern for environmental remediation applications.

MANUFACTURER

FMC CORPORATION
FMC Peroxygens
1735 Market Street
Philadelphia, PA 19103
(215) 299-6000 (General Information)
msdsinfo@fmc.com (Email - General Information)

EMERGENCY TELEPHONE NUMBERS

(303) 595-9048 (Medical - U.S. - Call Collect)

For leak, fire, spill, or accident emergencies, call:
(800) 424-9300 (CHEMTREC - U.S.A. & Canada)

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

- White, odorless, crystals
- Oxidizer.
- Decomposes in storage under conditions of moisture (water/water vapor) and/or excessive heat causing release of oxides of sulfur and oxygen that supports combustion. Decomposition could form a high temperature melt. See Section 10 ("Stability and Reactivity").

POTENTIAL HEALTH EFFECTS: Airborne persulfate dust may be irritating to eyes, nose, lungs, throat and skin upon contact. Exposure to high levels of persulfate dust may cause difficulty in breathing in sensitive persons.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS#	Wt.%	EC No.	EC Class
Sodium Persulfate	7775-27-1	>99	231-892-1	Xn-O; R8-R22-R36/37/38-R42/43

4. FIRST AID MEASURES

EYES: Flush with plenty of water. Get medical attention if irritation occurs and persists.

SKIN: Wash with plenty of soap and water. Get medical attention if irritation occurs and persists.

INGESTION: Rinse mouth with water. Dilute by giving 1 or 2 glasses of water. Do not induce vomiting. Never give anything by mouth to an unconscious person. See a medical doctor immediately.

INHALATION: Remove to fresh air. If breathing difficulty or discomfort occurs and persists, contact a medical doctor.

NOTES TO MEDICAL DOCTOR: This product has low oral toxicity and is not irritating to the eyes and skin. Flooding of exposed areas with water is suggested. For gastric lavage or emesis induction, consider the possible aggravation of esophageal injury, and the expected absence of system effects. Treatment is controlled removal of exposure followed by symptomatic and supportive care.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Deluge with water.

FIRE / EXPLOSION HAZARDS: Product is non-combustible. On decomposition releases oxygen which may intensify fire. Presence of water accelerates decomposition.

FIRE FIGHTING PROCEDURES: Do not use carbon dioxide or other gas filled fire extinguishers; they will have no effect on decomposing persulfates. Wear full protective clothing and self-contained breathing apparatus.

FLAMMABLE LIMITS: Non-combustible

SENSITIVITY TO IMPACT: No data available

SENSITIVITY TO STATIC DISCHARGE: Not available

6. ACCIDENTAL RELEASE MEASURES

RELEASE NOTES: Spilled material should be collected and put in approved DOT container and isolated for disposal. Isolated material should be monitored for signs of decomposition (fuming/smoking). If spilled material is wet, dissolve with large quantity of water and dispose as a hazardous waste. All disposals should be carried out according to regulatory agencies procedures.

7. HANDLING AND STORAGE

HANDLING: Use adequate ventilation when transferring product from bags or drums. Wear respiratory protection if ventilation is inadequate or not available. Use eye and skin protection. Use clean plastic or stainless steel scoops only.

STORAGE: Store (unopened) in a cool, clean, dry place away from point sources of heat, e.g. radiant heaters or steam pipes. Use first in, first out storage system. Avoid contamination of opened product. In case of fire or decomposition (fuming/smoking) deluge with plenty of water to control decomposition. For storage, refer to NFPA Bulletin 430 on storage of liquid and solid oxidizing materials.

COMMENTS: VENTILATION: Provide mechanical general and/or local exhaust ventilation to prevent release of dust into work environment. Spills should be collected into suitable containers to prevent dispersion into the air.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS

Chemical Name	ACGIH	OSHA	Supplier
Sodium Persulfate	0.1 mg/m^3 (TWA)		

ENGINEERING CONTROLS: Provide mechanical local general room ventilation to prevent release of dust into the work environment. Remove contaminated clothing immediately and wash before reuse.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Use cup type chemical goggles. Full face shield may be used.

RESPIRATORY: Use approved dust respirator when airborne dust is expected.

PROTECTIVE CLOTHING: Normal work clothes. Rubber or neoprene footwear.

GLOVES: Rubber or neoprene gloves. Thoroughly wash the outside of gloves with soap and water prior to removal. Inspect regularly for leaks.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR:	None
APPEARANCE:	White crystals
AUTOIGNITION TEMPERATURE:	Not applicable. No evidence of combustion up to 800°C. Decomposition will occur upon heating.
BOILING POINT:	Not applicable
COEFFICIENT OF OIL / WATER:	Not applicable
DENSITY / WEIGHT PER VOLUME:	Not available
EVAPORATION RATE:	Not applicable (Butyl Acetate = 1)
FLASH POINT:	Non-combustible
MELTING POINT:	Decomposes
ODOR THRESHOLD:	Not applicable
OXIDIZING PROPERTIES:	Oxidizer
PERCENT VOLATILE:	Not applicable
pH:	typically 5.0 - 7.0 @ 25 °C (1% solution)
SOLUBILITY IN WATER:	73 % @ 25 °C (by wt.)
SPECIFIC GRAVITY:	2.6 (H_2O=1)
VAPOR DENSITY:	Not applicable (Air = 1)
VAPOR PRESSURE:	Not applicable

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID:	Heat, moisture and contamination.
STABILITY:	Stable (becomes unstable in presence of heat, moisture and/or contamination).
POLYMERIZATION:	Will not occur
INCOMPATIBLE MATERIALS:	Acids, alkalis, halides (fluorides, chlorides, bromides and iodides), combustible materials, most metals and heavy metals, oxidizable materials, other oxidizers, reducing agents, cleaners, and organic or carbon containing compounds. Contact

with incompatible materials can result in a material decomposition or other uncontrolled reactions.

HAZARDOUS DECOMPOSITION PRODUCTS: Oxygen that supports combustion and oxides of sulfur.

COMMENTS: PRECAUTIONARY STATEMENT: Pumping and transport of Klozur persulfate requires appropriate precautions and design considerations for pressure and thermal relief.

Decomposing persulfates will evolve large volumes of gas and/or vapor, can accelerate exponentially with heat generation, and create significant and hazardous pressures if contained and not properly controlled or mitigated.

Use with alcohols in the presence of water has been demonstrated to generate conditions that require rigorous adherence to process safety methods and standards to prevent escalation to an uncontrolled reaction.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS: Non-irritating (rabbit) [FMC Ref. ICG/T-79.029]

SKIN EFFECTS: Non-irritating (rabbit) [FMC Ref. ICG/T-79.029]

DERMAL LD_{50}: > 10 g/kg [FMC Ref. ICG/T-79.029]

ORAL LD_{50}: 895 mg/kg (rat) [FMC Ref. ICG/T-79.029]

INHALATION LC_{50}: 5.1 mg/l (rat) [FMC Ref. I95-2017]

SENSITIZATION: May be sensitizing to allergic persons. [FMC Ref. ICG/T-79.029]

TARGET ORGANS: Eyes, skin, respiratory passages

ACUTE EFFECTS FROM OVEREXPOSURE: Dust may be harmful and irritating. May be harmful if swallowed.

CHRONIC EFFECTS FROM OVEREXPOSURE: Sensitive persons may develop dermatitis and asthma [Respiration 38:144, 1979]. Groups of male and female rats were fed 0, 300 or 3000 ppm sodium persulfate in the diet for 13 weeks, followed by 5000 ppm for 5 weeks. Microscopic examination of tissues revealed some injury to the gastrointestinal tract at the high dose (3000 ppm) only. This effect is not unexpected for an oxidizer at high concentrations. [Ref. FMC I90-1151, Toxicologist 1:149, 1981].

CARCINOGENICITY:

NTP:	Not listed
IARC:	Not listed
OSHA:	Not listed
OTHER:	ACGIH: Not listed

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION:

Bluegill sunfish, 96-hour LC_{50} = 771 mg/L [FMC Study I92-1250]
Rainbow trout, 96-hour LC_{50} = 163 mg/L [FMC Study I92-1251]
Daphnia, 48-hour LC_{50} = 133 mg/L [FMC Study I92-1252]
Grass shrimp, 96-hour LC_{50} = 519 mg/L [FMC Study I92-1253]

CHEMICAL FATE INFORMATION: Biodegradability does not apply to inorganic substances.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Dispose as a hazardous waste in accordance with local, state and federal regulatory agencies.

14. TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (DOT)

PROPER SHIPPING NAME:	Sodium Persulfate
PRIMARY HAZARD CLASS / DIVISION:	5.1 (Oxidizer)
UN/NA NUMBER:	UN 1505
PACKING GROUP:	III
LABEL(S):	5.1 (Oxidizer)
PLACARD(S):	5.1 (Oxidizer)
MARKING(S):	Sodium Persulfate, UN 1505
ADDITIONAL INFORMATION:	Hazardous Substance/RQ: Not applicable

49 STCC Number: 4918733

This material is shipped in 225 lb. fiber drums, 55 lb. poly bags and 1000 - 2200 lb. IBC's (supersacks).

INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG)

PROPER SHIPPING NAME: Sodium Persulfate

INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO) / INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA)

PROPER SHIPPING NAME: Sodium Persulfate

OTHER INFORMATION:

Protect from physical damage. Do not store near acids, moisture or heat.

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15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355, APPENDIX A):
Not applicable

SECTION 311 HAZARD CATEGORIES (40 CFR 370):
Fire Hazard, Immediate (Acute) Health Hazard

SECTION 312 THRESHOLD PLANNING QUANTITY (40 CFR 370):
The Threshold Planning Quantity (TPQ) for this product, if treated as a mixture, is 10,000 lbs; however, this product contains the following ingredients with a TPQ of less than 10,000 lbs.:
None

SECTION 313 REPORTABLE INGREDIENTS (40 CFR 372):
There are no ingredients in this product, which are subject to Section 313 reporting requirements.

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT)

CERCLA DESIGNATION & REPORTABLE QUANTITIES (RQ) (40 CFR 302.4):
Unlisted, RQ = 100 lbs., Ignitability

TSCA (TOXIC SUBSTANCE CONTROL ACT)

TSCA INVENTORY STATUS (40 CFR 710):
All components are listed or exempt.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)
RCRA IDENTIFICATION OF HAZARDOUS WASTE (40 CFR 261):
Waste Number: D001

CANADA

WHMIS (WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM):

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Hazard Classification / Division: C
D2A
D2B

Domestic Substance List: All components are listed or exempt.

INTERNATIONAL LISTINGS

Australia (AICS): Listed
China: Listed
Japan (ENCS): (1)-1131
Korea: KE-12369
Philippines (PICCS): Listed

HAZARD AND RISK PHRASE DESCRIPTIONS:

EC Symbols:	Xn	(Harmful)
	O	(Oxidizer)
EC Risk Phrases:	R8	(Contact with combustible material may cause fire)
	R22	(Harmful if swallowed.)
	R36/37/38	(Irritating to eyes, respiratory system and skin.)
	R42/43	(May cause sensitization by inhalation or by skin contact.)

16. OTHER INFORMATION

HMIS

Health	1
Flammability	0
Physical Hazard	1
Personal Protection (PPE)	J

Protection = J (Safety goggles, gloves, apron & combination dust & vapor respirator)

HMIS = Hazardous Materials Identification System

Degree of Hazard Code:
4 = Severe
3 = Serious
2 = Moderate
1 = Slight
0 = Minimal

NFPA

Health	1
Flammability	0
Reactivity	1
Special	OX

SPECIAL = OX (Oxidizer)

NFPA (National Fire Protection Association)

Degree of Hazard Code:
4 = Extreme
3 = High
2 = Moderate
1 = Slight
0 = Insignificant

REVISION SUMMARY:
This MSDS replaces Revision #4, dated September 18, 2006.
Changes in information are as follows:
Section 1 (Product and Company Identification)
Section 3 (Composition / Information on Ingredients)
Section 15 (Regulatory Information)
Section 16 (Other Information)

Klozur and FMC Logo - Trademarks of FMC Corporation

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Material Safety Data Sheet

Dissolvine® E-FE-13

MSDS #: 15708-41-5
Revision Date: 2013-03-28
Version 1

FMC
ENVIRONMENTAL SOLUTIONS

This MSDS has been prepared to meet U.S. OSHA Hazard Communication Standard 29 CFR 1910.1200 and Canada's Workplace Hazardous Materials Information System (WHMIS) requirements.

1. PRODUCT AND COMPANY IDENTIFICATION

Product name **Dissolvine® E-FE-13**
Synonyms Ferric sodium EDTA; CHEMICAL NAME: Ethyldiaminetetraacetic acid, ferric sodium complex
Formula C10H12FeN2O8Na.3H2O

Recommended use Chelating agent; Plant nutrient

Manufacturer

Akzo Nobel Functional Chemicals LLC
525 West Van Buren Street
Chicago, IL 60607-3823
Phone 1 800 / 906-7979

Emergency telephone number

For leak, fire, spill or accident emergencies, call:
1 800 / 424 9300 (CHEMTREC - U.S.A.)
1 703 / 527 3887 (CHEMTREC - Collect - All Other Countries)
1 613/ 996-6666 (CANUTEC - Canada)

Medical / Handling Emergencies:
1 914 / 693-6946 (Akzo Nobel - U.S.A.)

2. Hazards identification

Emergency Overview

Yellow-green odorless powder
Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source, is a potential dust explosion hazard.

Potential health effects

Eyes Product dust may cause mechanical eye irritation.
Skin Substance may cause slight skin irritation.
Inhalation Inhalation of dust in high concentration may cause irritation of respiratory system.
Ingestion No known effect based on information supplied.

Chronic Toxicity In a 31/61-day oral study on rats with Ferric-sodium EDTA, the NOAEL >/= 84 mg/kg.

3. Composition/information on ingredients

Ingredients

Chemical Name	CAS-No	Weight %
EDTA ferric sodium complex	15708-41-5	87-89
Water	7732-18-5	11-13

4. First aid measures

Eye contact

In case of eye contact, remove contact lenses and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention if irritation persists.

Skin contact

Wash off with warm water and soap. Wash contaminated clothing before reuse. Get medical attention if irritation develops and persists.

Inhalation

Move to fresh air. If breathing difficulty or discomfort occurs and persists, obtain medical attention.

Ingestion

Rinse mouth with water and afterwards drink plenty of water or milk. Do not induce vomiting or give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

5. Fire-fighting measures

Flammable properties

Not combustible.

Suitable extinguishing media

Use CO_2, dry chemical, or foam. Soft stream or water fog only if necessary.

Explosion Data

Sensitivity to Mechanical Impact Not sensitive.
Sensitivity to Static Discharge Not sensitive.

Specific hazards arising from the chemical

Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus and full protective gear.

NFPA	Health Hazard 1	Flammability 1	Stability 0	Special Hazards -

6. Accidental release measures

Personal precautions

Avoid contact with the skin and the eyes. Powder becomes slippery when wet. For personal protection see section 8.

Methods for containment

Cover with plastic sheet to prevent spreading. Do not allow material to enter storm or sanitary sewer system. Use a wet sweeping compound or water to prevent dust formation. Sweep or vacuum up spillage and return to container. Material may be recycled when contamination is not a problem.

Methods for cleaning up

After cleaning, flush away traces with water. Dispose of waste as indicated in Section 13.

7. Handling and storage

Handling

Avoid dust formation. Use in well ventilated areas to prevent formation of explosive dust-air mixtures. Avoid inhalation and prolonged and/or repeated skin and eye contact.

Storage

Keep tightly closed in a dry and cool place. Containers should not be opened until ready to use. Store in original container. Keep at temperatures below 25°C. Keep away from incompatible materials (see Section 10).

8. Exposure controls/personal protection

Exposure guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH	Mexico
EDTA ferric sodium complex 15708-41-5	TWA: 1 mg/m³		TWA: 1 mg/m³	
Chemical Name	**British Columbia**	**Quebec**	**Ontario TWAEV**	**Alberta**
EDTA ferric sodium complex 15708-41-5	TWA: 1 mg/m³ STEL: 2 mg/m³	TWA: 1.0 mg/m³		TWA: 1 mg/m³

Occupational exposure controls

Engineering measures — Apply technical measures to comply with the occupational exposure limits. When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment.

General Information — If the product is used in mixtures, it is recommended that you contact the appropriate protective equipment suppliers These recommendations apply to the product as supplied

Respiratory protection — Whenever dust in the worker's breathing zone cannot be controlled with ventilation or other engineering means, workers should wear respirators or dust masks approved by NIOSH/MSHA, EU CEN or comparable organization to protect against airborne dust.

Eye/face protection — Tightly fitting safety goggles

Skin and body protection — Wear suitable protective clothing. Protective shoes or boots.

Hand protection — Protective gloves: Nitrile rubber.

Hygiene measures — When using, do not eat, drink or smoke. Wash hands and face before breaks and immediately after handling the product

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	Yellow to green powder
Physical state	solid
Odor	odorless
pH	(1% solution) 4 - 5.5
Melting Point/Range	80 °C (crystal water loss)
Freezing point	No information available.
Boiling Point/Range	not applicable
Flash Point	not applicable
Evaporation rate	not applicable
Flammable properties	Not combustible
Vapor pressure	No information available.
Vapor density	No information available.
Density	0.95 g/cm³
Water solubility	90 g/L @ 20 °C; 300 g/L @ 80 °C
Percent volatile	No information available.
Partition coefficient:	log Pow = <1
Viscosity	No information available.

9.2 Other information

Autoignition Temperature — > 200 °C

10. Stability and reactivity

Stability	Stable under recommended storage conditions.
Conditions to avoid	Temperatures above 25°C. Very hygroscopic; protect from moisture.
Hazardous decomposition products	Thermal decomposition can lead to release of irritating and toxic gases and vapors: nitrogen oxides (NOx), Carbon oxides, metal oxides.
Hazardous polymerization	Hazardous polymerization does not occur.

11. Toxicological information

Acute effects

Eye irritation	Non-irritating.
Skin irritation	Non-irritating to the skin
LD50 Oral	> 2000 mg/kg bw (rat)
LD50 Dermal	> 2000 mg/kg bw (rat)
LC50 Inhalation:	> 2.75 mg/L (4-hr)
Sensitization	Did not cause sensitization on laboratory animals.

Chronic Toxicity

Chronic Toxicity	In a 31/61-day oral study on rats with Ferric-sodium EDTA, the NOAEL >/= 84 mg/kg.
Carcinogenicity	Not recognized as carcinogenic by Research Agencies (IARC, NTP, OSHA, ACGIH)
Mutagenicity	Not mutagenic in Ames Test. Ferric sodium EDTA gave a positive response in the Mouse Lynphoma Assay (in vitro) with and without metabolic activation at concentrations that were cytotoxic. The positive response was attributed to a possible sensitivity of the cells to abnormal iron concentrations.
Reproductive toxicity	EDTA and its sodium salts have been reported, in some studies, to cause birth defects in laboratory animals only at exaggerated doses that were toxic to the mother. These effects are likely associated with zinc deficiency due to chelation. Exposures having no effect on the mother should have no effect on the fetus. Based on data with a related substance (magnesium-disodium EDTA), the NOAEL is expected to be 500 mg/kg.
Target Organ Effects	Skin, Eyes.

12. Ecological information

Ecotoxicity

Active Ingredient(s)
EDTA ferric sodium complex (15708-41-5)

Active Ingredient(s)	Duration	Species	Value	Units:
Ferric Sodium EDTA	96 h LC50	Rainbow trout	>100	mg/L
Ferric Sodium EDTA	35 day NOEC.	Zebra fish	28.9	mg/L
Ferric Sodium EDTA	48 h EC50	Daphnia magna	100.9	mg/L
Ferric Sodium EDTA	21 day NOEC.	Daphnia magna	31	mg/L
Ferric Sodium EDTA	72 h NOEC	Algae	69.9	mg/L

Persistence and degradability Inherently biodegradable. EDTA ferric-sodium complex is photodegradable with a half life of 20 days.

Bioaccumulation Bioaccumulation is unlikely.

Mobility Will likely be mobile in the environment due to its water solubility. C.O.D. is approximately 570 mg/g.

Chemical Name	log Pow
EDTA ferric sodium complex	-10.6 (based on EPIWN model)

13. Disposal considerations

Waste disposal methods This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements.

Contaminated packaging Cleaning the container before final disposal is the responsibility of the person disposing of the container. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT not regulated

TDG not regulated

ICAO/IATA not regulated

IMDG/IMO not regulated

15. Regulatory information

International Inventories

TSCA Inventory (United States of America)	Complies
DSL (Canada)	Complies
NDSL (Canada)	Complies
EINECS/ELINCS (Europe)	Complies
ENCS (Japan)	Complies
IECSC (China)	Complies
KECL (Korea)	Complies
PICCS (Philippines)	Complies
AICS (Australia)	Complies
NZIoC (New Zealand)	Complies

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute Health Hazard	no
Chronic Health Hazard	no
Fire Hazard	no
Sudden Release of Pressure Hazard	no
Reactive Hazard	no

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

International Regulations

Mexico - Grade Slight risk, Grade 1

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Hazard Class

Non-controlled

16. Other information

HMIS	Health Hazard 1	Flammability 1	Stability 0	Special precautions -

Revision Date: 2013-03-28
Reason for revision: (M)SDS sections updated. 11. 12.

Disclaimer

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Prepared By

Product Stewardship

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End of Material Safety Data Sheet

APPENDIX F
UNDERGROUND INJECTION CONTROL PERMIT
APPLICATION - IN-SITU CHEMICAL OXIDANT

Form I UIC

D H E C

Underground Injection Control
Permit Application
Ground-Water Protection Division
(Collected under the Authority of Title 48 Chapter I of the 1976 South Carolina Code of Laws)

I. EPA ID NUMBER

		T/A	C
U			

Read attached instructions before starting.
For OfficialUse Only

Application Approved month day year	Date Received month day year	Permit Well Number

Comments

II. Facility Name and Address	III. Owner/Operator and Address
Facility Name: Broad River Amoco	Owner/OperatorName: Frederick Cecchini
Street Address: 4335 Broad River Rd.	Street Address: 4335 Broad River Rd.
City: Columbia; State: South Carolina; Zip Code: 29210-4009	City: Columbia; State: South Carolina; Zip Code: 29210-4009

IV. Ownership Status (Select One)

☐ A. Federal ☐ B. State ☒ C. Private
☐ D. Public ☐ E. Other (Explain)

V. SIC Codes

VI. Well Status (Select A, B or C)

☐ A. Operating | Date Started *(MM/DD/YYYY)* | ☐ B. Modification/Conversion ☒ C. Proposed

VII. Type of Permit Requested - Class and Type of Well (see reverse)

A. Class(es) enter code(s)	B. Type(s) enter code(s)	C. If class is "other" or type is code 'Y', explain	D. Number of Wells per type
V.A	I		15

VIII. Location of Wells or Approximate Center of field or Project

C	A. Latitude				B. Longitude			
I		Deg 34	Min 03	Sec 55.68	Deg 81	Min 07	Sec 00.90	

IX. Attachments

Complete the following questions on a separate sheet(s) and number accordingly; see instructions for Classes 11, 111, and V, complete and submit on a separate sheet(s) attachments A-U as appropriate. Attach maps where required. List attachments by letter which are applicable and include with your application.

X. Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment.

A. Name (Type or Print)	Title	B. Phone No.
Michael L. Faris	Hydrogeologist	(803) 269-3913

C. Signature: Michael L. Faris

D. Date Signed (MM/DD/YYYY): 04/05/2014

DHEC2502(08/1997)

Underground Injection Control for Corrective Action Wells
Attachments to Form I UIC - DHEC 2502

Attachment A: Approximately 15 injection wells (to be installed) will be utilized for purposes of chemical oxidation in effort to reduce the mass of Chemicals of Concern (COC) that have been detected in groundwater samples from various monitoring wells at the site. The in-situ chemical oxidation methodology will consist of the injection of a concentrated chemical liquid source, along with a recommended catalyst or activator to promote the degradation and mineralization of CoC. The recommended chemical source (Klolzur™) is a product developed and marketed by FMC Environmental Solutions and PeroxyChem and consists of sodium persulfate that oxidizes petroleum hydrocarbons, including dissolved chemical compounds related to gasoline fuels. A chelated iron catalyst or activator will be included in the liquid source to be injected into the injection wells prior to permanent closure. The FMC Environmental Solutions and PeroxyChem companies have proven success of their products in case histories of COC reduction efforts in South Carolina. The South Carolina Department of Health and Environmental Control (SCDHEC) has approved the use of these in-situ chemical oxidants on several other petroleum hydrocarbon releases in the State. General product information and Material Safety Data Sheets for FMC Environmental Solutions / PeroxyChem's products are included in Appendix E with the attached corrective action plan. The chemical source will be injected under a constant moderate pressure into the injection wells. Approximately 10 to 20 (possibly more) gallons of liquid source will be injected into each well if utilized. Numerous events of oxidant application may be performed. The number of events will be dependent on the rate of success of COC mass reduction efforts.

Attachment B: A schematic drawing of a typical injection well is attached.

Attachment C: 1) Approximately 10 to 20 gallons (possibly more) of oxidant liquid source will be injected into each well. Depending on the success rate in reducing COC mass, numerous injection applications may be performed. The sediments of the site surficial aquifer are expected to moderately receive the injected oxidant source. 2) Injection pressure is expected to be 5 to 10 PSI during each of the injection efforts 3) (see attached Table 1) 4) Laboratory analytical results of groundwater samples collected from the monitoring well network on March 2014 are summarized in Table 2 5) The length of time that the project may span is dependent on the success of COC mass reduction efforts. Project duration currently estimated at 36 months.

Underground Injection Control for Corrective Action Wells
Attachments to Form 1 UIC - DHEC 2502 (continued)

Attachment D: Initially, groundwater sampling and laboratory analysis of pertinent monitoring well(s) will be performed on an annual basis. The sampling schedule and scope will change only with notification to SCDHEC for approval.

Attachment E: SCDHEC UST Permit # 11946

Attachment F: The facility is a gasoline convenience store.

Attachment G: The location of the area of review can be viewed on Figure 1 in Attachment B. The site facility and adjacent properties are serviced with municipal water supply.

Attachment H: (See Figures 1 through 4 in Attachment B).

Attachment I: (See Figures 5 through 7 in Attachment B).

Attachment J: The site uppermost surficial aquifer is targeted to receive the oxidant source injection.

Attachment K: Approximately 10 to 20 gallons (possibly more) of oxidant liquid source will be injected into each well. Depending on the success rate in reducing COC mass, numerous injection applications may be performed. The sediments of the site surficial aquifer are expected to moderately receive the injected oxidant source.

Table 1 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and March 5 through 7, 2014

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-1	1/21/2011	40.0	20.0 - 40.0	101.84	20.92	N/A	N/A	N/A	80.92
	3/5/2011	40.0	20.0 - 40.0	101.84	14.45	N/A	N/A	N/A	87.39
	3/5/2013	40.0	20.0 - 40.0	101.84	18.62	N/A	N/A	N/A	83.22
	3/6/2014	40.0	20.0 - 40.0	101.84	15.90	N/A	N/A	N/A	85.94
MW-2	3/5/2011	28.0	18.0 - 28.0	101.13	13.50	N/A	N/A	N/A	87.63
	3/6/2013	28.0	18.0 - 28.0	101.13	17.66	16.32	1.34	16.70	84.43
	3/5/2014	28.0	18.0 - 28.0	101.13	11.57	10.15	1.42	10.53	90.60
MW-3	3/5/2011	31.0	21.0 - 31.0	101.09	13.72	N/A	N/A	N/A	87.37
	3/6/2013	31.0	21.0 - 31.0	101.09	17.94	N/A	N/A	N/A	83.15
	3/7/2014	31.0	21.0 - 31.0	101.09	11.57	N/A	N/A	N/A	89.52
MW-4	3/5/2011	25.0	15.0 - 25.0	97.02	9.15	N/A	N/A	N/A	87.87
	3/6/2013	25.0	15.0 - 25.0	97.02	12.41	10.10	2.31	10.75	86.27
	3/5/2014	25.0	15.0 - 25.0	97.02	9.74	7.50	2.24	8.10	88.92
MW-5	6/20/2011	20.0	10.0 - 20.0	101.34	14.05	13.75	0.30	13.83	87.51
	3/6/2013	20.0	10.0 - 20.0	101.34	19.63	16.80	2.83	17.59	83.75
	3/5/2014	20.0	10.0 - 20.0	101.34	15.75	8.12	7.63	10.18	91.16
MW-6A	3/6/2013	25.5	15.5 - 25.5	101.84	18.00	N/A	N/A	N/A	83.84
	3/5/2014	25.5	15.5 - 25.5	101.84	15.15	N/A	N/A	N/A	86.69
MW-6B	3/6/2013	38.5	28.5 - 38.5	101.91	18.05	N/A	N/A	N/A	83.86
	3/5/2014	38.5	28.5 - 38.5	101.91	13.30	N/A	N/A	N/A	88.61
MW-7A	3/6/2013	24.0	14.0 - 24.0	100.04	16.60	N/A	N/A	N/A	83.44
	3/5/2014	24.0	14.0 - 24.0	100.04	11.00	N/A	N/A	N/A	89.04
MW-8A	3/6/2013	23.0	13.0 - 23.0	100.45	16.84	N/A	N/A	N/A	83.61
	3/5/2014	23.0	13.0 - 23.0	100.45	12.04	N/A	N/A	N/A	88.41

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 1 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and March 5 through 7, 2014

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-8B	3/6/2013	37.5	27.5 - 37.5	100.37	16.60	N/A	N/A	N/A	83.77
	3/5/2014	37.5	27.5 - 37.5	100.37	10.45	N/A	N/A	N/A	89.92
MW-9A	3/6/2013	23.0	13.0 - 23.0	101.36	18.61	N/A	N/A	N/A	82.75
	3/6/2014	23.0	13.0 - 23.0	101.36	11.50	N/A	N/A	N/A	89.86
MW-9B	3/6/2013	31.5	21.5 - 31.5	101.38	17.60	N/A	N/A	N/A	83.78
	3/6/2014	31.5	21.5 - 31.5	101.38	11.65	N/A	N/A	N/A	89.73
MW-10A	3/6/2013	17.5	7.5 - 17.5	97.20	11.05	N/A	N/A	N/A	86.15
	3/6/2014	17.5	7.5 - 17.5	97.20	2.80	N/A	N/A	N/A	94.40
MW-10B	3/6/2013	39.0	29.0 - 39.0	97.34	13.87	N/A	N/A	N/A	83.47
	3/6/2014	39.0	29.0 - 39.0	97.34	7.54	N/A	N/A	N/A	89.80
MW-11A	3/6/2013	20.0	10.0 - 20.0	89.93	10.52	N/A	N/A	N/A	79.41
	3/6/2014	20.0	10.0 - 20.0	89.93	9.50	N/A	N/A	N/A	80.43
MW-11B	3/6/2013	35.0	29.0 - 39.0	90.26	10.30	N/A	N/A	N/A	79.96
	3/6/2014	35.0	29.0 - 39.0	90.26	9.47	N/A	N/A	N/A	80.79
MW-12A	3/6/2013	20.0	10.0 - 20.0	99.26	13.95	N/A	N/A	N/A	85.31
	3/6/2014	20.0	10.0 - 20.0	99.26	16.20	N/A	N/A	N/A	83.06
MW-12B	3/6/2013	36.5	26.5 - 36.5	99.35	16.72	N/A	N/A	N/A	82.63
	3/6/2014	36.5	26.5 - 36.5	99.35	11.87	N/A	N/A	N/A	87.48
MW-13A	3/25/2013	22.0	12.0 - 22.0	98.70	19.80	N/A	N/A	N/A	78.90
	3/5/2014	22.0	12.0 - 22.0	98.70	N/A	N/A	N/A	N/A	N/A
MW-13B	3/6/2013	33.5	23.5 - 33.5	98.69	19.88	N/A	N/A	N/A	78.81
	3/6/2014	33.5	23.5 - 33.5	98.69	16.12	N/A	N/A	N/A	82.57
MW-14A	3/6/2013	20.0	10.0 - 20.0	97.49	14.52	N/A	N/A	N/A	82.97
	3/6/2014	20.0	10.0 - 20.0	97.49	11.10	N/A	N/A	N/A	86.39
MW-14B	3/6/2013	38.5	28.5 - 38.5	97.45	17.27	N/A	N/A	N/A	80.18
	3/6/2014	38.5	28.5 - 38.5	97.45	12.45	N/A	N/A	N/A	85.00

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 1 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and March 5 through 7, 2014

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-15A	3/25/2013	17.0	7.0 - 17.0	96.87	16.01	N/A	N/A	N/A	80.86
	3/6/2014	17.0	7.0 - 17.0	96.87	15.58	N/A	N/A	N/A	81.29
MW-15B	3/6/2013	40.0	30.0 - 40.0	96.82	17.60	N/A	N/A	N/A	79.22
	3/6/2014	40.0	30.0 - 40.0	96.82	14.10	N/A	N/A	N/A	82.72
MW-16A	3/25/2013	18.0	8.0 - 18.0	95.95	16.21	N/A	N/A	N/A	79.74
	3/5/2014	18.0	8.0 - 18.0	95.95	N/A	N/A	N/A	N/A	N/A
MW-16B	3/6/2013	37.0	27.0 - 37.0	95.68	16.75	N/A	N/A	N/A	78.93
	3/5/2014	37.0	27.0 - 37.0	95.68	N/A	N/A	N/A	N/A	N/A
MW-17B	3/6/2013	39.5	29.5 - 39.5	92.69	9.05	N/A	N/A	N/A	83.64
	3/5/2014	39.5	29.5 - 39.5	92.69	6.04	N/A	N/A	N/A	86.65
MW-18A	3/6/2013	13.0	3.0 - 13.0	88.20	0.85	N/A	N/A	N/A	87.35
	3/5/2014	13.0	3.0 - 13.0	88.20	0.82	N/A	N/A	N/A	87.38
MW-18B	3/6/2013	35.0	25.0 - 35.0	88.30	1.05	N/A	N/A	N/A	87.25
	3/5/2014	35.0	25.0 - 35.0	88.30	0.78	N/A	N/A	N/A	87.52
MW-19A	3/6/2013	15.0	5.0 - 15.0	91.63	7.95	N/A	N/A	N/A	83.68
	3/5/2014	15.0	5.0 - 15.0	91.63	6.02	N/A	N/A	N/A	85.61
MW-19B	3/6/2013	34.0	24.0 - 34.0	91.69	8.35	N/A	N/A	N/A	83.34
	3/5/2014	34.0	24.0 - 34.0	91.69	7.58	N/A	N/A	N/A	84.11
MW-20A	3/6/2013	15.0	5.0 - 15.0	88.67	5.05	N/A	N/A	N/A	83.62
	3/5/2014	15.0	5.0 - 15.0	88.67	4.97	N/A	N/A	N/A	83.70
MW-20B	3/6/2013	35.0	25.0 - 35.0	88.61	4.11	N/A	N/A	N/A	84.50
	3/5/2014	35.0	25.0 - 35.0	88.61	3.62	N/A	N/A	N/A	84.99
MW-21A	3/6/2013	12.0	2.0 - 12.0	87.16	0.85	N/A	N/A	N/A	86.31
	3/5/2014	12.0	2.0 - 12.0	87.16	0.65	N/A	N/A	N/A	86.51
MW-21B	3/6/2013	35.0	25.0 - 35.0	87.23	1.35	N/A	N/A	N/A	85.88
	3/5/2014	35.0	25.0 - 35.0	87.23	0.85	N/A	N/A	N/A	86.38

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 1 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and March 5 through 7, 2014

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-22B	3/6/2013	35.0	25.0 - 35.0	87.40	2.10	N/A	N/A	N/A	85.30
	3/5/2014	35.0	25.0 - 35.0	87.40	1.45	N/A	N/A	N/A	85.95
RW-1	3/6/2013	40.0	20.0 - 40.0	101.21	17.26	17.11	0.15	17.15	84.06
	3/5/2014	40.0	20.0 - 40.0	101.21	15.78	9.10	6.68	10.90	90.31
RW-2	3/6/2013	40.0	20.0 - 40.0	100.96	16.96	N/A	N/A	N/A	84.00
	3/5/2014	40.0	20.0 - 40.0	100.96	10.65	N/A	N/A	N/A	90.31
RW-3	3/6/2013	41.0	21.0 - 41.0	101.44	17.41	17.36	0.05	17.37	84.07
	3/5/2014	41.0	21.0 - 41.0	101.44	10.58	10.52	0.06	10.54	90.90
RW-4	3/6/2013	40.5	20.5 - 40.5	100.83	16.73	N/A	N/A	N/A	84.10
	3/7/2014	40.5	20.5 - 40.5	100.83	10.50	N/A	N/A	N/A	90.33
RW-5	3/6/2013	38.5	18.5 - 38.5	101.62	17.64	17.58	0.06	17.6	84.02
	3/5/2014	38.5	18.5 - 38.5	101.62	10.88	10.58	0.30	10.66	90.96
DMW-1	3/6/2013	65.0	60.0 - 65.0	101.16	18.21	N/A	N/A	N/A	82.95
	3/7/2014	65.0	60.0 - 65.0	101.16	14.07	N/A	N/A	N/A	87.09
DMW-2	3/6/2013	65.0	60.0 - 65.0	92.63	9.40	N/A	N/A	N/A	83.23
	3/7/2014	65.0	60.0 - 65.0	92.63	5.94	N/A	N/A	N/A	86.69
DMW-3	3/6/2013	65.0	60.0 - 65.0	87.41	2.10	N/A	N/A	N/A	85.31
	3/5/2014	65.0	60.0 - 65.0	87.41	1.40	N/A	N/A	N/A	86.01

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 2 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5, 2011 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-1	3/5/2011	**1,760**	**18,400**	**1,270**	5,140	**4,070J**	<83.9	<121	<0.0032	**18**
	3/8/2013	**2,480**	**12,800**	**1,550**	5,650	**623**	**70.8 J**	**ND (11.6)**	ND (0.0039)	14 J
	3/6/2014	**3,080**	**35,100**	**3,130**	**13,300**	**754J**	ND(38.5)	**ND(58.1)**	ND(0.0063)	NA
MW-2	3/5/2011	**1,650**	**3,230**	422	2,190	**462J**	**3,420**	<12.1	**1.42**	<15
	3/6/2013	**1.34' Free Product**								
	3/5/2014	**1.42' Free Product**								
MW-3	3/5/2011	<15	10.4	9.52	30.6	4.74J	7.91	<0.121	<0.0032	<15
	3/8/2013	0.417 J	1.05	0.408 J	1.72 J	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/7/2014	2.04J	20.9J	2.81J	17.3J	7.44J	ND(0.770)	ND(1.16)	ND(0.0063)	NA
MW-4	3/5/2011	**1,830**	198	**1,270**	3,160	**598**	**3,100**	<12.1	<0.0032	<15
	3/6/2013	**2.31' Free Product**								
	3/5/2014	**2.24' Free Product**								
MW-5	6/20/2011	**0.30' Free Product**								
	3/6/2013	**2.83' Free Product**								
	3/5/2014	**7.63' Free Product**								
MW-6A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	13 J
	3/5/2014	ND(0.111)	0.469J	ND(0.109)	1.63J	2.43J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-6B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	**19**
	3/5/2014	0.372J	2.96J	2.15J	13.9J	13.1	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-7A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	1.06J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-8A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	6.8 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 2 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5, 2011 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	N/A	5	1,000	700	10,000	25	40	5 (MCL)	0.05	15 (Action Level)
MW-8B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-9A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.62	0.642 J	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.21J	0.667J	ND(0.0063)	NA
MW-9B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.79	0.675 J	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.51J	0.668J	ND(0.0063)	NA
MW-10A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-10B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-11A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.00	ND (0.116)	ND (0.0039)	11 J
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.67J	ND(0.116)	ND(0.0063)	NA
MW-11B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.12	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	0.940J	ND(0.116)	ND(0.0063)	NA
MW-12A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.486J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-12B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.359J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-13A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	7.8 J
	3/5/2014	Insufficient Water								
MW-13B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.322J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-14A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.329J	ND(0.077)	ND(0.116)	ND(0.0063)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 2 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5, 2011 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	N/A	5	1,000	700	10,000	25	40	5 (MCL)	0.05	15 (Action Level)
MW-14B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.277J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-15A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	5.3 J
	3/6/2014	ND(0.111)	ND(0.122)	0.166J	0.893J	0.454J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-15B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-16A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	**35**
	3/5/2014	Abandoned								
MW-16B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	Abandoned								
MW-17B	3/6/2013	**6.58**	2.47	1.1 J	3.87 J	ND (0.352	**244**	ND (0.232)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(1.11)	3.27J	ND(1.09)	9.61J	12.8J	**420**	ND(1.16)	ND(0.0063)	NA
MW-18A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.42	ND (0.116)	ND (0.0039)	**590**
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.363J	2.82J	ND(0.116)	ND(0.0063)	NA
MW-18B	3/6/2013	ND (0.111)	0.459 J	ND (0.109)	2.03 J	ND (0.176)	0.841 J	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.225J	0.416J	ND(0.116)	ND(0.0063)	NA
MW-19A	3/6/2013	0.566 J	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	1.97J	1.87J	0.941J	6.10J	3.67J	0.644J	ND(0.116)	ND(0.0063)	NA
MW-19B	3/6/2013	0.253 J	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	0.329J	0.349J	0.123J	1.07J	1.33J	1.11J	ND(0.116)	ND(0.0063)	NA
MW-20A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.15	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	0.991J	0.505J	2.92J	3.50J	0.526J	ND(0.116)	ND(0.0063)	NA
MW-20B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.25	ND (0.116)	ND (0.0039)	8.77 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.492J	18.1	ND(0.116)	ND(0.0063)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 2 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5, 2011 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-21A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	12 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-21B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.34	ND (0.116)	ND (0.0039)	6.8 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	5.75	ND(0.116)	ND(0.0063)	NA
MW-22B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.83	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	2.64J	ND(0.116)	ND(0.0063)	NA
RW-1	3/6/2013	**0.15' Free Product**								
	3/5/2014	**6.68' Free Product**								
RW-2	3/8/2013	**9,420**	**12,800**	**2,030**	**11,000**	**565 J**	**9100**	**224 J**	**1.65**	ND (3.8)
	3/5/2014	**11,000**	**18,500**	**1,580**	9,850	**299J**	**26,900**	**58.1J**	ND(0.0063)	NA
RW-3	3/6/2013	**0.05' Free Product**								
	3/5/2014	**0.06' Free Product**								
RW-4	3/8/2013	**3,390**	**1,730**	**977**	4,900	**210 J**	**4,460**	**ND (5.81)**	ND (0.0039)	12 J
	3/7/2014	**2,960**	**4,070**	378J	3,500	**186J**	**9,160**	**ND(11.6)**	ND(0.0063)	NA
RW-5	3/6/2013	**0.06' Free Product**								
	3/5/2014	**0.30' Free Product**								
DMW-1	3/8/2013	**507**	ND (1.22)	ND (1.09	ND (0.179)	ND (1.76)	**131**	**14.2 J**	ND (0.0039)	ND (3.8)
	3/7/2014	ND(0.111)	0.827J	ND(0.109)	1.17J	ND(0.176)	**159**	2.60J	ND(0.0063)	NA
DMW-2	3/6/2013	4.12	0.548 J	ND (0.109)	0.805 J	ND (0.176)	**153**	ND (0.116)	ND (0.0039)	ND (3.8)
	3/7/2014	0.669J	3.63J	1.90J	10.7J	13.2	**89.2**	ND(0.232)	ND(0.0063)	NA
DMW-3	3/6/2013	0.281 J	0.497 J	ND (0.109)	ND (0.179	ND (0.176)	1.76	ND (0.116)	ND (0.0039)	**120**
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.33J	ND(0.116)	ND(0.0063)	NA

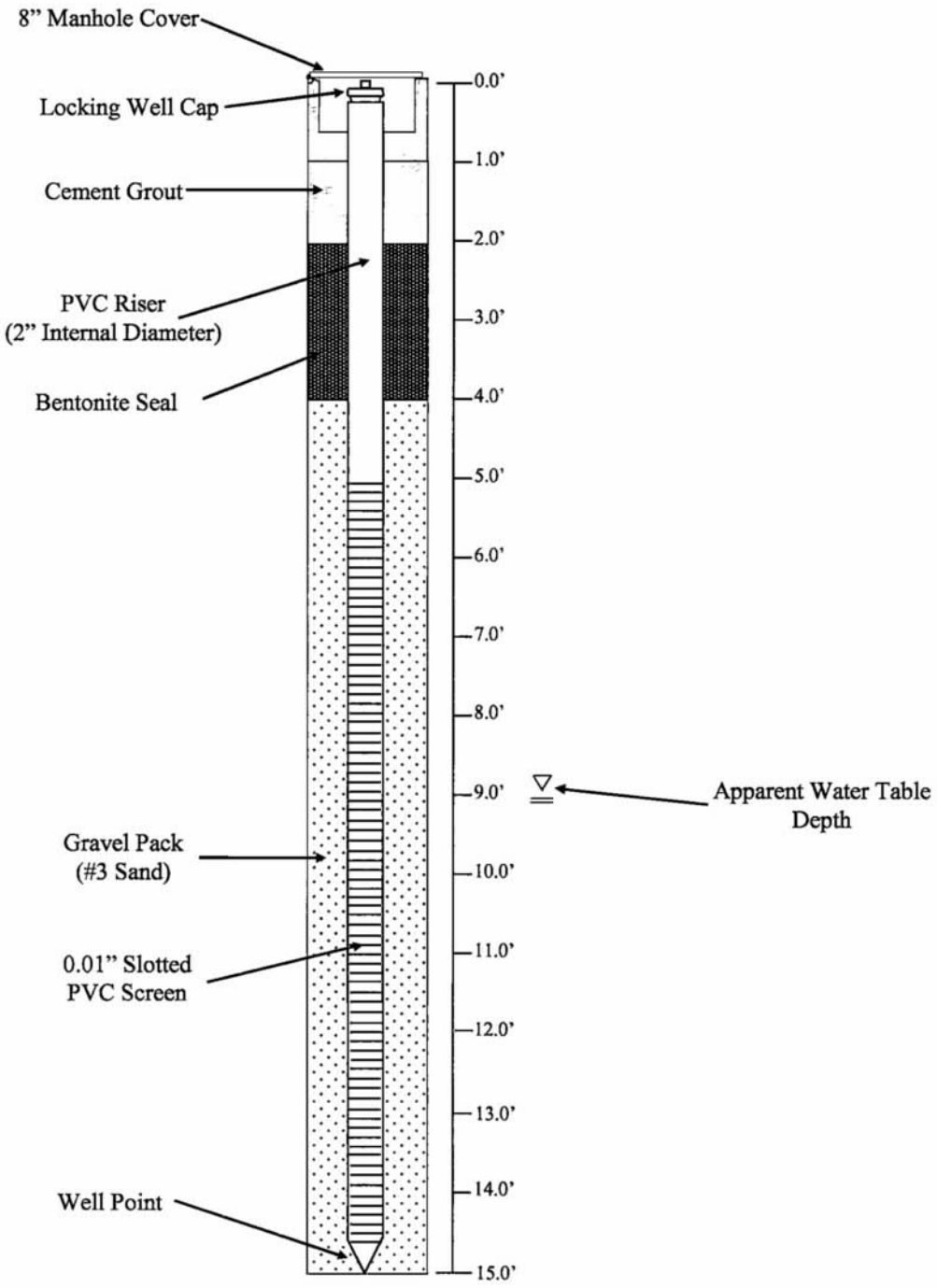
Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

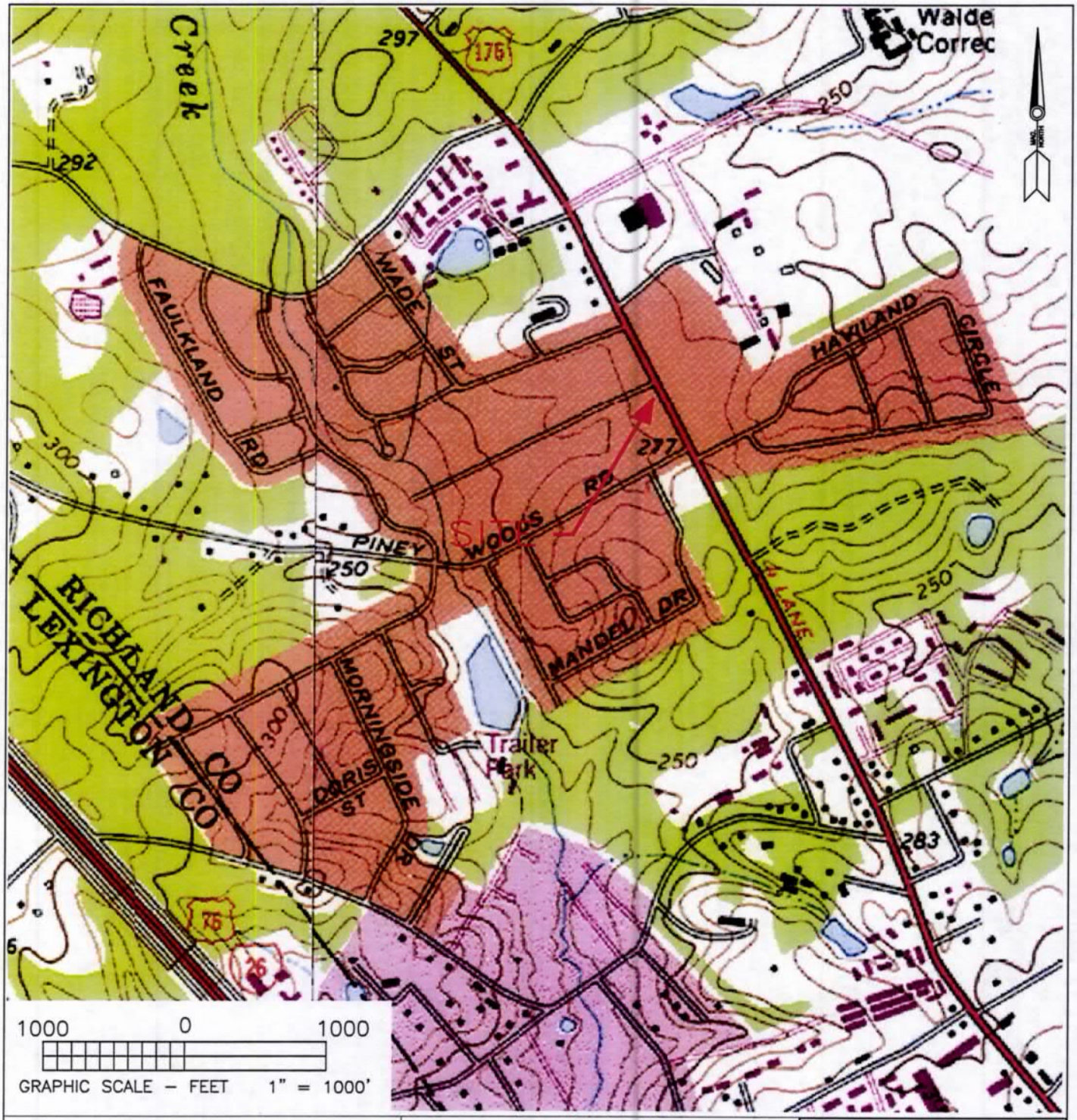
ATTACHMENT B

Well Construction Schematic

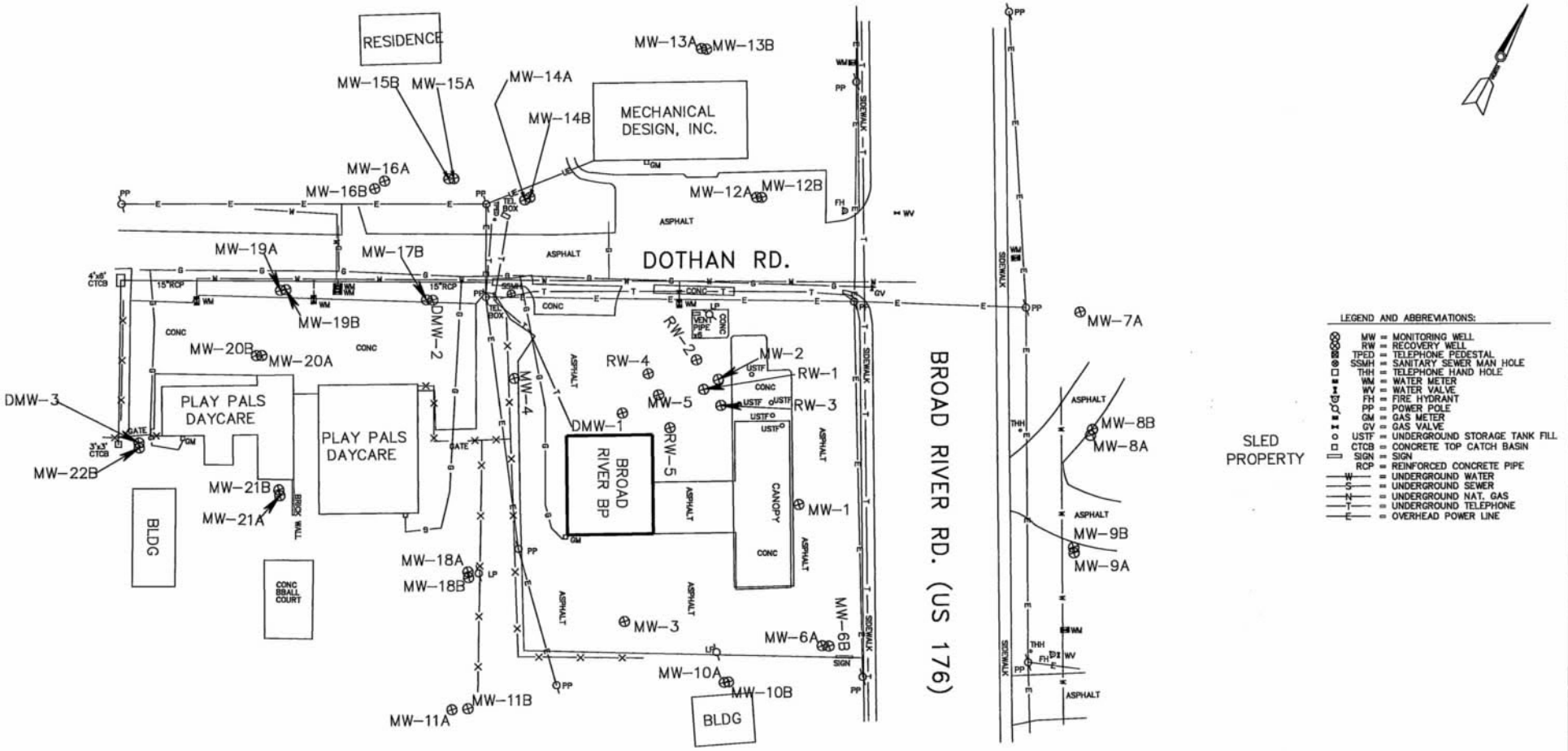
Figure 1 – Site Location Map (Topographic)
Figure 2 – Site Base Map
Figure 3 – Potentiometric Map (Shallow)
Figure 4 – Potentiometric Map (Intermediate)
Figure 5 – Geological Cross Section Base Map
Figure 6 – Geological Cross Section A-A'
Figure 7 – Geological Cross Section B-B'

Injection Well Construction Schematic





PROJECT: CORRECTIVE ACTION PLAN BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: SITE LOCATION MAP	*FIGURE 1* DATE: MARCH 2014
ENVIRO-TEST SERVICES	REFERENCE: U.S.G.S. TOPOGRAPHIC MAP (7.5 MINUTE SERIES) COLUMBIA NORTH – 1972, REV. 1990 SOUTH CAROLINA QUADRANGLE	LEGEND:



PROJECT:
CORRECTIVE ACTION PLAN
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
SITE BASE MAP

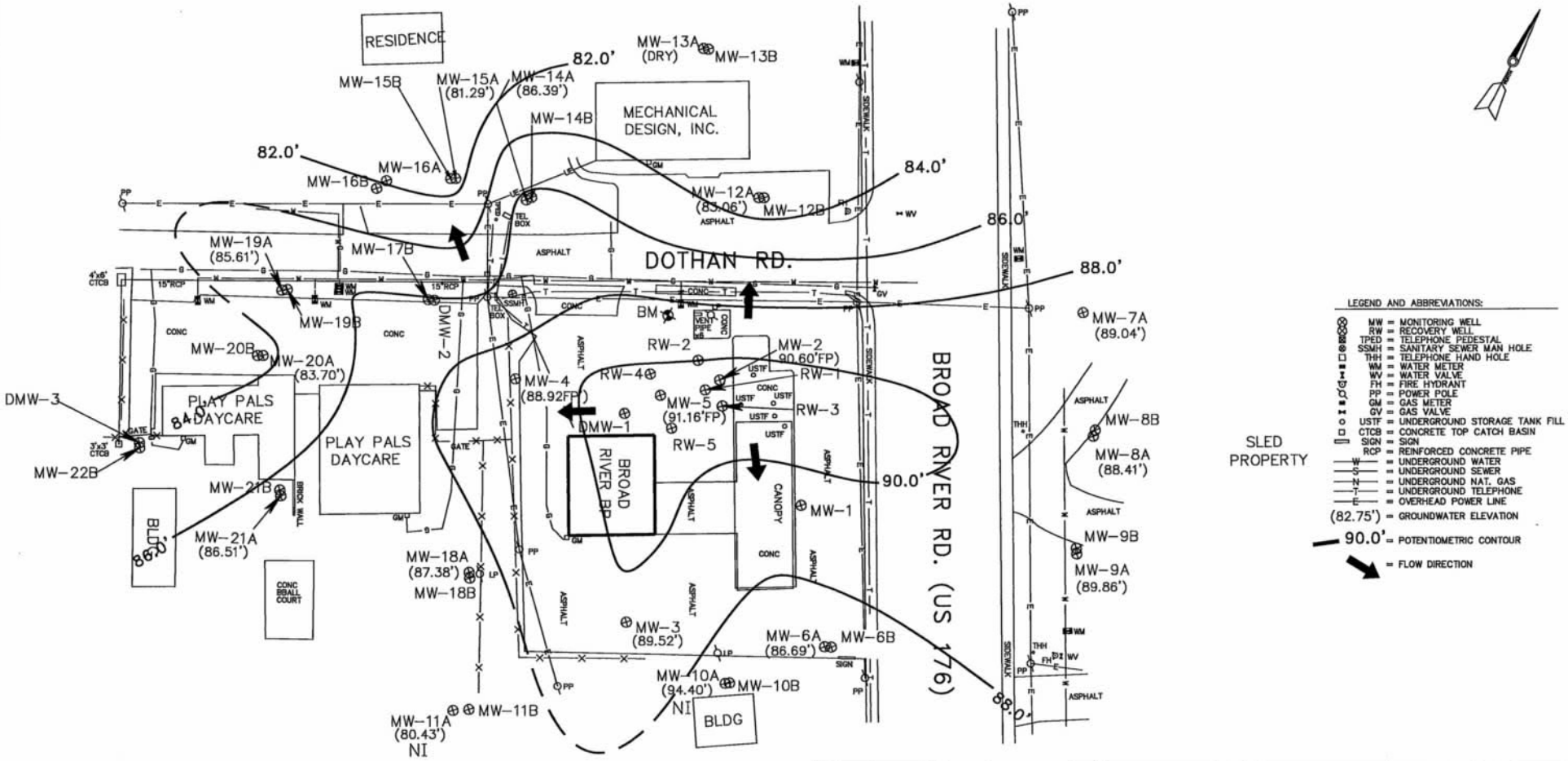
FIGURE 2

DATE:
MARCH 2014

ENVIRO-TEST SERVICES

REFERENCE:

NOTES:



PROJECT:
CORRECTIVE ACTION PLAN
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
GENERALIZED
POTENTIOMETRIC SURFACE MAP
(SHALLOW ZONE)

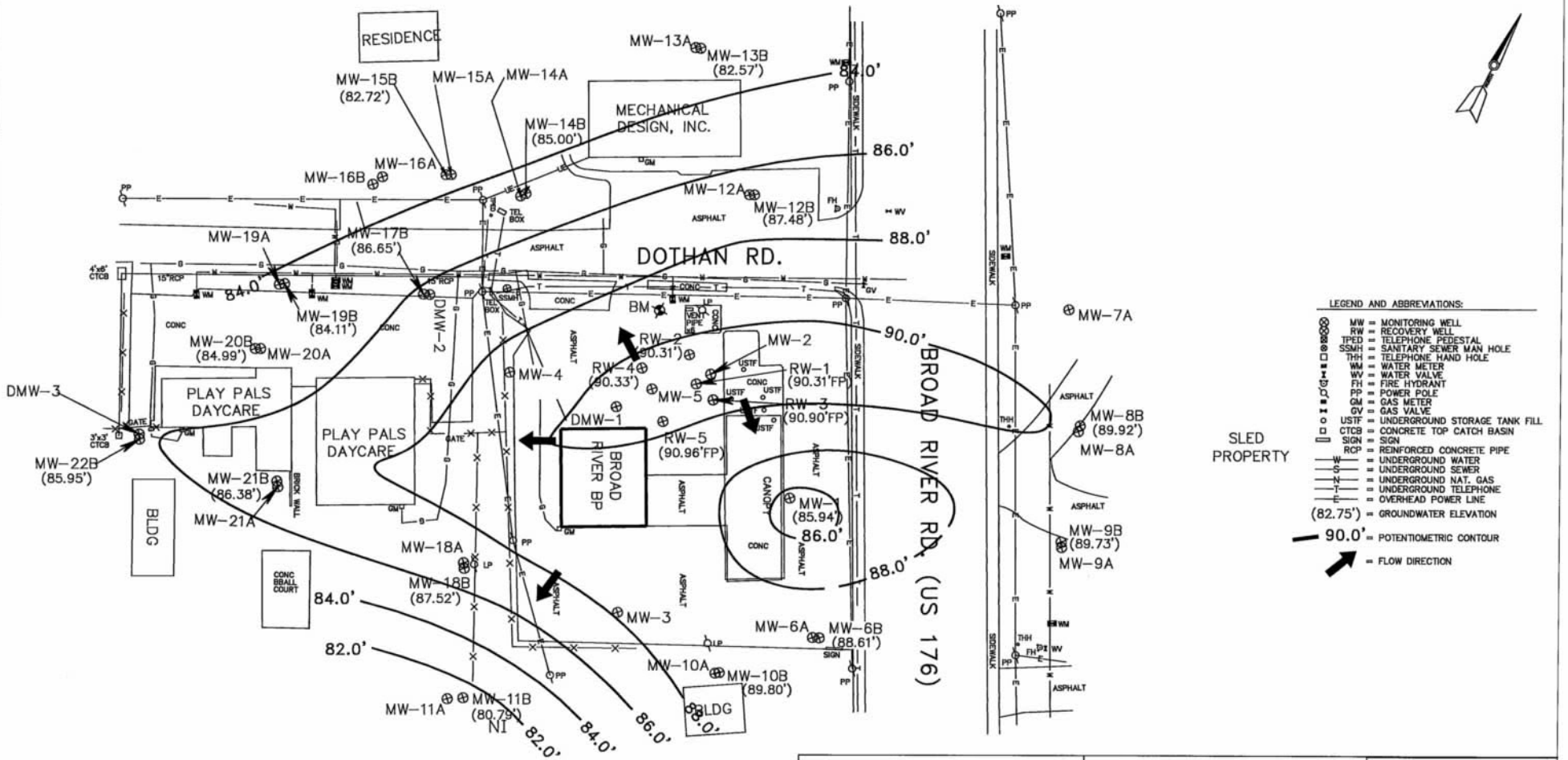
FIGURE 3

SAMPLE DATE:
MARCH 2014

ENVIRO-TEST SERVICES

REFERENCE:
GROUNDWATER ELEVATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL. CONTOURS ARE AT 2.0' INTERVALS.

NOTES:
NI = NOT INCLUDED
FP = WATER LEVEL CORRECTED FOR FREE PRODUCT



PROJECT:
CORRECTIVE ACTION PLAN
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
GENERALIZED
POTENTIOMETRIC SURFACE MAP
(INTERMEDIATE ZONE)

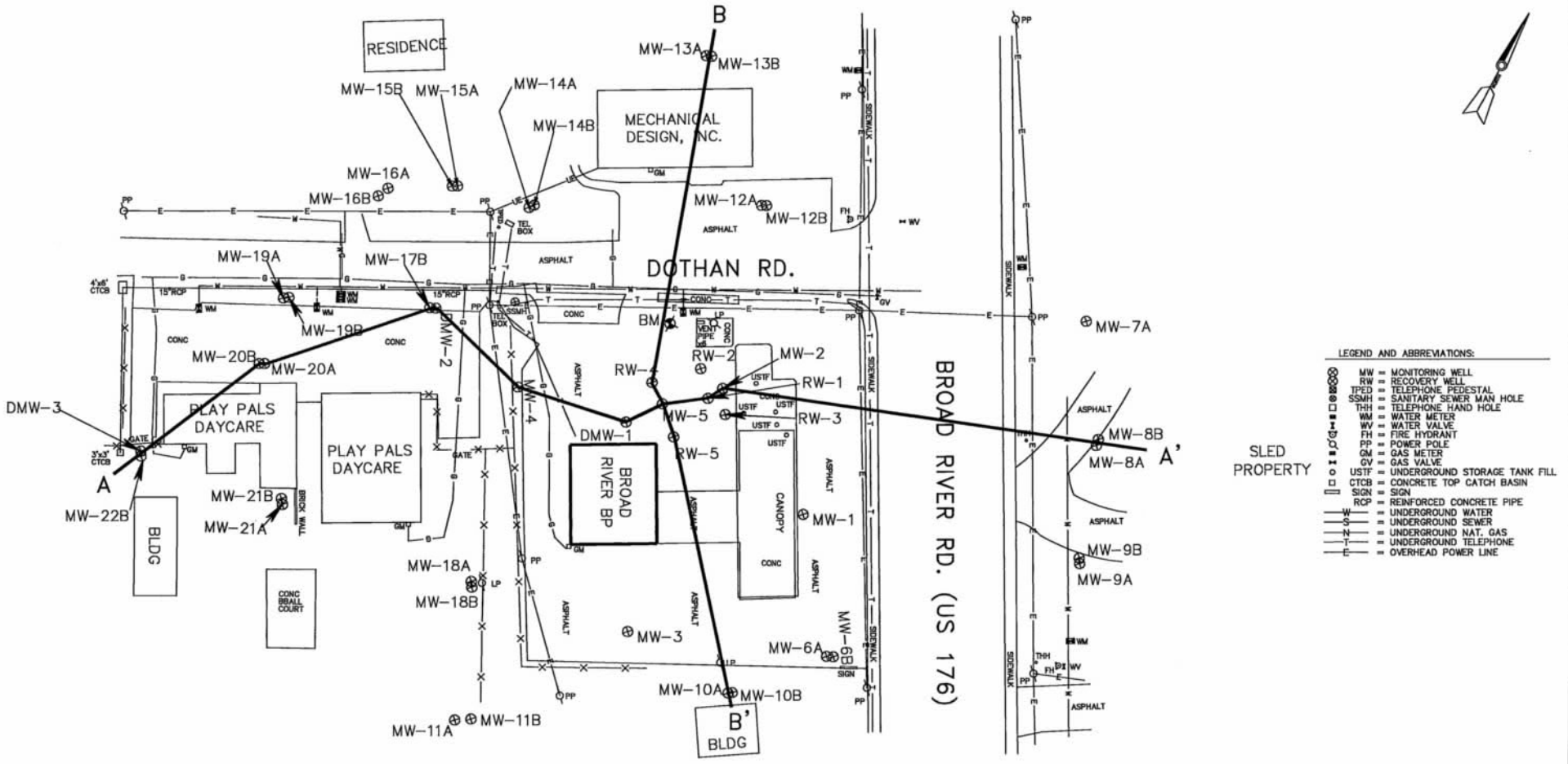
FIGURE 4

SAMPLE DATE:
MARCH 2014

ENVIRO-TEST SERVICES

REFERENCE:
GROUNDWATER ELEVATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL. CONTOURS ARE AT 2.0' INTERVALS.

NOTES:
NI = NOT INCLUDED
FP = WATER LEVEL CORRECTED FOR FREE PRODUCT



PROJECT:
CORRECTIVE ACTION PLAN
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
GEOLOGICAL CROSS SECTION
BASE MAP

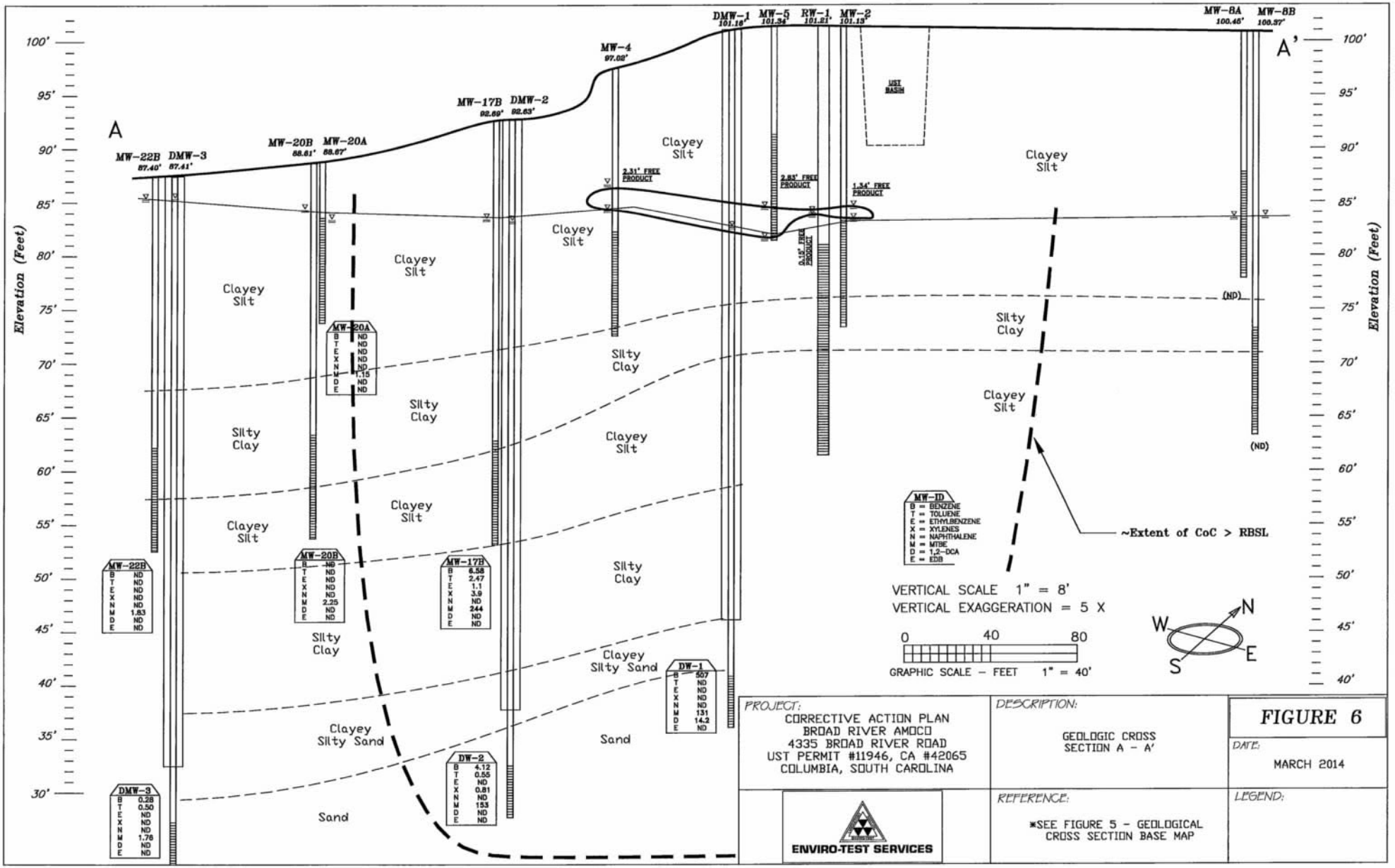
FIGURE 5

DATE:
MARCH 2014

REFERENCE:

NOTES:

ENVIRO-TEST SERVICES



PROJECT:
CORRECTIVE ACTION PLAN
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #42065
COLUMBIA, SOUTH CAROLINA

ENVIRO-TEST SERVICES

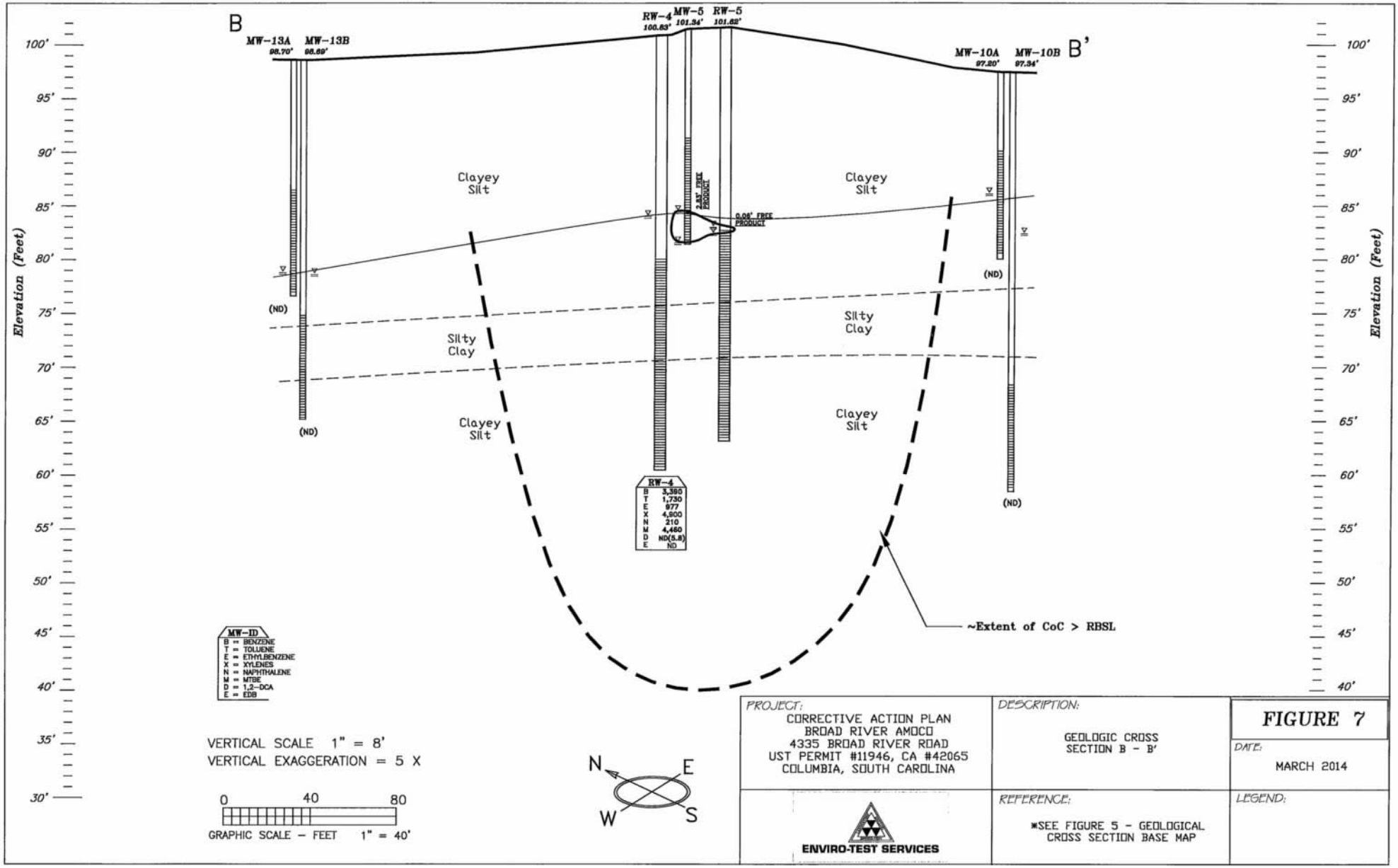
DESCRIPTION:
GEOLOGIC CROSS SECTION A - A'

REFERENCE:
*SEE FIGURE 5 - GEOLOGICAL CROSS SECTION BASE MAP

FIGURE 6

DATE:
MARCH 2014

LEGEND:



PROJECT: CORRECTIVE ACTION PLAN BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #42065 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: GEOLOGIC CROSS SECTION B – B'	**FIGURE 7** DATE: MARCH 2014
ENVIRO-TEST SERVICES	REFERENCE: *SEE FIGURE 5 – GEOLOGICAL CROSS SECTION BASE MAP	LEGEND:

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

4th Ltr
UST
DOCKET

FREDRICK N CECCHINI
BROAD RIVER AMOCO
4335 Broad River Road
COLUMBIA SC 29210-4009

Re: Tier I Assessment Directive
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit # 11946; Monitoring Well Approval # UMW-24111
Release reported January 4, 2011
Initial Groundwater Assessment received February 4, 2011
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (SCDHEC) has reviewed the referenced report submitted by Enviro-Test Services on your behalf. The report documents benzene, naphthalene, and MtBE in excess of risk based screening levels for soil and groundwater.

In accordance with Section 280.65 of the South Carolina Underground Storage Tank Regulations, assessment activities must be conducted as chemicals of concern are above the risk-based-screening levels in groundwater. Therefore, implementation of the scope of work as outlined in the Tier I Assessment will be necessary to characterize any possible risk to human health or to sensitive environmental receptors. The assessment should be conducted in accordance with the Tier I Assessment guidance document and must be conducted in compliance with all applicable regulations. All shallow wells are to be installed with screen intervals that bracket the water table. The Tier I document may be obtained from our website at http://www.scdhec.gov/ust. **The Tier I report should be submitted to the Division within 60 days of the date of this correspondence.** Water Well Record (DHEC form 1903, signed by a SC Certified well driller) are required for each new temporary or permanent monitoring well **in accordance with the South Carolina Well Standards, R.61-71**. 1903 forms are required for field screening borings (whether direct push or drilled) where a sample is extracted for analysis.

Please be aware that the release cannot be qualified for State Underground Petroleum Environmental Response Bank (SUPERB) and SUPERB funds cannot be expended for site rehabilitation until the UST system is determined to have been in substantial compliance at the time of the release and a completed SUPERB application is on-file with the UST Management Division. Our records indicate that an application has not been received.

Please note that in addition to the sample analyses required in the Tier I Guidance Document, all initial assessment activities are now required to include analyses for EDB (by EPA Method 8011) and lead. Laboratory analyses should be in accordance with *Analytical Methodology for Groundwater and Soil Assessment Guidelines* dated August 24, 2005. A copy of this publication is available on line at http://www.scdhec.gov/environment/lwm/forms/analmet.pdf. Also, if any drinking water wells are located within 500 feet of the UST system, a water sample shall be obtained from the well(s) and analyzed for the appropriate parameters.

Please note that in accordance with R.61-92, Subpart H, Section 280.114, you are required to notify the Division by certified mail within ten (10) days of commencing a voluntary or involuntary proceeding in bankruptcy. State law also requires that an owner/operator or guarantor that files for bankruptcy protection must immediately submit appropriate forms documenting that entity's ability to demonstrate financial responsibility.

Implementation of the Tier I Assessment may proceed immediately upon receipt of this correspondence. Approval to install three permanent monitoring wells is enclosed. Please note that applicable South Carolina certification requirements regarding laboratory services, well installation, and report preparation must be satisfied. Also note that only EPA Method 8260B will be accepted for analysis of volatile organic hydrocarbons except for EDB because EDB needs to be analyzed under EPA Method 8011 for the lower detection limit. Any site rehabilitation activity associated with the UST release must be performed by a SCDHEC-certified site rehabilitation contractor as required by R.61-98. According to Section IV.C.1 of the SUPERB Site Regulations and Fund Access Regulations, R.61-98, all plans, reports, invoices, and other documents relating to site rehabilitation activities which have been prepared or approved by a certified contractor shall be signed by the certified contractor and bear his certification number

The Department grants pre-approval for transportation of virgin petroleum impacted soil and groundwater from the referenced site to a permitted treatment facility. There can be no spillage or leakage in transport. All investigation-derived waste (IDW) must be properly contained and labeled prior to disposal. IDW should not be stored on-site longer than ninety (90) days. A copy of the disposal manifest and/or acceptance letter from the receiving facility that clearly designates the quantity received must be included as an appendix to the report. If the CoC concentrations, based on laboratory analysis, are below Risk Based Screening Levels (RBSLs), please contact the project manager for approval to dispose of soil and/or groundwater on site. The SUPERB Account will not reimburse for transportation or treatment of soil or groundwater with concentrations below RBSLs.

Please reference UST Permit number 11946 on all correspondence. If you have any questions, please contact me by phone at (803) 896-6669, by fax at (803) 896-6245, or by email at shradeaa@dhec.sc.gov.

Sincerely,

Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Monitoring Well Approval (MWA)

cc: Enviro-Test Services, PO Box 2237, Irmo, SC 29063 (with enc.)
Technical File (with enc.)

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

Monitoring Well Installation Approval Form

Is hereby granted to:	Enviro-Test Services, Incorporated
(on behalf of)	Mr. Fredrick Cecchini, Broad River Amoco
Facility:	Broad River Amoco 4355 Broad River Road, Columbia, SC
UST Permit Number:	11946
County:	Richland

This approval is for the installation of three shallow monitoring wells. The monitoring wells are to be installed in the approved locations. The monitoring wells are to be installed following the South Carolina Well Standards, R.61-71, and the applicable guidance documents.

Please note that R.61-71 requires the following:

1. All wells shall be drilled, constructed, and abandoned by a South Carolina certified well driller per R.61-71.D.1.

2. All monitoring wells shall be labeled as required by R.61-71.H.2.c.

3. A Water Well Record Form or other form provided or approved by the Department shall be completed and submitted to the Department within 30 days after well completion or abandonment unless another schedule has been approved by the Department. The form should contain the "as-built" construction details and all other information required by R.61-71.H.1.f

4. All analytical data and water levels obtained from each monitoring well shall be submitted to the Department within 30 days of receipt of laboratory results unless another schedule has been approved by the Department as required by R.61-71.H.1.d.

5. If any of the information provided to the Department changes, notification to Arthur Shrader (tel: (803) 896-6669 or e-mail: shradeaa@dhec.sc.gov) shall be provided a minimum of twenty-four (24) hours prior to well construction as required by R.61-71.H.1.a.

6. All temporary monitoring wells shall be abandoned within 5 days of borehole completion using appropriate methods as required by R.61-71.H.4.c. All other wells shall be properly developed per R.61-71.H.2.d.

7. Departmental approval is required prior to abandonment of all monitoring wells as required by R.61-71.H.1.a.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina Code of Laws and R.61-71 of the South Carolina Well Standards and Regulations, dated April 26, 2002. A copy of this approval should be on the site during well installation.

Date of Issuance: **January 11, 2011** **Approval #:** **UMW-24111**

Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

D H E C
PROMOTE PROTECT PROSPER
Catherine B. Templeton, Director
Promoting and protecting the health of the public and the environment

MR FREDERICK N CECCHINI
4335 BROAD RIVER RD
COLUMBIA SC 29210

MAY 28 2014

UST DOCKETING

Re: Public notice of proposed corrective action
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit #11946
Release reported January 4, 2011
Corrective action plan received May 6, 2014
Richland County

Dear Mr. Cecchini:

As you are aware, petroleum products have been identified in the soil and groundwater at the Broad River Amoco facility. To prevent the release from becoming an unacceptable risk, Enviro-Test Services, Inc. has been retained to initiate corrective action of the impacted soil and groundwater. Enviro-Test has submitted a corrective action plan (CAP) for aggressive fluid and vapor recovery (AFVR)/hydraulic fracturing, air sparge/vapor extraction, chemical injection, and excavation followed by natural attenuation. A copy of the CAP has been sent to you. Please contact me if you have not received the CAP.

Section 280.67 of the South Carolina Underground Storage Tank Regulations requires the South Carolina Department of Health and Environmental Control (Agency) to provide notice to those members of the public that may be affected by a planned corrective action. A copy of the public notice is enclosed for your information.

Enviro-Test will coordinate all corrective action activities with you. Your continued cooperation is appreciated.

If you have any questions or comments regarding the proposed corrective action, please contact me by phone at (803) 898-0655, by fax at (803) 898-0673, or by email at padgetjp@dhec.sc.gov. All comments should be submitted on or before June 16, 2014.

Sincerely,

Joel P. Padgett, P.G., Geologist/Hydrologist
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

JPP/jpp
11946.pnlet

enc: Public notice
cc: Technical file (w/enc)

D H E C

PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

MS HERTELINE LOWMAN
4315 BROAD RIVER RD
COLUMBA SC 29210

MAY 2 - 2014

Re: Public notice of proposed corrective action
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit #11946
Release reported January 4, 2011
Corrective action plan received May 6, 2014
Richland County

Dear Ms. Lowman:

As you may be aware, petroleum products have been identified in the soil and groundwater at the Broad River Amoco facility near your property (tax map #R06108-04-70). To prevent the release from becoming an unacceptable risk, Enviro-Test Services, Inc. has been retained to initiate corrective action of the impacted soil and groundwater. Enviro-Test has submitted a corrective action plan (CAP) for aggressive fluid and vapor recovery (AFVR)/hydraulic fracturing, air sparge/vapor extraction, chemical injection, and excavation followed by natural attenuation. A copy of the CAP has been sent to you. Please contact me if you have not received the CAP.

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Sincerely,

Joel P. Padgett, P.G., Geologist/Hydrologist
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

JPP/jpp
11946.pnlet

enc: Public notice
cc: Technical file (w/enc)

D H E C
PROMOTE PROTECT PROSPER
Catherine B Templeton, Director
Promoting and protecting the health of the public and the environment

SOUTH CAROLINA GENERAL SERVICES
300 GERVAIS ST
COLUMBIA SC 29201

MAY 2 8 2014

Re: Public notice of proposed corrective action
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit #11946
Release reported January 4, 2011
Corrective action plan received May 6, 2014
Richland County

Dear Sir or Madam:

As you may be aware, petroleum products have been identified in the soil and groundwater at the Broad River Amoco facility near your property (tax map #R06200-03-02). To prevent the release from becoming an unacceptable risk, Enviro-Test Services, Inc. has been retained to initiate corrective action of the impacted soil and groundwater. Enviro-Test has submitted a corrective action plan (CAP) for aggressive fluid and vapor recovery (AFVR)/hydraulic fracturing, air sparge/vapor extraction, chemical injection, and excavation followed by natural attenuation. A copy of the CAP has been sent to you. Please contact me if you have not received the CAP.

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Sincerely,

Joel P. Padgett, P.G., Geologist/Hydrologist
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

JPP/jpp
11946.pnlet

enc: Public notice
cc: Technical file (w/enc)

D H E C

PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

MDC ASSOCIATES
4403 BROAD RIVE RD
COLUMBIA SC 29210

MAY 28 2014

Re: Public notice of proposed corrective action
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit #11946
Release reported January 4, 2011
Corrective action plan received May 6, 2014
Richland County

Dear Sir or Madam:

As you may be aware, petroleum products have been identified in the soil and groundwater at the Broad River Amoco facility near your property (tax map #R06108-04-25). To prevent the release from becoming an unacceptable risk, Enviro-Test Services, Inc. has been retained to initiate corrective action of the impacted soil and groundwater. Enviro-Test has submitted a corrective action plan (CAP) for aggressive fluid and vapor recovery (AFVR)/hydraulic fracturing. air sparge/vapor extraction, chemical injection, and excavation followed by natural attenuation. A copy of the CAP has been sent to you. Please contact me if you have not received the CAP.

Section 280.67 of the South Carolina Underground Storage Tank Regulations requires the South Carolina Department of Health and Environmental Control (Agency) to provide notice to those members of the public that may be affected by a planned corrective action. A copy of the public notice is enclosed for your information.

Enviro-Test will coordinate applicable corrective action activities with you. Your continued cooperation is appreciated.

If you have any questions or comments regarding the proposed corrective action, please contact me by phone at (803) 898-0655, by fax at (803) 898-0673, or by email at padgetjp@dhec.sc.gov. All comments should be submitted on or before June 16, 2014.

Sincerely,

Joel P. Padgett, P.G., Geologist/Hydrologist
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

JPP/jpp
11946.pnlet

enc: Public notice
cc: Technical file (w/enc)

D H E C

PROMOTE PROTECT PROSPER

Catherine B Templeton, Director

Promoting and protecting the health of the public and the environment

JAMES R AND WENDY S RICE
22 CADDIS CREEK CT
IRMO SC 29063

MAY 2 8 2014

Re: Public notice of proposed corrective action
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit #11946
Release reported January 4, 2011
Corrective action plan received May 6, 2014
Richland County

Dear Mr. and Ms. Rice:

As you may be aware, petroleum products have been identified in the soil and groundwater at the Broad River Amoco facility near your property (tax map #R06108-04-26). To prevent the release from becoming an unacceptable risk, Enviro-Test Services, Inc. has been retained to initiate corrective action of the impacted soil and groundwater. Enviro-Test has submitted a corrective action plan (CAP) for aggressive fluid and vapor recovery (AFVR)/hydraulic fracturing. air sparge/vapor extraction, chemical injection, and excavation followed by natural attenuation. A copy of the CAP has been sent to you. Please contact me if you have not received the CAP.

Section 280.67 of the South Carolina Underground Storage Tank Regulations requires the South Carolina Department of Health and Environmental Control (Agency) to provide notice to those members of the public that may be affected by a planned corrective action. A copy of the public notice is enclosed for your information.

Enviro-Test will coordinate applicable corrective action activities with you. Your continued cooperation is appreciated.

If you have any questions or comments regarding the proposed corrective action, please contact me by phone at (803) 898-0655, by fax at (803) 898-0673, or by email at padgetjp@dhec.sc.gov. All comments should be submitted on or before June 16, 2014.

Sincerely,

Joel P. Padgett, P.G., Geologist/Hydrologist
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

JPP/jpp
11946.pnlet

enc: Public notice
cc: Technical file (w/enc)

D H E C

PROMOTE PROTECT PROSPER

Catherine B Templeton, Director

Promoting and protecting the health of the public and the environment

WILLIAM R AND BONNIE B SAVILLE
4509 WADE ST
COLUMBIA SC 29210

MAY 28 2014

Re: Public notice of proposed corrective action
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit #11946
Release reported January 4, 2011
Corrective action plan received May 6, 2014
Richland County

Dear Mr. and Ms. Saville:

As you may be aware, petroleum products have been identified in the soil and groundwater at the Broad River Amoco facility near your properties (tax map #R06108-04-67 and #R06108-04-68). To prevent the release from becoming an unacceptable risk, Enviro-Test Services, Inc. has been retained to initiate corrective action of the impacted soil and groundwater. Enviro-Test has submitted a corrective action plan (CAP) for aggressive fluid and vapor recovery (AFVR)/hydraulic fracturing, air sparge/vapor extraction, chemical injection, and excavation followed by natural attenuation. A copy of the CAP has been sent to you. Please contact me if you have not received the CAP.

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Sincerely,

Joel P. Padgett, P.G., Geologist/Hydrologist
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

JPP/jpp
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enc: Public notice
cc: Technical file (w/enc)

D H E C

PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment.

PUBLIC NOTICE

Notice #11946-1
June 2, 2014

This notice is to inform the public that the S.C. Department of Health and Environmental Control (Agency) is taking public comments on a corrective action plan (CAP). Section 280.67 of the S.C. Underground Storage Tank Control Regulations (R.61-92) requires that any CAP prepared to meet the requirements of 280.66 be placed on notice for public comment. The CAP addresses the cleanup of soil and groundwater contamination at the facility listed below. The contamination was caused by petroleum products that were released from the former underground storage tank system at this facility.

FACILITY: Broad River Amoco, 4335 Broad River Road, Columbia, SC

APPLICANT: Enviro-Test Services, Inc., P.O. Box 2237, Irmo, SC 29063 on behalf of Mr. Frederick Cecchini, 4335 Broad River Road, Columbia, SC 29210.

SUMMARY OF CAP: Petroleum and petroleum byproducts naturally break down over time through chemical, physical, and biological processes. These processes are called natural attenuation. Enviro-test Services, Inc. has submitted a CAP proposing the use of the following technologies in addition to natural attenuation to clean up the contamination:

- Aggressive Fluid Vapor Recovery (AFVR)/Hydraulic fracturing: High vacuum is applied to monitoring/recovery wells. The vacuum removes petroleum free-phase product, petroleum vapors, and petroleum-contaminated groundwater from the subsurface. Hydraulic fracturing may be used to increase the effectiveness of the AFVR. The process consists of high-pressure injection of drilling mud and sand into the subsurface through dedicated boreholes to create fractures that will serve as preferential pathways for free-phase product.
- Air sparging/Vapor extraction: Air is injected into the subsurface through dedicated injection wells to volatize petroleum constituents. Vacuum is applied to dedicated vapor extraction wells to remove petroleum vapors from the subsurface.
- Chemical injection: Chemical oxidants are injected into the subsurface through dedicated injection wells to oxidize petroleum constituents and enhance aerobic biodegradation.
- Excavation: Excavate and properly dispose of petroleum-impacted soils.

PUBLIC COMMENT PERIOD DEADLINE: The deadline for submitting written comments is 5:00 PM, June 16, 2014. Any interested person(s) may submit written comments concerning the cleanup to the Project Manager listed below. Please bring this notice to the attention of persons whom you know will be interested in this matter. Where there is a significant degree of public interest, the Agency will hold a public hearing.

E C

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Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

UST DOCKETING

SOUTH CAROLINA GENERAL SERVICES
300 GERVAIS ST
COLUMBIA SC 29201

MAY 28 2014

Re: Public notice of proposed corrective action
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit #11946
Release reported January 4, 2011
Corrective action plan received May 6, 2014
Richland County

Dear Sir or Madam:

As you may be aware, petroleum products have been identified in the soil and groundwater at the Broad River Amoco facility near your property (tax map #R06200-03-02). To prevent the release from becoming an unacceptable risk, Enviro-Test Services, Inc. has been retained to initiate corrective action of the impacted soil and groundwater. Enviro-Test has submitted a corrective action plan (CAP) for aggressive fluid and vapor recovery (AFVR)/hydraulic fracturing, air sparge/vapor extraction, chemical injection, and excavation followed by natural attenuation. A copy of the CAP has been sent to you. Please contact me if you have not received the CAP.

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Sincerely,

Joel P. Padgett, P.G., Geologist/Hydrologist
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

JPP/jpp
11946.pnlet

enc: Public notice
cc: Technical file (w/enc)

Joel P. Padgett, P.G., Geologist/Hydrologist
SCDHEC - UST Management Division
2600 Bull Street
Columbia SC 29201
803-898-0655

CONTACT INFORMATION: For additional information, please call the Project Manager listed above. To view a copy of the CAP, contact the Freedom of Information Office at 803-898-3882.

D H E C

PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

PUBLIC NOTICE

Notice #11946-1
June 2, 2014

This notice is to inform the public that the S.C. Department of Health and Environmental Control (Agency) is taking public comments on a corrective action plan (CAP). Section 280.67 of the S.C. Underground Storage Tank Control Regulations (R.61-92) requires that any CAP prepared to meet the requirements of 280.66 be placed on notice for public comment. The CAP addresses the cleanup of soil and groundwater contamination at the facility listed below. The contamination was caused by petroleum products that were released from the former underground storage tank system at this facility.

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APPLICANT: Enviro-Test Services, Inc., P.O. Box 2237, Irmo, SC 29063 on behalf of Mr. Frederick Cecchini, 4335 Broad River Road, Columbia, SC 29210.

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UST
DOCUMENTS
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UST
JUN 13 2014
DIVISION

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Site-Specific Work Plan for Approved ACQAP
Underground Storage Tank Management Division

To: Joel Padgett (SCDHEC Project Manager)
From: Michael Faris (Contractor Project Manager)
Contractor: Enviro-Test Services, Inc. UST Contractor Certification Number: #14

Facility Name: Broad River Amoco UST Permit #: 11946
Facility Address: 4335 Broad River Rd., Columbia SC
Responsible Party: Frederich Cecchini Phone: 803-798-3051
RP Address: 4335 Broad River Rd., Columbia SC 29210
Property Owner (if different): same
Property Owner Address: _____
Current Use of Property: gasoline service station

Scope of Work (Please check all that apply)

☐ IGWA ☐ Tier II ☑ Groundwater Sampling ☐ GAC
☐ Tier I ☐ Monitoring Well Installation ☐ Other _____

Analyses (Please check all that apply)

Groundwater/Surface Water:

☑ BTEXNMDCA (8260B) ☐ Lead ☐ BOD ☐ Methane
☑ Oxygenates (8260B) ☐ 8 RCRA Metals ☐ Nitrate ☐ Ethanol
☐ EDB (8011) ☐ TPH ☐ Sulfate ☐ Dissolved Iron
☐ PAH (8270D) ☐ pH ☐ Other _____

Soil:

☐ BTEXN ☐ 8 RCRA Metals ☐ TPH-DRO (3550B/8015B) ☐ Grain Size
☐ PAH ☐ Oil & Grease (9071) ☐ TPH-GRO (5030B/8015B) ☐ TOC

Air:

☐ BTEXN

Sample Collection (Estimate the number of samples of each matrix that are expected to be collected.)

_____ Soil _____ Water Supply Wells _____ Air 3 Field Blank
44 Monitoring Wells _____ Surface Water 3 Duplicate 2 Trip Blank

Field Screening Methodology

Estimate number and total completed depth for each point, and include their proposed locations on the attached map.

# of shallow points proposed: _____ Estimated Footage: _____ feet per point
# of deep points proposed: _____ Estimated Footage: _____ feet per point
Field Screening Methodology: _____

Permanent Monitoring Wells

Estimate number and total completed depth for each well, and include their proposed locations on the attached map.

# of shallow wells: _____ Estimated Footage: _____ feet per point
# of deep wells: _____ Estimated Footage: _____ feet per point
# of recovery wells: _____ Estimated Footage: _____ feet per point
Monitoring Well development method (consistent with SOP): _____
Comments, if warranted:

_____
_____
_____

UST Permit #: 11946 Facility Name: Broad River Amoco

Implementation Schedule (Number of calendar days from approval)
Field Work Start-Up: 15 days Field Work Completion: 30 days
Report Submittal: 60 days # of Copies Provided to Property Owners: _____

Aquifer Characterization
Pump Test: ☐ Slug Test: ☐ (Check one and provide explanation below for choice)

Investigation Derived Waste Disposal
Soil: _____ Tons Purge Water: 150 Gallons
Drilling Fluids: _____ Gallons Free-Phase Product: _____ Gallons

Additional Details For This Scope of Work
For example, list wells to be sampled, wells to be abandoned/repaired, well pads/bolts/caps to replace, details of AFVR event, etc.
MW-1 through MW-5, MW-6A, -6B, -7A, -8A, -8B, -9A, -9B, -10A, -10B, -11A, -11B, -12A, -12B, -13A, -13B, -14A, -14B, -15A, -15B, -16A, -16B, -17B, -18A, -18B, -19A, -19B, -20A, -20B, -21A, -21B, -22B, RW-1 through RW-5, DMW-1 through DMW-3

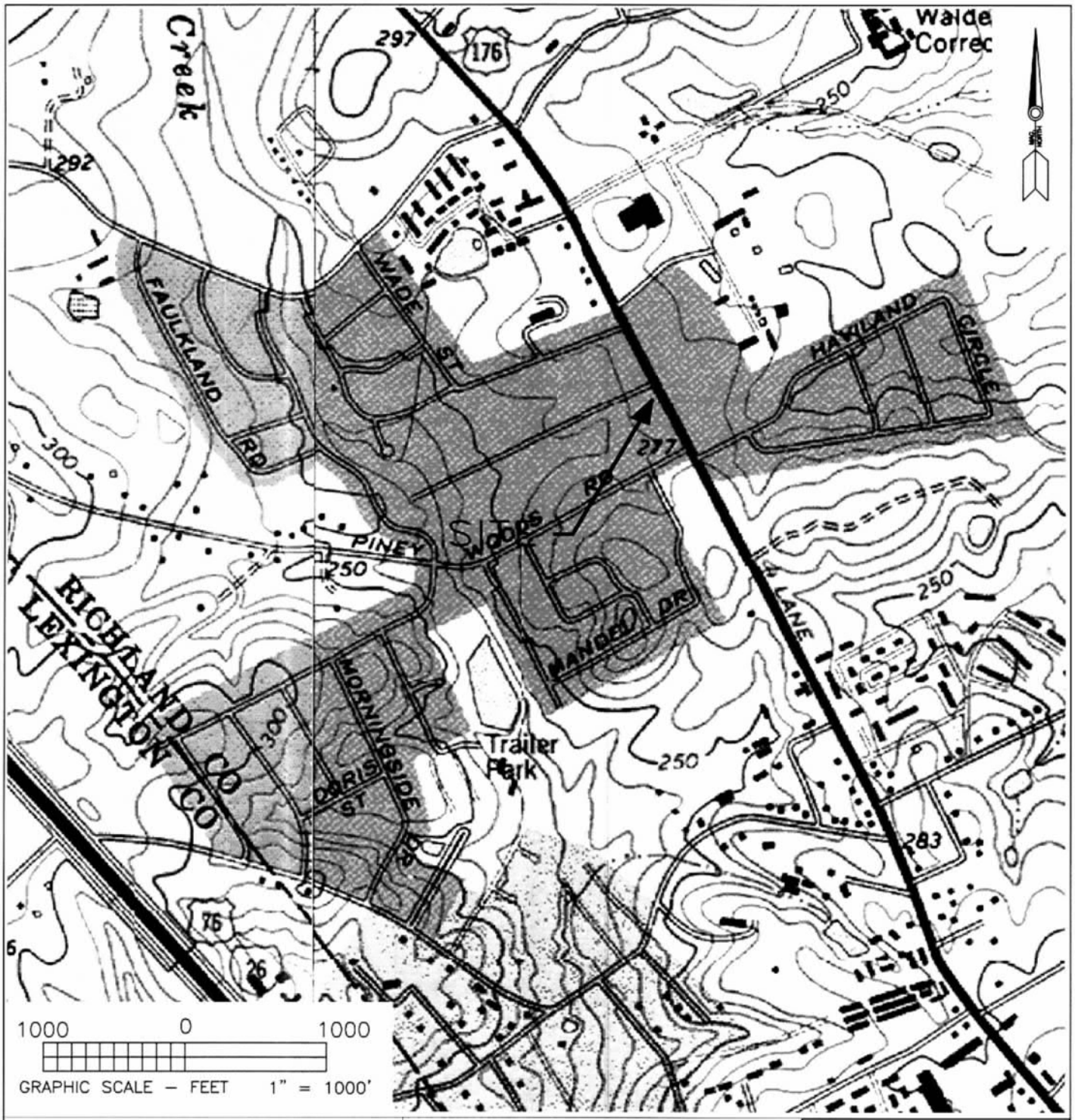
*It should be noted that only samples from: MW-1 through MW-5, MW-17B, RW-1 through RW-5, DMW-1 and DMW-2 have contained CoC at concentrations at or above RBSLs for the last two sampling events (only sampling other than IGWA & Tier I). Therefore, a written request may be submitted to DHEC to exclude clean perimeter wells from future sampling events.

Compliance With Annual Contractor Quality Assurance Plan (ACQAP)
Yes Laboratory as indicated in ACQAP? (Yes/No) If no, indicate laboratory information below.
Name of Laboratory: _____
SCDHEC Certification Number: _____
Name of Laboratory Director: _____

____ Well Driller as indicated in ACQAO? (Yes/No) If no, indicate driller information below.
Name of Well Driller: _____
SCLLR Certification Number: _____

____ Other variations from ACQAP. Please describe below.

Attachments
1. Attach a copy of the relevant portion of the USGS topographic map showing the site location.
2. Prepare a site base map. This map must be accurately scaled, but does not need to be surveyed. The map must include the following:
   - North Arrow
   - Location of property lines
   - Location of buildings
   - Previous soil sampling locations
   - Previous monitoring well locations
   - Proposed soil boring locations
   - Proposed monitoring well locations
   - Legend with facility name and address, UST permit number, and bar scale
   - Streets or highways (indicate names and numbers)
   - Location of all present and former ASTs and USTs
   - Location of all potential receptors
3. Assessment Component Cost Agreement, SCDHEC Form D-3664



PROJECT:

CORRECTIVE ACTION - SSWP
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:

SITE LOCATION MAP

FIGURE 1

DATE:

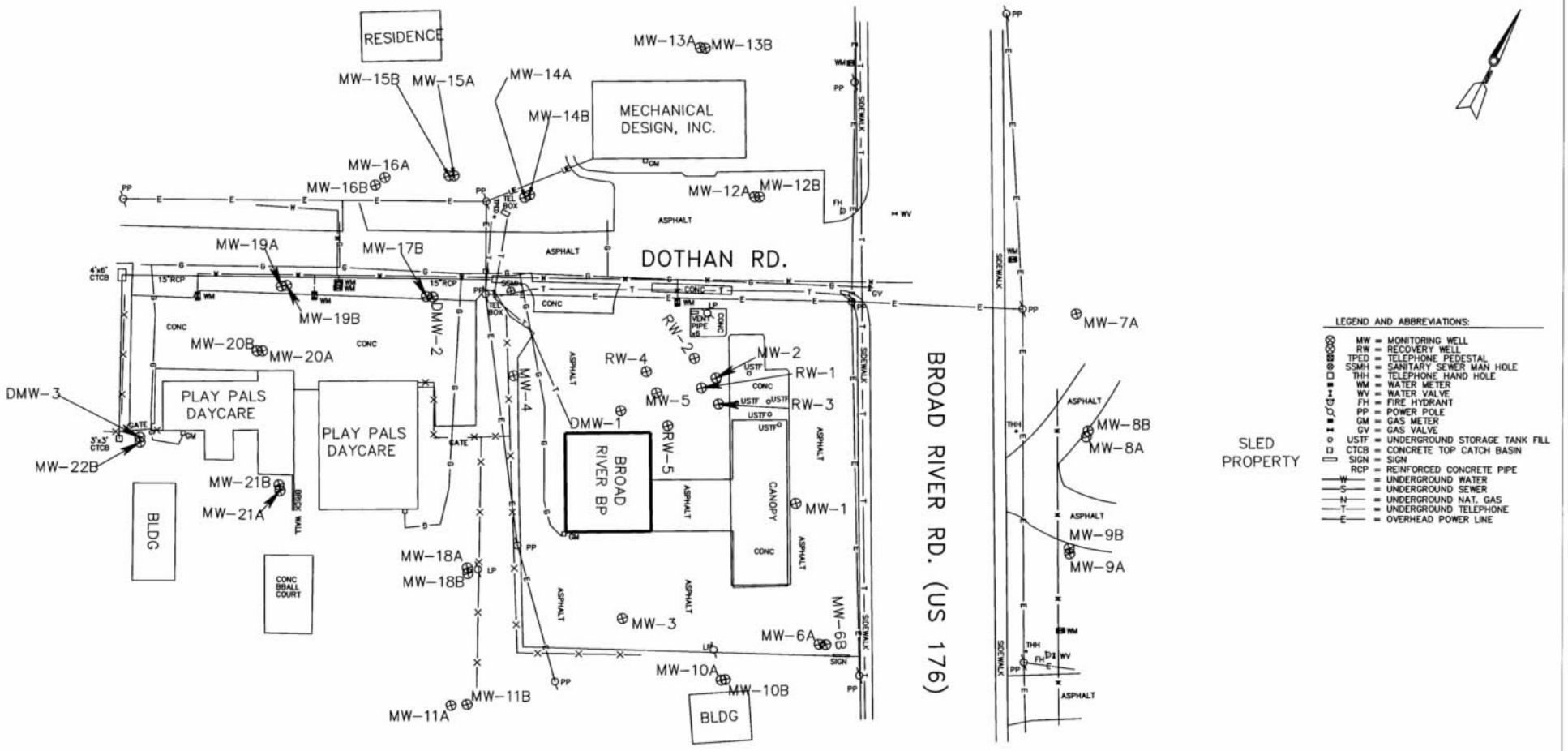
JUNE 2014

ENVIRO-TEST SERVICES

REFERENCE:

U.S.G.S. TOPOGRAPHIC MAP
(7.5 MINUTE SERIES)
COLUMBIA NORTH - 1972, REV. 1990
SOUTH CAROLINA QUADRANGLE

LEGEND:



PROJECT:
CORRECTIVE ACTION - SSWP
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
SITE BASE MAP

FIGURE 2

DATE:
JUNE 2014

REFERENCE:

NOTES:

ENVIRO-TEST SERVICES

D H E C

PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

MR FREDERICK N CECCHINI
4335 BROAD RIVER RD
COLUMBIA SC 29210-4009

JUN 18 2014

UST DOCKETING 43Keel

Re: Notice to proceed-ACA
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit #11946; CA #46916; MWA #UMW-25554
Release reported January 4, 2011
Corrective action plan received May 6, 2014
Site-specific work plan received June 13, 2014
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced site-specific work plan (SSWP) and corrective action plan (CAP). As required by Section 280.67 of the South Carolina Underground Storage Tank Regulations R.61-92, the Division has provided public notice of the proposed corrective action to all interested parties. No objections to the corrective action were received. Therefore, Enviro-Test Services may proceed with corrective action under the following restrictions:

- Proposed air sparging and chemical injection may not proceed without approved permits to construct and permits to operate issued by the Agency's Bureau of Water. The Division understands that Enviro-Test is submitting revised permit applications for review and approval.

Please refer to Solicitation Item C for a schedule of deliverables and deadlines. In accordance with the solicitation, the CAP must be implemented within 30 days of the date of this letter and a CAP implementation report must be submitted within 60 days of the date of this letter. All work must be conducted in accordance with the UST Management Division Quality Assurance Program Plan (QAPP) Revision 2.0 and the specifications outlined in the solicitation. The necessary monitoring well approval (MWA) is enclosed. Please coordinate with property owners to secure access and to minimize inconveniences.

The Agency grants pre-approval for transportation of virgin petroleum impacted soil and groundwater from the referenced site to a permitted treatment facility. There can be no spillage or leakage in transport. All investigation-derived waste (IDW) must be properly contained and labeled prior to disposal. IDW should not be stored on-site longer than 90 days. A copy of the disposal manifest and/or acceptance letter from the receiving facility that clearly designates the quantity received must be included as an appendix to the corrective action system evaluation (CASE) report.

As outlined in correspondence to you dated February 5, 2014, Cost Agreement (CA) #46916 has been approved in the amount of $149,380.00 for the corrective action. The first corrective action invoice in the amount of $59,742 (40%) may be submitted on an approved corrective action invoice form with the corrective action implementation report. All invoices submitted for the corrective action must comply with Section 44-2-20(2) of the SUPERB Act and with specifications outlined in the solicitation. An invoice form for free product only corrective action is available online at http://www.scdhec.gov/environment/docs/D-426.pdf. Please reference CA #46916 on all corrective action invoices.

On all correspondence regarding this site, please reference UST Permit #11946. If you have any questions regarding this correspondence, feel free to contact me by phone at (803) 898-0655, by fax at (803) 898-0673, or by email at padgetjp@dhec.sc.gov.

Sincerely,

Joel P. Padgett, P.G., Geologist/Hydrologist
Corrective Action Section
UST Management Division
Bureau of Land & Waste Management

JPP/jpp
11946.acantp

cc: Monitoring well approval

cc: Enviro-Test Services, P.O. Box 2237, Irmo, SC 29063 (w/enc)
Technical file (w/enc)

D H E C

PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

Monitoring Well Approval

Approval is hereby granted to:	Enviro-Test Services
(On behalf of):	Mr. Frederick N Cecchini
Facility:	Broad River Amoco
UST Permit Number:	11946
County:	Richland

This approval is for the installation of ten 4-inch recovery wells. The wells are to be installed in the approved locations in accordance with the South Carolina Well Standards, R.61-71, and the applicable guidance documents. Please note that R.61-71 requires the following:

1. All wells shall be drilled, constructed, and abandoned by a South Carolina certified well driller per R.61-71.D.1.
2. All monitoring wells shall be labeled as required by R.61-71.H.2.c.
3. A Water Well Record Form or other form provided or approved by the South Carolina Department of Health and Environmental Control (Agency) shall be completed and submitted to the Agency within 30 days after well completion or abandonment unless another schedule has been approved by the Agency. The form should contain the "as-built" construction details and all other information required by R.61-71.H.1.f.
4. All analytical data and water levels obtained from each monitoring well shall be submitted to the Agency within 30 days of receipt of laboratory results unless another schedule has been approved by the Agency required by R.61-71.H.1.d.
5. If any of the information provided to the Agency changes, notification to Joel Padgett (tel: (803) 898-0655 or e-mail: padgetjp@dhec.sc.gov) shall be provided a minimum of twenty-four (24) hours prior to well construction as required by R.61-71.H.1.a.
6. All temporary monitoring wells shall be abandoned within 5 days of borehole completion using appropriate methods as required by R.61-71.H.4.c. All other wells shall be properly developed per R.61-71.H.2.d.
7. Agency approval is required prior to abandonment of all monitoring wells as required by R.61-71.H.1.a.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina Code of Laws and R.61-71 of the South Carolina Well Standards and Regulations, dated April 26, 2002. A copy of this approval should be on the site during well installation.

Date of Issue: June 17, 2014 **Approval #:** UMW-25554

Joel P. Padgett, P.G., Geologist/Hydrologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

received 5/6/14 UST Division

11946

Form I UIC	D H E C Underground Injection Control Permit Application Ground-Water Protection Division (Collected under the Authority of Title 48 Chapter I of the 1976 South Carolina Code of Laws)	I. EPA ID NUMBER U	T/A	C

Read attached instructions before starting.
For OfficialUse Only

Application Approved month day year	Date Received month day year	Permit Well Number

Comments

II. Facility Name and Address	III. Owner/Operator and Address
Facility Name: Broad River Amoco	Owner/OperatorName: Frederick Cecchini
Street Address: 4335 Broad River Rd.	Street Address: 4335 Broad River Rd.
City: Columbia; State: South Carolina; Zip Code: 29210-4009	City: Columbia; State: South Carolina; Zip Code: 29210-4009

UST DOCKETING

IV. Ownership Status (Select One)

☐ A. Federal ☐ B. State ☒ C. Private ☐ D. Public ☐ E. Other (Explain)

V. SIC Codes

VI. Well Status (Select A, B or C)

☐ A. Operating | Date Started *(MM/DD/YYYY)* | ☐ B. Modification/Conversion ☒ C. Proposed

VII. Type of Permit Requested - Class and Type of Well (see reverse)

A. Class(es) enter code(s)	B. Type(s) enter code(s)	C. If class is "other" or type is code 'Y', explain	D. Number of Wells per type
V.A	I		15

VIII. Location of Wells or Approximate Center of field or Project

C	A. Latitude				B. Longitude			
I		Deg 34	Min 03	Sec 55.68		Deg 81	Min 07	Sec 00.90

IX. Attachments

Complete the following questions on a separate sheet(s) and number accordingly; see instructions for Classes 11, 111, and V, complete and submit on a separate sheet(s) attachments A-U as appropriate. Attach maps where required. List attachments by letter which are applicable and include with your application.

X. Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment.

A. Name (Type or Print)	Title	B. Phone No.
Michael L. Faris	Hydrogeologist	(803) 269-3913

C. Signature: Michael L. Faris

D. Date Signed (MM/DD/YYYY): 04/05/2014

DHEC2502(08/1997)

Underground Injection Control for Corrective Action Wells
Attachments to Form I UIC - DHEC 2502

Attachment A: Approximately 15 injection wells (to be installed) will be utilized for purposes of chemical oxidation in effort to reduce the mass of Chemicals of Concern (COC) that have been detected in groundwater samples from various monitoring wells at the site. The in-situ chemical oxidation methodology will consist of the injection of a concentrated chemical liquid source, along with a recommended catalyst or activator to promote the degradation and mineralization of CoC. The recommended chemical source (Klolzur™) is a product developed and marketed by FMC Environmental Solutions and PeroxyChem and consists of sodium persulfate that oxidizes petroleum hydrocarbons, including dissolved chemical compounds related to gasoline fuels. A chelated iron catalyst or activator will be included in the liquid source to be injected into the injection wells prior to permanent closure. The FMC Environmental Solutions and PeroxyChem companies have proven success of their products in case histories of COC reduction efforts in South Carolina. The South Carolina Department of Health and Environmental Control (SCDHEC) has approved the use of these in-situ chemical oxidants on several other petroleum hydrocarbon releases in the State. General product information and Material Safety Data Sheets for FMC Environmental Solutions / PeroxyChem's products are included in Appendix E with the attached corrective action plan. The chemical source will be injected under a constant moderate pressure into the injection wells. Approximately 10 to 20 (possibly more) gallons of liquid source will be injected into each well if utilized. Numerous events of oxidant application may be performed. The number of events will be dependent on the rate of success of COC mass reduction efforts.

Attachment B: A schematic drawing of a typical injection well is attached.

Attachment C: 1) Approximately 10 to 20 gallons (possibly more) of oxidant liquid source will be injected into each well. Depending on the success rate in reducing COC mass, numerous injection applications may be performed. The sediments of the site surficial aquifer are expected to moderately receive the injected oxidant source. 2) Injection pressure is expected to be 5 to 10 PSI during each of the injection efforts 3) (see attached Table 1) 4) Laboratory analytical results of groundwater samples collected from the monitoring well network on March 2014 are summarized in Table 2 5) The length of time that the project may span is dependent on the success of COC mass reduction efforts. Project duration currently estimated at 36 months.

Underground Injection Control for Corrective Action Wells
Attachments to Form 1 UIC - DHEC 2502 (continued)

Attachment D: Initially, groundwater sampling and laboratory analysis of pertinent monitoring well(s) will be performed on an annual basis. The sampling schedule and scope will change only with notification to SCDHEC for approval.

Attachment E: SCDHEC UST Permit # 11946

Attachment F: The facility is a gasoline convenience store.

Attachment G: The location of the area of review can be viewed on Figure 1 in Attachment B. The site facility and adjacent properties are serviced with municipal water supply.

Attachment H: (See Figures 1 through 4 in Attachment B).

Attachment I: (See Figures 5 through 7 in Attachment B).

Attachment J: The site uppermost surficial aquifer is targeted to receive the oxidant source injection.

Attachment K: Approximately 10 to 20 gallons (possibly more) of oxidant liquid source will be injected into each well. Depending on the success rate in reducing COC mass, numerous injection applications may be performed. The sediments of the site surficial aquifer are expected to moderately receive the injected oxidant source.

Table 1 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and March 5 through 7, 2014

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-1	1/21/2011	40.0	20.0 - 40.0	101.84	20.92	N/A	N/A	N/A	80.92
	3/5/2011	40.0	20.0 - 40.0	101.84	14.45	N/A	N/A	N/A	87.39
	3/5/2013	40.0	20.0 - 40.0	101.84	18.62	N/A	N/A	N/A	83.22
	3/6/2014	40.0	20.0 - 40.0	101.84	15.90	N/A	N/A	N/A	85.94
MW-2	3/5/2011	28.0	18.0 - 28.0	101.13	13.50	N/A	N/A	N/A	87.63
	3/6/2013	28.0	18.0 - 28.0	101.13	17.66	16.32	1.34	16.70	84.43
	3/5/2014	28.0	18.0 - 28.0	101.13	11.57	10.15	1.42	10.53	90.60
MW-3	3/5/2011	31.0	21.0 - 31.0	101.09	13.72	N/A	N/A	N/A	87.37
	3/6/2013	31.0	21.0 - 31.0	101.09	17.94	N/A	N/A	N/A	83.15
	3/7/2014	31.0	21.0 - 31.0	101.09	11.57	N/A	N/A	N/A	89.52
MW-4	3/5/2011	25.0	15.0 - 25.0	97.02	9.15	N/A	N/A	N/A	87.87
	3/6/2013	25.0	15.0 - 25.0	97.02	12.41	10.10	2.31	10.75	86.27
	3/5/2014	25.0	15.0 - 25.0	97.02	9.74	7.50	2.24	8.10	88.92
MW-5	6/20/2011	20.0	10.0 - 20.0	101.34	14.05	13.75	0.30	13.83	87.51
	3/6/2013	20.0	10.0 - 20.0	101.34	19.63	16.80	2.83	17.59	83.75
	3/5/2014	20.0	10.0 - 20.0	101.34	15.75	8.12	7.63	10.18	91.16
MW-6A	3/6/2013	25.5	15.5 - 25.5	101.84	18.00	N/A	N/A	N/A	83.84
	3/5/2014	25.5	15.5 - 25.5	101.84	15.15	N/A	N/A	N/A	86.69
MW-6B	3/6/2013	38.5	28.5 - 38.5	101.91	18.05	N/A	N/A	N/A	83.86
	3/5/2014	38.5	28.5 - 38.5	101.91	13.30	N/A	N/A	N/A	88.61
MW-7A	3/6/2013	24.0	14.0 - 24.0	100.04	16.60	N/A	N/A	N/A	83.44
	3/5/2014	24.0	14.0 - 24.0	100.04	11.00	N/A	N/A	N/A	89.04
MW-8A	3/6/2013	23.0	13.0 - 23.0	100.45	16.84	N/A	N/A	N/A	83.61
	3/5/2014	23.0	13.0 - 23.0	100.45	12.04	N/A	N/A	N/A	88.41

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 1 – Potentiometric Data
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Historical and March 5 through 7, 2014

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-8B	3/6/2013	37.5	27.5 - 37.5	100.37	16.60	N/A	N/A	N/A	83.77
	3/5/2014	37.5	27.5 - 37.5	100.37	10.45	N/A	N/A	N/A	89.92
MW-9A	3/6/2013	23.0	13.0 - 23.0	101.36	18.61	N/A	N/A	N/A	82.75
	3/6/2014	23.0	13.0 - 23.0	101.36	11.50	N/A	N/A	N/A	89.86
MW-9B	3/6/2013	31.5	21.5 - 31.5	101.38	17.60	N/A	N/A	N/A	83.78
	3/6/2014	31.5	21.5 - 31.5	101.38	11.65	N/A	N/A	N/A	89.73
MW-10A	3/6/2013	17.5	7.5 - 17.5	97.20	11.05	N/A	N/A	N/A	86.15
	3/6/2014	17.5	7.5 - 17.5	97.20	2.80	N/A	N/A	N/A	94.40
MW-10B	3/6/2013	39.0	29.0 - 39.0	97.34	13.87	N/A	N/A	N/A	83.47
	3/6/2014	39.0	29.0 - 39.0	97.34	7.54	N/A	N/A	N/A	89.80
MW-11A	3/6/2013	20.0	10.0 - 20.0	89.93	10.52	N/A	N/A	N/A	79.41
	3/6/2014	20.0	10.0 - 20.0	89.93	9.50	N/A	N/A	N/A	80.43
MW-11B	3/6/2013	35.0	29.0 - 39.0	90.26	10.30	N/A	N/A	N/A	79.96
	3/6/2014	35.0	29.0 - 39.0	90.26	9.47	N/A	N/A	N/A	80.79
MW-12A	3/6/2013	20.0	10.0 - 20.0	99.26	13.95	N/A	N/A	N/A	85.31
	3/6/2014	20.0	10.0 - 20.0	99.26	16.20	N/A	N/A	N/A	83.06
MW-12B	3/6/2013	36.5	26.5 - 36.5	99.35	16.72	N/A	N/A	N/A	82.63
	3/6/2014	36.5	26.5 - 36.5	99.35	11.87	N/A	N/A	N/A	87.48
MW-13A	3/25/2013	22.0	12.0 - 22.0	98.70	19.80	N/A	N/A	N/A	78.90
	3/5/2014	22.0	12.0 - 22.0	98.70	N/A	N/A	N/A	N/A	N/A
MW-13B	3/6/2013	33.5	23.5 - 33.5	98.69	19.88	N/A	N/A	N/A	78.81
	3/6/2014	33.5	23.5 - 33.5	98.69	16.12	N/A	N/A	N/A	82.57
MW-14A	3/6/2013	20.0	10.0 - 20.0	97.49	14.52	N/A	N/A	N/A	82.97
	3/6/2014	20.0	10.0 - 20.0	97.49	11.10	N/A	N/A	N/A	86.39
MW-14B	3/6/2013	38.5	28.5 - 38.5	97.45	17.27	N/A	N/A	N/A	80.18
	3/6/2014	38.5	28.5 - 38.5	97.45	12.45	N/A	N/A	N/A	85.00

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
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Table 1 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and March 5 through 7, 2014

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-15A	3/25/2013	17.0	7.0 - 17.0	96.87	16.01	N/A	N/A	N/A	80.86
	3/6/2014	17.0	7.0 - 17.0	96.87	15.58	N/A	N/A	N/A	81.29
MW-15B	3/6/2013	40.0	30.0 - 40.0	96.82	17.60	N/A	N/A	N/A	79.22
	3/6/2014	40.0	30.0 - 40.0	96.82	14.10	N/A	N/A	N/A	82.72
MW-16A	3/25/2013	18.0	8.0 - 18.0	95.95	16.21	N/A	N/A	N/A	79.74
	3/5/2014	18.0	8.0 - 18.0	95.95	N/A	N/A	N/A	N/A	N/A
MW-16B	3/6/2013	37.0	27.0 - 37.0	95.68	16.75	N/A	N/A	N/A	78.93
	3/5/2014	37.0	27.0 - 37.0	95.68	N/A	N/A	N/A	N/A	N/A
MW-17B	3/6/2013	39.5	29.5 - 39.5	92.69	9.05	N/A	N/A	N/A	83.64
	3/5/2014	39.5	29.5 - 39.5	92.69	6.04	N/A	N/A	N/A	86.65
MW-18A	3/6/2013	13.0	3.0 - 13.0	88.20	0.85	N/A	N/A	N/A	87.35
	3/5/2014	13.0	3.0 - 13.0	88.20	0.82	N/A	N/A	N/A	87.38
MW-18B	3/6/2013	35.0	25.0 - 35.0	88.30	1.05	N/A	N/A	N/A	87.25
	3/5/2014	35.0	25.0 - 35.0	88.30	0.78	N/A	N/A	N/A	87.52
MW-19A	3/6/2013	15.0	5.0 - 15.0	91.63	7.95	N/A	N/A	N/A	83.68
	3/5/2014	15.0	5.0 - 15.0	91.63	6.02	N/A	N/A	N/A	85.61
MW-19B	3/6/2013	34.0	24.0 - 34.0	91.69	8.35	N/A	N/A	N/A	83.34
	3/5/2014	34.0	24.0 - 34.0	91.69	7.58	N/A	N/A	N/A	84.11
MW-20A	3/6/2013	15.0	5.0 - 15.0	88.67	5.05	N/A	N/A	N/A	83.62
	3/5/2014	15.0	5.0 - 15.0	88.67	4.97	N/A	N/A	N/A	83.70
MW-20B	3/6/2013	35.0	25.0 - 35.0	88.61	4.11	N/A	N/A	N/A	84.50
	3/5/2014	35.0	25.0 - 35.0	88.61	3.62	N/A	N/A	N/A	84.99
MW-21A	3/6/2013	12.0	2.0 - 12.0	87.16	0.85	N/A	N/A	N/A	86.31
	3/5/2014	12.0	2.0 - 12.0	87.16	0.65	N/A	N/A	N/A	86.51
MW-21B	3/6/2013	35.0	25.0 - 35.0	87.23	1.35	N/A	N/A	N/A	85.88
	3/5/2014	35.0	25.0 - 35.0	87.23	0.85	N/A	N/A	N/A	86.38

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 1 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and March 5 through 7, 2014

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-22B	3/6/2013	35.0	25.0 - 35.0	87.40	2.10	N/A	N/A	N/A	85.30
	3/5/2014	35.0	25.0 - 35.0	87.40	1.45	N/A	N/A	N/A	85.95
RW-1	3/6/2013	40.0	20.0 - 40.0	101.21	17.26	17.11	0.15	17.15	84.06
	3/5/2014	40.0	20.0 - 40.0	101.21	15.78	9.10	6.68	10.90	90.31
RW-2	3/6/2013	40.0	20.0 - 40.0	100.96	16.96	N/A	N/A	N/A	84.00
	3/5/2014	40.0	20.0 - 40.0	100.96	10.65	N/A	N/A	N/A	90.31
RW-3	3/6/2013	41.0	21.0 - 41.0	101.44	17.41	17.36	0.05	17.37	84.07
	3/5/2014	41.0	21.0 - 41.0	101.44	10.58	10.52	0.06	10.54	90.90
RW-4	3/6/2013	40.5	20.5 - 40.5	100.83	16.73	N/A	N/A	N/A	84.10
	3/7/2014	40.5	20.5 - 40.5	100.83	10.50	N/A	N/A	N/A	90.33
RW-5	3/6/2013	38.5	18.5 - 38.5	101.62	17.64	17.58	0.06	17.6	84.02
	3/5/2014	38.5	18.5 - 38.5	101.62	10.88	10.58	0.30	10.66	90.96
DMW-1	3/6/2013	65.0	60.0 - 65.0	101.16	18.21	N/A	N/A	N/A	82.95
	3/7/2014	65.0	60.0 - 65.0	101.16	14.07	N/A	N/A	N/A	87.09
DMW-2	3/6/2013	65.0	60.0 - 65.0	92.63	9.40	N/A	N/A	N/A	83.23
	3/7/2014	65.0	60.0 - 65.0	92.63	5.94	N/A	N/A	N/A	86.69
DMW-3	3/6/2013	65.0	60.0 - 65.0	87.41	2.10	N/A	N/A	N/A	85.31
	3/5/2014	65.0	60.0 - 65.0	87.41	1.40	N/A	N/A	N/A	86.01

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 2 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5, 2011 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-1	3/5/2011	**1,760**	**18,400**	**1,270**	5,140	**4,070J**	<83.9	<121	<0.0032	**18**
	3/8/2013	**2,480**	**12,800**	**1,550**	5,650	**623**	**70.8 J**	**ND (11.6)**	ND (0.0039)	14 J
	3/6/2014	**3,080**	**35,100**	**3,130**	**13,300**	**754J**	ND(38.5)	**ND(58.1)**	ND(0.0063)	NA
MW-2	3/5/2011	**1,650**	**3,230**	422	2,190	**462J**	**3,420**	<12.1	**1.42**	<15
	3/6/2013	**1.34' Free Product**								
	3/5/2014	**1.42' Free Product**								
MW-3	3/5/2011	<15	10.4	9.52	30.6	4.74J	7.91	<0.121	<0.0032	<15
	3/8/2013	0.417 J	1.05	0.408 J	1.72 J	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/7/2014	2.04J	20.9J	2.81J	17.3J	7.44J	ND(0.770)	ND(1.16)	ND(0.0063)	NA
MW-4	3/5/2011	**1,830**	198	**1,270**	3,160	**598**	**3,100**	<12.1	<0.0032	<15
	3/6/2013	**2.31' Free Product**								
	3/5/2014	**2.24' Free Product**								
MW-5	6/20/2011	**0.30' Free Product**								
	3/6/2013	**2.83' Free Product**								
	3/5/2014	**7.63' Free Product**								
MW-6A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	13 J
	3/5/2014	ND(0.111)	0.469J	ND(0.109)	1.63J	2.43J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-6B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	**19**
	3/5/2014	0.372J	2.96J	2.15J	13.9J	13.1	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-7A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	1.06J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-8A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	6.8 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 2 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5, 2011 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-8B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-9A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.62	0.642 J	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.21J	0.667J	ND(0.0063)	NA
MW-9B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.79	0.675 J	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.51J	0.668J	ND(0.0063)	NA
MW-10A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-10B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-11A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.00	ND (0.116)	ND (0.0039)	11 J
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.67J	ND(0.116)	ND(0.0063)	NA
MW-11B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.12	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	0.940J	ND(0.116)	ND(0.0063)	NA
MW-12A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.486J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-12B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.359J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-13A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	7.8 J
	3/5/2014	Insufficient Water								
MW-13B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.322J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-14A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.329J	ND(0.077)	ND(0.116)	ND(0.0063)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 2 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5, 2011 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-14B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.277J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-15A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	5.3 J
	3/6/2014	ND(0.111)	ND(0.122)	0.166J	0.893J	0.454J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-15B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-16A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	**35**
	3/5/2014	Abandoned								
MW-16B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	Abandoned								
MW-17B	3/6/2013	**6.58**	2.47	1.1 J	3.87 J	ND (0.352	**244**	ND (0.232)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(1.11)	3.27J	ND(1.09)	9.61J	12.8J	**420**	ND(1.16)	ND(0.0063)	NA
MW-18A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.42	ND (0.116)	ND (0.0039)	**590**
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.363J	2.82J	ND(0.116)	ND(0.0063)	NA
MW-18B	3/6/2013	ND (0.111)	0.459 J	ND (0.109)	2.03 J	ND (0.176)	0.841 J	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.225J	0.416J	ND(0.116)	ND(0.0063)	NA
MW-19A	3/6/2013	0.566 J	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	1.97J	1.87J	0.941J	6.10J	3.67J	0.644J	ND(0.116)	ND(0.0063)	NA
MW-19B	3/6/2013	0.253 J	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	0.329J	0.349J	0.123J	1.07J	1.33J	1.11J	ND(0.116)	ND(0.0063)	NA
MW-20A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.15	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	0.991J	0.505J	2.92J	3.50J	0.526J	ND(0.116)	ND(0.0063)	NA
MW-20B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.25	ND (0.116)	ND (0.0039)	8.77 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.492J	18.1	ND(0.116)	ND(0.0063)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 2 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
March 5, 2011 through March 7, 2014

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-21A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	12 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
MW-21B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.34	ND (0.116)	ND (0.0039)	6.8 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	5.75	ND(0.116)	ND(0.0063)	NA
MW-22B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.83	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	2.64J	ND(0.116)	ND(0.0063)	NA
RW-1	3/6/2013	**0.15' Free Product**								
	3/5/2014	**6.68' Free Product**								
RW-2	3/8/2013	**9,420**	**12,800**	**2,030**	**11,000**	**565 J**	**9100**	**224 J**	**1.65**	ND (3.8)
	3/5/2014	**11,000**	**18,500**	**1,580**	9,850	**299J**	**26,900**	**58.1J**	ND(0.0063)	NA
RW-3	3/6/2013	**0.05' Free Product**								
	3/5/2014	**0.06' Free Product**								
RW-4	3/8/2013	**3,390**	**1,730**	**977**	4,900	**210 J**	**4,460**	**ND (5.81)**	ND (0.0039)	12 J
	3/7/2014	**2,960**	**4,070**	378J	3,500	**186J**	**9,160**	**ND(11.6)**	ND(0.0063)	NA
RW-5	3/6/2013	**0.06' Free Product**								
	3/5/2014	**0.30' Free Product**								
DMW-1	3/8/2013	**507**	ND (1.22)	ND (1.09	ND (0.179)	ND (1.76)	**131**	**14.2 J**	ND (0.0039)	ND (3.8)
	3/7/2014	ND(0.111)	0.827J	ND(0.109)	1.17J	ND(0.176)	**159**	2.60J	ND(0.0063)	NA
DMW-2	3/6/2013	4.12	0.548 J	ND (0.109)	0.805 J	ND (0.176)	**153**	ND (0.116)	ND (0.0039)	ND (3.8)
	3/7/2014	0.669J	3.63J	1.90J	10.7J	13.2	**89.2**	ND(0.232)	ND(0.0063)	NA
DMW-3	3/6/2013	0.281 J	0.497 J	ND (0.109)	ND (0.179	ND (0.176)	1.76	ND (0.116)	ND (0.0039)	**120**
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.33J	ND(0.116)	ND(0.0063)	NA

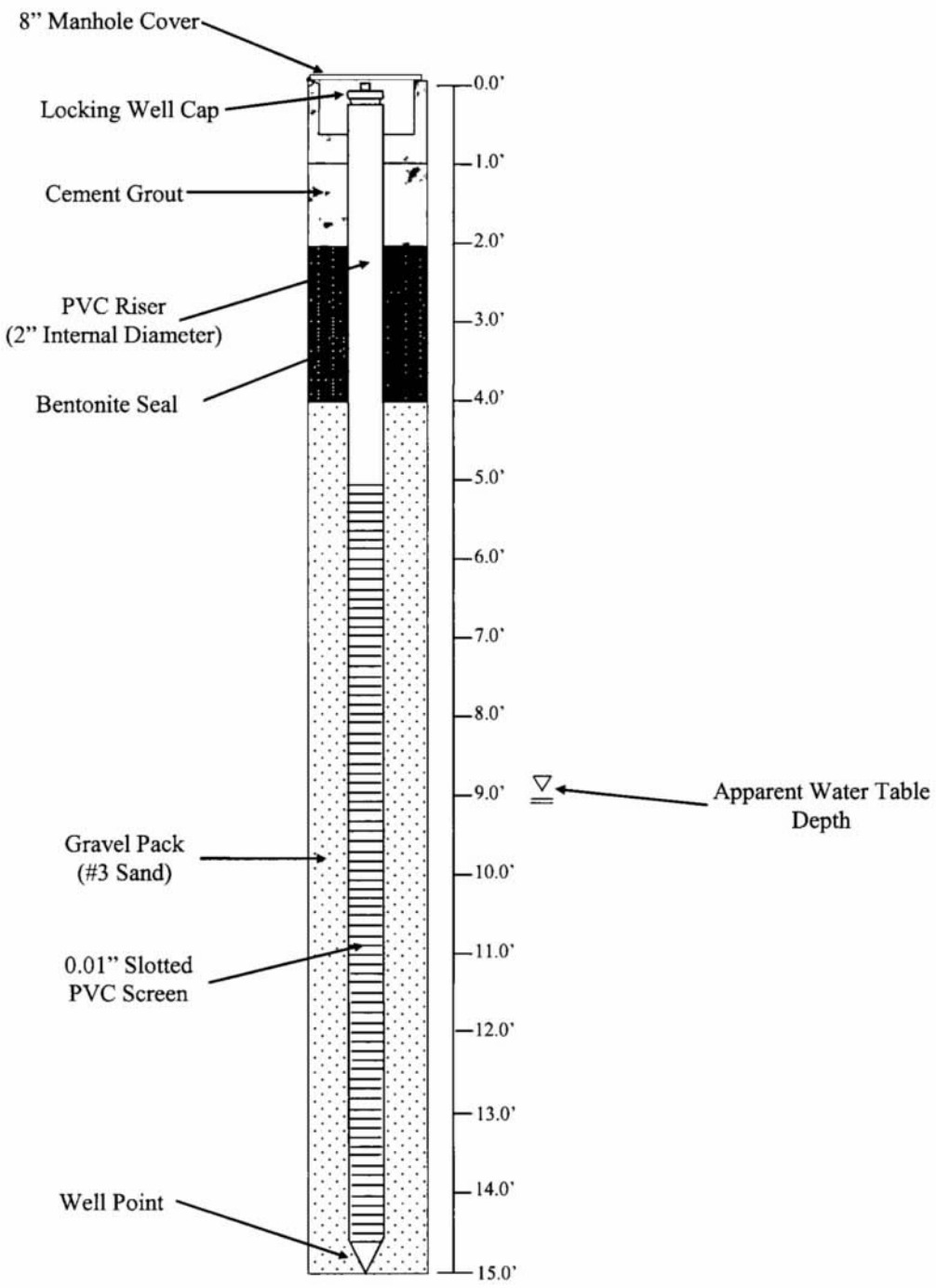
Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

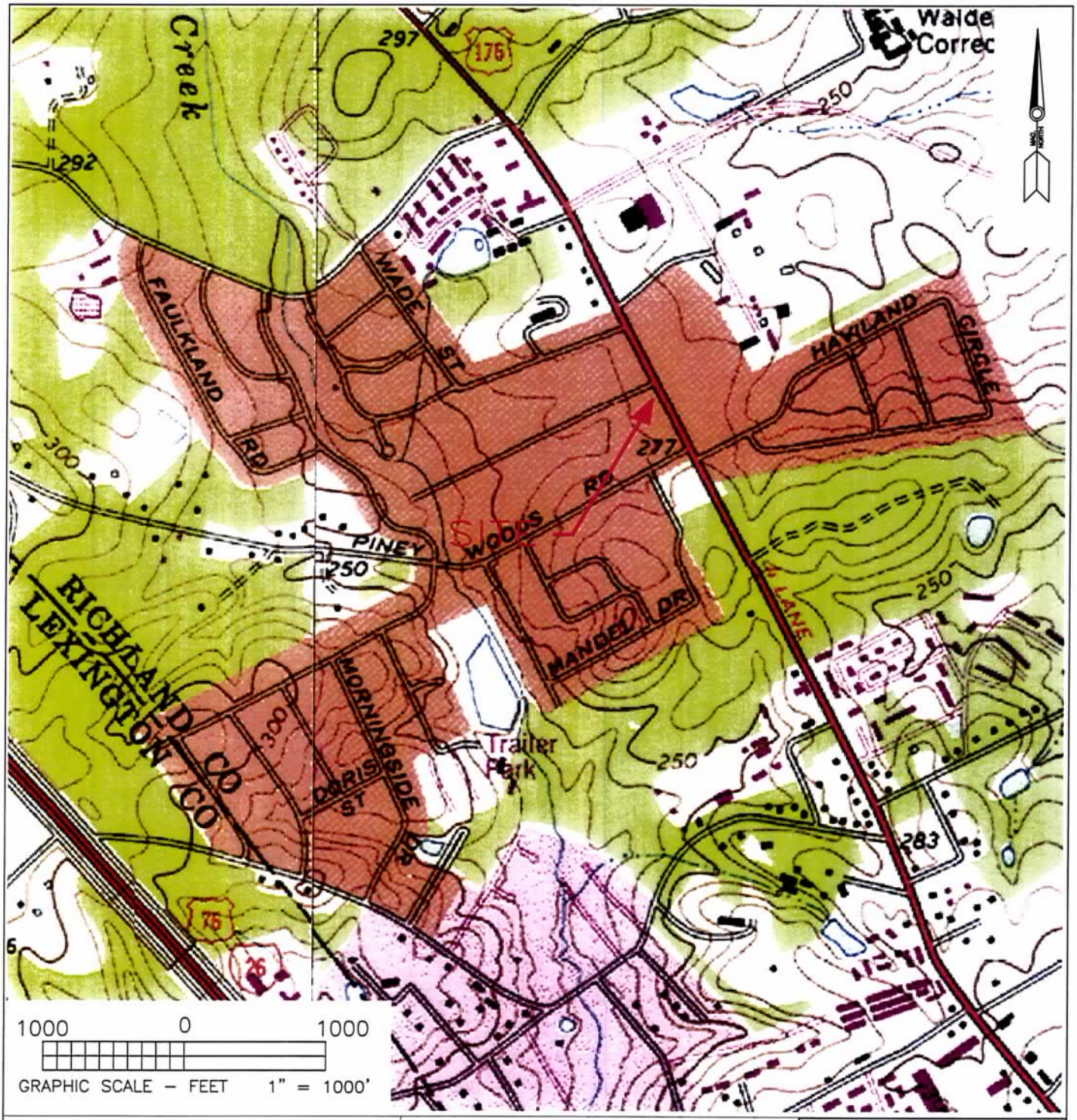
ATTACHMENT B

Well Construction Schematic

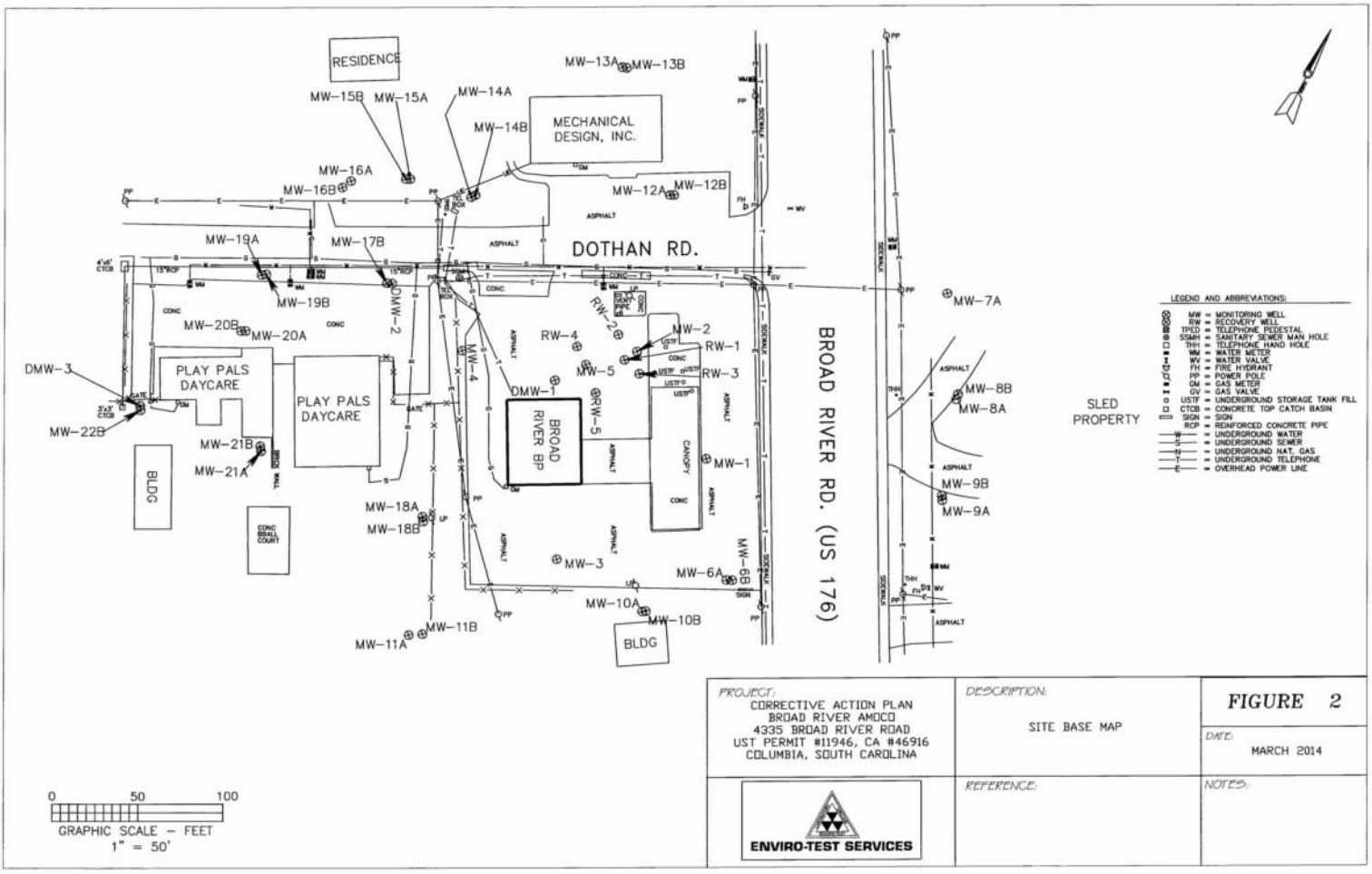
Figure 1 – Site Location Map (Topographic)
Figure 2 – Site Base Map
Figure 3 – Potentiometric Map (Shallow)
Figure 4 – Potentiometric Map (Intermediate)
Figure 5 – Geological Cross Section Base Map
Figure 6 – Geological Cross Section A-A'
Figure 7 – Geological Cross Section B-B'

Injection Well Construction Schematic

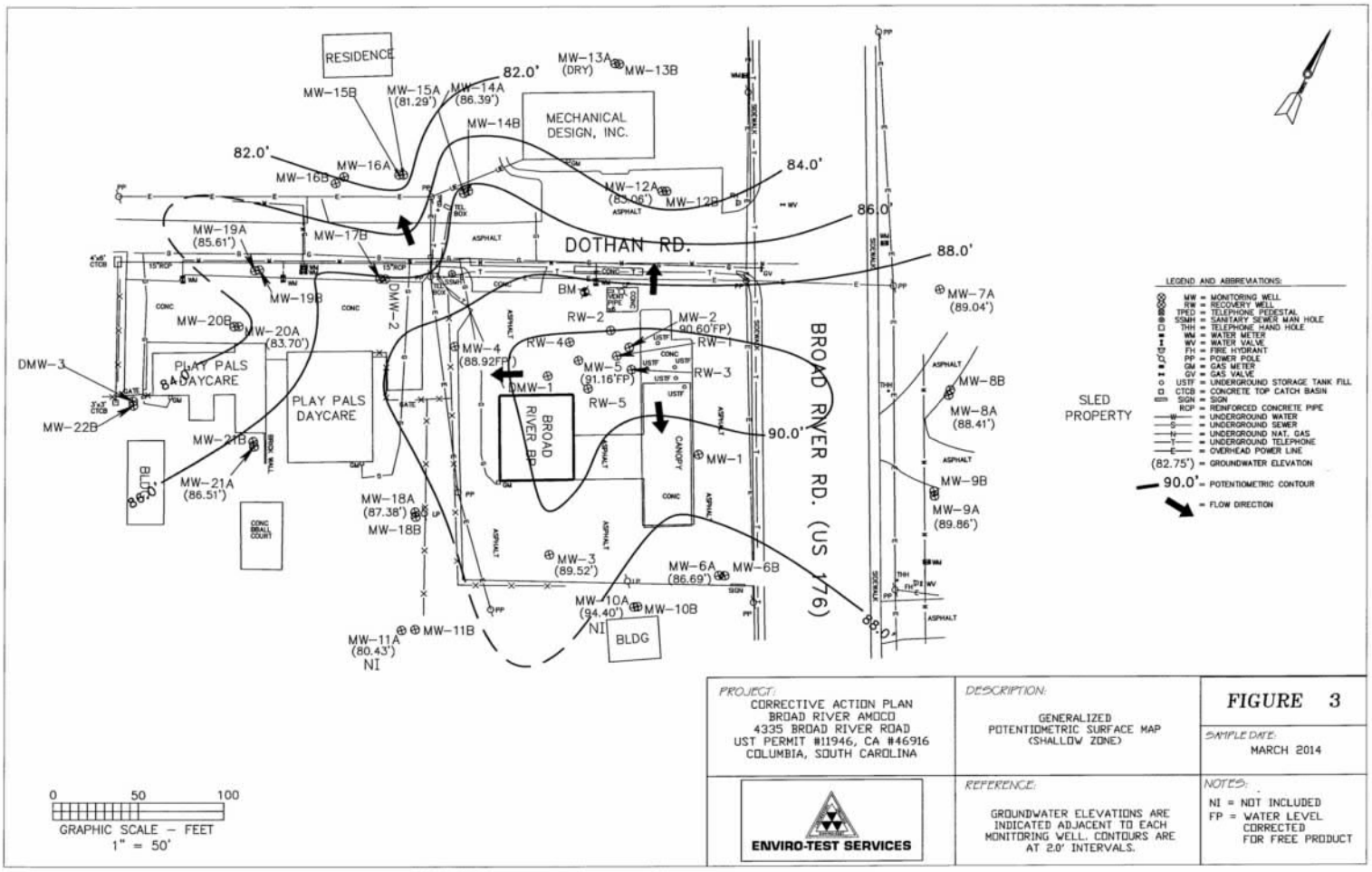




PROJECT: CORRECTIVE ACTION PLAN BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: SITE LOCATION MAP	*FIGURE 1* DATE: MARCH 2014
ENVIRO-TEST SERVICES	REFERENCE: U.S.G.S. TOPOGRAPHIC MAP (7.5 MINUTE SERIES) COLUMBIA NORTH – 1972, REV. 1990 SOUTH CAROLINA QUADRANGLE	LEGEND:



PROJECT: CORRECTIVE ACTION PLAN BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: SITE BASE MAP	**FIGURE 2**
		DATE: MARCH 2014
ENVIRO-TEST SERVICES	REFERENCE:	NOTES:



PROJECT:
CORRECTIVE ACTION PLAN
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
GENERALIZED
POTENTIOMETRIC SURFACE MAP
(SHALLOW ZONE)

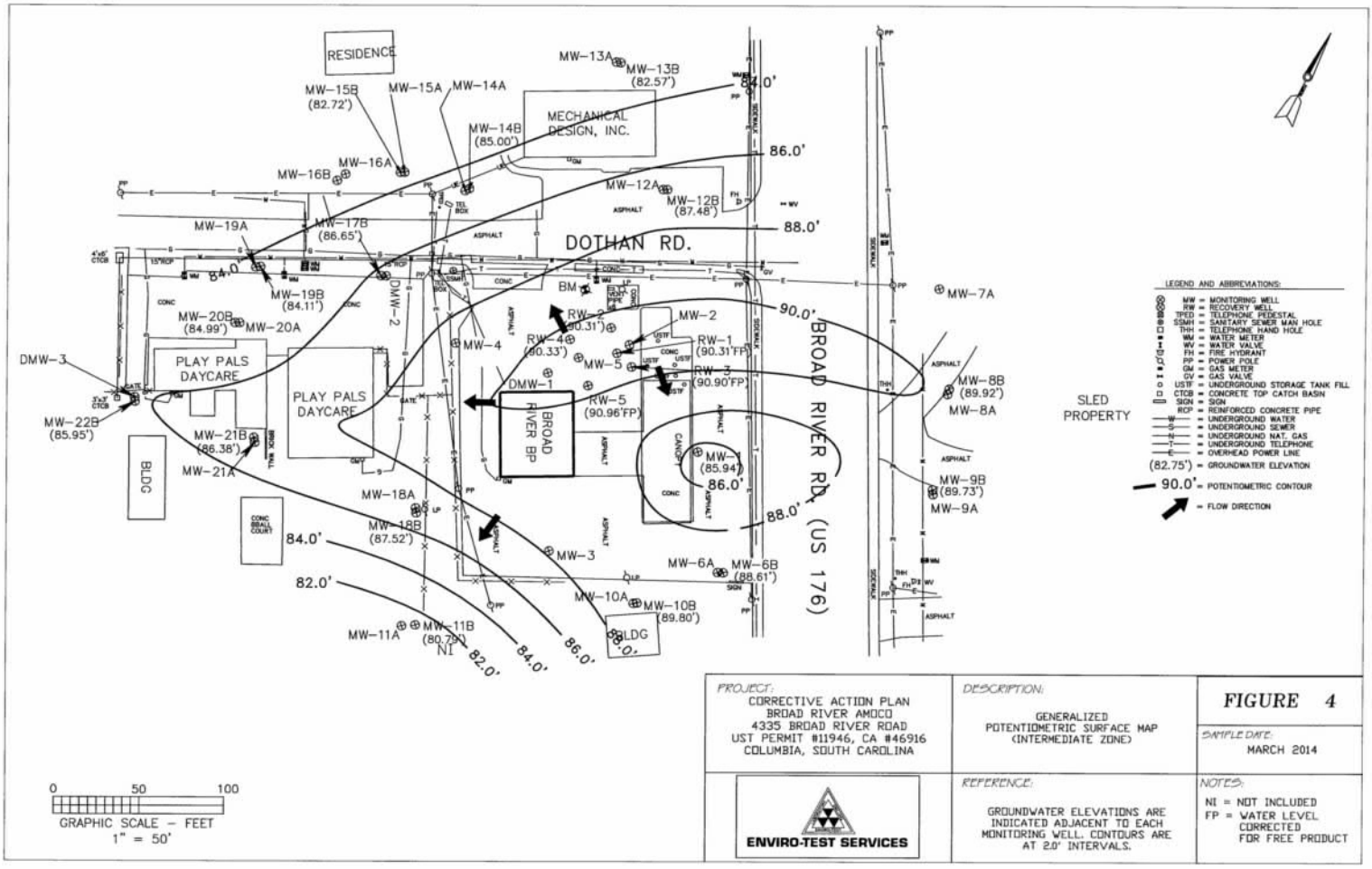
FIGURE 3

SAMPLE DATE:
MARCH 2014

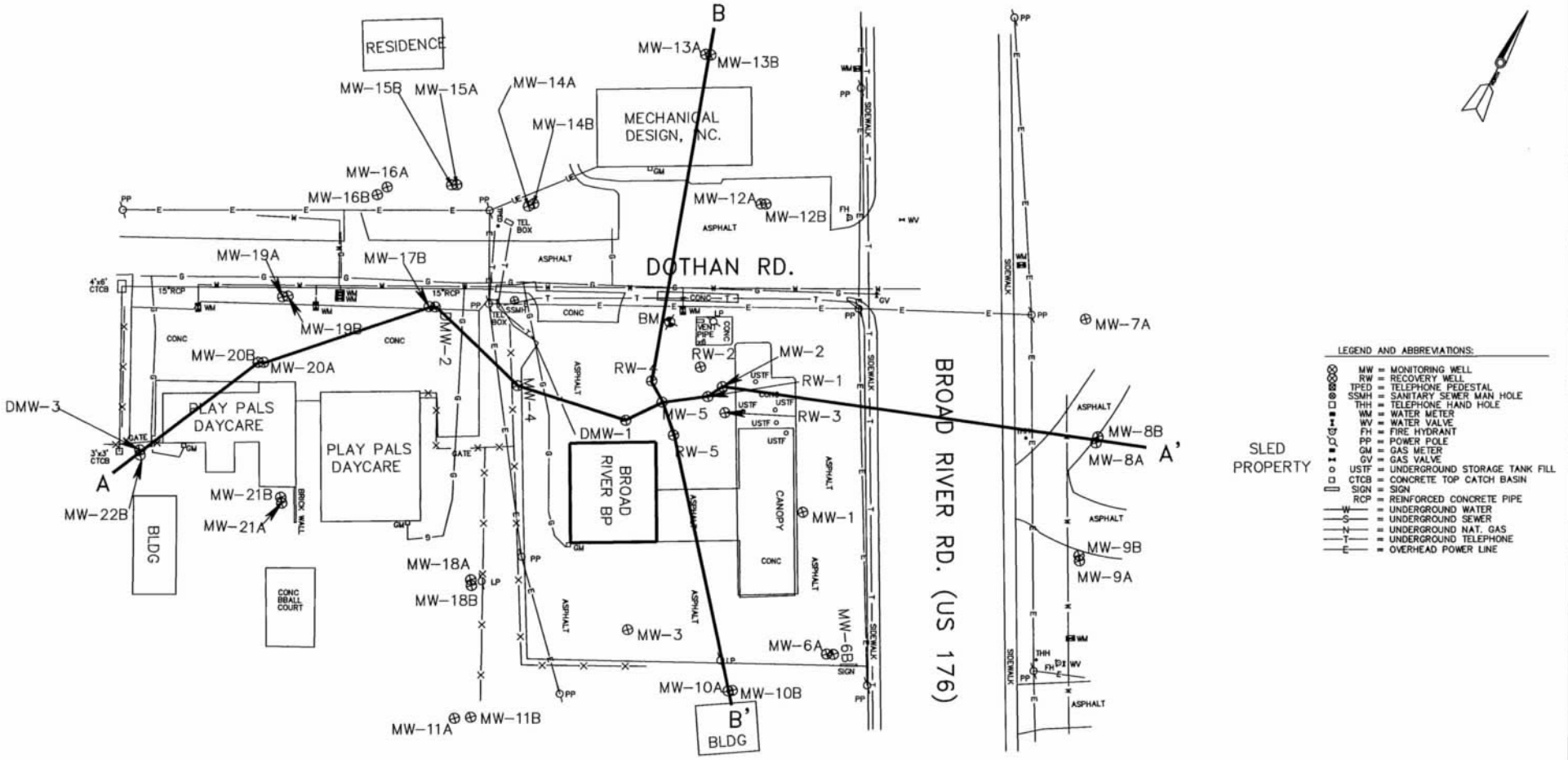
ENVIRO-TEST SERVICES

REFERENCE:
GROUNDWATER ELEVATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL. CONTOURS ARE AT 2.0' INTERVALS.

NOTES:
NI = NOT INCLUDED
FP = WATER LEVEL CORRECTED FOR FREE PRODUCT



PROJECT: CORRECTIVE ACTION PLAN BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: GENERALIZED POTENTIOMETRIC SURFACE MAP (INTERMEDIATE ZONE)	**FIGURE 4** SAMPLE DATE: MARCH 2014
ENVIRO-TEST SERVICES	REFERENCE: GROUNDWATER ELEVATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL. CONTOURS ARE AT 2.0' INTERVALS.	NOTES: NI = NOT INCLUDED FP = WATER LEVEL CORRECTED FOR FREE PRODUCT



PROJECT:
CORRECTIVE ACTION PLAN
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
GEOLOGICAL CROSS SECTION
BASE MAP

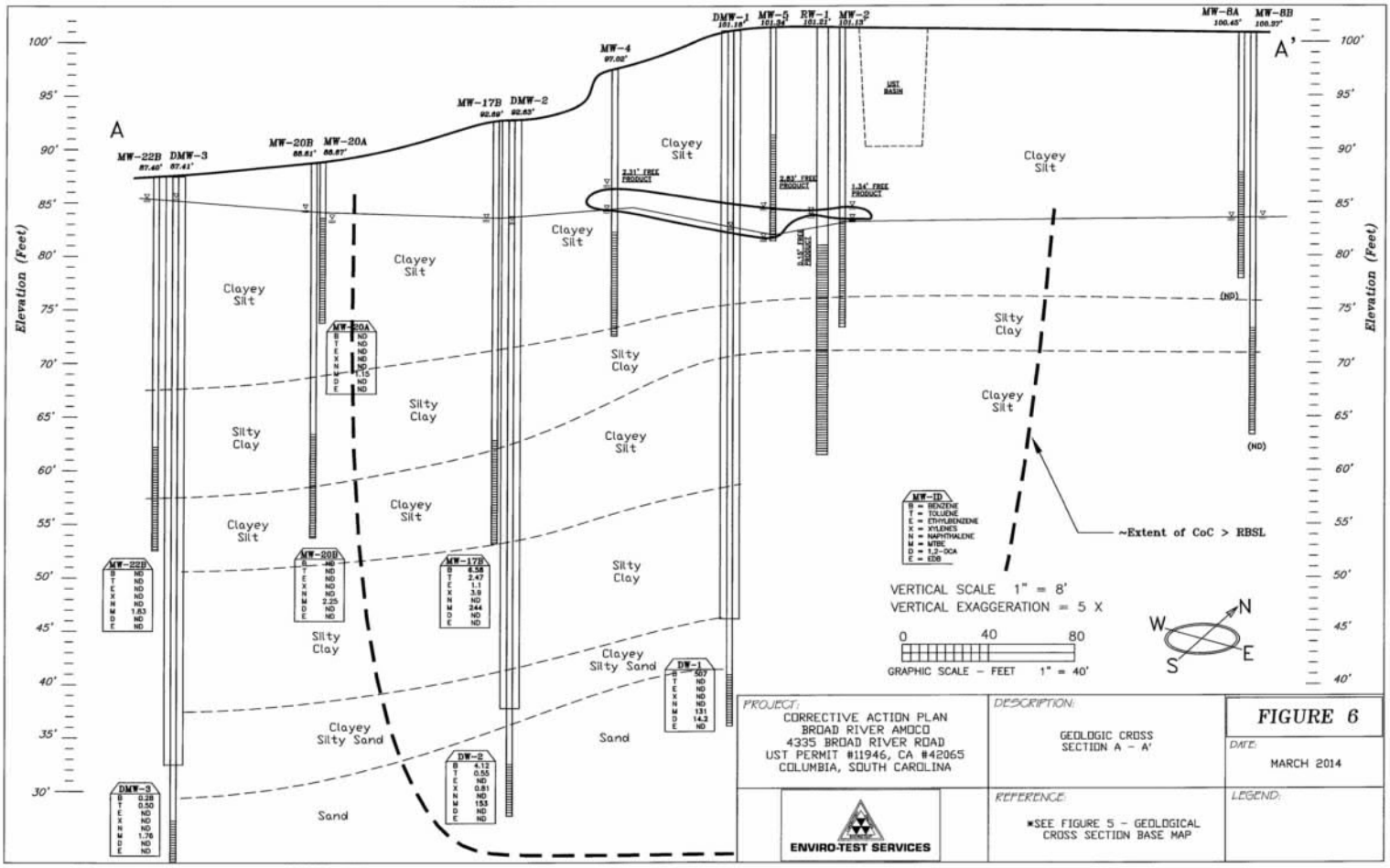
FIGURE 5

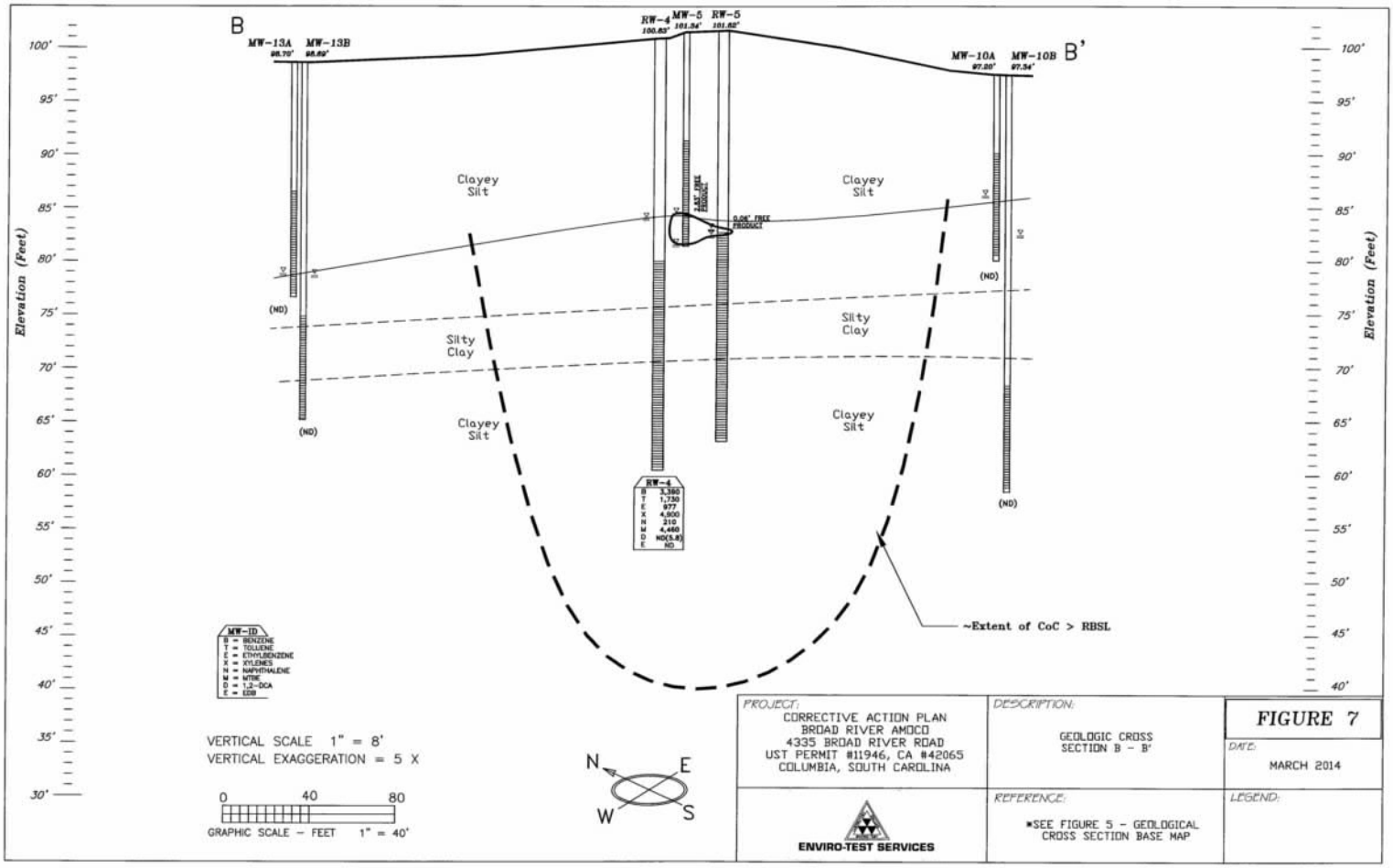
DATE:
MARCH 2014

REFERENCE:

NOTES:

ENVIRO-TEST SERVICES


A
A'
MW-22B
DMW-3
MW-20B
MW-20A
MW-17B
DMW-2
MW-4
DMW-1
MW-5
RW-1
MW-2
MW-8A
MW-8B
Elevation (Feet)
Clayey Silt
Silty Clay
Clayey Silty Sand
Sand
UST BASIN
2.21' FREE PRODUCT
2.83' FREE PRODUCT
1.34' FREE PRODUCT
0.15' FREE PRODUCT
(ND)
~Extent of CoC > RBSL
MW-ID
B = BENZENE
T = TOLUENE
E = ETHYLBENZENE
X = XYLENES
N = NAPHTHALENE
M = MTBE
D = 1,2-DCA
E = EDB
VERTICAL SCALE 1" = 8'
VERTICAL EXAGGERATION = 5 X
0 40 80
GRAPHIC SCALE - FEET 1" = 40'
N
W
E
S
PROJECT:
CORRECTIVE ACTION PLAN
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #42065
COLUMBIA, SOUTH CAROLINA
DESCRIPTION:
GEOLOGIC CROSS SECTION A - A'
FIGURE 6
DATE:
MARCH 2014
ENVIRO-TEST SERVICES
REFERENCE:
*SEE FIGURE 5 - GEOLOGICAL CROSS SECTION BASE MAP
LEGEND:



PROJECT:
CORRECTIVE ACTION PLAN
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #42065
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
GEOLOGIC CROSS SECTION B - B'

FIGURE 7

DATE:
MARCH 2014

ENVIRO-TEST SERVICES

REFERENCE:
*SEE FIGURE 5 - GEOLOGICAL CROSS SECTION BASE MAP

LEGEND:

July 2, 2014, 2014

ENVIRO-TEST SERVICES

UST
DOCKETING
45 Steel

Michael Peveler
Mr. Lee Monts, Hydrogeologist
Corrective Action Section
UST Program
Bureau of Land and Waste management

UST
JUL 0 2 2014
DIVISION

RE: CAP Implementation Report
Broad River BP
Permit # 11946; CA # 46916
4335 Broad River Rd Columbia, SC
Richland County

Dear Mr. Monts,

On June 23, 2014 Enviro-Test Services personnel moved the Vac unit on site and begin 2 eight hour Aggressive Fluid Vapor Events (AFVR) The event included Monitor Wells MW-2, MW-5 RW-1 and RW-2 as requested in the June 18, 2014 Notice to proceed -ACA directive. This was the first AFVR performed on this location. After gauging the wells with an interface probe . A teflon bailer was used to remove the free product from each well before the events started. Approximately 17.5 gallons of dark brown product was recovered. The OVA (PID) was calibrated with Zero Air then with 250 ppm of Isobutylene Span gas per factory specifications at the beginning each day . The first event included MW-2, MW-5, RW-1, and RW-2 started at 1000 hrs on 06/24/2014 and ended at 1800 hrs. The second event performed on MW-4 started at 0900 hrs. 06/25/2014 and ended at 1700 hrs.

The AFVR Data is contained in Attachment A. and the disposal Manifest is Attachment B. The total weight of petroleum removed as vapor was 72.75 lbs, . A total of 230 gallons of fluid was recovered The total amount of Free Product recovered was 17.5 gallons.

Terry L. Teate
Project Manager
Enviro-Test Services Inc.

ATTACHMENT A

ENVIRO-TEST SERVICES

Broad River BP Corrective Action AFVR

Site Name Broad River BP | **County** Richland | **Date:** June 24, 2014

UST Permit Number: 11946 | **Field Personnel:** Terry Teate

WELL NAI MW-2, MW-5 RW-1, RW-2 | **Well Dia.:** 2 & 4 inch | **Ambient Temp** 90 deg

Exhaust Stack Diameter(inches): 3

			After
MW-2	FP: 8.56	GWL: 12.44	GWL: 13.0
MW-5	FP: 8.23	GWL: 15.89	GWL: 10.40
RW-1	FP: 8.44	GWL: 15.48	GWL: 12.1
RW-2	FP: 10.22	GWL: 10.73	GWL: 13.0

Start Time 10:00 **End Time:** 18:00

Weather Conditions: Clear, Sunny & Hot

TOTAL FREE PRODUCT RECOVERED = 15 gal
TOTAL FLUID RECOVERD = 230 gallons

Dry Standard CFM Air Flow - Qstd

TOTAL EMISSIONS= 50.17 lbs.

Interval	Time	Vacuum, in. of Hg	PPM measured	Humidity Ratio,gpp	Water Vapor,%	Dry Air(1/100)	Discharge Flow Volume, CFM	Temperature, °f	Temperature Constant	Qstd cfm
0	1000	26	39	122	0.01742857	0.9826	305.00	94.00	0.9531	285.62
30	1030	26	614	307	0.0439	0.9561	295.00	117.00	0.9151	258.11
60	1100	26	881	156	0.0223	0.9777	285.00	149.00	0.8670	241.59
90	1130	26	1,027	219	0.0313	0.9687	277.00	107.00	0.9312	249.88
120	1200	26	1,107	279	0.0399	0.9601	278.00	106.00	0.9329	249.00
150	1230	26	1,148	180	0.0257	0.9743	274.00	109.00	0.9279	247.72
180	1300	26	1,155	224	0.0320	0.9680	278.00	131.00	0.8934	240.42
210	1330	26	1,322	291	0.0416	0.9584	269.00	129.00	0.8964	231.12
240	1400	26	1,444	301	0.0430	0.9570	274.00	128.00	0.8980	235.46
270	1430	26	1,692	457	0.0653	0.9347	281.00	140.00	0.8800	231.14
300	1500	26	2,199	352	0.0503	0.9497	280.00	145.00	0.8727	232.08
330	1530	26	2,191	200	0.0286	0.9714	270.00	108.00	0.9296	243.81
360	1600	26	1,608	209	0.0299	0.9701	272.00	137.00	0.8844	233.38
390	1630	26	1,234	122	0.0174	0.9826	268.00	126.00	0.9010	237.27
420	1700	26	1,205	280	0.0400	0.9600	273.00	142.00	0.8771	229.86
450	1730	26	1,160	179	0.0256	0.9744	272.00	111.00	0.9247	245.08
480	1800	26	1,075	138	0.0197	0.9803	270.00	110.00	0.9263	245.17
AVERAGES		26.00	1,241.24	236.24	0.0337	0.9663	277.71	122.88	0.9065	243.34

NOTES:

Vacuum = Level of vacuum being applied as record from the vacuum truck tank, inches of Hg.
PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
Humidity Ratio = Grains of moisture per pound(gpp) of dry air measured at the blower discharge stack.
Water Vapor = Pounds of water per pound of dry air as %.
Dry Air = Calculated pound of dry air,(1 - water vapor %).
Discharge Flow Volume = Measured air flow from 3" discharge stack in cubic feet per minute,cfm.
Temperature = Temperature of the air exiting the discharge stack in deg. Fahrenheit.
Temperature Constant = 528°R / (Temp.,°F + 460)

EQUATION

Qstd = Dry Air x Discharge Flow x Temperature Constant

ENVIRO-TEST SERVICES **Broad River BP Corrective Action AFVR**

Site Name Broad River BP **County** Richland

Date: June 24, 2014

UST Permit Number: 11946 **Field Personnel:** Terry Teate

WELL NAI MW-2, MW-5 RW-1, RW-2 **Well Dia.:** 2 & 4 inch **Ambient Temp** 90 deg

Exhaust Stack Diameter(inches): 3

				After
MW-2	FP: 8.56	GWL: 12.44		GWL: 13.0
MW-5	FP: 8.23	GWL: 15.89		GWL: 10.40
RW-1	FP: 8.44	GWL: 15.48		GWL: 12.1
RW-2	FP: 10.22	GWL: 10.73		GWL: 13.0

Start Time 10:00 **End Time:** 18:00

Weather Conditions: Clear, Sunny & Hot

TOTAL FREE PRODUCT RECOVERD= 15 gal

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
0	285.62	39	1	39	207.40	1.2942E-05	0.2218	0.0000
30	258.11	614	1	614	3,265.25	2.0375E-04	3.1554	1.5777
60	241.59	881	1	881	4,685.16	2.9235E-04	4.2377	2.1189
90	249.88	1027	1	1,027	5,461.59	3.4080E-04	5.1095	2.5548
120	249.00	1107	1	1,107	5,887.03	3.6735E-04	5.4882	2.7441
150	247.72	1148	1	1,148	6,105.06	3.8096E-04	5.6622	2.8311
180	240.42	1155	1	1,155	6,142.29	3.8328E-04	5.5288	2.7644
210	231.12	1322	1	1,322	7,030.40	4.3870E-04	6.0834	3 0417
240	235.46	1444	1	1,444	7,679.19	4.7918E-04	6.7697	3.3849
270	231.14	1692	1	1,692	8,998.06	5.6148E-04	7.7867	3.8933
300	232.08	2199	1	2,199	11,694.28	7.2972E-04	10.1611	5.0805
330	243.81	2191	1	2,191	11,651.74	7.2707E-04	10.6362	5.3181
360	233.38	1608	1	1,608	8,551.34	5.3360E-04	7.4720	3.7360
390	237.27	1,234	1	1,234	6,562.41	4.0949E-04	5.8295	2.9148
420	229.86	1,205	1	1,205	6,408.19	3.9987E-04	5.5150	2.7575
450	245.08	1,160	1	1,160	6,168.88	3.8494E-04	5.6606	2.8303
480	245.17	1,075	1	1,075	5,716.85	3.5673E-04	5.2477	2.6238
AVERAGES		1,241.24		1,241.24	6,600.89	4.1190E-04	5.9156	2.9513

TOTAL EMISSIONS **50.1718 LBS**

TOTAL AMOUNT OF FLUID RECOVERED **230.00 Gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **15.00 Gallons**

NOTES;

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS;

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)
PMRg = Cg x Qstd x 60 min/hr
PMR = PMRg x [(T2-T1) / 60], PMRg x [(T3-T2) / 60], ...

ENVIRO-TEST SERVICES

Broad River BP Corrective Action AFVR

Site Name Broad River BP | **County** Richland | **Date:** June 24, 2014

UST Permit Number: 11946 | **Field Personnel:** Terry Teate

WELL NAI MW-2, MW-5 RW-1, RW-2 | **Well Dia.:** 2 & 4 inch | **Ambient Temp** 90 deg

Exhaust Stack Diameter(inches): 3

Start Time 10:00 **End Time:** 18:00

Weather Conditions: Clear, Sunny & Hot

			After
MW-2	FP: 8.56	GWL: 12.44	GWL: 13.0
MW-5	FP: 8.23	GWL: 15.89	GWL: 10.40
RW-1	FP: 8.44	GWL: 15.48	GWL: 12.1
RW-2	FP: 10.22	GWL: 10.73	GWL: 13.0

TOTAL FREE PRODUCT RECOVERD= 15 gal

VACUUM GAUGE MEASUREMENTS

STINGER DEPTHS

Interval	Time	Vacuum of Hg In Inches MW-2	MW-5	RW-1	RW-2	Stinger Depth In ft. MW-2	MW-5	RW-1	RW-2
0	1000	26	26	26	26	8.5	8.5	10.0	10.0
30	1030	18	18	18	18	8.5	8.5	10.0	10.0
60	1100	18	18	18	18	9	9	10.0	10.0
90	1130	16	16	16	16	9	9	12.0	12.0
120	1200	16	16	16	16	10	10	12.0	12.0
150	1230	15	15	15	15	10	10	15.0	15.0
180	1300	14	15	15	15	10	10	15.0	15.0
210	1330	15	16	15	15	10	10	15.0	15.0
240	1400	15	15	15	15	15	15	15.0	15.0
270	1430	15	15	16	15	15	15	18.0	18.0
300	1500	12	12	12	12	18	18	18.0	18.0
330	1530	14	14	14	14	18	18	20.0	20.0
360	1600	14	14	14	14	20	20	20.0	20.0
390	1630	12	12	12	12	20	20	25.0	25.0
420	1700	12	12	12	12	10	10	18.0	18.0
450	1730	14	14	14	14	10	10	18.0	18.0
480	1800	15	15	15	15	10	10	18.0	18.0

ENVIRO-TEST SERVICES

Broad River BP Corrective Action AFVR

Site Name Broad River BP | **County** Richland | **Date:** June 25, 2014

UST Permit Number: 11946 | **Field Personnel:** Terry Teate

Well Name MW-4 | **Well Dia.:** 2 inch | **Ambient Temp** 88 deg

Exhaust Stack Diameter(inches): 3 | **MW-4** FP: 7.38 | GWL: 10.13

Start Time 9:00 **End Time:** 17:00

Weather Conditions: Clear, Sunny & Hot

TOTAL FREE PRODUCT RECOVERED = 2.5 gal.

Dry Standard CFM Air Flow - Qstd

TOTAL EMISSIONS= 22.58 lbs

Interval	Time	Vacuum, in. of Hg	PPM measured	Humidity Ratio,gpp	Water Vapor,%	Dry Air(1/100)	Discharge Flow Volume, CFM	Temperature, °f	Temperature Constant	Qstd cfm
0	900	26	534	138	0.01971429	0.9803	320.00	94.00	0.9531	298.97
30	930	26	621	188	0.0269	0.9731	294.00	117.00	0.9151	261 81
60	1000	26	802	162	0.0231	0.9769	288.00	149.00	0.8670	243.92
90	1030	26	834	256	0.0366	0.9634	270.00	107.00	0.9312	242.23
120	1100	26	912	278	0.0397	0.9603	264.00	106.00	0.9329	236.49
150	1130	26	889	245	0.0350	0.9650	240.00	109.00	0.9279	214.91
180	1200	26	872	359	0.0513	0.9487	226.00	131.00	0.8934	191.55
210	1230	26	1,007	289	0.0413	0.9587	231.00	129.00	0.8964	198.53
240	1300	26	908	234	0.0334	0.9666	198.00	128.00	0.8980	171.85
270	1330	26	821	372	0.0531	0.9469	184.00	140.00	0.8800	153.32
300	1400	26	856	365	0.0521	0.9479	172.00	145.00	0.8727	142.28
330	1430	26	722	198	0.0283	0.9717	183.00	108.00	0.9296	165.30
360	1500	26	637	212	0.0303	0.9697	195.00	137.00	0.8844	167.24
390	1530	26	513	184	0.0263	0.9737	221.00	126.00	0.9010	193.89
420	1600	26	378	231	0.0330	0.9670	198.00	142.00	0.8771	167.93
450	1630	26	334	153	0.0219	0.9781	234.00	111.00	0.9247	211.65
480	1700	26	388	182	0.0260	0.9740	205.00	110.00	0.9263	184.96
AVERAGES		26.00	707.53	238.00	0.0340	0.9660	230.76	122.88	0.9065	202.75

NOTES:

Vacuum = Level of vacuum being applied as record from the vacuum truck tank, inches of Hg.
PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
Humidity Ratio = Grains of moisture per pound(gpp) of dry air measured at the blower discharge stack.
Water Vapor = Pounds of water per pound of dry air as %.
Dry Air = Calculated pound of dry air,(1 - water vapor %).
Discharge Flow Volume = Measured air flow from 3" discharge stack in cubic feet per minute,cfm.
Temperature = Temperature of the air exiting the discharge stack in deg. Fahrenheit.
Temperature Constant = 528°R / (Temp.,°F + 460)

EQUATION

Qstd = Dry Air x Discharge Flow x Temperature Constant

ENVIRO-TEST SERVICES **Broad River BP Corrective Action AFVR**

Site Name Broad River BP **County Richland**

Date: June 25, 2014

UST Permit Number: 11946 **Field Personnel: Terry Teate**

Well Name MW-4 **Well Dia.: 2 inch** **Ambient Temp 88 deg**

Exhaust Stack Diameter(inches): 3 **MW-4 FP: 7.38** **GWL: 10.13**

Start Time 9:00 End Time: 17:00

Weather Conditions: Clear, Sunny & Hot **TOTAL FREE PRODUCT RECOVERD = 2.5 gal**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
0	298.97	534	1	534	2,839.81	1.7720E-04	3.1787	0.0000
30	261.81	621	1	621	3,302.48	2.0607E-04	3.2371	1.6186
60	243.92	802	1	802	4,265.04	2.6614E-04	3.8949	1.9475
90	242.23	834	1	834	4,435.21	2.7676E-04	4.0224	2.0112
120	236.49	912	1	912	4,850.02	3.0264E-04	4.2944	2.1472
150	214.91	889	1	889	4,727.70	2.9501E-04	3.8040	1.9020
180	191.55	872	1	872	4,637.30	2.8937E-04	3.3258	1.6629
210	198.53	1007	1	1,007	5,355.23	3.3417E-04	3.9805	1.9902
240	171.85	908	1	908	4,828.74	3.0131E-04	3.1069	1.5534
270	153.32	821	1	821	4,366.08	2.7244E-04	2.5062	1.2531
300	142.28	856	1	856	4,552.21	2.8406E-04	2.4250	1.2125
330	165.30	722	1	722	3,839.60	2.3959E-04	2.3763	1.1881
360	167.24	637	1	637	3,387.57	2.1138E-04	2.1211	1.0606
390	193.89	513	1	513	2,728.13	1.7024E-04	1.9804	0.9902
420	167.93	378	1	378	2,010.20	1.2544E-04	1.2639	0.6319
450	211.65	334	1	334	1,776.21	1.1084E-04	1.4075	0.7037
480	184.96	388	1	388	2,063.38	1.2876E-04	1.4289	0.7144
AVERAGES		707.53		707.53	3,762.64	2.3479E-04	2.8443	1.3287

TOTAL EMISSIONS **22.5876 LBS**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **2.50 Gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)
PMRg = Cg x Qstd x 60 min/hr
PMR = PMRg x [(T2-T1) / 60], PMRg x [(T3-T2) / 60], ...

ENVIRO-TEST SERVICES

Broad River BP Corrective Action AFVR

Site Name Broad River BP **County** Richland

Date: June 25, 2014

UST Permit Number: 11946 **Field Personnel:** Terry Teate

Well Name MW-4 **Well Dia.:** 2 inch **Ambient Temp** 88 deg

Exhaust Stack Diameter(inches): 3 **MW-4** **FP:** 7.38 **GWL:** 10.13

Start Time 9:00 **End Time:** 17:00

Weather Conditions: Clear, Sunny & Hot

TOTAL FREE PRODUCT RECOVERD = 2.5 gal

VACUUM GAUGE MEASUREMENTS

Interval	Time	Vacuum of Hg in inches MW-4
0	900	26
30	930	22
60	1000	20
90	1030	20
120	1100	28
150	1130	18
180	1200	18
210	1230	18
240	1300	18
270	1330	16
300	1400	18
330	1430	18
360	1500	18
390	1530	18
420	1600	20
450	1630	18
480	1700	18

STINGER DEPTHS

Stinger Depth in ft. MW-4
7.5
7.5
8.0
8.0
8.0
8.0
10.0
10.0
15.0
15.0
15.0
20.0
20.0
10.0
10.0
8.0
8.0

ATTACHMENT B

C 198315

Crandall

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. 36184 | 2. Page 1 of 1

GENERATOR

3. Generator's Name and Mailing Address: Enviro-Test Services
1621 Lake Murray Blvd
Columbia, SC 29212

4. Generator's Phone: (803) 413-4926

5. Transporter 1 Company Name: Enviro-Test Services | 6. US EPA ID Number | A. Transporter's Phone: (803) 732-5770

7. Transporter 2 Company Name | 8. US EPA ID Number | B. Transporter's Phone

9. Designated Facility Name and Site Address:
Crandall Corporation
100 Rich Lex Dr
Lexington, SC 29072

10. US EPA ID Number: SCD981864499 | C. Facility's Phone: (803) 791-4800

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt./Vol.
a. Non Hazardous Waste, Petroleum Contact Water	001	TT	0230	G
b.				
c				
d.				

D. Additional Descriptions for Materials Listed Above

E. Handling Codes for Wastes Listed Above

UST
JUL 02 2014
DIVISION

15. Special Handling Instructions and Additional Information
Broad River BP AFVR

Infotrac 800-535-5053 Registrant Crandall Corp
Srv Call ID: GLB0206184

11a: ENV004-003-D-W

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name: Terry L. Teate | Signature: Terry L. Teate | Month 07 | Day 02 | Year 14

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Terry L. Teate | Signature: Terry L. Teate | Month 07 | Day 02 | Year 14

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in item 19.

Printed/Typed Name: Bob Crums | Signature | Month 07 | Day 02 | Year 14

GENERATOR COPY

ENVIRO-TEST SERVICES

UST
JAN 27 2015
DIVISION

January 27 ,2015

RECEIVED
JAN 27 2015
SC Department of
Health and Environmental
Control

UST
DOCKETING
46916

Jonya Utz
~~Mr. Lee Monts, Manager~~
Corrective Action Section
UST Management Division
Bureau of Land and Waste management

RE: Corrective Case Report
Broad River Amoco
4335 Broad River Rd. Columbia , SC
Permit # 11946 CA # 46916

Dear Mr. Monts,

Enviro-Test Services has achieved 94% reduction in the Free Product removal at the above site. See Tables 1, 2. and 3. This will allow payment for 60% removal at 10% of the contract price ($14,938.00) plus 90% removal of free product at 10% of the contract price ($14,938.00) for a Total of $29, 878.00.
We are continuing to remove product in order to achieve an early completion date.

Thank You for Recognizing our commitment to continuing working on this site.

Terry L. Teate
Terry L. Teate
Project Manager
Enviro-Test Services Inc.

Tables 1, 2, and 3

Broad River Amoco; UST Permit #11946

Table 1 – Potentiometric Data (SSTL Wells)

Historical and January 6, 2015

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level (feet)	GW Elevation (feet)
MW-1	1/21/2011	40.0	20.0 - 40.0	101.84	20.92	N/A	N/A	N/A	80.92
	3/5/2011	40.0	20.0 - 40.0	101.84	14.45	N/A	N/A	N/A	87.39
	3/5/2013	40.0	20.0 - 40.0	101.84	18.62	N/A	N/A	N/A	83.22
	10/30/2013	40.0	20.0 - 40.0	101.84			N/A		
	3/6/2014	40.0	20.0 - 40.0	101.84	15.90	N/A	N/A	N/A	85.94
	1/6/2015	40.0	20.0 - 40.0	101.84	14.05	N/A	N/A	N/A	87.79
MW-2	3/5/2011	28.0	18.0 - 28.0	101.13	13.50	N/A	N/A	N/A	87.63
	3/6/2013	28.0	18.0 - 28.0	101.13	17.66	16.32	1.34	16.70	84.43
	10/30/2013	28.0	18.0 - 28.0	101.13			1.43		
	3/5/2014	28.0	18.0 - 28.0	101.13	11.57	10.15	1.42	10.53	90.60
	1/6/2015	28.0	18.0 - 28.0	101.13	13.38	N/A	N/A	N/A	87.75
MW-4	3/5/2011	25.0	15.0 - 25.0	97.02	9.15	N/A	N/A	N/A	87.87
	3/6/2013	25.0	15.0 - 25.0	97.02	12.41	10.10	2.31	10.75	86.27
	10/30/2013	25.0	15.0 - 25.0	97.02			2.25		
	3/5/2014	25.0	15.0 - 25.0	97.02	9.74	7.50	2.24	8.10	88.92
	1/6/2015	25.0	15.0 - 25.0	97.02	9.45	9.40	0.05	9.41	87.61
MW-5	6/20/2011	20.0	10.0 - 20.0	101.34	14.05	13.75	0.30	13.83	87.51
	3/6/2013	20.0	10.0 - 20.0	101.34	19.63	16.80	2.83	17.59	83.75
	10/30/2013	20.0	10.0 - 20.0	101.34			6.26		
	3/5/2014	20.0	10.0 - 20.0	101.34	15.75	8.12	7.63	10.18	91.16
	1/6/2015	20.0	10.0 - 20.0	101.34	13.62	13.17	0.45	13.29	88.05

Notes: Corrected WL = Static WL - (Product Thickness x Product Gravity)

N/A - Not Applicable

Broad River Amoco; UST Permit #11946

Table 1 – Potentiometric Data (SSTL Wells)

Historical and January 6, 2015

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level (feet)	GW Elevation (feet)
RW-1	3/6/2013	40.0	20.0 - 40.0	101.21	17.26	17.11	0.15	17.15	84.06
	10/30/2013	40.0	20.0 - 40.0	101.21			5.30		
	3/5/2014	40.0	20.0 - 40.0	101.21	15.78	9.10	6.68	10.90	90.31
	1/6/2015	40.0	20.0 - 40.0	101.21	13.70	13.40	0.30	13.48	87.73
RW-2	3/6/2013	40.0	20.0 - 40.0	100.96	16.96	N/A	N/A	N/A	84.00
	10/30/2013	40.0	20.0 - 40.0	100.96			N/A		
	3/5/2014	40.0	20.0 - 40.0	100.96	10.65	N/A	N/A	N/A	90.31
	1/6/2015	40.0	20.0 - 40.0	100.96	13.50	N/A	N/A	N/A	87.46
RW-3	3/6/2013	41.0	21.0 - 41.0	101.44	17.41	17.36	0.05	17.37	84.07
	10/30/2013	41.0	21.0 - 41.0	101.44			0.01		
	3/5/2014	41.0	21.0 - 41.0	101.44	10.58	10.52	0.06	10.54	90.90
	1/6/2015	41.0	21.0 - 41.0	101.44	13.73	13.50	0.23	13.56	87.88
RW-4	3/6/2013	40.5	20.5 - 40.5	100.83	16.73	N/A	N/A	N/A	84.10
	10/30/2013	40.5	20.5 - 40.5	100.83			N/A		
	3/7/2014	40.5	20.5 - 40.5	100.83	10.50	N/A	N/A	N/A	90.33
	1/6/2015	40.5	20.5 - 40.5	100.83	13.10	N/A	N/A	N/A	87.73
RW-5	3/6/2013	38.5	18.5 - 38.5	101.62	17.64	17.58	0.06	17.6	84.02
	10/30/2013	38.5	18.5 - 38.5	101.62			0.03		
	3/5/2014	38.5	18.5 - 38.5	101.62	10.88	10.58	0.30	10.66	90.96
	1/6/2015	38.5	18.5 - 38.5	101.62	15.26	15.25	0.01	15.25	86.37

Notes: Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable

Broad River Amoco; UST Permit #11946

Table 2 - Free-Phase Product Reduction Calculation

January 6, 2015

Well		Product Thickness (feet)	Product Thickness >SSTL Thickness (feet)
MW-1	Initial Thickness	0.00	
	SSTL Thickness	0.01	
	Initial > SSTL	0.00	0.00
	Subsequent (1/6/15)	0.00	
	Subsequent >SSTL	0.00	0.00
MW-2	Initial Thickness	1.43	
	SSTL Thickness	0.01	
	Initial > SSTL	1.42	1.42
	Subsequent (1/6/15)	0.00	
	Subsequent >SSTL	-0.01	0.00
MW-4	Initial Thickness	2.25	
	SSTL Thickness	0.01	
	Initial > SSTL	2.24	2.24
	Subsequent (1/6/15)	0.05	
	Subsequent >SSTL	0.04	0.04
MW-5	Initial Thickness	6.26	
	SSTL Thickness	0.01	
	Initial > SSTL	6.25	6.25
	Subsequent (1/6/15)	0.45	
	Subsequent >SSTL	0.44	0.44
RW-1	Initial Thickness	5.30	
	SSTL Thickness	0.01	
	Initial > SSTL	5.29	5.29
	Subsequent (1/6/15)	0.30	
	Subsequent >SSTL	0.29	0.29
RW-2	Initial Thickness	0.00	
	SSTL Thickness	0.01	
	Initial > SSTL	0.00	0.00
	Subsequent (1/6/15)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-3	Initial Thickness	0.01	
	SSTL Thickness	0.01	
	Initial > SSTL	0.00	0.00
	Subsequent (1/6/15)	0.23	
	Subsequent >SSTL	0.22	0.22
RW-4	Initial Thickness	0.00	
	SSTL Thickness	0.01	
	Initial > SSTL	0.00	0.00
	Subsequent (1/6/15)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-5	Initial Thickness	0.03	
	SSTL Thickness	0.01	
	Initial > SSTL	0.02	0.02
	Subsequent (1/6/15)	0.01	
	Subsequent >SSTL	0.00	0.00
Total	Initial > SSTL		15.28
	Subsequent >SSTL		0.99

Free-Phase Product Thickness Reduction = 94%

UST # 11946, Broad River Amoco
Richland County

Table 3: Current CoC Concentrations in Groundwater

CoC concentrations in micrograms per liter (µg/l) based on the March 2013 sampling. Product thickness based on the October 30, 2013 gauging:

Well	Free Product Thickness	Benzene	Toluene	Ethylbenzene	Xylene	Naphthalene	MTBE	1,2-DCA	EDB
MW-1	**None**	**2480**	**12,800**	**1550**	**5650**	**623**	**70.8J**	**<11.6**	**<0.0039**
MW-2	**1.43'**								
MW-3		0.417J	1.05	0.408J	1.72J	<0.176	<0.078	<0.116	<0.0039
MW-4	**2.25'**								
MW-5	**6.26'**								
MW-6A		<0.111	<0.122	<0.109	<0.179	<0.176	<0.078	<0.116	<0.0039
MW-6B		<0.111	<0.122	<0.109	<0.179	<0.176	<0.078	<0.116	<0.0039
MW-7A		<0.111	<0.122	<0.109	<0.179	<0.176	<0.078	<0.116	<0.0039
MW-8A		<0.111	<0.122	<0.109	<0.179	<0.176	<0.078	<0.116	<0.0039
MW-8B		<0.111	<0.122	<0.109	<0.179	<0.176	<0.078	<0.116	<0.0039
MW-9A		<0.111	<0.122	<0.109	<0.179	<0.176	2.62	0.642J	<0.0039
MW-9B		<0.111	<0.122	<0.109	<0.179	<0.176	2.79	0.675J	<0.0039
MW-10A		<0.111	<0.122	<0.109	<0.179	<0.176	<0.078	<0.116	<0.0039
MW-10B		<0.111	<0.122	<0.109	<0.179	<0.176	<0.078	<0.116	<0.0039
MW-11A		<0.111	<0.122	<0.109	<0.179	<0.176	1	<0.116	<0.0039
MW-11B		<0.111	<0.122	<0.109	<0.179	<0.176	1.12	<0.116	<0.0039
MW-12A		<0.111	<0.122	<0.109	<0.179	<0.176	<0.078	<0.116	<0.0039
MW-12B		<0.111	<0.122	<0.109	<0.179	<0.176	<0.078	<0.116	<0.0039
MW-13A		<0.111	<0.122	<0.109	<0.179	<0.176	<0.078	<0.116	<0.0039
MW-13B		<0.111	<0.122	<0.109	<0.179	<0.176	<0.078	<0.116	<0.0039
MW-14A		<0.111	<0.122	<0.109	<0.179	<0.176	<0.078	<0.116	<0.0039
MW-14B		<0.111	<0.122	<0.109	<0.179	<0.176	<0.078	<0.116	<0.0039
MW-15A		<0.111	<0.122	<0.109	<0.179	<0.176	<0.078	<0.116	<0.0039
MW-15B		<0.111	<0.122	<0.109	<0.179	<0.176	<0.078	<0.116	<0.0039
MW-16A		<0.111	<0.122	<0.109	<0.179	<0.176	<0.078	<0.116	<0.0039
MW-16B		<0.111	<0.122	<0.109	<0.179	<0.176	<0.078	<0.116	<0.0039
MW-17B		6.58	2.47	1.1J	3.87J	<0.352	244	<0.232	<0.0039
MW-18A		<0.111	<0.122	<0.109	<0.179	<0.176	1.42	<0.116	<0.0039
MW-18B		<0.111	0.459J	<0.109	2.03J	<0.176	0.841J	<0.116	<0.0039
MW-19A		0.566J	<0.122	<0.109	<0.179	<0.176	<0.078	<0.116	<0.0039
MW-19B		0.253J	<0.122	<0.109	<0.179	<0.176	<0.078	<0.116	<0.0039
MW-20A		<0.111	<0.122	<0.109	<0.179	<0.176	1.15	<0.116	<0.0039
MW-20B		<0.111	<0.122	<0.109	<0.179	<0.176	2.25	<0.116	<0.0039
MW-21A		<0.111	<0.122	<0.109	<0.179	<0.176	<0.078	<0.116	<0.0039
MW-21B		<0.111	<0.122	<0.109	<0.179	<0.176	1.34	<0.116	<0.0039
MW-22B		<0.111	<0.122	<0.109	<0.179	<0.176	1.83	<0.116	<0.0039
RW-1	**5.30'**								
RW-2	**None**	**9420**	**12,800**	**2030**	**11,000**	**565J**	**9100**	**224J**	**1.65**
RW-3	**0.01'**								
RW-4	**None**	**3390**	**1730**	**977**	**4900**	**210J**	**4460**	**<5.81**	**<0.0039**
RW-5	**0.03'**								
DMW-1		507	<1.22	<1.09	<1.79	<1.76	131	14.2J	<0.0039
DMW-2		4.12	<0.548J	<0.109	0.805J	<0.176	153	<0.116	<0.0039
DMW-3		0.281J	0.497	<0.109	<0.179	<0.176	1.76	<0.116	<0.0039

* CoC concentations and free product thicknesses may vary due to seasonal fluctuations in the groundwater.

D H E C
PROMOTE PROTECT PROSPER

Underground Storage Tank Management Division
Field Data Information Sheet – Notes

Site Information

Date: 1-28-15	Site ID #: ~~11404~~ 11946	Site Name: Broad River Amoco
County: Richland	Project Manager: S. Utz	Field Personnel: S. Utz

Notes:

MW-4 DTW 8.50
RW-4 DTW 11.92
MW-5 water in MW / did not gauge

-no injection wells located
-no additional Recovery wells located / identified.

UST Branch DOCKETING

Signature: S Utz Date: 1-28-14

D H E C
PROMOTE PROTECT PROSPER
W. Marshall Taylor Jr., Acting Director
Promoting and protecting the health of the public and the environment

UST 48tech DOCKETING

MR FREDERICK N CECCHINI
4335 BROAD RIVER RD
COLUMBIA SC 29210-4009

JAN 30 2015

Re: **CAP Implementation Report and CASE Report Review**
Broad River Amoco, 4335 Broad River Rd., Columbia, SC
UST Permit #11946; CA# 46916
Release Reported January 4, 2001
Corrective Action Plan (CAP) received May 6, 2014
CAP Implementation Report received July 2, 2014
Corrective Action System Evaluation (CASE) Report received January 27, 2015
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced documents and has the following comments:

The Corrective Action Plan (CAP) section 3.2 Aggressive Fluid and Vapor Recovery (AFVR) must be revised to reflect the inability to use any monitoring or recovery well established as a Site Specific Target Level (SSTL) well for any active correction activity. Examples of active corrective action activities include but are not limited to extraction, injection, and air-sparging.

The CAP Implementation Report is not usable because the remediation activities listed in the CAP were not properly executed. Monitoring wells MW-2, MW-4, and MW-5 were used as extraction points during the two 8-hour AFVR events conducted on June 24, 2014 and June 25, 2014. The CAP submitted by Enviro-Test Services, Inc. clearly states monitoring wells will not be utilized as extraction points during AFVR events. Approval for installation of up to ten (10) 4-inch recovery wells was given in the Notice to Proceed-ACA letter sent from the UST Department on June 18, 2014. Enviro-Test will need to install recovery wells, conduct an active corrective action activity on the newly installed wells, and document all activities in a new CAP Implementation Report to be submitted to the UST Department.

The referenced CASE report is deficient and not usable. CASE reports must include, at minimum, all items stipulated in the Documents and Records section and the Active Site Rehabilitation Procedures section of the Quality Assurance Project Plan (QAPP), revision 2.0. The referenced sections of the QAPP are enclosed for your information.

The Site Incentive Period began on June 24, 2014 and will expire on June 24, 2017.

A revised CAP is due to the UST Department thirty (30) days from the date of this letter.

A revised CAP Implementation Report is **due on or before April 28, 2015.**

The next quarterly CASE report, documenting corrective action activities during the second quarter of 2015 is **due on or before July 15, 2015**.

On all correspondence regarding this site, please reference UST Permit #11964. If you have questions concerning this correspondence, feel free to contact me by telephone at (803) 898-0634, by fax at (803) 898-0673 or by email utzst@dhec.sc.gov.

Sincerely,

Sonya T. Utz, Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: QAPP Section A9
QAPP page 79

cc: Enviro-Test Services, Inc., P.O. Box 2237, Irmo, SC 29063 (w/enc)
Technical File (w/enc)

All site rehabilitation activities at LUST sites must be conducted by a SCDHEC certified site rehabilitation contractor as required by SUPERB.

Any required occupational safety and health training (e.g., OSHA) as defined by the laws and regulations of the United States of America, the State of South Carolina, the county, or any municipality is the responsibility of the contractor.

Well drillers must be certified in accordance with Title 40, Chapter 23 of the SC Code of Laws. The certification number must be provided on all well forms submitted to the UST Management Division. The certification number must also be provided in the site-specific QAPP Contractor Addendum. As well drillers work under the direct supervision of the Class I certified contractor, the well driller is not required to sign the QAPP Contractor Addendum.

Laboratories must be certified in accordance with SCDHEC Office of Environmental Laboratory Certification for the analytical methods performed. The laboratory certification number must be provided on all laboratory data submitted to the UST Management Division. The certification number must also be provided in the site-specific QAPP Contractor Addendum.

All of the above information will be obtained from the contractor as part of their QAPP Contractor Addendum. In addition the contractor must specify who will be responsible for detailing how training will be provided, who will be responsible for assuring that personnel participating in the study receive proper training, and where the training is documented.

A9 Documents and Records

The UST Management Division QAPP will be reviewed and, if necessary, revised at least annually by the UST Management Division QAPP Coordinator. Any required updates to the QAPP will be distributed in accordance with the distribution list contained in this document. A copy of the QAPP will be maintained in a common directory on the UST Management Division file server. The UST Project Managers will be required to sign a statement indicating that they have received a copy of the QAPP. A new form must be signed whenever revisions to the QAPP are made to ensure that all project managers have been provided the most recent version of the QAPP. UST Certified Contractors will be provided a copy of the QAPP electronically. The contractor will be required to sign a statement indicating receipt of the QAPP. The statement will be required as part of the yearly certification renewal process. A new form will be required to be submitted when revisions to the QAPP are made. The contractor's addendum will include a signature page signed by all parties involved in the project that they have received the most recent version of the Program QAPP and the site-specific QAPP.

All records and reports submitted to the UST Management Division that contain interpretation of the data provided must be signed and sealed by a Professional Engineer or a Professional Geologist registered in the State of South Carolina. All original records and reports submitted to the UST Management Division must be maintained by the contractor for a minimum of 5 years, unless otherwise specified by the UST Management Division. Record archival policies for SCDHEC UST are given in Appendix J. This includes electronic as well as hard copy storage.

Each report submitted to the Agency shall include, at a minimum, the following elements as applicable to the scope of work being conducted:

A. Introduction:
1. UST facility name, permit #, address, phone number, UST owner's and operator's name, address, and phone number
2. Name, address, and telephone number of the property owner
3. DHEC Certified UST Site Rehabilitation Contractor's name, address, telephone number, and certification number
4. Name, address, telephone number, and certification number of the well driller that installed borings/monitoring wells.
5. Name, address, telephone number, and certification number of the certified laboratory performing analytical analyses.
6. Facility history including tank information (number, size, and contents of all current and former USTs), date release reported to DHEC, estimated quantity of release, cause of release (if known), and status of any other releases at the facility. If the facility is no longer a petroleum marketing facility, please provide the current facility name and use. If the facility is currently not in use, please list the current use as vacant.
7. Regional geology and hydrogeology.

B. Receptor Survey & Site Data
1. Receptor survey results- Locate all private and public water supply wells (drinking and non-drinking) and other potential receptors (as defined in the South Carolina Risk Based Corrective Action (RBCA) Guidance Document, i.e., utilities, surface waters, wetlands, basements) within a 1,000-foot radius of the site. - the results shall include all known groundwater quality and public and private groundwater usage
2. Document the current use of the site and adjacent land (residential, commercial, agricultural, industrial, etc.). Identify any UST site(s) within a 1000-foot radius of the subject site and provide their UST permit number(s) in the report.
3. Site-specific geology and hydrogeology

C. Soil Assessment/Field Screening Information & Methodology
1. Describe the primary soil type and field screening results.
2. Describe how the soil sample was collected (e.g. two encore samplers and one four ounce jar) and preserved.
3. Describe how the field screening was conducted.

D. Monitoring Well Information
1. Provide the monitoring well installation and development date(s).
2. Describe the well development procedure.
3. Provide justification for monitoring well locations.

E. Groundwater Data
1. Describe the groundwater sampling methodology and provide the date sampled. Include groundwater measurements (pH, specific conductance, temperature, turbidity and

dissolved oxygen).
2. Describe the purging methodology and provide the volume of water purged and groundwater measurements to verify that purging is complete.
3. If free product is present, provide the thickness.

F. AFVR Information
1. An original copy of the disposal manifest from the permitted treatment facility that clearly designates the quantity of effluent received, applicable permit numbers, and dates, must be included as an appendix to the final report. A brief description of the completed work scope and any relevant descriptions pertaining to the data tables.
2. A table summarizing the airflow (in CFM), pre-treatment vapor concentrations (parts per million), and post-treatment vapor concentrations (parts per million). The table shall also list the AFVR extraction wells and stinger depths in feet.
3. A table summarizing the vacuum gauge measurements from all extraction wells and adjacent wells.
4. The total volume of water recovered (gallons).
5. The total volume of free phase product recovered in gallons (typically measured with a product/water interface device inserted into the top of the tanker and then converted to an approximate volume).
6. The total volume of petroleum removed as vapor in gallons. This is calculated based on the airflow rate and the pre-treatment vapor concentrations.
7. A table documenting the FPP thickness in each well before and after the AFVR event.
8. A scaled base map depicting the location of the extraction wells and the surrounding wells equipped with vacuum gauges.
9. There can be no spillage or leakage in transport. An original copy of the disposal manifest from the permitted treatment facility that clearly designates the quantity of effluent received, applicable permit numbers, and dates must be included as Appendix G in the final report.

G. Granulated Activated Carbon Installation
1. Description of the unit installed, to include carbon capacity, warranty information, counter information, validation by Water Quality Association, where installed, combination or key information, etc.
2. A schematic diagram of the unit (new or old) with the model number, serial number, site name, UST permit number, inlet and outlet ports will be required. This information must be submitted within one week of installation.
3. The contractor must provide all calculations for determining COC breakthrough and the frequency at which the filter material must be changed based on CoC concentration and projected water usage.
4. All work under this contract must be done by a professional plumber certified in the State of South Carolina. Proof of certification must be provided with the QAPP Contractor Addendum

H. Results & Discussion
1. Assessment results – the report shall include a brief discussion of the assessment and

results. The discussion shall include all methodology used.

2. Aquifer evaluation results (if conducted) – the report shall include a brief discussion of the aquifer evaluation and results.
3. Fate & transport results (if conducted) – the report shall include a brief description of the fate & transport model(s) used. All assumptions shall be clearly identified. The input parameters are to be given in tabular format. The method of model calibration for each CoC shall be discussed.
4. Tier 1 Risk Evaluation
    i. Site Conceptual Model Tables must be included. (See Appendix D)
5. Tier 2 Risk Evaluation (If requested by the UST Project Manager)
    i. Exposure pathway analysis. It is recommended that the site rehabilitation contractor fax all screening data, receptor locations, exposure points, and compliance points to the project manager at (803) 898-2544 prior to the start of exposure modeling. The tier analysis shall be done in accordance with the Risk Based Corrective Action (RBCA) Procedures Section.
    ii. SSTLs shall be calculated for each CoC and for each potential vapor, soil, and groundwater exposure pathway. Results shall be tabulated.
    iii. Recommendations - The report shall include recommendations for further action (Tier III assessment, active remediation, intrinsic remediation, etc.) as warranted by the Tier 2 evaluation.

I. Tables

1. Soil Analytical data for the site shall be given in tabular form as Table 1. Soil borings should be designated with the 5-digit permit and boring id (e.g. 12345-SB1) on the chain of custody forms.
2. Potentiometric data for the site shall be listed in tabular form for this and all previous sampling events as Table 2. This should include top of casing elevations, screened intervals, depth to water, depth to product, and groundwater elevation for each well.
3. Laboratory data shall be summarized in a tabular form and must include current and historical data. Monitoring wells should be designated with the 5-digit permit number and the well id (e.g. 12345-MW1) on the chain of custody forms. Water supply wells should be designated with the 5-digit permit number and the well Id (e.g. 12345-WSW1). Surface water sampling locations should be designated with the 5-digit permit number and the location ID (e.g. 12345-SW1). Include groundwater measurements (pH, specific conductance, temperature, turbidity and dissolved oxygen).
4. Aquifer characteristics – hydraulic conductivity, seepage velocity, etc. shall be summarized on the appropriate SCDHEC form.
5. Site Conceptual Model - identify the data necessary to characterize the migration potential along the pathway and to quantify the potential impact.

J. Figures

1. Topographic Map- the report shall include a copy of the relevant portion of a USGS topographic map showing the site location and the locations of all public and private water supply wells and other potential receptors within 1,000 feet of the site or the down-gradient edge of the plume whichever is greater. The figure will be captioned with the facility name

and address, UST permit number, date, and bar scale. The map must include a north arrow. Label as Figure 1.

2. Site base map-
    i. Initial Groundwater Assessment: The site base map, labeled as Figure 2, shall be accurately scaled, but does not need to be surveyed. The map shall include the following:
        1. Legend including the facility name and address, UST permit number and a bar scale.
        2. North arrow.
        3. Location of property lines.
        4. Streets or highways (indicate names and numbers).
        5. Location of buildings.
        6. Paved areas on or adjacent to site.
        7. Location of all present and former aboveground and underground storage tanks and associated lines, pumps, and dispensers.
        8. Underground and aboveground utilities on or adjacent to site (sewer, water, telephone, gas, electric, etc.).
        9. Location of any potential receptors.
        10. Previous soil sampling locations.
        11. Boring/Monitoring well location.
    ii. Tier I Assessment: A scaled location map indicating the location of the site and any receptors within a 500-foot radius of the facility. The figure will be captioned with the facility name and address, UST permit number, data, and bar scale. The map must include a north arrow. Label the map as Figure 2
    iii. Tier II Assessment: a surveyed map (scaled to one inch equals fifty feet) that shows structures, underground utilities, potential receptors, USTs and associated piping and dispensers, and the locations of all sampling points and monitoring wells for a minimum distance of 500 by 500 feet with the UST facility in the center of the map. The figure will be captioned with the facility name and address, UST Permit number, data, and bar scale. The map must include a north arrow. Label the map as Figure 2
3. CoC site maps - the maps shall show the known and estimated horizontal extent of CoCs in the soil and groundwater. Analytical values for the CoCs shall be indicated at each sampling point. A separate map shall be used for each medium. Label the Soil CoCs map as Figure 3 and the Groundwater CoCs map as Figure 4.

The analytical data should be adjacent to the relative sampling point and should use the following format (additional parameters such as dissolved oxygen may be required):

Sample ID (MW# or SB#)
Benzene (µg/kg or µg/l)
Toluene (µg/kg or µg/l)
Ethylbenzene (µg/kg or µg/l)
Xylenes (µg/kg or µg/l)
Naphthalene (µg/kg or µg/l)
MtBE (ug/kg or ug/l)
Total Lead (µg/kg or µg/l)
RCRA Metals (µg/kg or µg/l)
PAHs (µg/kg or µg/l)

EDB (µg/l)	DIPE (µg/l)
1,2 DCA (µg/l)	TBF (µg/l)
ETBE (µg/l)	TBA (µg/l)
3,3-Dimethyl-1-butanol (µg/l)	TAA(µg/l)
TAME (µg/l)	Ethanol

Note: Not all parameters apply. If the laboratory analysis indicates all CoC at or below detection limits "ND" may be listed on the map beside that boring or monitoring well.

4. Site potentiometric map - the map shall indicate the water level elevations for each monitoring well and show the direction of groundwater flow for the surficial aquifer. (Tier I, Tier II, groundwater sampling events). Label as Figure 5 NOTE: Great care should be exercised in the use of computer contouring programs (e.g., Surfer®). Any unusual potentiometric features depicted on the map (e.g., sinks, mounds, abnormally steep gradients, etc.) must be explained.
5. Geologic cross-sections - the report shall include two cross-sections showing the lithology, hydrology and stratigraphy of the site, and the known and estimated vertical extent of CoCs in the soil and groundwater. The cross-sections shall intersect at a 90-degree angle if possible. One cross-section shall include the source area and go down-gradient through as many wells as practicable with the highest concentrations. If a subsequent assessment is conducted to define the extent of CoCs, the cross-sections will be updated to include the additional wells. (Tier II). Label as Figure 6.
6. A map or series of maps showing the predicted migration and attenuation of the CoCs through time shall be presented. Total BTEX and TPH maps will not be used. (Tier II)

K. Appendices

1. Appendix A: Site Survey prepared and certified by a South Carolina Licensed Professional Land Surveyor (Tier I and Tier II) The surveyed base map should be plotted to an accuracy of 1-foot and include the following:
   i. Location of property lines, for the subject site and all affected adjacent properties
   ii. Streets and highways (indicate names)
   iii. Location of buildings
   iv. Paved areas on or adjacent to site
   v. Location of present and former aboveground and underground storage tanks and associated lines, pumps, and dispensers.
   vi. Underground utilities on or adjacent to the site (sewer, water, gas, telephone, electric, etc.)
   vii. Location of any potential receptors
   viii. Soil boring locations
   ix. Monitoring well locations
   x. Survey datum location
   xi. Captioned with the facility name and address, UST permit number, date, and bar scale.
   xii. North arrow
2. Appendix B: Sampling logs, laboratory data sheets and chain-of-custody forms. The analytical data packages will include the following information: sample results with units,

method blank results, laboratory control sample recovery, matrix spike/matrix spike duplicate recoveries and relative percent differences, date and time of sample collection, date and time of sample receipt, date and time of sample extraction/preparation, date and time of sample analysis, dilution factors, pH of water samples, sample temperature at time of receipt, analytical methods used, method detection and quantification limits, problems and Site Rehabilitations, and applicable certifications. (A laboratory data package may be requested that includes raw data/instrument printouts, calibration data (initial and continuing), method and preparation blanks, field blanks, QA/QC data, digestion/extraction bench sheets, analytical logs, etc.)

3. Appendix C: A copy of the relevant portion of the tax map depicting the location of the facility, all impacted properties, and all properties located adjacent to the impacted properties shall also be included. The property owner names, addresses, and phone numbers as well as a list of monitoring wells installed on each parcel should be included in tabular format. The report shall also include a scaled site vicinity map that indicates site location, surface drainage, structures, roads, receptors, and adjacent property uses. (Maps should not be integrated in the report.) List of adjacent property owner and well owners with their information.
4. Appendix D: Soil Boring/Field Screening logs for Temporary Wells and Screening Points to include DHEC Form 1903 for any abandoned temporary borings or wells.
5. Appendix E: Well completion logs and DHEC Form 1903 for all well(s);
6. Appendix F: Aquifer evaluation summary forms, data, graphs, equations
7. Appendix G: Disposal manifests
8. Appendix H: Local zoning regulations
9. Appendix I: If requested by the UST Project Manager, all fate and transport modeling assumptions, data input to each model, and all generated output data.
10. Appendix J: Copies of any access agreements obtained by the contractor to complete the required work.
11. Appendix K: Data verification checklist

Appendices not included in the report should be listed as omitted in the Table of Contents.

SECTION B – DATA GENERATION AND ACQUISITION

B1 Sampling Process Design/Experimental Design

Each sampling process is described below. Since all information is potentially critical in nature, any problems with sample collection or access to the sites must be reported to the SCDHEC UST Project Manager to determine what actions should be taken (re-sampling, etc.) Variability is expected in these samples due to nature of sampling for contamination. The project manager is also to be contacted when anomalies are found in the data or in the site itself.

of the treatment process outlined in the Site Rehabilitation Plan. Analytical parameters will be specified in the bid specification.

6. Site Rehabilitation System Evaluations – Quarterly Site Rehabilitation system evaluations (CASE) and monitoring reports documenting progress must be submitted. The reporting schedule will be outlined in the bid specification. Each CASE should include the following, at a minimum:

   A. Brief description of any construction or treatment system adjustments completed by the site rehabilitation contractor since the previous report. Well completion logs and treatment system construction schematics may be included in the appendix.

   B. A table summarizing the measurement of any observed free product and groundwater potentiometric data. In addition, a brief description and a map depicting the most current groundwater flow direction and gradient and any observed historical trends, should be included.

   C. A table summarizing the historical and current analytical results from all monitoring wells, which are required to be sampled pursuant to the bid specification. Cleanup goals or SSTLs should also be noted. The total mass exceeding SSTL should be calculated in accordance with the formula and example included in Section H. Negative values should not be used.

   D. A brief discussion should be included which describes the contractors' on-going efforts to maximize the time efficiency of the treatment process.

   E. A revised implementation schedule should be included which more accurately estimates when the cleanup process will be complete.

   F. Site maps, analytical results, well purging records, and any applicable soil or water disposal manifests should be included in the appendix.

7. Calculation of % mass removed– The following formula will be used to calculate the percent total mass reduction: total mass above the cleanup goal or SSTLs from initial sampling less total mass above cleanup goal or SSTLs from subsequent sampling divided by total mass above cleanup goal or SSTLs from initial sampling.

The following is an example to demonstrate the CoC Mass Reduction Calculation:

Well		Benzene	Toluene	Ethylbenzene	Xylene	MTBE	Naphthalene	Mass>SSTL
MW-1	Initial [A]	7,500	4,000	2,000	15,000	3,000	1,000	[A]
	SSTL [B]	10	2,000	1,400	10,000	80	50	[B]
	Initial > SSTL [C]	7,490	2,000	600	5,000	2,920	950	18,860 [C]
	Subsequent [D]	3,000	1,000	900	13,000	2,000	5	[D]
	SSTL [E]	10	2,000	1,400	10,000	80	50	[E]
	Subsequent > SSTL [F]	2,990	0	0	3,000	1,920	0	7,910 [F]
MW-4	Initial [G]	150	400	50	250	300	25	[G]
	SSTL [H]	5	400	50	250	40	25	[H]
	Initial > SSTL [I]	145	0	0	0	260	0	405 [I]
	Subsequent [J]	100	100	1	1	100	1	[J]
	SSTL [K]	5	400	50	250	40	25	[K]

	Subsequent > SSTL [L]	95	0	0	0	60	0	155 [L]
Totals	Initial > SSTL [M]	(sum of initial mass above SSTL for all wells) (C+I)						19,365 [M]
	Subsequent > SSTL [N]	(sum of subsequent mass above SSTL for all wells) (F+L)						8,065 [N]

Table 6 CoC Mass Reduction Calculation Example

Notes:

- *** If subsequent sampling indicates a CoC concentration value at or below the cleanup goal or SSTL and/or a CoC concentration below laboratory detection level but reporting level less than cleanup goal or SSTL for any constituent, the value for the mass reduction will be 0 (no negative numbers).**
- **If subsequent sampling indicates a CoC concentration below the laboratory detection level but the reporting limit is greater than cleanup goal or SSTL, the value for any constituent will be the analytical reporting limit.**

Mass Reduction Calculation
CoC Mass Reduction = (M-N) = (19,365-8,065) = 0.5835 *100 = 58.35% CoC Reduction
(definitions of variables in this equation can be found in the example table above)

8. Completion of Active Site Rehabilitation – Once analytical results indicate that the concentration of each CoC at each monitoring point is below the cleanup goal or SSTL and the conditions in the site rehabilitation specification have been met, the contractor may request authorization from the Agency to stop the treatment system. Once granted, the contractor will begin the post-remediation monitoring and verification cycle. The Agency may require the installation of verification borings and wells. The number of verification points, analytical parameters, and the duration of the post-remediation verification process are specified in the site rehabilitation specification.

9. Once the verification process is complete and all concentrations of CoC are confirmed to remain less than the cleanup goal or SSTL, the Agency will issue approval for the contractor to remove their Site Rehabilitation equipment, abandon pipe runs, and abandon monitoring wells.

INTRINSIC SITE REHABILITATION PROCEDURES

1. Data collection - Prior to implementation of Site Rehabilitation, the horizontal and vertical extent of CoC in the soil and groundwater, aquifer characteristics, and SSTLs are determined. This data is typically collected during Tier 1, Tier 2, and Tier 3 assessments as described in this document.

2. Basics of Intrinsic Remediation – Intrinsic remediation refers to the naturally occurring microbial and fate and transport processes that results in a reduction of the total mass of hydrocarbons. A monitoring program is implemented to gather the necessary data to support that intrinsic remediation is reducing the concentrations of CoC. Once the evidence documents that site conditions are suitable and that intrinsic remediation is taking place, an intrinsic Site Rehabilitation report (ICAR) is then prepared to justify the issuance of a Conditional No Further Action and the discontinuation of monitoring.

3. Monitoring - The primary evidence for intrinsic remediation shall be the observed reduction in the concentration of each CoC in each well and a corresponding reduction in the overall size and geometry of the plume.

ENVIRO-TEST SERVICES

UST
MAR 0 6 2015
PROGRAM

February 28, 2014

UST
HQ-tech
DOCKETING

Sonya Utz, Hydrogeologist
Underground Storage Tank Section
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Re: Corrective Action Plan – Revision 1 Addendum
Broad River Amoco
4335 Broad River Rd., Columbia
Richland County, South Carolina
UST Permit #11946; CA #46916

Dear Ms. Utz;

Pursuant to your correspondence dated January 30, 2015, Enviro-Test Services, Inc. (ETS) has revised the Corrective Action Plan for the Broad River Amoco site located in Columbia, South Carolina. Specifically, Page 9, Section 3.2 Aggressive Fluid Vapor Recovery (AFVR) has been amended to include a statement indicating that no monitoring wells will be utilized for AFVR activities at the site. It is further understood that no monitoring wells will be used for any remediation activities at the site.

If you should have any questions regarding this addendum, or should you need additional information, please do not hesitate to contact our office.

Sincerely,
Enviro-Test Services, Inc.
Contractor Certification #14

Michael L. Faris, P.G. (#2379)
Hydrogeologist

cc: Fredrick Cecchini

The two layers of water are clearly connected as contamination has been identified at both depths during this Tier II investigation. There appears to be an aquitard comprised of mostly dry silty clay (with a small % of sand) between the two above-described zones of water across the area of study. Because the contaminants have been identified at both depths in and near the source area, there clearly is transmissivity between the two layers. Therefore, the silty clay is not considered a true aquiclude, but is acting at least as a partially confining unit.

3.0 PROPOSED CORRECTIVE ACTION METHODOLOGY

3.1 Overview

Migration of free phase product appears to be limited based on assessment and monitoring information. Also, assessment and monitoring information suggest limitation of groundwater migration of dissolved phase constituents. Thus, reduction of the free-phase product should assure the reduction of subsurface impact.

Possible free product recovery technologies and methods were evaluated during an initial alternatives screening process. The proposed corrective action technologies and methodologies and their applicability to the site based on a review of the attributes and logistics of installation and operation, technical likelihood of success, and economic concerns are discussed below.

3.2 Aggressive Fluid Vapor Recovery (AFVR)

The remediation activities will commence with implementation of Aggressive Fluid Vapor Recovery (AFVR). The AFVR efforts will utilize a liquid-ring vacuum pump capable of maintaining a vacuum of 27-inches Hg. The AFVR methodology is a total-fluid and vapor recovery process. The attention will be focused in the area of the free-phase product identified during the Tier II Assessment. Enviro-Test Services, Inc. specifically intends to concentrate AFVR efforts on recovery wells RW-1, RW-2, RW-3, RW-4, and RW-5 as a part of this proposed corrective action methodology. Additional recovery/extraction wells (approximately 5 to 10 wells) will be installed as needed at various locations along the axis of the contaminant plume in the source area, and areas downgradient where product has been detected and/or is suspected. AFVR will not be conducted on any monitoring wells at the site. Enviro-Test Services, Inc. will perform AFVR until approximately 10,000 gallons of total fluid have been recovered. At that juncture, the effectiveness of the AVFR efforts will be evaluated, possibly sooner depending on recovery rate of the aquifer.

ENVIRO-TEST SERVICES

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APR 28 2015
SC Department of
Health and Environmental
Control

April 25, 2015

Sonya T. Utz, Hydrogeologist
Underground Storage Tank Section
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Re: CAP Implementation Report
Broad River Amoco
4335 Broad River Rd., Columbia
Richland County, South Carolina
UST Permit #11946; CA #46916

Dear Ms. Utz;

Pursuant to your correspondence dated January 30, 2015, Enviro-Test Services, Inc. (ETS) has restarted the remediation activities at the Broad River Amoco site located in Columbia, South Carolina. In order to implement the site rehabilitation activities ETS has completed four (4) Aggressive Fluid Vapor Recovery (AFVR) events in accordance with the Corrective Action Plan (CAP) Revision 1, dated February 28, 2015, for the site. The pertinent information regarding this assessment, including conclusions, is presented on the following pages and in the Figures and Appendices of this document.

If you should have any questions regarding the results of this assessment, or should you need additional information, please do not hesitate to contact our office. Thank you for recognizing our commitment to continuing the site rehabilitation work on this site.

Sincerely,
Enviro-Test Services, Inc.
Contractor Certification #14

MICHAEL L. FARIS
REGISTERED
No. 2379
SOUTH CAROLINA
PROFESSIONAL GEOLOGIST

Michael L. Faris, P.G. (#2379)
Hydrogeologist

Terry L. Teate
President, Sr. Project Manager

cc: Fredrick Cecchini

Site History & Background Information

The subject site is located in northwest Richland County in Columbia, South Carolina and is situated on the southwest side of Broad River Road, a five-lane local thoroughfare. The site is comprised of approximately 0.85 acres and is currently owned and operated as a petroleum retail facility, convenience store and restaurant (Broad River BP).

A 1939 aerial photograph from the Richland County Geographic Information System (GIS) shows that the subject property was utilized for agriculture and was partially wooded. Broad River Road appears as a two-lane road. Information available through the Richland County Assessor's Office indicates the property was owned by B.O. Derrick in 1955 and a 1959 aerial photograph indicates that the property had apparently been developed as a petroleum retail facility. Subsequently, the property was acquired by Associated Oils of South Carolina, Inc. in February 1988, and the previous UST system (B.O. Derrick) was properly closed, as reported to the SCDHEC in 1989. Reportedly, the closure included proper abandonment by removal of one 2,000-gallon UST and one 3,000-gallon UST. Additionally, the property redevelopment activities of 1988 and 1989 reportedly included the demolition of pre-existing structures and construction of the existing store building, dispenser islands and UST system. Subsequently, the property was acquired by Mr. Frederick N. Cecchini in June 1997, and Mr. Cecchini remains the current owner.

UST #	Product	Date Installed	Currently in use (Yes or No)	If not in use, Date Removed
1	Gasoline (2,000 gallon)	(?)	No	1989
2	Gasoline (3,000 gallon)	(?)	No	1989
3	Diesel (3,000 gallon)	1989	Yes	-
4	Gasoline Unleaded (3,000 gallon)	1989	Yes	-
5	Gasoline Plus (3,000 gallon)	1989	Yes	-
6	Gasoline Plus (8,000 gallon)	1989	Yes	-
7	Gasoline Super (8,000 gallon)	1989	Yes	-
8	Kerosene (1,000 gallon)	1989	Yes	-

Reportedly, no soil samples were collected for analysis at the time of proper abandonment of the previous UST system as reported to SCDHEC in 1989. In December 2010, a Phase II Subsurface Investigation was performed by Partner Engineering and Science, Inc. of El Segundo, California. The Phase II investigation included the installation of four soil borings and a Temporary Monitoring Well Permit (Approval No. 4053) was obtained from the SCDHEC for the purpose of groundwater sample collection. Reportedly, the soil borings extended to terminal depths of 26 feet below land surface (BLS) utilizing direct push penetration technology with continuous soil sample collection.

Drilling refusal was encountered in all four soil borings before groundwater was encountered; therefore, no groundwater samples were collected for laboratory analysis. Eight soil samples (two from each soil boring) were submitted for laboratory analysis for Volatile Organic Compounds (VOC) and Polynuclear Aromatic Hydrocarbons (PAH). The laboratory analytical results indicated the detection of various VOC and PAH chemical compounds at concentrations deemed reportable to the SCDHEC.

An Initial Groundwater Assessment (IGWA) was completed by Enviro-Test Services, Inc. during January, 2011 and an IGWA report was submitted on February 4, 2011. On January 20, 2011, the soil boring for monitoring well MW-1 was installed. The soil sample from the 10 to 15 feet sampling interval yielded the highest PID reading of 1,782 ppm and accordingly was submitted for laboratory analysis for BTEX, MTBE, naphthalene, PAH and lead. Moderately elevated concentrations of toluene, ethylbenzene, xylenes and naphthalene were detected in the soil sample. Saturated sediments were encountered at the depth interval of 35 to 40 feet below grade level (BGL). As such, monitoring well MW-1 was installed to a depth of 40 feet BGL and was screened from 40 to 20 feet BGL. On January 21, 2011, a groundwater sample was collected from monitoring well MW-1 and laboratory analysis for BTEX, naphthalene, MTBE, PAH and lead was performed. The depth to groundwater in monitoring well MW-1 was measured from the top-of-casing to be 20.92 feet. The groundwater sample yielded COC concentrations as follows: benzene (929 ug/l), toluene (10,300 ug/l), ethylbenzene (684 ug/l), MTBE (243 ug/l) and naphthalene (922 ug/l). Following review of the IGWA report, the SCDHEC requested a Tier I Assessment in correspondence dated February 7, 2011.

Field activities for the Tier I Assessment were commenced on February 24 and 25, 2011 with the completion of soil borings SB-1 through SB-9. Laboratory analysis of soil samples for BTEX, MTBE and PAH yielded elevated concentrations of benzene and naphthalene above RBSL in soil borings SB-1 (10 ft), SB-2 (5 ft), SB-3 (8 ft) and 5 (6 ft) which were installed proximal to the existing UST basin (SB-1 and SB-2) and product pipeline/dispenser islands (SB-3 and SB-5). Monitoring wells MW-2, MW-3 and MW-4 were completed on February 25, 2011 and were subsequently sampled on March 5, 2011. Laboratory analysis of the groundwater samples yielded concentrations of benzene as follows: MW-1 (1,760 ug/l), MW-2 (1,650 ug/l), MW-3 (9.93 ug/l) and MW-4 (1,830 ug/l). Additionally, concentrations of MTBE were also detected in wells MW-2 (3,420 ug/l) and MW-4 (3,100 ug/l). Naphthalene by EPA method 8260 was detected in wells MW-1 (4,070J ug/l), MW-2 (462J ug/l) and MW-4 (598 ug/l). Also, elevated concentrations of toluene were detected in wells MW-1 (16,400 ug/l) and MW-2 (3,230 ug/l) and ethylbenzene in wells MW-1 (1,270 ug/l) and MW-4 (1,270 ug/l). A Tier I Assessment Report was submitted to SCDHEC on April 8, 2011.

Subsequent to review of the Tier I Assessment Report, the Technical Project Manager and Section Manager, as applicable, expressed concern regarding the depth of the screened interval of each monitoring well in relation to the measured groundwater levels due to the fact that none of the monitoring wells were bracketing the water table of the site surficial aquifer.

Enviro-Test Services, Inc. stated that during soil boring and monitoring well installations no saturated sediments were encountered until the 35 to 40-ft depth interval of drilling at each well location; therefore, the monitoring wells were installed at depths somewhat deeper than preferable. Also, during drilling activities for installation of monitoring well MW-4, where elevated COC's were later detected in the March 5, 2011 groundwater sample, no petroleum hydrocarbon odors or elevated PID readings were noted to be present in apparent vadose soils; however, upon encountering saturated soils at approximately 35 feet, strong odors and elevated PID readings were readily apparent. Consequently, the Technical Project Manager decided that an additional monitoring well (MW-5) should be installed at a shallower, bracketing depth to determine the availability of groundwater for sample collection in what appeared to be unsaturated, vadose soils. Accordingly, on May 27, 2011 monitoring well MW-5 was installed to a depth of 20 feet, with a 10-ft screen at a location adjacent to the north corner of the existing convenience store building. The infiltration of groundwater was noted to be exceedingly slow; as such, groundwater was allowed to seep into the well casing for several days. On June 3, 2011, the depth to groundwater was measured at 13.80 feet and free product (gasoline) of a degraded appearance was measured at 13.68 feet (a free product thickness of 0.12 feet). Again, on June 20, 2011, depth to the groundwater was measured at 14.05 feet and free product at 13.75 feet (a free product thickness of 0.30 feet). These findings were submitted to the DHEC Project Manager on June 20, 2011.

Based on the results of the Tier I Assessment, a Tier II was requested. The Tier II was completed in 2013, with a report dated May 28, 2013, and the horizontal and vertical extent of the contaminant plume was delineated. This site is currently in the corrective action section of the UST Program in order to remove the free-phase product associated with the release contaminant plume.

The subject property is bounded by Broad River Road to the northeast, then by the South Carolina Law Enforcement Division (SLED). The adjacent property to the southeast is a nail and beauty salon. The adjacent property to the southwest is commercially utilized as a nursery school and day care (Play Pal Day Care). The Play Pal Day Care facility encompasses two properties fronting Dothan Road. The subject property is bounded to the northwest by Dothan Road and a commercially utilized property beyond (MDC Associates, an apparent mechanical engineering firm). The commercial usage of the subject property and adjacent properties is expected to remain the same in the future.

Site Geography

In general, the site is located on the west side of a topographically ridge extending southeast to northwest. Broad River Road lies at or near the crest of the apparent topographic ridge. Storm water runoff on the east side of the ridge ultimately flows into the Broad River located approximately 2 miles east of the site. On the west side of the ridge, storm water runoff flows toward Stoop Creek located approximately 1,650 feet to the southwest (near the southwest dead end of Dothan Road). From this point, Stoop Creek flows southward approximately 2.6 miles before emptying into the Saluda River.

In the general vicinity, numerous surface water features are evident on the USGS topographic map including several unnamed creeks (apparently spring fed) and several small to medium-sized surface water impoundments. In relative close proximity to the site, three surface water features are apparent on the west side of the topographic ridge and three on the east side of the topographic ridge. These surface water features are visibly apparent of Figure 1, a topographic site location map. On the west side of the topographic ridge, located approximately 1,430 feet to the northwest is a small pond with an estimated surface elevation of 265 feet MSL, approximately 1,680 feet to the southwest is the aforementioned Stoop Creek (estimated surface elevation of 233 feet MSL) and approximately 2,370 feet to the south-southeast is an apparent spring-fed creek (estimated surface elevation of 252 feet MSL at depicted point of emergence). On the east side of the topographic ridge, located approximately 1,240 feet to the northeast is an apparent spring-fed creek (estimated surface elevation of 248 feet MSL at the depicted point of emergence), approximately 1,820 feet to the east-northeast is an apparent spring-fed creek (estimated surface elevation of 230 feet MSL at the depicted point of emergence) and approximately 2,480 feet to the southeast is an apparent incised, spring-fed creek (estimated surface elevation of 235 feet MSL at the depicted point of emergence). Estimated surface elevations were obtained via the Richland County GIS utilizing a topographic option depicting contour intervals of two feet. For purposes of estimation, the depicted contours are deemed to be reasonably reliable.

According to the USGS Topographic Quadrangle Map of *Columbia North, South Carolina*, dated 1972 and revised in 1990, the elevation of the site is approximately 275 feet above mean sea level (MSL). The topography surrounding the site is relatively flat toward the north and east, but slopes downward toward the west/southwest. The topography in the general vicinity of the site slopes downward toward the west/southwest. A Topographic Site Location Map is included as Figure 1.

Regional Geology and Hydrogeology

The Broad River Amoco (BP) lies within the Lower Piedmont Physiographic Provence in close proximity and northwest of the contact zone, the "fall line", with the Upper Coastal Plain Physiographic Provence. The dominant rock types of the general area are related to the Carolina Slate Belt and specifically the Precambrian to Early Cambrian, Persimmon Fork Formation which is comprised primarily of green-gray to blue-gray, moderately metamorphosed, felsic volcanic (metavolcanic) tuffs and to a lesser extent mafic metavolcanic tuffs. These rocks occur as very weathered to moderately weathered outcrops in the site study area and are most often visible at areas of excavation related to road and building construction.

In the general vicinity, the uppermost aquifer generally occurs under unconfined conditions and receives water from precipitation, which infiltrates the unsaturated surface soils and migrates downward to the saturated zone. Underlying the uppermost aquifer is the fractured bedrock aquifer in which groundwater occurs in fractures, joints and faults. The fractured bedrock aquifer is often an important water resource for rural residences and commercial and light industrial properties at areas where municipal water supply is unavailable or unfeasible. Well yields are typically 1 to 350 gpm in the crystalline and metamorphic rocks with the larger yields located in areas of intensely fractured metamorphic rocks.

Site Geology and Hydrogeology

Based on the data collected during the Tier I and Tier II Assessments, it is apparent that groundwater can be found in several stratified layers or zones at the site. The most shallow water encountered at the site was generally found between 15' - 20' below ground level. This shallow water was very slow to accumulate in the boreholes. Typically it took at least several days to over a week for the water levels to come to equilibrium. It is likely that this most shallow water is present in small volume in the sandy clayey silt due to localized recharge, perching, and soil capillarity. The soils become more clayey (a silty clay) and mostly dry beginning at approximately 25' bgl. The second layer or zone of water encountered in the subsurface was typically found at an approximate depth of 35'-40'. The water in this second water-bearing zone was under significant hydraulic pressure and immediately entered the boreholes and rose upward many feet in the boreholes/wells.

The two layers of water are clearly connected as contamination has been identified at both depths during this Tier II investigation. There appears to be an aquitard comprised of mostly dry silty clay (with a small % of sand) between the two above-described zones of water across the area of study. Because the contaminants have been identified at both depths in and near the source area, there clearly is transmissivity between the two layers. Therefore, the silty clay is not considered a true aquiclude, but is acting at least as a partially confining unit.

Corrective Action Plan Implementation

AFVRs

In order to reduce the thickness of and remove free-phase product associated with the release, ETS personnel have completed AFVR events at the site. It should be noted that ETS completed the AFVRs in compliance with the CAP Revision 1 for the site and no monitoring wells were used for remediation activities.

The AFVRs were completed with a liquid-ring vacuum pump system capable of maintaining a vacuum of 27-inches Hg. The AFVR methodology used was a total-fluid and vapor recovery process. The attention was focused in the area of the free-phase product identified during the Tier II Assessment and Initial Monitoring conducted at the site by ETS in March 2014. At each recovery well vacuum point a non-collapsible drop tube or stinger was extended into the well head and was sealed at the top of each well with an appropriately sized rubber seal or plumbers plug. Magnehelic vacuum gauges were used at other nearby wells to evaluate the vacuum influence of the AFVR event.

Four AFVR events were completed at the site on April 17 through 20, 2015. One AFVR event was completed on each of the listed days. The first event was performed on recovery wells RW-1, RW-2, and RW-3. The second, third, and fourth events were performed on recovery wells RW-4 and RW-5. The tabulated AFVR field data for each of the events is included in Appendix A.

Prior to the initiation of the AFVRs, each of the target wells were gauged with a decontaminated interface probe. No thickness of product greater than 0.01 feet was observed in the wells. However, after the second event on RW-4 and RW-5, and prior to the startup of the third AFVR event, 0.01 feet of free product was detected in RW-5. RW-5 became the primary focus of the third and fourth events. As the stinger was lowered to near the bottom of RW-5 the organic vapor readings increased to their highest readings of 3,000 ppm and 2,831 ppm for the third and fourth events, respectively (see page 10 of the AFVR data in Appendix A).

Mass Removal

A weight of 161.76 pounds of petroleum as vapor (total gaseous non-methane organic emissions) was removed during the four (4) six-hour events based on the field data collected. The concentrations of organic vapor at the discharge stack were measured using a ThermoEnvironmental Instruments 580B Photo Ionization Detector (PID). The data, variables, and calculations used to determine the pollutant mass removal are included in the AFVR data located in Appendix A.

Disposal

A total of 350 gallons of gas cut fluid was collected during the four (4) AFVR events summarized in this report. The waste disposal manifest is included in Appendix B.

Conclusions

Enviro-Test Services has worked with Mr. Read Miner, PG, a Department UST project manager, on several AFVR events at other sites in recent years. Based on conversations about the AFVRs with Mr. Miner, it is apparent that the "washing machine" method or "tidal effect" has produced positive results in the removal of free-phase product at other sites. The results of these prior efforts will help ETS focus on the removal of product from the Broad River Amoco site during future AFVR events.

It is understood that the Site Incentive Period began on June 24, 2014 and will expire on June 24, 2017. ETS will continue to remove the product present at the site in order to achieve an early completion date for the rehabilitation activities.

References

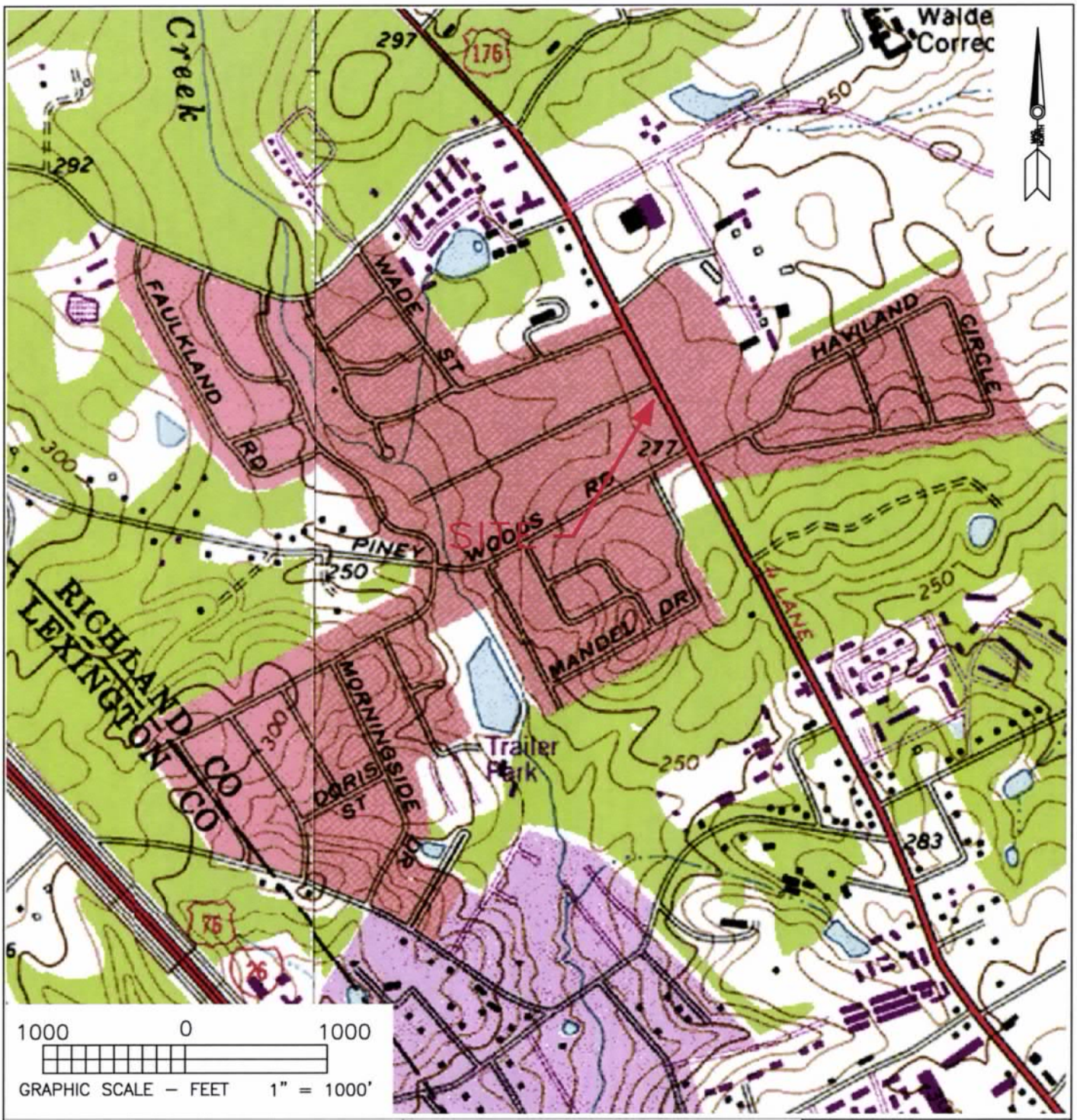
Enviro-Test Services, Inc., 2015, Corrective Action Plan, Revision 1 Addendum; Broad River Amoco site; Columbia, SC.

Maybin and Nystrom, 1997, revised by Willoughby, Howard and Nystrom, 2005. Generalized Geologic Map of South Carolina; South Carolina Department of Natural Resources Geological Survey.

USGS Open-File Report 2005-1323, Preliminary integrated geologic map databases for the United States: Alabama, Florida, Georgia, Mississippi, North Carolina, and South Carolina, http://pubs.usgs.gov/of/2005/1323/

FIGURES

Figure 1 – Site Location Map (Topographic)
Figure 2 – Site Base Map



PROJECT:
CAP IMPLEMENTATION REPORT
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
SITE LOCATION MAP

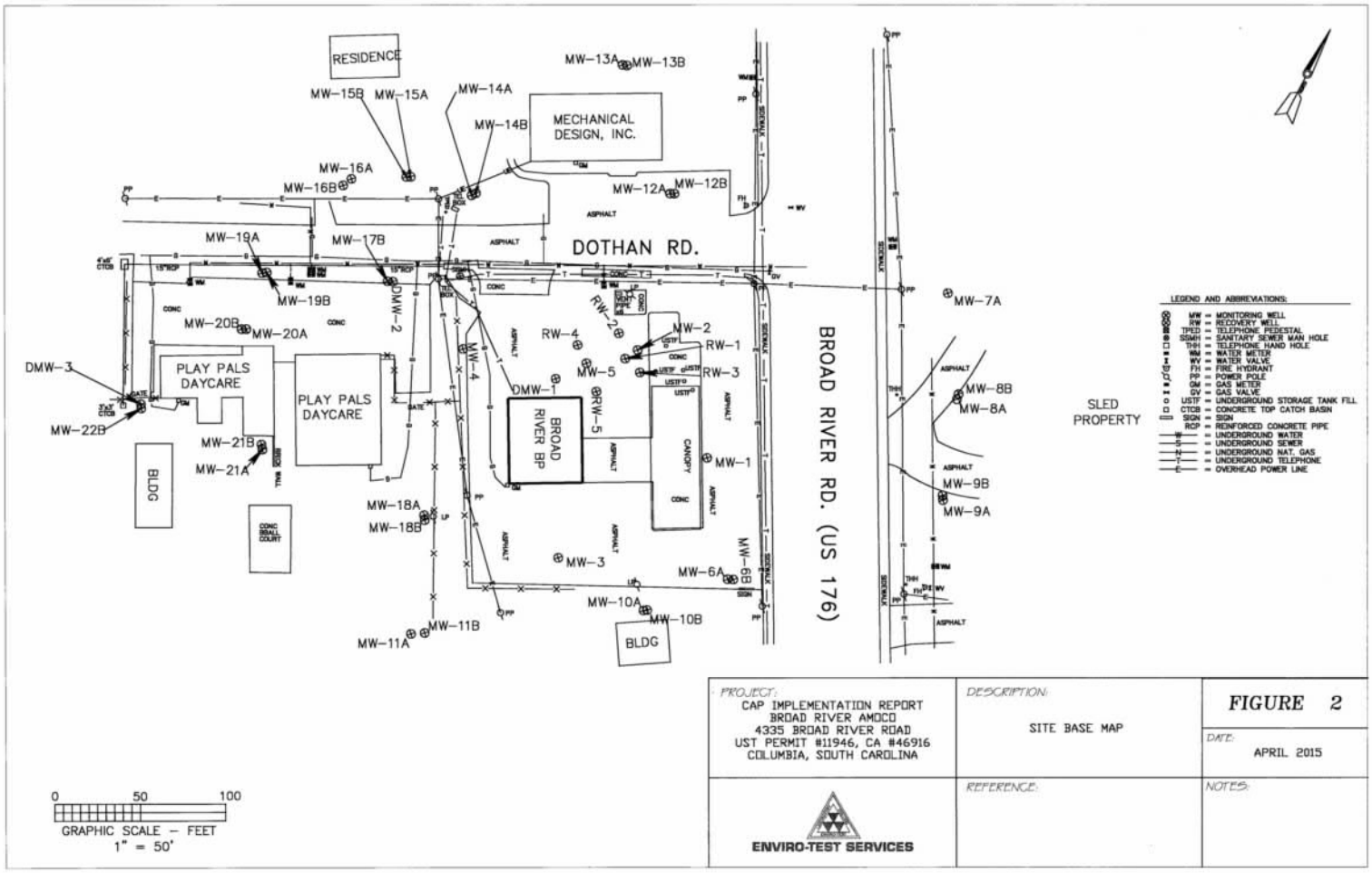
FIGURE 1

DATE:
APRIL 2015

ENVIRO-TEST SERVICES

REFERENCE:
U.S.G.S. TOPOGRAPHIC MAP
(7.5 MINUTE SERIES)
COLUMBIA NORTH – 1972, REV. 1990
SOUTH CAROLINA QUADRANGLE

LEGEND:



PROJECT: CAP IMPLEMENTATION REPORT BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: SITE BASE MAP	**FIGURE 2** DATE: APRIL 2015
ENVIRO-TEST SERVICES	REFERENCE:	NOTES:

APPENDICES

A. AFVR Field Data (April 17, 18, 19, 20)
B. Disposal Manifest

APPENDIX A

AFVR DATA

(April 17, 18, 19, 20)

ENVIRO-TEST SERVICES

Broad River BP Corrective Action AFVR

Site Name Broad River BP | **County** Richland | **Date:** April 17, 2015

UST Permit Number: 11946 | **Field Personnel:** Terry Teate

Well Name RW-1 RW-2 RW-3 | **Well Dia.:** 4 Inch | **Ambient Temp.** 59 deg

Exhaust Stack Diameter(inches): 3

		Before	After
RW-1	FP: None	GWL: 9.50	GWL: 36.89
RW-2	FP: None	GWL: 10.90	GWL: 38:37
RWW-3	FP: None	GWL: 10.74	GWL: 38.10

Start Time 12:00 **End Time** 1800

Weather Conditions: Over cast, Cloudy

TOTAL FREE PRODUCT RECOVERED = 0.00
TOTAL FLUID RECOVERED = 145 gal

Dry Standard CFM Air Flow - Qstd

TOTAL EMISSIONS = 20.77 lbs

Interval	Time	Vacuum, in. of Hg	PPM measured	Humidity Ratio,gpp	Water Vapor,%	Dry Air(1/100)	Discharge Flow Volume, CFM	Temperature, °f	Temperature Constant	Qstd cfm
0	1200	26	724	461	0.06585714	0.9341	345.00	112.00	0.9231	297.49
30	1230	26	839	356	0.0509	0.9491	284.00	111.00	0.9247	249.26
60	1300	26	628	493	0.0704	0.9296	290.00	115.00	0.9183	247.54
90	1330	26	622	496	0.0709	0.9291	285.00	115.00	0.9183	243.16
120	1400	26	618	469	0.0670	0.9330	271.00	112.00	0.9231	233.39
150	1430	26	1,395	357	0.0510	0.9490	269.00	105.00	0.9345	238.56
180	1500	26	1,028	288	0.0411	0.9589	275.00	93.00	0.9548	251.77
210	1530	26	606	228	0.0326	0.9674	274.00	99.00	0.9445	250.38
240	1600	26	653	292	0.0417	0.9583	280.00	105.00	0.9345	250.75
270	1630	26	639	312	0.0446	0.9554	278.00	109.00	0.9279	246.47
300	1700	26	581	491	0.0701	0.9299	267.00	115.00	0.9183	227.98
330	1730	26	465	344	0.0491	0.9509	269.00	112.00	0.9231	236.11
360	1800	26	502	390	0.0557	0.9443	273.00	110.00	0.9263	238.79
AVERAGES		26.00	715.38	382.85	0.0547	0.9453	281.54	108.69	0.9286	247.05

NOTES:

Vacuum = Level of vacuum being applied as record from the vacuum truck tank, inches of Hg.
PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
Humidity Ratio = Grains of moisture per pound(gpp) of dry air measured at the blower discharge stack.
Water Vapor = Pounds of water per pound of dry air as %.
Dry Air = Calculated pound of dry air,(1 - water vapor %).
Discharge Flow Volume = Measured air flow from 3" discharge stack in cubic feet per minute,cfm.
Temperature = Temperature of the air exiting the discharge stack in deg. Fahrenheit.
Temperature Constant = 528°R / (Temp.,°F + 460)

EQUATION

Qstd = Dry Air x Discharge Flow x Temperature Constant

ENVIRO-TEST SERVICES

Broad River BP Corrective Action AFVR

Site Name Broad River BP | **County** Richland | **Date:** April 17, 2015

UST Permit Number: 11946 | **Field Personnel:** Terry Teate

Well Name RW-1 RW-2 RW-3 | **Well Dia.:** 4 Inch | **Ambient Temp.** 59 deg

Exhaust Stack Diameter(inches): 3

		Before	After
RW-1	FP: None	GWL: 9.50	GWL: 36.89
RW-2	FP: None	GWL: 10.90	GWL: 38:37
RWW-3	FP: None	GWL: 10.74	GWL: 38.10

Start Time 12:00 **End Time** 1800

Weather Conditions: Over cast, Cloudy

TOTAL FREE PRODUCT RECOVERED = 0.00

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
0	297.49	724	1	724	3,850.23	2.4025E-04	4.2884	0.0000
30	249.26	839	1	839	4,461.80	2.7842E-04	4.1638	2.0819
60	247.54	628	1	628	3,339.70	2.0840E-04	3.0952	1.5476
90	243.16	622	1	622	3,307.80	2.0641E-04	3.0114	1.5057
120	233.39	618	1	618	3,286.52	2.0508E-04	2.8718	1.4359
150	238.56	1395	1	1,395	7,418.61	4.6292E-04	6.6262	3.3131
180	251.77	1028	1	1,028	5,466.90	3.4113E-04	5.1531	2.5766
210	250.38	606	1	606	3,222.71	2.0110E-04	3.0210	1.5105
240	250.75	653	1	653	3,472.65	2.1669E-04	3.2601	1.6301
270	246.47	639	1	639	3,398.20	2.1205E-04	3.1358	1.5679
300	227.98	581	1	581	3,089.76	1.9280E-04	2.6373	1.3186
330	236.11	465	1	465	2,472.87	1.5431E-04	2.1860	1.0930
360	238.79	502	1	502	2,669.64	1.6659E-04	2.3868	1.1934
AVERAGES		715.38		715.38	3,804.42	2.3740E-04	3.5259	1.5980

TOTAL EMISSIONS **20.7743 LBS**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **0.00 Gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)
PMRg = Cg x Qstd x 60 min/hr
PMR = PMRg x [(T2-T1) / 60], PMRg x [(T3-T2) / 60], ...

ENVIRO-TEST SERVICES

Broad River BP Corrective Action AFVR

Site Name Broad River BP

County Richland

Date: April 17, 2015

UST Permit Number: 11946

Field Personnel: Terry Teate

Well Name RW-1 RW-2 RW-3

Well Dia.: 4 Inch

Ambient Temp. 59 deg

		Before	After
RW-1	FP: None	GWL: 9.50	GWL: 36.89
RW-2	FP: None	GWL: 10.90	GWL: 38:37
RWW-3	FP: None	GWL: 10.74	GWL: 38.10

Exhaust Stack Diameter(inches): 3

Start Time 12:00 **End Time** 1800

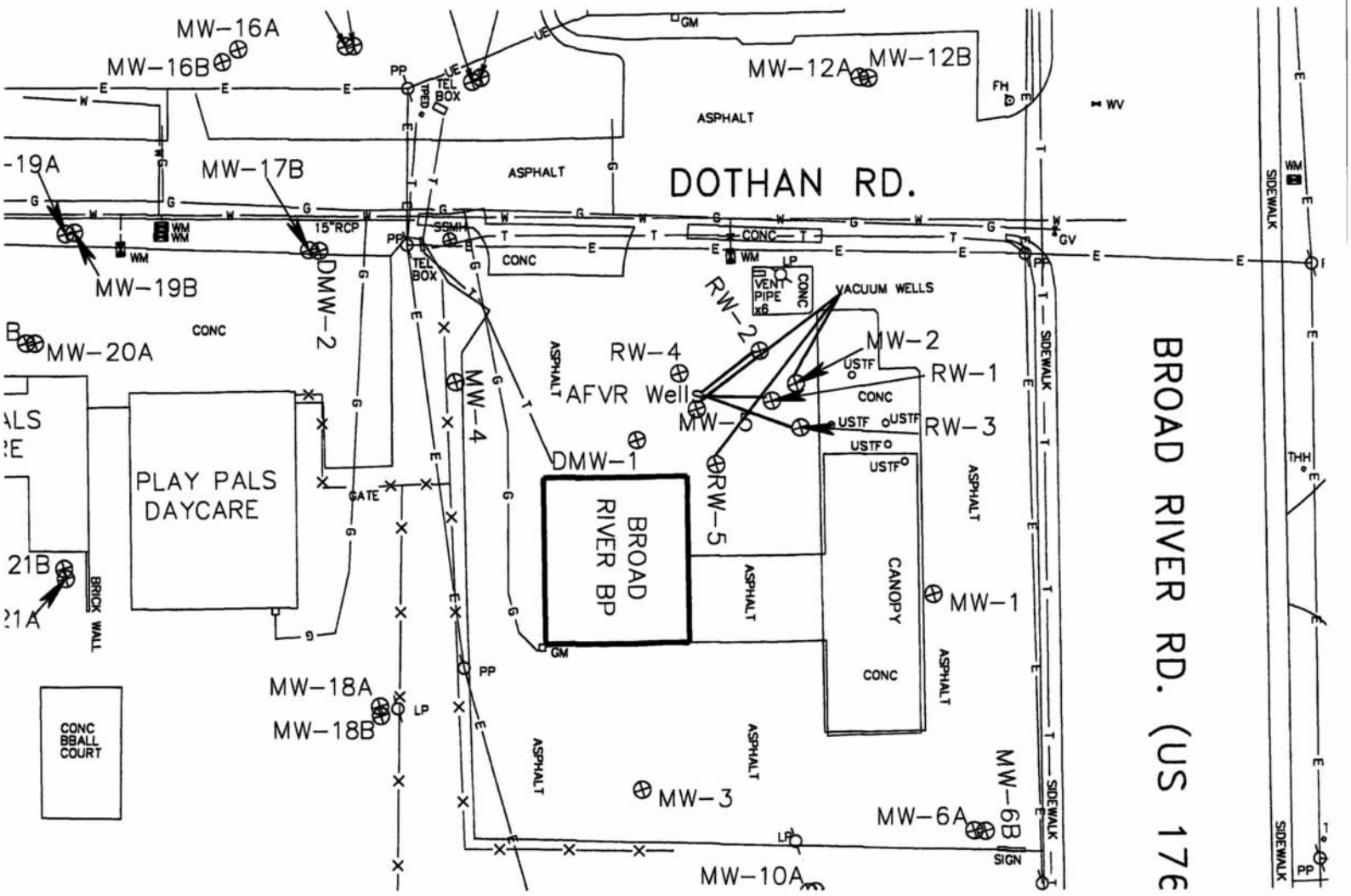
Weather Conditions: Over cast, Cloudy

TOTAL FREE PRODUCT RECOVERED = 0.00

VACUUM GAUGE MEASUREMENTS

STINGER DEPTHS

		Vacuum of Hg in Inches						Stinger Depth in ft.		
Interval	Time	RW-1	RW-2	RW-3	MW-2	MW-5	RW-5	RW-1	RW-2	RW-3
0	1200	26	26	26	0	0	0	10.5	11.0	11.0
30	1230	20	20	20	0	0	0	10.5	11.0	11.0
60	1300	20	18	18	0	0	0	11.0	11.5	11.5
90	1330	20	20	20	0	0	0	11.0	11.5	11.5
120	1400	18	18	18	0	0	0	11.5	12.0	12.0
150	1430	16	16	16	0	0	0	11.5	12.0	12.0
180	1500	16	18	18	0	0	0	12.0	12.5	12.5
210	1530	18	20	20	0	0	0	12.0	12.5	12.5
240	1600	20	20	20	0	0	0	13.0	13.0	13.0
270	1630	20	20	20	0	0	0	14.0	14.0	14.0
300	1700	18	20	18	0	0	0	40.0	15.0	15.0
330	1730	18	18	20	0	0	0	40.0	40.0	11.0
360	1800	18	18	18	0	0	0	40.0	40.0	40.0



BROAD RIVER BP DHEC Permit # 11946

ENVIRO-TEST SERVICES

Broad River BP Corrective Action AFVR

Site Name Broad River BP | **County** Richland | **Date:** April 18, 2015

UST Permit Number: 11946 | **Field Personnel:** Terry Teate

Well Name: RW-4 RW-5 | **Well Dia.:** 4 Inch | **Ambient Temp.** Before 62 deg / After

Exhaust Stack Diameter(inches): 3 | RW-4 FP: None GWL: 10.10 GWL: 37.72 | RW-5 FP: None GWL: 10.80 GWL: 38.13

Start Time: 9:30 **End Time:** 15:30

Weather Conditions: Over cast, Cool

TOTAL FREE PRODUCT RECOVERED = 0.00
TOTAL FLUID RECOVERED = 80 gal

Dry Standard CFM Air Flow - Qstd

TOTAL EMISSIONS = 45.49 lbs

Interval	Time	Vacuum, In. of Hg	PPM measured	Humidity Ratio,gpp	Water Vapor,%	Dry Air(1/100)	Discharge Flow Volume, CFM	Temperature, °f	Temperature Constant	Qstd cfm
0	Sat 930	28	470	131	0.01871429	0.9813	436.00	78.00	0.9814	419.89
30	1000	24	855	168	0.0240	0.9760	302.00	84.00	0.9706	286.08
60	1030	26	727	143	0.0204	0.9796	297.00	79.00	0.9796	285.00
90	1100	26	1,900	139	0.0199	0.9801	290.00	79.00	0.9796	278.44
120	1130	25	943	218	0.0311	0.9689	288.00	90.00	0.9600	267.87
150	1200	26	542	269	0.0384	0.9616	289.00	96.00	0.9496	263.90
180	1230	26	1,872	184	0.0263	0.9737	274.00	84.00	0.9706	258.95
210	1300	26	2,187	260	0.0371	0.9629	270.00	95.00	0.9514	247.32
240	1330	26	1,937	288	0.0411	0.9589	268.00	98.00	0.9462	243.16
270	1400	26	1,802	229	0.0327	0.9673	271.00	92.00	0.9565	250.74
300	1430	26	693	479	0.0684	0.9316	275.00	114.00	0.9199	235.65
330	1500	26	2,444	321	0.0459	0.9541	264.00	109.00	0.9279	233.74
360	1530	26	2,177	297	0.0424	0.9576	270.00	122.00	0.9072	234.56
AVERAGES		25.92	1,426.85	240.46	0.0344	0.9656	291.85	93.85	0.9539	269.64

NOTES:

Vacuum = Level of vacuum being applied as record from the vacuum truck tank, inches of Hg.
PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
Humidity Ratio = Grains of moisture per pound(gpp) of dry air measured at the blower discharge stack.
Water Vapor = Pounds of water per pound of dry air as %.
Dry Air = Calculated pound of dry air,(1 - water vapor %).
Discharge Flow Volume = Measured air flow from 3" discharge stack in cubic feet per minute,cfm.
Temperature = Temperature of the air exiting the discharge stack in deg. Fahrenheit.
Temperature Constant = 528°R / (Temp.,°F + 460)

EQUATION

Qstd = Dry Air x Discharge Flow x Temperature Constant

ENVIRO-TEST SERVICES **Broad River BP Corrective Action AFVR**

Site Name Broad River BP **County** **Richland**

Date: April 18, 2015

UST Permit Number: 11946 **Field Personnel:** **Terry Teate**

Well Name: RW-4 RW-5 **Well Dia.: 4 Inch** **Ambient Temp.** **62 deg**

		Before	After
Exhaust Stack Diameter(inches): 3	**RW-4** **FP: None**	**GWL: 10.10**	**GWL: 37.72**
	RW-5 **FP: None**	**GWL: 10.80**	**GWL: 38.13**

Start Time: 9:30 **End Time: 15:30**

Weather Conditions: Over cast, Cool

TOTAL FREE PRODUCT RECOVERED = 0.00

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
0	419.89	470	1	470	2,499.46	1.5597E-04	3.9293	0.0000
30	286.08	855	1	855	4,546.89	2.8373E-04	4.8701	2.4351
60	285.00	727	1	727	3,866.19	2.4125E-04	4.1253	2.0627
90	278.44	1900	1	1,900	10,104.20	6.3050E-04	10.5334	5.2667
120	267.87	943	1	943	5,014.87	3.1293E-04	5.0294	2.5147
150	263.90	542	1	542	2,882.36	1.7986E-04	2.8479	1.4239
180	258.95	1872	1	1,872	9,955.30	6.2121E-04	9.6518	4.8259
210	247.32	2187	1	2,187	11,630.47	7.2574E-04	10.7696	5.3848
240	243.16	1937	1	1,937	10,300.97	6.4278E-04	9.3778	4.6889
270	250.74	1802	1	1,802	9,583.04	5.9798E-04	8.9962	4.4981
300	235.65	693	1	693	3,685.37	2.2997E-04	3.2515	1.6258
330	233.74	2444	1	2,444	12,997.19	8.1102E-04	11.3743	5.6871
360	234.56	2177	1	2,177	11,577.29	7.2242E-04	10.1669	5.0834
AVERAGES		1,426.85		1,426.85	7,587.97	4.7349E-04	7.3018	3.4998

TOTAL EMISSIONS **45.4972 LBS**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **0.00 Gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)
PMRg = Cg x Qstd x 60 min/hr
PMR = PMRg x [(T2-T1) / 60], PMRg x [(T3-T2) / 60], ...

ENVIRO-TEST SERVICES

Broad River BP Corrective Action AFVR

Site Name Broad River BP

County Richland

Date: April 18, 2015

UST Permit Number: 11946

Field Personnel: Terry Teate

Well Name: RW-4 RW-5

Well Dia.: 4 Inch

Ambient Temp. 62 deg

		Before	After
Exhaust Stack Diameter(inches): 3	RW-4 FP: None	GWL: 10.10	GWL: 37.72
	RW-5 FP: None	GWL: 10.80	GWL: 38.13

Start Time: 9:30 **End Time:** 15:30

Weather Conditions: Over cast, Cool

TOTAL FREE PRODUCT RECOVERED = 0.00

VACUUM GAUGE MEASUREMENTS

Interval	Time	Vacuum of Hg in Inches RW-4	RW-5	MW-5	DMW-1	RW-1
0	930	26	26	0	0	0
30	1000	15	16	0	0	0
60	1030	15	14	0	0	0
90	1100	14	16	0	0	0
120	1130	14	15	0	0	0
150	1200	16	16	0	0	0
180	1230	15	15	0	0	0
210	1300	14	15	0	0	0
240	1330	16	15	0	0	0
270	1400	15	15	0	0	0
300	1430	15	15	0	0	0
330	1500	16	14	0	0	0
360	1530	16	15	0	0	0

STINGER DEPTHS

Stinger Depth in ft. RW-4	RW-5
11.0	11.0
11.0	11.0
11.5	11.5
11.5	11.5
12.0	12.0
12.5	12.5
12.5	12.5
13.0	13.0
13.5	13.5
15.0	15.0
16.0	16.0
40.0	40.0
40.0	40.0

ENVIRO-TEST SERVICES

Broad River BP Corrective Action AFVR

Site Name Broad River BP | **County** Richland | **Date:** April 19, 2014

UST Permit Number: 11946 | **Field Personnel:** Terry Teate

Well Name: RW-4, RW-5 | **Well Dia.:** 4 Inch | **Ambient Temp.** 63 deg

		Before	After
Exhaust Stack Diameter(inches): 3	RW-4 FP: None	GWL: 14.62	GWL: 38.03
	RW-5 FP: 15.48	GWL: 15.49	GWL 39.04

Start Time: Sun 1030 **End Time::** Sun 1630

Weather Conditions: Rain, Drizzel

TOTAL FREE PRODUCT RECOVERED = 0.00
TOTAL FULID RECOVERED = 70 gal

Dry Standard CFM Air Flow - Qstd

TOTAL EMISSIONS =50.21

Interval	Time	Vacuum, in. of Hg	PPM measured	Humidity Ratio,gpp	Water Vapor,%	Dry Air(1/100)	Discharge Flow Volume, CFM	Temperature, °f	Temperature Constant	Qstd cfm
0	Sun 1030	28	726	155	0.02214286	0.9779	334.00	85.00	0.9688	316.42
30	1100	26	523	146	0.0209	0.9791	305.00	84.00	0.9706	289.86
60	1130	25	1,677	118	0.0169	0.9831	297.00	78.00	0.9814	286.57
90	1200	26	3,542	173	0.0247	0.9753	290.00	87.00	0.9653	273.01
120	1230	25	2,270	144	0.0206	0.9794	291.00	82.00	0.9742	277.65
150	1300	25	1,632	113	0.0161	0.9839	288.00	76.00	0.9851	279.12
180	1330	26	442	100	0.0143	0.9857	285.00	75.00	0.9869	277.25
210	1400	26	229	106	0.0151	0.9849	278.00	75.00	0.9869	270.21
240	1430	25	1,565	207	0.0296	0.9704	281.00	131.00	0.8934	243.62
270	1500	26	1,346	184	0.0263	0.9737	280.00	90.00	0.9600	261.73
300	1530	25	1,733	181	0.0259	0.9741	273.00	97.00	0.9479	252.09
330	1600	26	2,305	238	0.0340	0.9660	279.00	90.00	0.9600	258.73
360	1630	26	1,550	250	0.0357	0.9643	287.00	96.00	0.9496	262.81
AVERAGES		25.77	1,503.08	162.69	0.0232	0.9768	289.85	88.15	0.9639	273.01

NOTES:

Vacuum = Level of vacuum being applied as record from the vacuum truck tank, inches of Hg.
PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
Humidity Ratio = Grains of moisture per pound(gpp) of dry air measured at the blower discharge stack.
Water Vapor = Pounds of water per pound of dry air as %.
Dry Air = Calculated pound of dry air,(1 - water vapor %).
Discharge Flow Volume = Measured air flow from 3" discharge stack in cubic feet per minute,cfm.
Temperature = Temperature of the air exiting the discharge stack in deg. Fahrenheit.
Temperature Constant = 528°R / (Temp.,°F + 460)

EQUATION

Qstd = Dry Air x Discharge Flow x Temperature Constant

ENVIRO-TEST SERVICES **Broad River BP Corrective Action AFVR**

Site Name Broad River BP **County** **Richland**

Date: April 19, 2014

UST Permit Number: 11946 **Field Personnel:** **Terry Teate**

Well Name: RW-4, RW-5 **Well Dia.: 4 Inch** **Ambient Temp.** **63 deg**

		Before	After
Exhaust Stack Diameter(inches): 3	**RW-4** **FP: None**	**GWL: 14.62**	**GWL: 38.03**
	RW-5 **FP: 15.48**	**GWL: 15.49**	**GWL 39.04**

Start Time: Sun 1030 End Time:: Sun 1630

Weather Conditions: Rain, Drizzel

TOTAL FREE PRODUCT RECOVERED = 0.00

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
0	316.42	726	1	726	3,860.87	2.4092E-04	4.5738	0.0000
30	289.86	523	1	523	2,781.31	1.7355E-04	3.0183	1.5092
60	286.57	1677	1	1,677	8,918.29	5.5650E-04	9.5685	4.7842
90	273.01	3542	1	3,542	18,836.36	1.1754E-03	19.2535	9.6267
120	277.65	2270	1	2,270	12,071.86	7.5328E-04	12.5490	6.2745
150	279.12	1632	1	1,632	8,678.98	5.4157E-04	9.0698	4.5349
180	277.25	442	1	442	2,350.56	1.4667E-04	2.4400	1.2200
210	270.21	229	1	229	1,217.82	7.5992E-05	1.2320	0.6160
240	243.62	1565	1	1,565	8,322.67	5.1933E-04	7.5913	3.7956
270	261.73	1346	1	1,346	7,158.03	4.4666E-04	7.0144	3.5072
300	252.09	1733	1	1,733	9,216.09	5.7508E-04	8.6985	4.3493
330	258.73	2305	1	2,305	12,257.99	7.6490E-04	11.8743	5.9371
360	262.81	1550	1	1,550	8,242.90	5.1436E-04	8.1108	4.0554
AVERAGES		1,503.08		1,503.08	7,993.36	4.9879E-04	8.0765	3.8623

TOTAL EMISSIONS **50.2102 LBS**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **0.00 Gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)
PMRg = Cg x Qstd x 60 min/hr
PMR = PMRg x [(T2-T1) / 60], PMRg x [(T3-T2) / 60], ...

ENVIRO-TEST SERVICES

Broad River BP Corrective Action AFVR

Site Name Broad River BP

County Richland

Date: April 19, 2014

UST Permit Number: 11946

Field Personnel: Terry Teate

Well Name: RW-4, RW-5

Well Dia.: 4 Inch

Ambient Temp. 63 deg

Exhaust Stack Diameter(inches): 3

		Before	After
RW-4	FP: None	GWL: 14.62	GWL: 38.03
RW-5	FP: 15.48	GWL: 15.49	GWL 39.04

Start Time: Sun 1030 **End Time:** : Sun 1630

Weather Conditions: Rain, Drizzel

TOTAL FREE PRODUCT RECOVERED = 0.00

VACUUM GAUGE MEASUREMENTS

STINGER DEPTHS

Interval	Time	Vacuum of Hg in Inches RW-4	RW-5	MW-5	DMW-1	RW-1	Stinger Depth in ft. RW-4	RW-5
0	Sun 1030	26	26	0	0	0	15.0	16.0
30	1100	16	15	0	0	0	15.5	16.5
60	1130	14	15	0	0	0	40.0	40.0
90	1200	14	14	0	0	0	40.0	40.0
120	1230	14	15	0	0	0	40.0	40.0
150	1300	16	14	0	0	0	40.0	40.0
180	1330	14	14	0	0	0	20.0	20.0
210	1400	15	15	0	0	0	20.0	20.0
240	1430	15	14	0	0	0	40.0	40.0
270	1500	16	15	0	0	0	40.0	40.0
300	1530	14	15	0	0	0	40.0	40.0
330	1600	14	15	0	0	0	40.0	40.0
360	1630	14	14	0	0	0	40.0	40.0

ENVIRO-TEST SERVICES

Broad River BP Corrective Action AFVR

Site Name Broad River BP | **County** Richland | **Date: April 20, 2015**

UST Permit Number: 11946 | **Field Personnel:** Terry Teate

Well Name: RW-4, RW-5 | **Well Dia.:** 4 Inch | **Ambient Temp.** 78 deg

			Before	After
Exhaust Stack Diameter(inches): 3	RW-4	FP: None	GWL: 11.94	GWL: 39.5
	RW-5	FP: None	GWL: 14.62	GWL: 37.8

Start Time : Mon 8:30 End Time: : Mon 14:30

Weather Conditions: Clear, Sunny

TOTAL FREE PRODUCT RECOVERED = 0.00
TOTAL FLUID RECOVERED = 55 gal

Dry Standard CFM Air Flow - Qstd

TOTAL EMISSIONS = 45.27

Interval	Time	Vacuum, in. of Hg	PPM measured	Humidity Ratio,gpp	Water Vapor,%	Dry Air(1/100)	Discharge Flow Volume, CFM	Temperature, °f	Temperature Constant	Qstd cfm
0	Mon 830	26	1331	144	0.02057143	0.9794	388.00	81.00	0.9760	370.89
30	900	26	799	169	0.0241	0.9759	380.00	85.00	0.9688	359.26
60	930	26	1,186	179	0.0256	0.9744	283.00	89.00	0.9617	265.21
90	1000	25	629	176	0.0251	0.9749	279.00	83.00	0.9724	264.47
120	1030	25	754	127	0.0181	0.9819	285.00	85.00	0.9688	271.10
150	1100	26	529	144	0.0206	0.9794	288.00	79.00	0.9796	276.32
180	1130	26	265	100	0.0143	0.9857	279.00	83.00	0.9724	267.42
210	1200	26	1,981	282	0.0403	0.9597	305.00	105.00	0.9345	273.54
240	1230	26	2,295	289	0.0413	0.9587	297.00	110.00	0.9263	263.76
270	1300	26	3,000	288	0.0411	0.9589	286.00	140.00	0.8800	241.33
300	1330	26	2,831	195	0.0279	0.9721	281.00	96.00	0.9496	259.42
330	1400	26	1,398	125	0.0179	0.9821	287.00	81.00	0.9760	275.10
360	1430	26	1,331	244	0.0349	0.9651	293.00	79.00	0.9796	277.02
AVERAGES		25.85	1,409.92	189.38	0.0271	0.9729	302.38	92.00	0.9574	281.91

NOTES:

Vacuum = Level of vacuum being applied as record from the vacuum truck tank, inches of Hg.
PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
Humidity Ratio = Grains of moisture per pound(gpp) of dry air measured at the blower discharge stack.
Water Vapor = Pounds of water per pound of dry air as %.
Dry Air = Calculated pound of dry air,(1 - water vapor %).
Discharge Flow Volume = Measured air flow from 3" discharge stack in cubic feet per minute,cfm.
Temperature = Temperature of the air exiting the discharge stack in deg. Fahrenheit.
Temperature Constant = 528°R / (Temp.,°F + 460)

EQUATION

Qstd = Dry Air x Discharge Flow x Temperature Constant

ENVIRO-TEST SERVICES **Broad River BP Corrective Action AFVR**

Site Name Broad River BP **County** **Richland**

Date: April 20, 2015

UST Permit Number: 11946 **Field Personnel:** **Terry Teate**

Well Name: RW-4, RW-5 **Well Dia.: 4 Inch** **Ambient Temp.** **78 deg**

			Before	After
Exhaust Stack Diameter(inches): 3	**RW-4**	**FP: None**	**GWL: 11.94**	**GWL: 39.5**
	RW-5	**FP: None**	**GWL: 14.62**	**GWL: 37.8**

Start Time : Mon 8:30 End Time: : Mon 14:30

Weather Conditions: Clear, Sunny **TOTAL FREE PRODUCT RECOVERED = 0.00**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
0	370.89	1331	1	1331	7,078.26	4.4168E-04	9.8289	0.0000
30	359.26	799	1	799	4,249.08	2.6514E-04	5.7153	2.8576
60	265.21	1186	1	1,186	6,307.15	3.9357E-04	6.2628	3.1314
90	264.47	629	1	629	3,345.02	2.0873E-04	3.3122	1.6561
120	271.10	754	1	754	4,009.77	2.5021E-04	4.0699	2.0350
150	276.32	529	1	529	2,813.22	1.7555E-04	2.9104	1.4552
180	267.42	265	1	265	1,409.27	8.7938E-05	1.4110	0.7055
210	273.54	1981	1	1,981	10,534.96	6.5738E-04	10.7894	5.3947
240	263.76	2295	1	2,295	12,204.81	7.6158E-04	12.0523	6.0262
270	241.33	3000	1	3,000	15,954.00	9.9553E-04	14.4148	7.2074
300	259.42	2831	1	2,831	15,055.26	9.3945E-04	14.6224	7.3112
330	275.10	1398	1	1,398	7,434.56	4.6392E-04	7.6575	3.8287
360	277.02	1331	1	1,331	7,078.26	4.4168E-04	7.3412	3.6706
AVERAGES		1,409.92		1,409.92	7,497.97	4.6787E-04	7.7222	3.4830

TOTAL EMISSIONS **45.2796 LBS**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **0.00 Gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)
PMRg = Cg x Qstd x 60 min/hr
PMR = PMRg x [(T2-T1) / 60], PMRg x [(T3-T2) / 60], ...

ENVIRO-TEST SERVICES

Broad River BP Corrective Action AFVR

Site Name Broad River BP

County Richland

Date: April 20, 2015

UST Permit Number: 11946

Field Personnel: Terry Teate

Well Name: RW-4, RW-5

Well Dia.: 4 Inch

Ambient Temp. 78 deg

Exhaust Stack Diameter(inches): 3

		Before	After
RW-4	FP: None	GWL: 11.94	GWL: 39.5
RW-5	FP: None	GWL: 14.62	GWL: 37.8

Start Time : Mon 8:30 **End Time::** Mon 14:30

Weather Conditions: Clear, Sunny

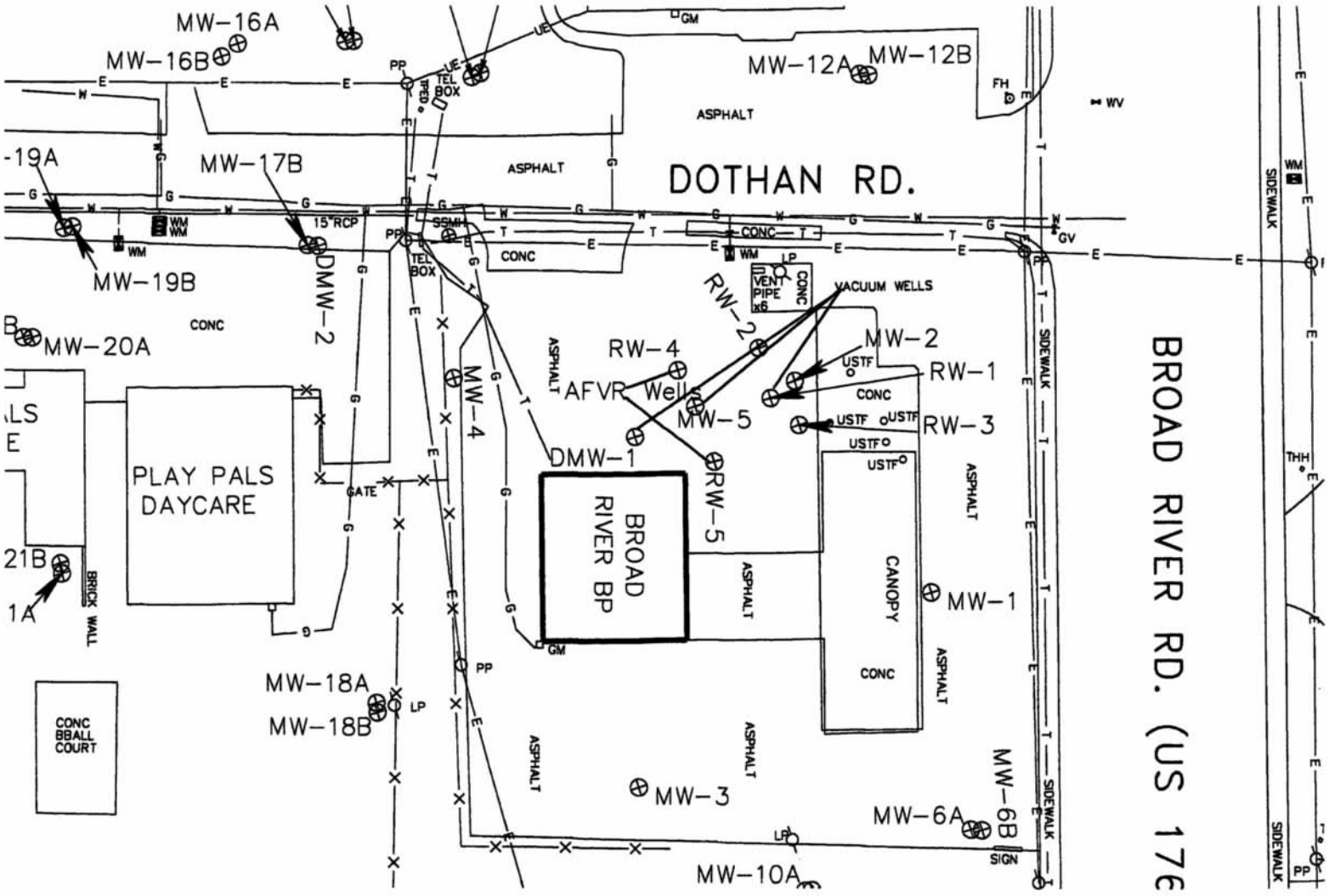
TOTAL FREE PRODUCT RECOVERED = 0.00

VACUUM GAUGE MEASUREMENTS

STINGER DEPTHS

Interval	Time	Vacuum of Hg in inches RW-4	RW-5	MW-5	DMW-1	RW-1	Stinger Depth in ft. RW-4	RW-5
0	Mon 830	26	0	0	0	0	12.5	0.0
30	900	25	0	0	0	0	40.0	0.0
60	930	25	0	0	0	0	40.0	0.0
90	1000	25	0	0	0	0	40.0	0.0
120	1030	26	0	0	0	0	40.0	0.0
150	1100	26	0	0	0	0	40.0	0.0
180	1130	26	0	0	0	0	15.0	0.0
210	1200	0	26	0	0	0	0.0	15.0
240	1230	0	26	0	0	0	0.0	40.0
270	1300	0	25	0	0	0	0.0	40.0
300	1330	0	26	0	0	0	0.0	40.0
330	1400	0	26	0	0	0	0.0	40.0
360	1430	0	26	0	0	0	0.0	40.0

FIGURE 2



BROAD RIVER BP DHEC Permit # 11946

APPENDIX B
DISPOSAL MANIFEST

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No. 1

2. Page 1 of 1

3. Generator's Name and Mailing Address
Enviro-Test Services
P.O. Box 2237
Irmo, SC
4. Generator's Phone (803) 413-4936

5. Transporter 1 Company Name
Enviro-Tes. Services

6. US EPA ID Number

A. State Transporter's ID

B. Transporter 1 Phone

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address
Clear Water Solutions
55 Brendan Way
Greenville, SC 29616

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone
706-254-4050

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON-HAZARDOUS PETROLEUM CONTAMINATED SOIL	2	TOTES	350	Gal
b. NON-HAZARDOUS PETROLEUM CONTAMINATED WATER				
c.				
d.				

G. Additional Descriptions for Materials Listed Above
AFVR events at Broad River
BP, DHEC Site # 11946
4335 Broad River Rd. Columbia SC

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name | Signature | Date (Month Day Year)

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Terry L. Teate | Signature: Terry L Teate | Date (Month Day Year): 4 20 15

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date (Month Day Year)

19. Discrepancy Indication Space

20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name: Keith Schmelz | Signature: Keith Schmelz | Date (Month Day Year): 4 20 15

GENERATOR

TRANSPORTER

FACILITY

NON-HAZARDOUS WASTE

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Rev. 3/05

D H E C

PROMOTE PROTECT PROSPER

W. Marshall Taylor Jr., Acting Director

Promoting and protecting the health of the public and the environment

MR FREDERICK N CECCHINI
4335 BROAD RIVER RD
COLUMBIA SC 29210-4009

MAY 2 9 2015

Re: **CASE Report Review**
Broad River Amoco, 4335 Broad River Rd., Columbia, SC
UST Permit #11946; CA# 46916
Release Reported January 4, 2011
Corrective Action System Evaluation (CASE) Report received April 28, 2015
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced report and noted the findings.

The next quarterly CASE report, documenting corrective action activities during the second quarter of 2015 is **due on or before August 28, 2015**.

On all correspondence regarding this site, please reference UST Permit #11964. If you have questions concerning this correspondence, feel free to contact me by telephone at (803) 898-0634, by fax at (803) 898-0673 or by email utzst@dhec.sc.gov.

Sincerely,

Sonya T. Utz, Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Enviro-Test Services, Inc., P.O. Box 2237, Irmo, SC 29063 (w/enc)
Technical File (w/enc)

D H E C

Underground Storage Tank Management Division
Field Data Information Sheet – Monitoring Well Gauging

Site Information

Date: 6/18/15	Site ID #: 11946	Site Name: Broad River Amoco
County: Richland	Project Manager: S. Utz	Field Personnel: S. Utz J Bryant

Well Gauging Information

Well ID:	Total Well Depth (ft.)	Screened Interval (ft.)	Depth to Free Product (ft.)	Depth to Ground water (ft.)	Free Product Thickness (ft.)	Confirmed with Bailer?	Photos Taken ?	Well Pad OK?	Bolts in Well Cover?	Water in Well Vault?
MW-1		UNABLE		TO		OPEN				
MW-2		UNABLE		TO		OPEN				
MW-4				8.44		No	No	Yes	No	No
MW-5				10.78		No	No	Yes	No	Yes
RW-1				11.75		No	No	Yes	No	No
RW-2				12.98		No	No	Yes	No	No
RW-3				13.08		No	No	Cracked	No	No
RW-4				12.00		No	No	Cracked	No	Yes
RW-5			11.68	11.70	0.02	No	No	Cracked	No	Yes

UST Docketing 55464

Notes: MW-1 & MW-2 had a bolt that I could not find a match for and we could not gauge for free product. all RWs & RWs except RW-1 & MW-2 were missing bolts

Signature: SUtz

D H E C
PROMOTE PROTECT PROSPER

Catherine E. Heigel, Director
Promoting and protecting the health of the public and the environment

MR FREDERICK N CECCHINI
4335 BROAD RIVER RD
COLUMBIA SC 29210-4009

JUN 2 2 2015

UST 53ked DOCKETING

Re: **CASE Report Review and Verification Gauging**
Broad River Amoco, 4335 Broad River Rd., Columbia, SC
UST Permit #11946; CA# 46916
Release Reported January 4, 2011
Corrective Action System Evaluation (CASE) Report received April 28, 2015
Verification gauging conducted June 18, 2015
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced report documenting the remediation and gauging activities for this site.

On June 18, 2015 personnel from the UST Division conducted verification gauging of the Site Specific Target Level (SSTL) wells at the referenced site. Results show a total thickness of free-phase product in recovery well, RW-5, to be 0.02 feet. Based on these results, The Division calculates a 99.93% reduction in the total free-phase product thickness in the SSTL wells.

The next quarterly CASE report, documenting corrective action activities during the second quarter of 2015 is **due on or before August 28, 2015**.

On all correspondence regarding this site, please reference UST Permit #11964. If you have questions concerning this correspondence, feel free to contact me by telephone at (803) 898-0634, by fax at (803) 898-0673 or by email utzst@dhec.sc.gov.

Sincerely,

Sonya T. Utz, Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Enviro-Test Services, Inc., P.O. Box 2237, Irmo, SC 29063 (w/enc)
Technical File (w/enc)

ENVIRO-TEST SERVICES

July 18, 2015

Sonya T. Utz, Hydrogeologist
Underground Storage Tank Section
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Re: Monitoring Well Sampling Set Request
Broad River Amoco
4335 Broad River Rd., Columbia
Richland County, South Carolina
UST Permit #11946; CA #46916

Dear Ms. Utz;

Enviro-Test Services, Inc. (ETS) is in receipt of your correspondence dated June 22, 2015. Thank you for conducting the verification gauging of the wells at the site. Based on the reduction in free-phase product thickness, ETS would like to request that samples shall be collected from the following monitoring / recovery wells for the upcoming CASE sampling event: MW-1, MW-2, MW-4, MW-5, RW-1, RW-2, RW-3, RW-4, and RW-5.

Thank you for recognizing our commitment to the completion of site rehabilitation.

Sincerely,
Enviro-Test Services, Inc.
Contractor Certification #14

Michael L. Faris, P.G. (#2379)
Hydrogeologist

ENVIRO-TEST SERVICES

UST
AUG 27 2015
DIVISION

UST
55 tech
DOCKETING

August 26, 2015

Sonya T. Utz, Hydrogeologist
Underground Storage Tank Section
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Re: Corrective Action System Evaluation Report – 2nd Quarter 2015
Broad River Amoco
4335 Broad River Rd., Columbia
Richland County, South Carolina
UST Permit #11946; CA #46916

Dear Ms. Utz;

Enviro-Test Services, Inc. (ETS) has completed the Corrective Action System Evaluation (CASE) in order to document the corrective action activities at the Broad River Amoco site located in Columbia, South Carolina. The pertinent information regarding this assessment, including conclusions, is presented on the following pages and in the attached Figures, Tables, and Appendices.

Based on the analytical data collected during this evaluation, it is apparent that the free-phase petroleum product previously observed on the property is no longer present in any of the monitoring wells or recovery wells designated as Site Specific Target Level (SSTL) wells. Therefore, according to the requirements of this corrective action contract, ETS has achieved 100% reduction in the total free product thickness in the SSTL wells.

If you should have any questions regarding the results of this assessment, or should you need additional information, please do not hesitate to contact our office.

MICHAEL L. FARIS
REGISTERED
No. 2379
SOUTH CAROLINA
PROFESSIONAL GEOLOGIST

Sincerely,
Enviro-Test Services, Inc.
Contractor Certification #14

Michael L. Faris, P.G. (#2379)
Hydrogeologist

Terry L. Teate
President, Sr. Project Manager

cc: Fredrick Cecchini

Background

The subject site is located in northwest Richland County in Columbia, South Carolina and is situated on the southwest side of Broad River Road, a five-lane local thoroughfare. The site is comprised of approximately 0.85 acres and is currently owned and operated as a petroleum retail facility, convenience store and restaurant (Broad River BP).

A 1939 aerial photograph from the Richland County Geographic Information System (GIS) shows that the subject property was utilized for agriculture and was partially wooded. Broad River Road appears as a two-lane road. Information available through the Richland County Assessor's Office indicates the property was owned by B.O. Derrick in 1955 and a 1959 aerial photograph indicates that the property had apparently been developed as a petroleum retail facility. Subsequently, the property was acquired by Associated Oils of South Carolina, Inc. in February 1988, and the previous UST system (B.O. Derrick) was properly closed, as reported to the SCDHEC in 1989. Reportedly, the closure included proper abandonment by removal of one 2,000-gallon UST and one 3,000-gallon UST. Additionally, the property redevelopment activities of 1988 and 1989 reportedly included the demolition of pre-existing structures and construction of the existing store building, dispenser islands and UST system. Subsequently, the property was acquired by Mr. Frederick N. Cecchini in June 1997, and Mr. Cecchini remains the current owner.

UST #	Product	Date Installed	Currently in use (Yes or No)	If not in use, Date Removed
1	Gasoline (2,000 gallon)	(?)	No	1989
2	Gasoline (3,000 gallon)	(?)	No	1989
3	Diesel (3,000 gallon)	1989	Yes	-
4	Gasoline Unleaded (3,000 gallon)	1989	Yes	-
5	Gasoline Plus (3,000 gallon)	1989	Yes	-
6	Gasoline Plus (8,000 gallon)	1989	Yes	-
7	Gasoline Super (8,000 gallon)	1989	Yes	-
8	Kerosene (1,000 gallon)	1989	Yes	-

Reportedly, no soil samples were collected for analysis at the time of proper abandonment of the previous UST system as reported to SCDHEC in 1989. In December 2010, a Phase II Subsurface Investigation was performed by Partner Engineering and Science, Inc. of El Segundo, California. The Phase II investigation included the installation of four soil borings and a Temporary Monitoring Well Permit (Approval No. 4053) was obtained from the SCDHEC for the purpose of groundwater sample collection. Reportedly, the soil borings extended to terminal depths of 26 feet below land surface (BLS) utilizing direct push penetration technology with continuous soil sample collection.

Drilling refusal was encountered in all four soil borings before groundwater was encountered; therefore, no groundwater samples were collected for laboratory analysis. Eight soil samples (two from each soil boring) were submitted for laboratory analysis for Volatile Organic Compounds (VOC) and Polynuclear Aromatic Hydrocarbons (PAH). The laboratory analytical results indicated the detection of various VOC and PAH chemical compounds at concentrations deemed reportable to the SCDHEC.

An Initial Groundwater Assessment (IGWA) was completed by Enviro-Test Services, Inc. during January, 2011 and an IGWA report was submitted on February 4, 2011. On January 20, 2011, the soil boring for monitoring well MW-1 was installed. The soil sample from the 10 to 15 feet sampling interval yielded the highest PID reading of 1,782 ppm and accordingly was submitted for laboratory analysis for BTEX, MTBE, naphthalene, PAH and lead. Moderately elevated concentrations of toluene, ethylbenzene, xylenes and naphthalene were detected in the soil sample. Saturated sediments were encountered at the depth interval of 35 to 40 feet below grade level (BGL). As such, monitoring well MW-1 was installed to a depth of 40 feet BGL and was screened from 40 to 20 feet BGL. On January 21, 2011, a groundwater sample was collected from monitoring well MW-1 and laboratory analysis for BTEX, naphthalene, MTBE, PAH and lead was performed. The depth to groundwater in monitoring well MW-1 was measured from the top-of-casing to be 20.92 feet. The groundwater sample yielded COC concentrations as follows: benzene (929 ug/l), toluene (10,300 ug/l), ethylbenzene (684 ug/l), MTBE (243 ug/l) and naphthalene (922 ug/l). Following review of the IGWA report, the SCDHEC requested a Tier I Assessment in correspondence dated February 7, 2011.

Field activities for the Tier I Assessment were commenced on February 24 and 25, 2011 with the completion of soil borings SB-1 through SB-9. Laboratory analysis of soil samples for BTEX, MTBE and PAH yielded elevated concentrations of benzene and naphthalene above RBSL in soil borings SB-1 (10 ft), SB-2 (5 ft), SB-3 (8 ft) and 5 (6 ft) which were installed proximal to the existing UST basin (SB-1 and SB-2) and product pipeline/dispenser islands (SB-3 and SB-5). Monitoring wells MW-2, MW-3 and MW-4 were completed on February 25, 2011 and were subsequently sampled on March 5, 2011. Laboratory analysis of the groundwater samples yielded concentrations of benzene as follows: MW-1 (1,760 ug/l), MW-2 (1,650 ug/l), MW-3 (9.93 ug/l) and MW-4 (1,830 ug/l). Additionally, concentrations of MTBE were also detected in wells MW-2 (3,420 ug/l) and MW-4 (3,100 ug/l). Naphthalene by EPA method 8260 was detected in wells MW-1 (4,070J ug/l), MW-2 (462J ug/l) and MW-4 (598 ug/l). Also, elevated concentrations of toluene were detected in wells MW-1 (16,400 ug/l) and MW-2 (3,230 ug/l) and ethylbenzene in wells MW-1 (1,270 ug/l) and MW-4 (1,270 ug/l). A Tier I Assessment Report was submitted to SCDHEC on April 8, 2011.

Subsequent to review of the Tier I Assessment Report, the Technical Project Manager and Section Manager, as applicable, expressed concern regarding the depth of the screened interval of each monitoring well in relation to the measured groundwater levels due to the fact that none of the monitoring wells were bracketing the water table of the site surficial aquifer.

Enviro-Test Services, Inc. stated that during soil boring and monitoring well installations no saturated sediments were encountered until the 35 to 40-ft depth interval of drilling at each well location; therefore, the monitoring wells were installed at depths somewhat deeper than preferable. Also, during drilling activities for installation of monitoring well MW-4, where elevated COC's were later detected in the March 5, 2011 groundwater sample, no petroleum hydrocarbon odors or elevated PID readings were noted to be present in apparent vadose soils; however, upon encountering saturated soils at approximately 35 feet, strong odors and elevated PID readings were readily apparent. Consequently, the Technical Project Manager decided that an additional monitoring well (MW-5) should be installed at a shallower, bracketing depth to determine the availability of groundwater for sample collection in what appeared to be unsaturated, vadose soils. Accordingly, on May 27, 2011 monitoring well MW-5 was installed to a depth of 20 feet, with a 10-ft screen at a location adjacent to the north corner of the existing convenience store building. The infiltration of groundwater was noted to be exceedingly slow; as such, groundwater was allowed to seep into the well casing for several days. On June 3, 2011, the depth to groundwater was measured at 13.80 feet and free product (gasoline) of a degraded appearance was measured at 13.68 feet (a free product thickness of 0.12 feet). Again, on June 20, 2011, depth to the groundwater was measured at 14.05 feet and free product at 13.75 feet (a free product thickness of 0.30 feet). These findings were submitted to the DHEC Project Manager on June 20, 2011.

Based on the results of the Tier I Assessment, a Tier II was requested. The Tier II was completed in 2013, with a report dated May 28, 2013, and the horizontal and vertical extent of the contaminant plume was delineated. This site is currently in the corrective action section of the UST Program in order to remove the free-phase product associated with the release contaminant plume.

The subject property is bounded by Broad River Road to the northeast, then by the South Carolina Law Enforcement Division (SLED). The adjacent property to the southeast is a nail and beauty salon. The adjacent property to the southwest is commercially utilized as a nursery school and day care (Play Pal Day Care). The Play Pal Day Care facility encompasses two properties fronting Dothan Road. The subject property is bounded to the northwest by Dothan Road and a commercially utilized property beyond (MDC Associates, an apparent mechanical engineering firm). The commercial usage of the subject property and adjacent properties is expected to remain the same in the future.

Site Geography

In general, the site is located on the west side of a topographically ridge extending southeast to northwest. Broad River Road lies at or near the crest of the apparent topographic ridge. Storm water runoff on the east side of the ridge ultimately flows into the Broad River located approximately 2 miles east of the site. On the west side of the ridge, storm water runoff flows toward Stoop Creek located approximately 1,650 feet to the southwest (near the southwest dead end of Dothan Road). From this point, Stoop Creek flows southward approximately 2.6 miles before emptying into the Saluda River.

In the general vicinity, numerous surface water features are evident on the USGS topographic map including several unnamed creeks (apparently spring fed) and several small to medium-sized surface water impoundments. In relative close proximity to the site, three surface water features are apparent on the west side of the topographic ridge and three on the east side of the topographic ridge. These surface water features are visibly apparent of Figure 1, a topographic site location map. On the west side of the topographic ridge, located approximately 1,430 feet to the northwest is a small pond with an estimated surface elevation of 265 feet MSL, approximately 1,680 feet to the southwest is the aforementioned Stoop Creek (estimated surface elevation of 233 feet MSL) and approximately 2,370 feet to the south-southeast is an apparent spring-fed creek (estimated surface elevation of 252 feet MSL at depicted point of emergence). On the east side of the topographic ridge, located approximately 1,240 feet to the northeast is an apparent spring-fed creek (estimated surface elevation of 248 feet MSL at the depicted point of emergence), approximately 1,820 feet to the east-northeast is an apparent spring-fed creek (estimated surface elevation of 230 feet MSL at the depicted point of emergence) and approximately 2,480 feet to the southeast is an apparent incised, spring-fed creek (estimated surface elevation of 235 feet MSL at the depicted point of emergence). Estimated surface elevations were obtained via the Richland County GIS utilizing a topographic option depicting contour intervals of two feet. For purposes of estimation, the depicted contours are deemed to be reasonably reliable.

According to the USGS Topographic Quadrangle Map of *Columbia North, South Carolina*, dated 1972 and revised in 1990, the elevation of the site is approximately 275 feet above mean sea level (MSL). The topography surrounding the site is relatively flat toward the north and east, but slopes downward toward the west/southwest. The topography in the general vicinity of the site slopes downward toward the west/southwest. A Topographic Site Location Map is included as Figure 1. A Site Base Map is included as Figure 2.

Regional Geology and Hydrogeology

The Broad River Amoco (BP) lies within the Lower Piedmont Physiographic Provence in close proximity and northwest of the contact zone, the "fall line", with the Upper Coastal Plain Physiographic Provence. The dominant rock types of the general area are related to the Carolina Slate Belt and specifically the Precambrian to Early Cambrian, Persimmon Fork Formation which is comprised primarily of green-gray to blue-gray, moderately metamorphosed, felsic volcanic (metavolcanic) tuffs and to a lesser extent mafic metavolcanic tuffs. These rocks occur as very weathered to moderately weathered outcrops in the site study area and are most often visible at areas of excavation related to road and building construction.

In the general vicinity, the uppermost aquifer generally occurs under unconfined conditions and receives water from precipitation, which infiltrates the unsaturated surface soils and migrates downward to the saturated zone. Underlying the uppermost aquifer is the fractured bedrock aquifer in which groundwater occurs in fractures, joints and faults. The fractured bedrock aquifer is often an important water resource for rural residences and commercial and light industrial properties at areas where municipal water supply is unavailable or unfeasible. Well yields are typically 1 to 350 gpm in the crystalline and metamorphic rocks with the larger yields located in areas of intensely fractured metamorphic rocks.

Site Geology and Hydrogeology

Based on the data collected during the Tier I and Tier II Assessments, it is apparent that groundwater can be found in several stratified layers or zones at the site. The most shallow water encountered at the site was generally found between 15' - 20' below ground level. This shallow water was very slow to accumulate in the boreholes. Typically it took at least several days to over a week for the water levels to come to equilibrium. It is likely that this most shallow water is present in small volume in the sandy clayey silt due to localized recharge, perching, and soil capillarity. The soils become more clayey (a silty clay) and mostly dry beginning at approximately 25' bgl. The second layer or zone of water encountered in the subsurface was typically found at an approximate depth of 35'-40'. The water in this second water-bearing zone was under significant hydraulic pressure and immediately entered the boreholes and rose upward many feet in the boreholes/wells.

The two layers of water are clearly connected as contamination has been identified at both depths during this Tier II investigation. There appears to be an aquitard comprised of mostly dry silty clay (with a small % of sand) between the two above-described zones of water across the area of study. Because the contaminants have been identified at both depths in and near the source area, there clearly is transmissivity between the two layers. Therefore, the silty clay is not considered a true aquiclude, but is acting at least as a partially confining unit.

Summary of Findings

Gauging

On August 5, 2015, ETS personnel located and gauged monitoring wells MW-1, MW-2, MW-4, and MW-5, as well as recovery wells RW-1, RW-2, RW-3, RW-4, RW-5. Prior to the initiation of any gauging, purging or sampling activities, clean plastic sheeting was placed on the ground surface around each well in order to provide a clean work area. Each well was opened and gauged with a decontaminated electronic water level indicator to the nearest 0.01-foot. Fluid levels and total depths of the monitoring wells were recorded on field data sheets in indelible ink.

Groundwater flow direction(s) of the water table / perched aquifer and second water bearing zone were determined to be generally toward the east, north, and northwest. The current potentiometric data are summarized in Table 2. A Generalized Potentiometric Surface Map, displaying groundwater elevations at each sampled well and groundwater flow directions for the water table aquifer / second water bearing zone is included as Figure 5.

Purging

The wells to be sampled were purged with a low flow peristaltic pump with disposable tubing. Prior to purging, the well volumes were calculated using the diameter of the well, the static water level and the total depth of the well. The flow rate of the peristaltic pump remained low in order to minimize agitation of the water column.

Temperature, pH, specific conductivity, dissolved oxygen, and turbidity were measured and recorded throughout the purging process and purging continued until these parameters stabilized, typically in three to five well volumes. Stabilization occurs when pH measurements remain constant within 0.1 Standard Unit (SU), or reproducible to within 0.1 (SU), specific conductance varies no more that 10 percent, the temperature is constant for at least three consecutive readings and the turbidity has stabilized. Wells purged to dryness were considered sufficiently purged. Samples were collected immediately after the purging process was complete.

Prior to commencement of purging, the purging meters were calibrated according to manufacturer's specifications. Also, the meters' calibration was checked mid-way through and after the purging activities. The calibration checks indicated that the meters remained calibrated within the acceptable ranges of the meters' standards throughout the purging activities. The purging data were recorded on field data sheets in indelible ink. The Purge Meter Calibration Data Sheets and Monitoring Well Purging Data Sheets are included in Appendix B.

Groundwater Sampling

Groundwater samples were collected from monitoring wells MW-1, MW-2, MW-4, and MW-5, as well as recovery wells RW-1, RW-2, RW-3, RW-4, RW-5. Each sample was placed into pre-labeled, laboratory-prepared sample containers utilizing a low flow peristaltic pump with disposable tubing via the straw method.

Purging parameters were again measured and recorded immediately after sample collection at each well. In order to further ensure sample integrity, samples were immediately placed on ice in an insulated cooler upon collection and entered into chain of custody. A field blank was collected at the completion of each day of sampling activities. A laboratory-prepared trip blank was included with the insulated sample cooler to ensure cross-contamination did not occur between the collected groundwater samples.

A duplicate sample was collected from monitoring wells MW-2 (Duplicate 1).

The groundwater samples were submitted to Access Analytical, Inc. and analyzed by Gulf Coast Analytical Laboratories, Inc. (GCAL) a South Carolina certified laboratory (certification #73006), for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, methyl tertiary-butyl ether (MTBE) and 1,2-dichloroethane (1,2-DCA) by EPA method 8260B, as well as for EDB by EPA method 8011.

Groundwater samples were also analyzed for the following eight oxygenates: di-isopropyl ether (DIPE), ethanol, ethyl tert-butyl alcohol (ETBA), ethyl tert-butyl either (ETBE), tert-amyl alcohol (TAA), tert-amyl methyl either (TAME), tert-butyl alcohol (TBA) and tert-butyl formate (TBF).

The laboratory analytical results from this assessment (current) are tabulated in Table 3. Results from previous groundwater sampling events are tabulated with the data from this assessment (current and historical) in Table 4. CoC detected at concentrations above the RBSLs established by SCDHEC are indicated in bold type. The complete laboratory analytical results, including chain-of-custody documentation, are included as Appendix B. A Groundwater CoC Site Map, indicating the August 2015 CoC concentrations in the groundwater at each monitoring well, is included as Figure 4.

Disposal

A total of 75 gallons of contaminated purge water and decontamination fluids were collected during this assessment. The fluids are awaiting disposal at an approved facility. The waste manifest will be forwarded as soon as it is received from the waste facility.

A disposal manifest for the contaminated purge water and decontamination fluids generated during this assessment are included in Appendix G.

Contractor Checklist

The SCDHEC QAPP Contractor Checklist is included in Appendix K.

SSTL Reduction Calculation

The Free-Phase Product Reduction Calculation worksheet is included as Table 5.

Conclusions and Recommendations

Based on the data collected during this assessment, it appears that elevated concentrations of several Chemicals of Concern remain present at the site. However, based on the analytical data collected during this evaluation, it is apparent that the free-phase petroleum product previously observed on the property is no longer present in any of the monitoring wells or recovery wells gauged during this evaluation.

Therefore, according to the requirements of this corrective action contract, ETS has achieved 100% reduction in the total free product thickness in the SSTL wells.

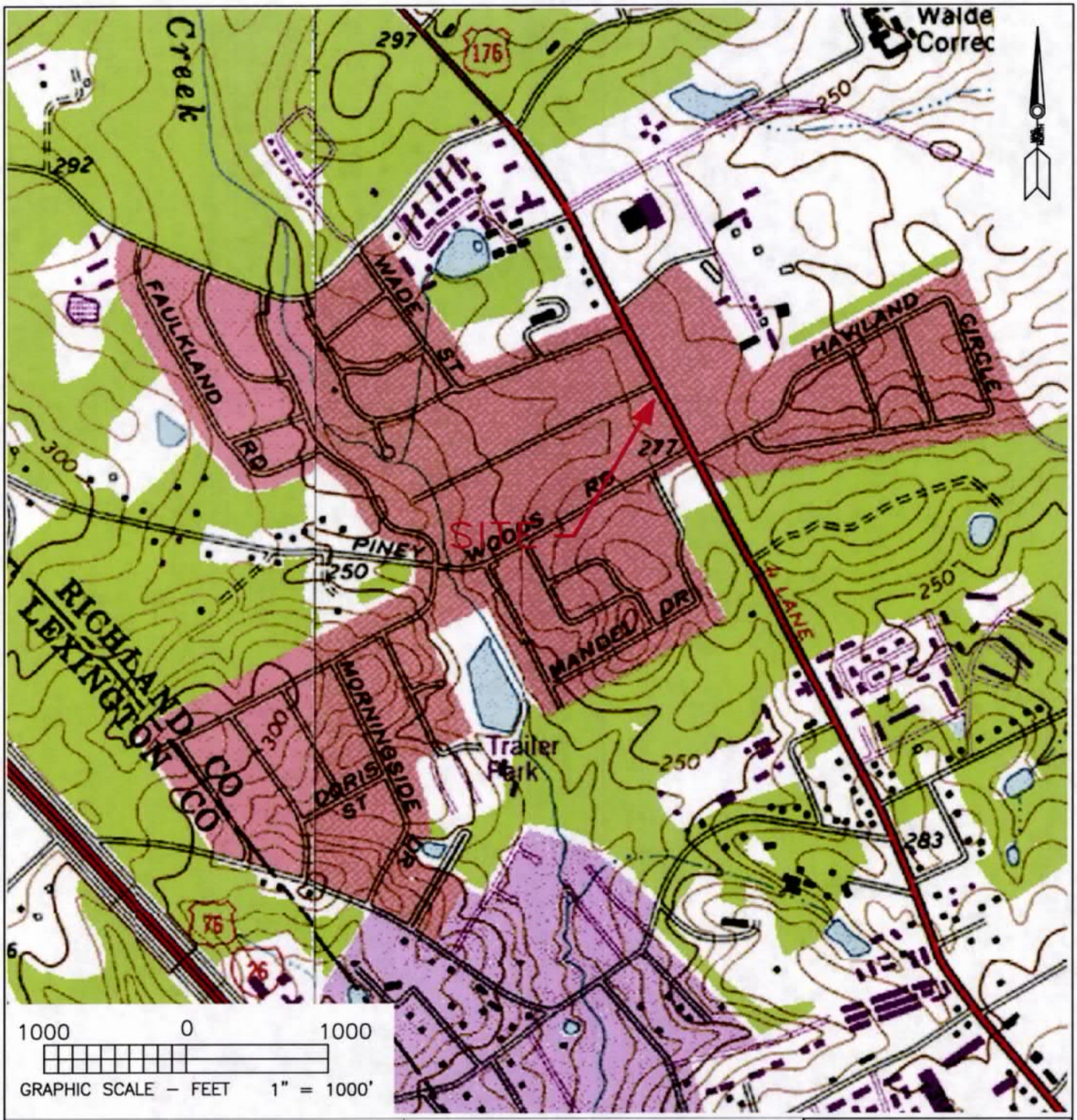
References

Maybin and Nystrom, 1997, revised by Willoughby, Howard and Nystrom, 2005. Generalized Geologic Map of South Carolina; South Carolina Department of Natural Resources Geological Survey.

USGS Open-File Report 2005-1323, Preliminary integrated geologic map databases for the United States: Alabama, Florida, Georgia, Mississippi, North Carolina, and South Carolina, http://pubs.usgs.gov/of/2005/1323/

FIGURES

Figure 1 – Site Location Map (Topographic)
Figure 2 – Site Base Map
Figure 3 – Not Included
Figure 4 – Groundwater CoC Map
Figure 5 – Potentiometric Map



PROJECT:
CORRECTIVE ACTION SYSTEM EVAL.
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
SITE LOCATION MAP

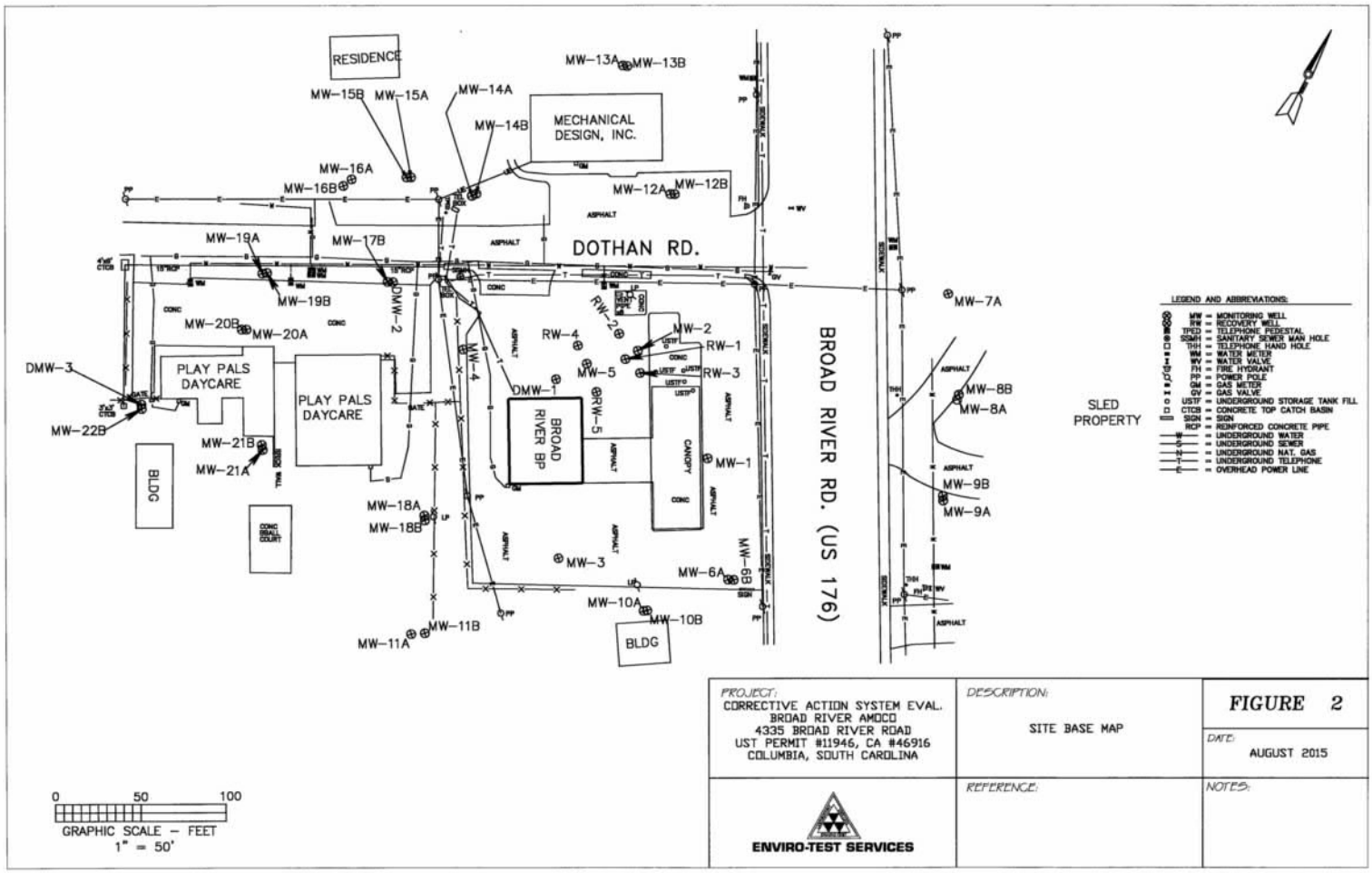
FIGURE 1

DATE:
AUGUST 2015

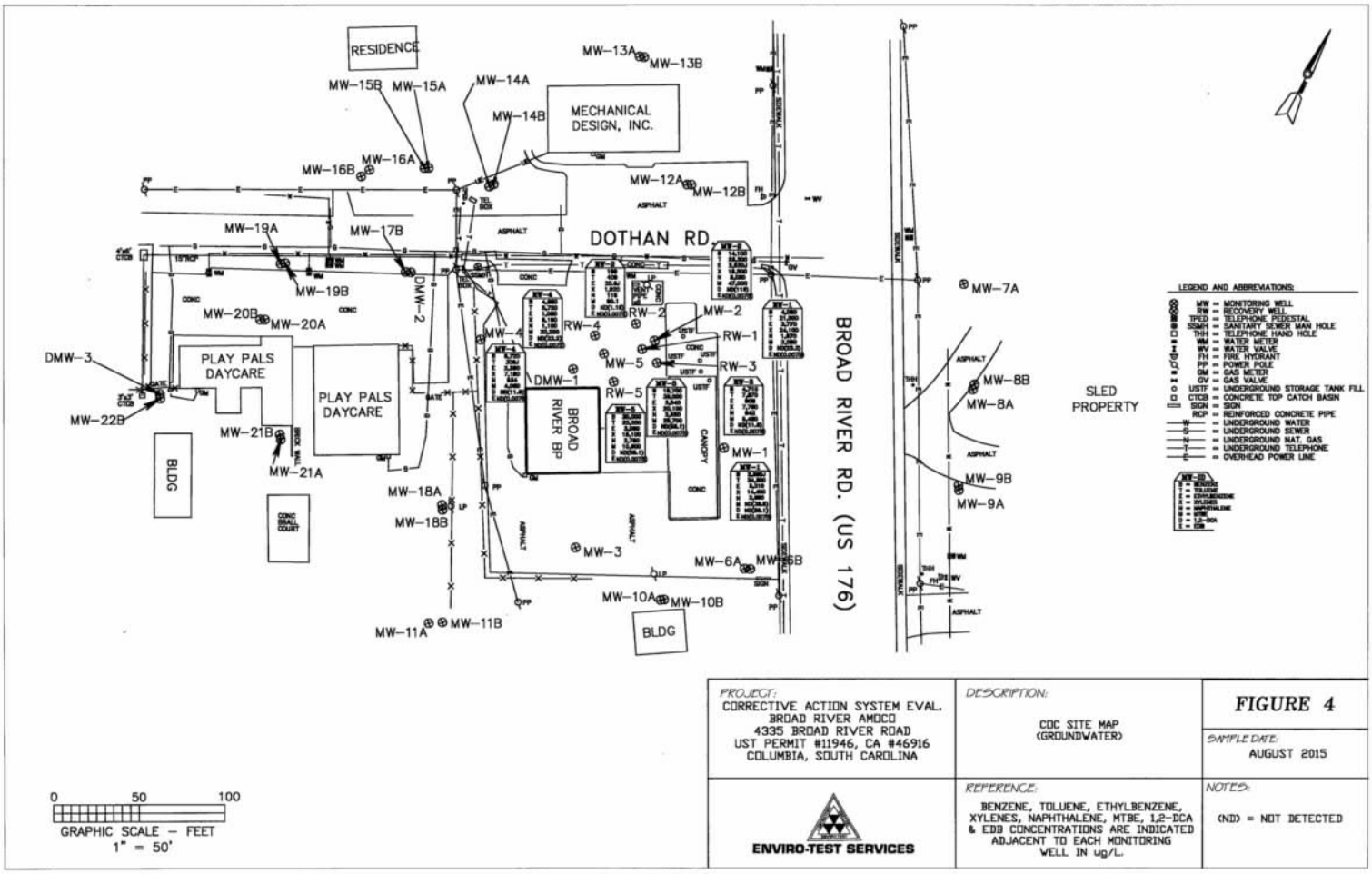
ENVIRO-TEST SERVICES

REFERENCE:
U.S.G.S. TOPOGRAPHIC MAP
(7.5 MINUTE SERIES)
COLUMBIA NORTH – 1972, REV. 1990
SOUTH CAROLINA QUADRANGLE

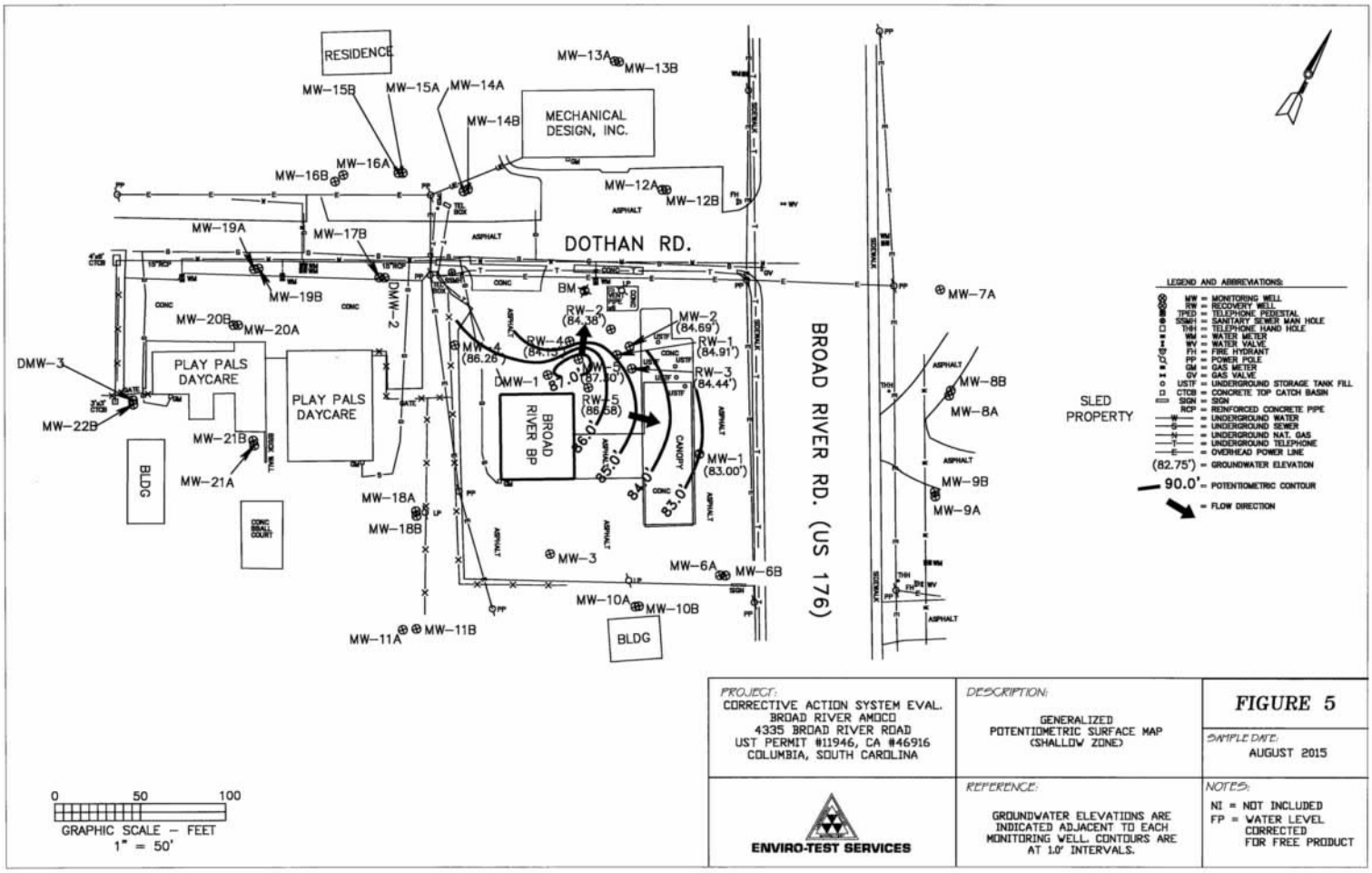
LEGEND:



PROJECT: CORRECTIVE ACTION SYSTEM EVAL. BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: SITE BASE MAP	**FIGURE 2**
		DATE: AUGUST 2015
ENVIRO-TEST SERVICES	REFERENCE:	NOTES:



PROJECT: CORRECTIVE ACTION SYSTEM EVAL. BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: CDC SITE MAP (GROUNDWATER)	**FIGURE 4**
		SAMPLE DATE: AUGUST 2015
ENVIRO-TEST SERVICES	REFERENCE: BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, NAPHTHALENE, MTBE, 1,2-DCA & EDB CONCENTRATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL IN ug/L.	NOTES: (ND) = NOT DETECTED



PROJECT: CORRECTIVE ACTION SYSTEM EVAL. BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: GENERALIZED POTENTIOMETRIC SURFACE MAP (SHALLOW ZONE)	**FIGURE 5** SAMPLE DATE: AUGUST 2015
ENVIRO-TEST SERVICES	REFERENCE: GROUNDWATER ELEVATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL. CONTOURS ARE AT 1.0' INTERVALS.	NOTES: NI = NOT INCLUDED FP = WATER LEVEL CORRECTED FOR FREE PRODUCT

TABLES

Table 1 – Not Included
Table 2 – Potentiometric Data
Table 3 – Groundwater Analytical Data (Current)
Table 4 – Groundwater Analytical Data
(Current & Historical)
Table 5 – Free-Phase Product Reduction Calculation

APPENDICES

A. Not Included
B. Purging Data Sheets and Laboratory Analytical Data
C. Not Included
D. Not Included
E. Not Included
F. Not Included
G. Disposal Manifest(s)
H. Not Included
I. Not Included
J. Not Included
K. SCDHEC Contractor Checklist

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and August 5, 2015

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-1	1/21/2011	40.0	20.0 - 40.0	101.84	20.92	N/A	N/A	N/A	80.92
	3/5/2011	40.0	20.0 - 40.0	101.84	14.45	N/A	N/A	N/A	87.39
	3/5/2013	40.0	20.0 - 40.0	101.84	18.62	N/A	N/A	N/A	83.22
	3/6/2014	40.0	20.0 - 40.0	101.84	15.90	N/A	N/A	N/A	85.94
	8/5/2015	40.0	20.0 - 40.0	101.84	18.84	N/A	N/A	N/A	83.00
MW-2	3/5/2011	28.0	18.0 - 28.0	101.13	13.50	N/A	N/A	N/A	87.63
	3/6/2013	28.0	18.0 - 28.0	101.13	17.66	16.32	1.34	16.70	84.43
	3/5/2014	28.0	18.0 - 28.0	101.13	11.57	10.15	1.42	10.53	90.60
	8/5/2015	28.0	18.0 - 28.0	101.13	16.44	N/A	N/A	N/A	84.69
MW-3	3/5/2011	31.0	21.0 - 31.0	101.09	13.72	N/A	N/A	N/A	87.37
	3/6/2013	31.0	21.0 - 31.0	101.09	17.94	N/A	N/A	N/A	83.15
	3/7/2014	31.0	21.0 - 31.0	101.09	11.57	N/A	N/A	N/A	89.52
MW-4	3/5/2011	25.0	15.0 - 25.0	97.02	9.15	N/A	N/A	N/A	87.87
	3/6/2013	25.0	15.0 - 25.0	97.02	12.41	10.10	2.31	10.75	86.27
	3/5/2014	25.0	15.0 - 25.0	97.02	9.74	7.50	2.24	8.10	88.92
	8/5/2015	25.0	15.0 - 25.0	97.02	10.76	N/A	N/A	N/A	86.26
MW-5	6/20/2011	20.0	10.0 - 20.0	101.34	14.05	13.75	0.30	13.83	87.51
	3/6/2013	20.0	10.0 - 20.0	101.34	19.63	16.80	2.83	17.59	83.75
	3/5/2014	20.0	10.0 - 20.0	101.34	15.75	8.12	7.63	10.18	91.16
	8/5/2015	20.0	10.0 - 20.0	101.34	14.04	N/A	N/A	N/A	87.30
MW-6A	3/6/2013	25.5	15.5 - 25.5	101.84	18.00	N/A	N/A	N/A	83.84
	3/5/2014	25.5	15.5 - 25.5	101.84	15.15	N/A	N/A	N/A	86.69
MW-6B	3/6/2013	38.5	28.5 - 38.5	101.91	18.05	N/A	N/A	N/A	83.86
	3/5/2014	38.5	28.5 - 38.5	101.91	13.30	N/A	N/A	N/A	88.61
MW-7A	3/6/2013	24.0	14.0 - 24.0	100.04	16.60	N/A	N/A	N/A	83.44
	3/5/2014	24.0	14.0 - 24.0	100.04	11.00	N/A	N/A	N/A	89.04
MW-8A	3/6/2013	23.0	13.0 - 23.0	100.45	16.84	N/A	N/A	N/A	83.61
	3/5/2014	23.0	13.0 - 23.0	100.45	12.04	N/A	N/A	N/A	88.41

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and August 5, 2015

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-8B	3/6/2013	37.5	27.5 - 37.5	100.37	16.60	N/A	N/A	N/A	83.77
	3/5/2014	37.5	27.5 - 37.5	100.37	10.45	N/A	N/A	N/A	89.92
MW-9A	3/6/2013	23.0	13.0 - 23.0	101.36	18.61	N/A	N/A	N/A	82.75
	3/6/2014	23.0	13.0 - 23.0	101.36	11.50	N/A	N/A	N/A	89.86
MW-9B	3/6/2013	31.5	21.5 - 31.5	101.38	17.60	N/A	N/A	N/A	83.78
	3/6/2014	31.5	21.5 - 31.5	101.38	11.65	N/A	N/A	N/A	89.73
MW-10A	3/6/2013	17.5	7.5 - 17.5	97.20	11.05	N/A	N/A	N/A	86.15
	3/6/2014	17.5	7.5 - 17.5	97.20	2.80	N/A	N/A	N/A	94.40
MW-10B	3/6/2013	39.0	29.0 - 39.0	97.34	13.87	N/A	N/A	N/A	83.47
	3/6/2014	39.0	29.0 - 39.0	97.34	7.54	N/A	N/A	N/A	89.80
MW-11A	3/6/2013	20.0	10.0 - 20.0	89.93	10.52	N/A	N/A	N/A	79.41
	3/6/2014	20.0	10.0 - 20.0	89.93	9.50	N/A	N/A	N/A	80.43
MW-11B	3/6/2013	35.0	29.0 - 39.0	90.26	10.30	N/A	N/A	N/A	79.96
	3/6/2014	35.0	29.0 - 39.0	90.26	9.47	N/A	N/A	N/A	80.79
MW-12A	3/6/2013	20.0	10.0 - 20.0	99.26	13.95	N/A	N/A	N/A	85.31
	3/6/2014	20.0	10.0 - 20.0	99.26	16.20	N/A	N/A	N/A	83.06
MW-12B	3/6/2013	36.5	26.5 - 36.5	99.35	16.72	N/A	N/A	N/A	82.63
	3/6/2014	36.5	26.5 - 36.5	99.35	11.87	N/A	N/A	N/A	87.48
MW-13A	3/25/2013	22.0	12.0 - 22.0	98.70	19.80	N/A	N/A	N/A	78.90
	3/5/2014	22.0	12.0 - 22.0	98.70	N/A	N/A	N/A	N/A	N/A
MW-13B	3/6/2013	33.5	23.5 - 33.5	98.69	19.88	N/A	N/A	N/A	78.81
	3/6/2014	33.5	23.5 - 33.5	98.69	16.12	N/A	N/A	N/A	82.57
MW-14A	3/6/2013	20.0	10.0 - 20.0	97.49	14.52	N/A	N/A	N/A	82.97
	3/6/2014	20.0	10.0 - 20.0	97.49	11.10	N/A	N/A	N/A	86.39
MW-14B	3/6/2013	38.5	28.5 - 38.5	97.45	17.27	N/A	N/A	N/A	80.18
	3/6/2014	38.5	28.5 - 38.5	97.45	12.45	N/A	N/A	N/A	85.00

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and August 5, 2015

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-15A	3/25/2013	17.0	7.0 - 17.0	96.87	16.01	N/A	N/A	N/A	80.86
	3/6/2014	17.0	7.0 - 17.0	96.87	15.58	N/A	N/A	N/A	81.29
MW-15B	3/6/2013	40.0	30.0 - 40.0	96.82	17.60	N/A	N/A	N/A	79.22
	3/6/2014	40.0	30.0 - 40.0	96.82	14.10	N/A	N/A	N/A	82.72
MW-16A	3/25/2013	18.0	8.0 - 18.0	95.95	16.21	N/A	N/A	N/A	79.74
	3/5/2014	18.0	8.0 - 18.0	95.95	N/A	N/A	N/A	N/A	N/A
MW-16B	3/6/2013	37.0	27.0 - 37.0	95.68	16.75	N/A	N/A	N/A	78.93
	3/5/2014	37.0	27.0 - 37.0	95.68	N/A	N/A	N/A	N/A	N/A
MW-17B	3/6/2013	39.5	29.5 - 39.5	92.69	9.05	N/A	N/A	N/A	83.64
	3/5/2014	39.5	29.5 - 39.5	92.69	6.04	N/A	N/A	N/A	86.65
MW-18A	3/6/2013	13.0	3.0 - 13.0	88.20	0.85	N/A	N/A	N/A	87.35
	3/5/2014	13.0	3.0 - 13.0	88.20	0.82	N/A	N/A	N/A	87.38
MW-18B	3/6/2013	35.0	25.0 - 35.0	88.30	1.05	N/A	N/A	N/A	87.25
	3/5/2014	35.0	25.0 - 35.0	88.30	0.78	N/A	N/A	N/A	87.52
MW-19A	3/6/2013	15.0	5.0 - 15.0	91.63	7.95	N/A	N/A	N/A	83.68
	3/5/2014	15.0	5.0 - 15.0	91.63	6.02	N/A	N/A	N/A	85.61
MW-19B	3/6/2013	34.0	24.0 - 34.0	91.69	8.35	N/A	N/A	N/A	83.34
	3/5/2014	34.0	24.0 - 34.0	91.69	7.58	N/A	N/A	N/A	84.11
MW-20A	3/6/2013	15.0	5.0 - 15.0	88.67	5.05	N/A	N/A	N/A	83.62
	3/5/2014	15.0	5.0 - 15.0	88.67	4.97	N/A	N/A	N/A	83.70
MW-20B	3/6/2013	35.0	25.0 - 35.0	88.61	4.11	N/A	N/A	N/A	84.50
	3/5/2014	35.0	25.0 - 35.0	88.61	3.62	N/A	N/A	N/A	84.99
MW-21A	3/6/2013	12.0	2.0 - 12.0	87.16	0.85	N/A	N/A	N/A	86.31
	3/5/2014	12.0	2.0 - 12.0	87.16	0.65	N/A	N/A	N/A	86.51
MW-21B	3/6/2013	35.0	25.0 - 35.0	87.23	1.35	N/A	N/A	N/A	85.88
	3/5/2014	35.0	25.0 - 35.0	87.23	0.85	N/A	N/A	N/A	86.38

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and August 5, 2015

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-22B	3/6/2013	35.0	25.0 - 35.0	87.40	2.10	N/A	N/A	N/A	85.30
	3/5/2014	35.0	25.0 - 35.0	87.40	1.45	N/A	N/A	N/A	85.95
RW-1	3/6/2013	40.0	20.0 - 40.0	101.21	17.26	17.11	0.15	17.15	84.06
	3/5/2014	40.0	20.0 - 40.0	101.21	15.78	9.10	6.68	10.90	90.31
	8/5/2015	40.0	20.0 - 40.0	101.21	16.30	N/A	N/A	N/A	84.91
RW-2	3/6/2013	40.0	20.0 - 40.0	100.96	16.96	N/A	N/A	N/A	84.00
	3/5/2014	40.0	20.0 - 40.0	100.96	10.65	N/A	N/A	N/A	90.31
	8/5/2015	40.0	20.0 - 40.0	100.96	16.58	N/A	N/A	N/A	84.38
RW-3	3/6/2013	41.0	21.0 - 41.0	101.44	17.41	17.36	0.05	17.37	84.07
	3/5/2014	41.0	21.0 - 41.0	101.44	10.58	10.52	0.06	10.54	90.90
	8/5/2015	41.0	21.0 - 41.0	101.44	17.00	N/A	N/A	N/A	84.44
RW-4	3/6/2013	40.5	20.5 - 40.5	100.83	16.73	N/A	N/A	N/A	84.10
	3/7/2014	40.5	20.5 - 40.5	100.83	10.50	N/A	N/A	N/A	90.33
	8/5/2015	40.5	20.5 - 40.5	100.83	16.70	N/A	N/A	N/A	84.13
RW-5	3/6/2013	38.5	18.5 - 38.5	101.62	17.64	17.58	0.06	17.6	84.02
	3/5/2014	38.5	18.5 - 38.5	101.62	10.88	10.58	0.30	10.66	90.96
	8/5/2015	38.5	18.5 - 38.5	101.62	15.04	N/A	N/A	N/A	86.58
DMW-1	3/6/2013	65.0	60.0 - 65.0	101.16	18.21	N/A	N/A	N/A	82.95
	3/7/2014	65.0	60.0 - 65.0	101.16	14.07	N/A	N/A	N/A	87.09
DMW-2	3/6/2013	65.0	60.0 - 65.0	92.63	9.40	N/A	N/A	N/A	83.23
	3/7/2014	65.0	60.0 - 65.0	92.63	5.94	N/A	N/A	N/A	86.69
DMW-3	3/6/2013	65.0	60.0 - 65.0	87.41	2.10	N/A	N/A	N/A	85.31
	3/5/2014	65.0	60.0 - 65.0	87.41	1.40	N/A	N/A	N/A	86.01

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 3 – Current Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
August 5, 2015

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**
MW-1	8/5/2015	**2,360J**	**34,300**	**3,310**	**14,400**	**2,660**	ND(38.5)	ND(**58.1**)	ND(0.00750)
MW-2	8/5/2015	**14,100**	**23,300**	**2,930J**	**15,500**	**5,050**	**47,000**	ND(**116**)	ND(0.00750)
MW-3	8/5/2015	Not Sampled							
MW-4	8/5/2015	**5,720**	309J	**2,390**	7,180	**934**	**4,060**	ND(**11.6**)	ND(0.00750)
MW-5	8/5/2015	**18,700**	**36,000**	**3,540**	**20,100**	**2,950**	**25,700**	ND(**58.1**)	ND(0.00750)
MW-6A	8/5/2015	Not Sampled							
MW-6B	8/5/2015	Not Sampled							
MW-7A	8/5/2015	Not Sampled							
MW-8A	8/5/2015	Not Sampled							
MW-8B	8/5/2015	Not Sampled							
MW-9A	8/5/2015	Not Sampled							
MW-9B	8/5/2015	Not Sampled							
MW-10A	8/5/2015	Not Sampled							
MW-10B	8/5/2015	Not Sampled							
MW-11A	8/5/2015	Not Sampled							
MW-11B	8/5/2015	Not Sampled							
MW-12A	8/5/2015	Not Sampled							
MW-12B	8/5/2015	Not Sampled							
MW-13A	8/5/2015	Not Sampled							
MW-13B	8/5/2015	Not Sampled							
MW-14A	8/5/2015	Not Sampled							
MW-14B	8/5/2015	Not Sampled							
MW-15A	8/5/2015	Not Sampled							
MW-15B	8/5/2015	Not Sampled							

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
August 5, 2015

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**
MW-16A	8/5/2015	Abandoned							
MW-16B	8/5/2015	Abandoned							
MW-17B	8/5/2015	Not Sampled							
MW-18A	8/5/2015	Not Sampled							
MW-18B	8/5/2015	Not Sampled							
MW-19A	8/5/2015	Not Sampled							
MW-19B	8/5/2015	Not Sampled							
MW-20A	8/5/2015	Not Sampled							
MW-20B	8/5/2015	Not Sampled							
MW-21A	8/5/2015	Not Sampled							
MW-21B	8/5/2015	Not Sampled							
MW-22B	8/5/2015	Not Sampled							
RW-1	8/5/2015	**4,060**	**21,500**	**2,770**	**24,100**	**1,670**	**2,080**	ND(**23.2**)	ND(0.00750)
RW-2	8/5/2015	**199**	409	20.6J	1,920	**116**	**90.1**	ND(1.16)	ND(0.00750)
RW-3	8/5/2015	**4,710**	**7,870**	**908**	7,760	**642**	**6,460**	ND(**11.6**)	ND(0.00750)
RW-4	8/5/2015	**4,680**	**5,720**	**1,050**	6,190	**1,100**	**20,200**	ND(**23.2**)	ND(0.00750)
RW-5	8/5/2015	**20,000**	**33,200**	**3,060**	**18,100**	**2,780**	**10,600**	ND(**58.1**)	ND(0.00750)
DMW-1	8/5/2015	Not Sampled							
DMW-2	8/5/2015	Not Sampled							
DMW-3	8/5/2015	Not Sampled							
Duplicate 1 (MW-2)	8/5/2015	**14,100**	**22,500**	**2,820**	**15,500**	**2,750**	**47,900**	ND(**58.1**)	ND(0.00750)
Field Blank 1	8/5/2015	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)
Trip Blank 1	8/5/2015	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current Groundwater Analytical Data
--8 Oxygenates--
Broad River Amoco; UST Permit #11946
August 5, 2015

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	---	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
MW-1	8/5/2015	ND(118)	ND(62,500)	ND(18,800)	ND(117)	ND(507)	ND(120)	ND(145)	ND(243)
MW-2	8/5/2015	ND(236)	ND(125,000)	ND(37,600)	ND(234)	48,800	3,740J	21,700	ND(487)
MW-3	8/5/2015	Not Sampled							
MW-4	8/5/2015	ND(23.6)	ND(12,500)	ND(3,760)	ND(23.4)	2,410	441J	2,180	ND(48.7)
MW-5	8/5/2015	ND(118)	ND(62,500)	ND(18,800)	ND(117)	17,500	2,220J	3,740J	ND(243)
MW-6A	8/5/2015	Not Sampled							
MW-6B	8/5/2015	Not Sampled							
MW-7A	8/5/2015	Not Sampled							
MW-8A	8/5/2015	Not Sampled							
MW-8B	8/5/2015	Not Sampled							
MW-9A	8/5/2015	Not Sampled							
MW-9B	8/5/2015	Not Sampled							
MW-10A	8/5/2015	Not Sampled							
MW-10B	8/5/2015	Not Sampled							
MW-11A	8/5/2015	Not Sampled							
MW-11B	8/5/2015	Not Sampled							
MW-12A	8/5/2015	Not Sampled							
MW-12B	8/5/2015	Not Sampled							
MW-13A	8/5/2015	Not Sampled							
MW-13B	8/5/2015	Not Sampled							
MW-14A	8/5/2015	Not Sampled							
MW-14B	8/5/2015	Not Sampled							
MW-15A	8/5/2015	Not Sampled							
MW-15B	8/5/2015	Not Sampled							

Note: All units expressed in µg/L (PPB) N/A - Not Analyzed
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current Groundwater Analytical Data
--8 Oxygenates--
Broad River Amoco; UST Permit #11946
August 5, 2015

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	---	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW-16A	8/5/2015	Abandoned							
MW-16B	8/5/2015	Abandoned							
MW-17B	8/5/2015	Not Sampled							
MW-18A	8/5/2015	Not Sampled							
MW-18B	8/5/2015	Not Sampled							
MW-19A	8/5/2015	Not Sampled							
MW-19B	8/5/2015	Not Sampled							
MW-20A	8/5/2015	Not Sampled							
MW-20B	8/5/2015	Not Sampled							
MW-21A	8/5/2015	Not Sampled							
MW-21B	8/5/2015	Not Sampled							
MW-22B	8/5/2015	Not Sampled							
RW-1	8/5/2015	ND(47.2)	ND(25,000)	ND(7,520)	ND(46.8)	13,100	ND(48.0)	1,420J	ND(97.4)
RW-2	8/5/2015	ND(2.36)	ND(1,250)	ND(376)	ND(2.34)	220	ND(2.40)	71.8J	ND(4.87)
RW-3	8/5/2015	ND(23.6)	ND(12,500)	ND(3,760)	ND(23.4)	21,000	464J	3,330	ND(48.7)
RW-4	8/5/2015	ND(47.2)	ND(25,000)	ND(7,520)	ND(46.8)	11,900	743J	9,020	ND(97.4)
RW-5	8/5/2015	ND(118)	ND(62,500)	ND(18,800)	ND(117)	19,500	2,150J	ND(145)	ND(243)
DMW-1	8/5/2015	Not Sampled							
DMW-2	8/5/2015	Not Sampled							
DMW-3	8/5/2015	Not Sampled							
Duplicate 1 (MW-2)	8/5/2015	ND(118)	ND(62,500)	ND(18,800)	ND(117)	42,900	2,130J	22,100	ND(243)
Field Blank 1	8/5/2015	ND(236)	ND(125)	ND(37.6)	ND(234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
Trip Blank 1	8/5/2015	ND(236)	ND(125)	ND(37.6)	ND(234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)

Note: All units expressed in µg/L (PPB) N/A - Not Analyzed
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and August 5, 2015

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15** (Action Level)
MW-1	3/5/2011	**1,760**	**18,400**	**1,270**	5,140	**4,070J**	<83.9	<121	<0.0032	**18**
	3/8/2013	**2,480**	**12,800**	**1,550**	5,650	**623**	**70.8 J**	ND(**11.6**)	ND (0.0039)	14 J
	3/6/2014	**3,080**	**35,100**	**3,130**	**13,300**	**754J**	ND(38.5)	ND(**58.1**)	ND(0.0063)	NA
	8/5/2015	**2,360J**	**34,300**	**3,310**	**14,400**	**2,660**	ND(38.5)	ND(**58.1**)	ND(0.00750)	NA
MW-2	3/5/2011	**1,650**	**3,230**	422	2,190	**462J**	**3,420**	<12.1	**1.42**	<15
	3/6/2013	**1.34' Free Product**								
	3/5/2014	**1.42' Free Product**								
	8/5/2015	**14,100**	**23,300**	**2,930J**	**15,500**	**5,050**	**47,000**	ND(**116**)	ND(0.00750)	NA
MW-3	3/5/2011	<15	10.4	9.52	30.6	4.74J	7.91	<0.121	<0.0032	<15
	3/8/2013	0.417 J	1.05	0.408 J	1.72 J	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/7/2014	2.04J	20.9J	2.81J	17.3J	7.44J	ND(0.770)	ND(1.16)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-4	3/5/2011	**1,830**	198	**1,270**	3,160	**598**	**3,100**	<12.1	<0.0032	<15
	3/6/2013	**2.31' Free Product**								
	3/5/2014	**2.24' Free Product**								
	8/5/2015	**5,720**	309J	**2,390**	7,180	**934**	**4,060**	ND(**11.6**)	ND(0.00750)	NA
MW-5	6/20/2011	**0.30' Free Product**								
	3/6/2013	**2.83' Free Product**								
	3/5/2014	**7.63' Free Product**								
	8/5/2015	**18,700**	**36,000**	**3,540**	**20,100**	**2,950**	**25,700**	ND(**58.1**)	ND(0.00750)	NA
MW-6A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	13 J
	3/5/2014	ND(0.111)	0.469J	ND(0.109)	1.63J	2.43J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-6B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	**19**
	3/5/2014	0.372J	2.96J	2.15J	13.9J	13.1	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and August 5, 2015

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-7A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	1.06J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-8A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	6.8 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-8B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-9A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.62	0.642 J	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.21J	0.667J	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-9B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.79	0.675 J	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.51J	0.668J	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-10A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-10B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-11A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.00	ND (0.116)	ND (0.0039)	11 J
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.67J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-11B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.12	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	0.940J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and August 5, 2015

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-12A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.486J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-12B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.359J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-13A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	7.8 J
	3/5/2014	Insufficient Water								
	8/5/2015	Not Sampled								
MW-13B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.322J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-14A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.329J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-14B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.277J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-15A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	5.3 J
	3/6/2014	ND(0.111)	ND(0.122)	0.166J	0.893J	0.454J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-15B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-16A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	**35**
	3/5/2014	Abandoned								
	8/5/2015	Abandoned								

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and August 5, 2015

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15** (Action Level)
MW-16B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	Abandoned								
	8/5/2015	Abandoned								
MW-17B	3/6/2013	**6.58**	2.47	1.1 J	3.87 J	ND (0.352	**244**	ND (0.232)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(1.11)	3.27J	ND(1.09)	9.61J	12.8J	**420**	ND(1.16)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-18A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.42	ND (0.116)	ND (0.0039)	**590**
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.363J	2.82J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-18B	3/6/2013	ND (0.111)	0.459 J	ND (0.109)	2.03 J	ND (0.176)	0.841 J	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.225J	0.416J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-19A	3/6/2013	0.566 J	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	1.97J	1.87J	0.941J	6.10J	3.67J	0.644J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-19B	3/6/2013	0.253 J	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	0.329J	0.349J	0.123J	1.07J	1.33J	1.11J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-20A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.15	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	0.991J	0.505J	2.92J	3.50J	0.526J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-20B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.25	ND (0.116)	ND (0.0039)	8.77 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.492J	18.1	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								

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ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and August 5, 2015

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15** (Action Level)
MW-21A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	12 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-21B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.34	ND (0.116)	ND (0.0039)	6.8 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	5.75	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
MW-22B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.83	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	2.64J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
RW-1	3/6/2013	**0.15' Free Product**								
	3/5/2014	**6.68' Free Product**								
	8/5/2015	**4,060**	**21,500**	**2,770**	**24,100**	**1,670**	**2,080**	ND(**23.2**)	ND(0.00750)	NA
RW-2	3/8/2013	**9,420**	**12,800**	**2,030**	**11,000**	**565 J**	**9100**	**224 J**	**1.65**	ND (3.8)
	3/5/2014	**11,000**	**18,500**	**1,580**	9,850	**299J**	**26,900**	**58.1J**	ND(0.0063)	NA
	8/5/2015	**199**	409	20.6J	1,920	**116**	**90.1**	ND(1.16)	ND(0.00750)	NA
RW-3	3/6/2013	**0.05' Free Product**								
	3/5/2014	**0.06' Free Product**								
	8/5/2015	**4,710**	**7,870**	**908**	7,760	**642**	**6,460**	ND(**11.6**)	ND(0.00750)	NA
RW-4	3/8/2013	**3,390**	**1,730**	**977**	4,900	**210 J**	**4,460**	**ND (5.81)**	ND (0.0039)	12 J
	3/7/2014	**2,960**	**4,070**	378J	3,500	**186J**	**9,160**	**ND(11.6)**	ND(0.0063)	NA
	8/5/2015	**4,680**	**5,720**	**1,050**	6,190	**1,100**	**20,200**	ND(**23.2**)	ND(0.00750)	NA
RW-5	3/6/2013	**0.06' Free Product**								
	3/5/2014	**0.30' Free Product**								
	8/5/2015	**20,000**	**33,200**	**3,060**	**18,100**	**2,780**	**10,600**	ND(**58.1**)	ND(0.00750)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and August 5, 2015

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15** (Action Level)
DMW-1	3/8/2013	**507**	ND (1.22)	ND (1.09	ND (0.179)	ND (1.76)	**131**	**14.2 J**	ND (0.0039)	ND (3.8)
	3/7/2014	ND(0.111)	0.827J	ND(0.109)	1.17J	ND(0.176)	**159**	2.60J	ND(0.0063)	NA
	8/5/2015	Not Sampled								
DMW-2	3/6/2013	4.12	0.548 J	ND (0.109)	0.805 J	ND (0.176)	**153**	ND (0.116)	ND (0.0039)	ND (3.8)
	3/7/2014	0.669J	3.63J	1.90J	10.7J	13.2	**89.2**	ND(0.232)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
DMW-3	3/6/2013	0.281 J	0.497 J	ND (0.109)	ND (0.179	ND (0.176)	1.76	ND (0.116)	ND (0.0039)	**120**
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.33J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Broad River Amoco; UST Permit #11946

Table 5 - Free-Phase Product Reduction Calculation

August 5, 2015

Well		Product Thickness (feet)	Product Thickness >SSTL Thickness (feet)
MW-1	Initial Thickness	0.00	
	SSTL Thickness	0.01	
	Initial > SSTL	0.00	0.00
	Subsequent (8/5/15)	0.00	
	Subsequent >SSTL	0.00	0.00
MW-2	Initial Thickness	1.43	
	SSTL Thickness	0.01	
	Initial > SSTL	1.42	1.42
	Subsequent (8/5/15)	0.00	
	Subsequent >SSTL	-0.01	0.00
MW-4	Initial Thickness	2.25	
	SSTL Thickness	0.01	
	Initial > SSTL	2.24	2.24
	Subsequent (8/5/15)	0.00	
	Subsequent >SSTL	0.00	0.00
MW-5	Initial Thickness	6.26	
	SSTL Thickness	0.01	
	Initial > SSTL	6.25	6.25
	Subsequent (8/5/15)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-1	Initial Thickness	5.30	
	SSTL Thickness	0.01	
	Initial > SSTL	5.29	5.29
	Subsequent (8/5/15)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-2	Initial Thickness	0.00	
	SSTL Thickness	0.01	
	Initial > SSTL	0.00	0.00
	Subsequent (8/5/15)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-3	Initial Thickness	0.01	
	SSTL Thickness	0.01	
	Initial > SSTL	0.00	0.00
	Subsequent (8/5/15)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-4	Initial Thickness	0.00	
	SSTL Thickness	0.01	
	Initial > SSTL	0.00	0.00
	Subsequent (8/5/15)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-5	Initial Thickness	0.03	
	SSTL Thickness	0.01	
	Initial > SSTL	0.02	0.02
	Subsequent (8/5/15)	0.00	
	Subsequent >SSTL	0.00	0.00
Total	Initial > SSTL		15.28
	Subsequent >SSTL		0.00

Free-Phase Product Thickness Reduction = 100%

APPENDIX A
NOT INCLUDED

APPENDIX B
PURGING DATA SHEETS &
LABORATORY ANALYTICAL DATA

ENVIRO-TEST SERVICES

Purge Meter Calibration Data Sheet

Site Data

Facility Name: Broad River BP Facility Location: Broad River Rd. Columbia, SC

UST Permit # 11946 Field Personnel: Terry TeaTe (full names) Weather: HoT, Humid 94°

pH / Specific Conductivity Meter

Model & Serial #: (check one)
- ✓ Hanna HI9824 – S/N 886328
- ____ Hanna HI9824 – S/N 871936

Dissolved Oxygen Meter

Model & Serial #: (check one)
- ____ YSI 58 Dissolved Oxygen – S/N 510
- ✓ YSI 550A Dissolved Oxy. – S/N 06A280

Turbidity Meter

Model & Serial #: (check one)
- ✓ Micro-TPW 2000 – S/N 201401347

Initial Calibration

pH Calibration:	4.02 / 7.0 / 10.0	Spec. Cond. Calibration:	1004	Turbidity Calibration:	.02 / 10.03 / 1008
pH Standard:	4.01 / 7.00 / 10.01	Spec. Cond. Standard:	1000	Turbidity Standard:	0.02 / 10.0 / 1000

Date: 8-5-15 Time: 1105

Midday Calibration Check

pH Calibration:	4.0 / 6.9 / 10.3	Spec. Cond. Calibration:	1009	Turbidity Calibration:	.02 / 10.05 / 1012
pH Standard:	4.01 / 7.00 / 10.01	Spec. Cond. Standard:	1000	Turbidity Standard:	0.02 / 10.0 / 1000

Date: 8-5-15 Time: 1338

End-of-Day Calibration Check

pH Calibration:	4.0 / 6.9 / 10.4	Spec. Cond. Calibration:	997	Turbidity Calibration:	0.2 / 10.01 / 1004
pH Standard:	4.01 / 7.00 / 10.01	Spec. Cond. Standard:	1000	Turbidity Standard:	0.02 / 10.0 / 1000

Date: 8-5-15 Time: 1715

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 8-5-15

Site Data

Facility Name: Broad River BP Facility Location: Broad River Rd. Columbia, SC

UST Permit # 11946 Field Personnel: Terry TeaTe (full names) Weather: Hot; Humid 94°

Well Data

Well Number: MW-1 Diameter (in): 2" Well Volume (gal): 3.4

Total Depth: 40' Static Water Level: 18.84 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2	2	2					1
Time (military)									
pH (standard units)	4.5	4.2	4.3	4.3					4.3
Specific Cond. (µS/cm)	32	18	14	12					30
Water Temp (°C)	27.3	24.5	24.7	24.1					24.3
Turbidity (mild, moderate, strong)	22.95	22.83	90.61	88.42					80.42
Dissolved Oxygen	6.19	5.60	4.88	4.71					4.52

Sample Collection Time: 1125

Remarks:

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 8-5-15

Site Data

Facility Name: Broad River BP Facility Location: Broad River Rd. Columbia SC

UST Permit # 11946 Field Personnel: Terry TeaTe (full names) Weather: Hot, 94° Humid

Well Data

Well Number: MW-2 Diameter (in): 2" Well Volume (gal): 1.8

Total Depth: 20' Static Water Level: 16.44 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2	1	1					1
Time (military)									
pH (standard units)	4.9	4.9	4.9	4.9					4.9
Specific Cond. (µS/cm)	124	100	201	193					190
Water Temp (°C)	26.5	25.8	25.6	25.3					25.3
Turbidity (mild, moderate, strong)	63.22	82.75	181.5	202.5					208.8
Dissolved Oxygen	3.01	2.84	2.71	2.88					2.57

Sample Collection Time: 1212

Remarks: _____

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 8-5-15

Site Data

Facility Name: Broad River BP Facility Location: Broad River Rd. Columbia SC

UST Permit # 11946 Field Personnel: Terry TeaTe (full names) Weather: HoT; Humid 94°

Well Data

Well Number: MW-4 Diameter (in): 2" Well Volume (gal): 2.3

Total Depth: 25 Static Water Level: 10.76 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2.5	1.5	1					.5
Time (military)									
pH (standard units)	6.1	6.4	6.3	6.3					6.3
Specific Cond. (µS/cm)	141	30	336	104					127
Water Temp (°C)	25.8	24.9	24.6	24.8					24.4
Turbidity (mild, moderate, strong)	15.08	207.0	192.8	182.4					188.1
Dissolved Oxygen	2.32	2.77	2.32	2.15					2.22

Sample Collection Time: 1655

Remarks:

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 8-5-15

Site Data

Facility Name: Broad River BP Facility Location: Broad River Rd. Columbia, SC

UST Permit # 11946 Field Personnel: Terry TeaTe (full names) Weather: Hot Humid 94°

Well Data

Well Number: MW-5 Diameter (in): 2" Well Volume (gal): .9

Total Depth: 20' Static Water Level: 14.04 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	1	.5					.5
Time (military)									
pH (standard units)	5.3	5.3	5.2	5.2					5.2
Specific Cond. (µS/cm)	94	85	170	117					110
Water Temp (°C)	26.4	25.3	26.1	25.8					25.5
Turbidity (mild, moderate, strong)	20.55	108.7	240.3	198.3					188.4
Dissolved Oxygen	2.07	2.01	1.90	1.86					1.91

Sample Collection Time: 1618

Remarks:

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 8-5-15

Site Data

Facility Name: Broad River BP Facility Location: Broad River Rd. Columbia, SC

UST Permit # 11946 Field Personnel: Terry TeaTe (full names) Weather: HoT; Humid 94°

Well Data

Well Number: RW-1 Diameter (in): 4" Well Volume (gal): 15.4

Total Depth: 40' Static Water Level: 16.30 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		5	2	2					1
Time (military)									
pH (standard units)	5.9	5.7	5.9	5.9					5.9
Specific Cond. (µS/cm)	186	135	110	61					31
Water Temp (°C)	25.8	25.5	25.7	25.2					25.0
Turbidity (mild, moderate, strong)	27.13	21.78	24.24	26.08					26.48
Dissolved Oxygen	2.50	2.34	2.40	2.42					2.25

Sample Collection Time: 12 55

Remarks:

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 8-5-15

Site Data

Facility Name: Broad River BP Facility Location: Broad River Rd. Colo, SC

UST Permit # 11946 Field Personnel: Terry TeaTe (full names) Weather: Hot; Humid, 94°

Well Data

Well Number: RW-2 Diameter (in): 4" Well Volume (gal): 15.2

Total Depth: 40' Static Water Level: 16.58 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		5	2	2.5					1
Time (military)									
pH (standard units)	5.8	5.7	5.8	5.8					5.8
Specific Cond. (µS/cm)	91	008	53	62					84
Water Temp (°C)	26.5	26.6	25.6	25.4					25.5
Turbidity (mild, moderate, strong)	5.33	5.88	6.51	5.50					5.72
Dissolved Oxygen	2.33	2.21	2.19	2.42					2.33

Sample Collection Time: 1343

Remarks:

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 8-5-15

Site Data

Facility Name: Broad River BP Facility Location: Broad River Rd. Cdo, SC

UST Permit # 11946 Field Personnel: Terry TeaTe (full names) Weather: HoT Humid 94°

Well Data

Well Number: RW-3 Diameter (in): 4" Well Volume (gal): 15.6

Total Depth: 41' Static Water Level: 17.00 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		5	2	2					1.
Time (military)									
pH (standard units)	5.4	5.3	5.4	5.4					5.4
Specific Cond. (µS/cm)	009	68	86	59					51
Water Temp (°C)	25.1	24.9	24.8	24.4					24.5
Turbidity (mild, moderate, strong)	7.14	10.22	11.17	9.34					8.72
Dissolved Oxygen	2.31	2.29	2.21	2.22					2.24

Sample Collection Time: 1415

Remarks: _____

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 8-5-15

Site Data

Facility Name: Broad River BP Facility Location: Broad River Rd Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot Muggy 94°

Well Data

Well Number: RW-4 Diameter (in): 4" Well Volume (gal): 15.5

Total Depth: 40.5 Static Water Level: 16.70 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		5	2	1					1
Time (military)									
pH (standard units)	5.0	5.1	5.1	5.1					5.1
Specific Cond. (µS/cm)	101	82	37	141					17
Water Temp (°C)	25.9	25.6	25.5	25.2					25.3
Turbidity (mild, moderate, strong)	29.51	39.22	63.46	68.53					69.22
Dissolved Oxygen	2.08	2.05	2.17	2.22					2.24

Sample Collection Time: 1500

Remarks:

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 8-5-15

Site Data

Facility Name: Broad River BP Facility Location: Broad River Rd. Colo, SC

UST Permit # 11946 Field Personnel: Terry TeaTe (full names) Weather: Hot, Humid 94°

Well Data

Well Number: RW-5 Diameter (in): 4" Well Volume (gal): 15.3

Total Depth: 38.5 Static Water Level: 15.04 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		5	3	2					1
Time (military)									
pH (standard units)	5.8	6.0	5.9	5.9					5.9
Specific Cond. (µS/cm)	273	517	425	493					437
Water Temp (°C)	25.6	24.9	24.7	24.3					24.4
Turbidity (mild, moderate, strong)	82.10	51.33	14.04	11.56					10.71
Dissolved Oxygen	2.90	2.64	2.57	2.54					2.60

Sample Collection Time: 1544

Remarks:

ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT
Enviro-Test Services
P.O. Box 2237
Irmo, SC 29063

ATTENTION
Terry Teate

PROJECT ID
Broad River BP

LABORATORY REPORT NUMBER
215080718

DATE
08/14/2015

Primary Data Review By

Authorized Signature

Secondary Data Review By

Ashley B. Amick
Project Manager, Access Analytical, Inc.
aamick@accessanalyticalinc.com

PLEASE NOTE:

- **Unless otherwise noted, all analysis on this report performed at Gulf Coast Analytical Labs (GCAL), 7979 Innovation Park Dr., Baton Rouge, LA 70820.**
- **GCAL is SCDHEC certified laboratory # 73006, NCDENR certified lab # 618, GA certified lab # LA-01955, NELAP certified laboratory # 01955**
- Local support services for this project are provided by Access Analytical, Inc.. Access Analytical is a representative of GCAL serving clients in the SC/NC/GA areas. All questions regarding this report should be directed to your local Access Analytical representative at 803.781.4243 or toll free at 888.315.4243.

GCAL
ANALYTICAL LABORATORIES, LLC

NELAP CERTIFICATE NUMBER: 01955
DOD ELAP CERTIFICATE NUMBER: L14-243

ANALYTICAL RESULTS

PERFORMED BY

GCAL, LLC
7979 Innovation Park Dr.
Baton Rouge, LA 70820

Report Date 08/14/2015

GCAL Report 215080718

Project Broad River BP

Deliver To
Terry Teate
Enviro-Test Services
P.O. Box 2237
Irmo, SC 29063
803-732-5770

PJLA Testing DoD ELAP

ISO 17025

NELAP ACCREDITED LABORATORY

Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

Common Abbreviations that may be Utilized in this Report

ND	Indicates the result was Not Detected at the specified reporting limit
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DL	Diluted analysis – when appended to Client Sample ID
LOD	Limit of Detection
LOQ	Limit of Quantitation
RE	Re-analysis
N	Metals Matrix Spike or Matrix Spike Duplicate Recovery is outside control limits
00:00	Reported as a time equivalent to 12:00 AM

Reporting Flags that may be Utilized in this Report

J or I	Indicates the result is between the MDL and LOQ
U	Indicates the compound was analyzed for but not detected
B	Indicates the analyte was detected in the associated Method Blank
Q	Indicates a non-compliant QC Result (See Q Flag Application Report)
*	Indicates a non-compliant or not applicable QC recovery or RPD

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with the NELAC standard and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.

Karen Melerine/Mng Data Del

Authorized Signature
GCAL Report 215080718

Case Narrative

Client: Access Analytical **Report:** 215080718

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

VOLATILES MASS SPECTROMETRY

In the EPA 8260B analysis, samples 21508071801 (MW-1), 21508071802 (MW-2), 21508071803 (MW-4), 21508071804 (MW-5), 21508071805 (RW-1), 21508071806 (RW-2), 21508071807 (RW-3), 21508071808 (RW-4), 21508071809 (RW-5) and 21508071810 (DUPLICATE-1) had to be diluted to bracket the concentration of target compounds within the calibration range of the instrument. The dilution is reflected in elevated reporting limits.

Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21508071801	MW-1	Water	08/05/2015 11:25	08/07/2015 10:30
21508071802	MW-2	Water	08/05/2015 12:12	08/07/2015 10:30
21508071803	MW-4	Water	08/05/2015 16:55	08/07/2015 10:30
21508071804	MW-5	Water	08/05/2015 16:18	08/07/2015 10:30
21508071805	RW-1	Water	08/05/2015 12:55	08/07/2015 10:30
21508071806	RW-2	Water	08/05/2015 13:43	08/07/2015 10:30
21508071807	RW-3	Water	08/05/2015 14:15	08/07/2015 10:30
21508071808	RW-4	Water	08/05/2015 15:00	08/07/2015 10:30
21508071809	RW-5	Water	08/05/2015 15:44	08/07/2015 10:30
21508071810	DUPLICATE-1	Water	08/05/2015 12:14	08/07/2015 10:30
21508071811	FIELD BLANK-1	Water	08/05/2015 11:10	08/07/2015 10:30
21508071812	TRIP BLANK-1	Water	08/05/2015 00:00	08/07/2015 10:30

Summary of Compounds Detected

MW-1

Collect Date 08/05/2015 11:25 **GCAL ID** 21508071801
Receive Date 08/07/2015 10:30 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
71-43-2	Benzene	2360J	55.5	2500	ug/L
108-88-3	Toluene	34300	60.9	2500	ug/L
100-41-4	Ethylbenzene	3310	54.5	2500	ug/L
1330-20-7	Xylene (total)	14400	89.4	7500	ug/L
91-20-3	Naphthalene	2660	88.0	2500	ug/L

MW-2

Collect Date 08/05/2015 12:12 **GCAL ID** 21508071802
Receive Date 08/07/2015 10:30 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	3740J	240	5000	ug/L
75-65-0	t-Butanol (TBA)	21700	290	10000	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	47000	77.0	5000	ug/L
75-85-4	tert-amyl alcohol (TAA)	48800	1010	20000	ug/L
71-43-2	Benzene	14100	111	5000	ug/L
108-88-3	Toluene	23300	122	5000	ug/L
100-41-4	Ethylbenzene	2930J	109	5000	ug/L
1330-20-7	Xylene (total)	15500	179	15000	ug/L
91-20-3	Naphthalene	5050	176	5000	ug/L

MW-4

Collect Date 08/05/2015 16:55 **GCAL ID** 21508071803
Receive Date 08/07/2015 10:30 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	441J	24.0	500	ug/L
75-65-0	t-Butanol (TBA)	2180	29.0	1000	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	4060	7.70	500	ug/L
75-85-4	tert-amyl alcohol (TAA)	2410	101	2000	ug/L
71-43-2	Benzene	5720	11.1	500	ug/L
108-88-3	Toluene	309J	12.2	500	ug/L
100-41-4	Ethylbenzene	2390	10.9	500	ug/L
1330-20-7	Xylene (total)	7180	17.9	1500	ug/L
91-20-3	Naphthalene	934	17.6	500	ug/L

Summary of Compounds Detected

MW-5

Collect Date 08/05/2015 16:18 **GCAL ID** 21508071804
Receive Date 08/07/2015 10:30 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	2220J	120	2500	ug/L
75-65-0	t-Butanol (TBA)	3740J	145	5000	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	25700	38.5	2500	ug/L
75-85-4	tert-amyl alcohol (TAA)	17500	507	10000	ug/L
71-43-2	Benzene	18700	55.5	2500	ug/L
108-88-3	Toluene	36000	60.9	2500	ug/L
100-41-4	Ethylbenzene	3540	54.5	2500	ug/L
1330-20-7	Xylene (total)	20100	89.4	7500	ug/L
91-20-3	Naphthalene	2950	88.0	2500	ug/L

RW-1

Collect Date 08/05/2015 12:55 **GCAL ID** 21508071805
Receive Date 08/07/2015 10:30 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
75-65-0	t-Butanol (TBA)	1420J	58.0	2000	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	2080	15.4	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	13100	203	4000	ug/L
71-43-2	Benzene	4060	22.2	1000	ug/L
108-88-3	Toluene	21500	24.4	1000	ug/L
100-41-4	Ethylbenzene	2770	21.8	1000	ug/L
1330-20-7	Xylene (total)	24100	35.8	3000	ug/L
91-20-3	Naphthalene	1670	35.2	1000	ug/L

RW-2

Collect Date 08/05/2015 13:43 **GCAL ID** 21508071806
Receive Date 08/07/2015 10:30 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
75-65-0	t-Butanol (TBA)	71.8J	2.90	100	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	90.1	0.770	50.0	ug/L
75-85-4	tert-amyl alcohol (TAA)	220	10.1	200	ug/L
71-43-2	Benzene	199	1.11	50.0	ug/L
108-88-3	Toluene	409	1.22	50.0	ug/L
100-41-4	Ethylbenzene	20.6J	1.09	50.0	ug/L
1330-20-7	Xylene (total)	1920	1.79	150	ug/L
91-20-3	Naphthalene	116	1.76	50.0	ug/L

Summary of Compounds Detected

RW-3

Collect Date 08/05/2015 14:15 **GCAL ID** 21508071807
Receive Date 08/07/2015 10:30 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	464J	24.0	500	ug/L
75-65-0	t-Butanol (TBA)	3330	29.0	1000	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	6460	7.70	500	ug/L
75-85-4	tert-amyl alcohol (TAA)	21000	101	2000	ug/L
71-43-2	Benzene	4710	11.1	500	ug/L
108-88-3	Toluene	7870	12.2	500	ug/L
100-41-4	Ethylbenzene	908	10.9	500	ug/L
1330-20-7	Xylene (total)	7760	17.9	1500	ug/L
91-20-3	Naphthalene	642	17.6	500	ug/L

RW-4

Collect Date 08/05/2015 15:00 **GCAL ID** 21508071808
Receive Date 08/07/2015 10:30 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	743J	48.0	1000	ug/L
75-65-0	t-Butanol (TBA)	9020	58.0	2000	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	20200	15.4	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	11900	203	4000	ug/L
71-43-2	Benzene	4680	22.2	1000	ug/L
108-88-3	Toluene	5720	24.4	1000	ug/L
100-41-4	Ethylbenzene	1050	21.8	1000	ug/L
1330-20-7	Xylene (total)	6190	35.8	3000	ug/L
91-20-3	Naphthalene	1100	35.2	1000	ug/L

RW-5

Collect Date 08/05/2015 15:44 **GCAL ID** 21508071809
Receive Date 08/07/2015 10:30 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	2150J	120	2500	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	10600	38.5	2500	ug/L
75-85-4	tert-amyl alcohol (TAA)	19500	507	10000	ug/L
71-43-2	Benzene	20000	55.5	2500	ug/L
108-88-3	Toluene	33200	60.9	2500	ug/L
100-41-4	Ethylbenzene	3060	54.5	2500	ug/L
1330-20-7	Xylene (total)	18100	89.4	7500	ug/L
91-20-3	Naphthalene	2780	88.0	2500	ug/L

Summary of Compounds Detected

DUPLICATE-1	**Collect Date**	08/05/2015 12:14	**GCAL ID**	21508071810
	Receive Date	08/07/2015 10:30	**Matrix**	Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	2130J	120	2500	ug/L
75-65-0	t-Butanol (TBA)	22100	145	5000	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	47900	38.5	2500	ug/L
75-85-4	tert-amyl alcohol (TAA)	42900	507	10000	ug/L
71-43-2	Benzene	14100	55.5	2500	ug/L
108-88-3	Toluene	22500	60.9	2500	ug/L
100-41-4	Ethylbenzene	2820	54.5	2500	ug/L
1330-20-7	Xylene (total)	15500	89.4	7500	ug/L
91-20-3	Naphthalene	2750	88.0	2500	ug/L

Sample Results

MW-1	**Collect Date**	08/05/2015 11:25	**GCAL ID**	21508071801
	Receive Date	08/07/2015 10:30	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	500	08/08/2015 06:15	CJR	564997

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	120U	120	2500	ug/L
75-65-0	t-Butanol (TBA)	145U	145	5000	ug/L
108-20-3	diisopropyl Ether (DIPE)	118U	118	2500	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	38.5U	38.5	2500	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	117U	117	2500	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	18800U	18800	50000	ug/L
64-17-5	Ethanol	62500U	62500	500000	ug/L
75-85-4	tert-amyl alcohol (TAA)	507U	507	10000	ug/L
762-75-4	tert-butyl formate (TBF)	243U	243	25000	ug/L
71-43-2	**Benzene**	**2360J**	**55.5**	**2500**	**ug/L**
108-88-3	**Toluene**	**34300**	**60.9**	**2500**	**ug/L**
100-41-4	**Ethylbenzene**	**3310**	**54.5**	**2500**	**ug/L**
1330-20-7	**Xylene (total)**	**14400**	**89.4**	**7500**	**ug/L**
91-20-3	**Naphthalene**	**2660**	**88.0**	**2500**	**ug/L**
107-06-2	1,2-Dichloroethane	58.1U	58.1	2500	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	25000	25900	ug/L	104	78 - 130
1868-53-7	Dibromofluoromethane	25000	25600	ug/L	102	77 - 127
2037-26-5	Toluene d8	25000	26400	ug/L	106	76 - 134
17060-07-0	1,2-Dichloroethane-d4	25000	23900	ug/L	96	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
08/07/2015 16:00	564968	EPA 8011	1	08/12/2015 14:40	ARW	565387

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-2	**Collect Date**	08/05/2015 12:12	**GCAL ID**	21508071802
	Receive Date	08/07/2015 10:30	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1000	08/08/2015 06:57	CJR	564997

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	**t-amyl methyl ether (TAME)**	**3740J**	**240**	**5000**	**ug/L**
75-65-0	**t-Butanol (TBA)**	**21700**	**290**	**10000**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	236U	236	5000	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**47000**	**77.0**	**5000**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	234U	234	5000	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37600U	37600	100000	ug/L
64-17-5	Ethanol	125000U	125000	1000000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**48800**	**1010**	**20000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	487U	487	50000	ug/L
71-43-2	**Benzene**	**14100**	**111**	**5000**	**ug/L**
108-88-3	**Toluene**	**23300**	**122**	**5000**	**ug/L**
100-41-4	**Ethylbenzene**	**2930J**	**109**	**5000**	**ug/L**
1330-20-7	**Xylene (total)**	**15500**	**179**	**15000**	**ug/L**
91-20-3	**Naphthalene**	**5050**	**176**	**5000**	**ug/L**
107-06-2	1,2-Dichloroethane	116U	116	5000	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50000	51700	ug/L	103	78 - 130
1868-53-7	Dibromofluoromethane	50000	51300	ug/L	103	77 - 127
2037-26-5	Toluene d8	50000	53600	ug/L	107	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50000	48400	ug/L	97	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
08/07/2015 16:00	564968	EPA 8011	1	08/12/2015 14:59	ARW	565387

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-4	**Collect Date**	08/05/2015 16:55	**GCAL ID**	21508071803
	Receive Date	08/07/2015 10:30	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	100	08/08/2015 07:18	CJR	564997

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	**t-amyl methyl ether (TAME)**	**441J**	**24.0**	**500**	**ug/L**
75-65-0	**t-Butanol (TBA)**	**2180**	**29.0**	**1000**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	23.6U	23.6	500	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**4060**	**7.70**	**500**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	23.4U	23.4	500	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	3760U	3760	10000	ug/L
64-17-5	Ethanol	12500U	12500	100000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**2410**	**101**	**2000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	48.7U	48.7	5000	ug/L
71-43-2	**Benzene**	**5720**	**11.1**	**500**	**ug/L**
108-88-3	**Toluene**	**309J**	**12.2**	**500**	**ug/L**
100-41-4	**Ethylbenzene**	**2390**	**10.9**	**500**	**ug/L**
1330-20-7	**Xylene (total)**	**7180**	**17.9**	**1500**	**ug/L**
91-20-3	**Naphthalene**	**934**	**17.6**	**500**	**ug/L**
107-06-2	1,2-Dichloroethane	11.6U	11.6	500	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	5000	5060	ug/L	101	78 - 130
1868-53-7	Dibromofluoromethane	5000	5120	ug/L	102	77 - 127
2037-26-5	Toluene d8	5000	5330	ug/L	107	76 - 134
17060-07-0	1,2-Dichloroethane-d4	5000	4880	ug/L	98	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
08/07/2015 16:00	564968	EPA 8011	1	08/12/2015 15:36	ARW	565387

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-5	**Collect Date**	08/05/2015 16:18	**GCAL ID**	21508071804
	Receive Date	08/07/2015 10:30	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	500	08/11/2015 19:44	TJB	565291

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	**t-amyl methyl ether (TAME)**	**2220J**	**120**	**2500**	**ug/L**
75-65-0	**t-Butanol (TBA)**	**3740J**	**145**	**5000**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	118U	118	2500	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**25700**	**38.5**	**2500**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	117U	117	2500	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	18800U	18800	50000	ug/L
64-17-5	Ethanol	62500U	62500	500000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**17500**	**507**	**10000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	243U	243	25000	ug/L
71-43-2	**Benzene**	**18700**	**55.5**	**2500**	**ug/L**
108-88-3	**Toluene**	**36000**	**60.9**	**2500**	**ug/L**
100-41-4	**Ethylbenzene**	**3540**	**54.5**	**2500**	**ug/L**
1330-20-7	**Xylene (total)**	**20100**	**89.4**	**7500**	**ug/L**
91-20-3	**Naphthalene**	**2950**	**88.0**	**2500**	**ug/L**
107-06-2	1,2-Dichloroethane	58.1U	58.1	2500	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	25000	25900	ug/L	104	78 - 130
1868-53-7	Dibromofluoromethane	25000	25300	ug/L	101	77 - 127
2037-26-5	Toluene d8	25000	26700	ug/L	107	76 - 134
17060-07-0	1,2-Dichloroethane-d4	25000	24700	ug/L	99	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
08/07/2015 16:00	564968	EPA 8011	1	08/12/2015 15:54	ARW	565387

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

RW-1	**Collect Date**	08/05/2015 12:55	**GCAL ID**	21508071805
	Receive Date	08/07/2015 10:30	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	200	08/11/2015 20:05	TJB	565291

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	48.0U	48.0	1000	ug/L
75-65-0	**t-Butanol (TBA)**	**1420J**	**58.0**	**2000**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	47.2U	47.2	1000	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**2080**	**15.4**	**1000**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	46.8U	46.8	1000	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	7520U	7520	20000	ug/L
64-17-5	Ethanol	25000U	25000	200000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**13100**	**203**	**4000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	97.4U	97.4	10000	ug/L
71-43-2	**Benzene**	**4060**	**22.2**	**1000**	**ug/L**
108-88-3	**Toluene**	**21500**	**24.4**	**1000**	**ug/L**
100-41-4	**Ethylbenzene**	**2770**	**21.8**	**1000**	**ug/L**
1330-20-7	**Xylene (total)**	**24100**	**35.8**	**3000**	**ug/L**
91-20-3	**Naphthalene**	**1670**	**35.2**	**1000**	**ug/L**
107-06-2	1,2-Dichloroethane	23.2U	23.2	1000	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	10000	10500	ug/L	105	78 - 130
1868-53-7	Dibromofluoromethane	10000	10000	ug/L	100	77 - 127
2037-26-5	Toluene d8	10000	10600	ug/L	106	76 - 134
17060-07-0	1,2-Dichloroethane-d4	10000	9580	ug/L	96	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
08/07/2015 16:00	564968	EPA 8011	1	08/12/2015 16:12	ARW	565387

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

RW-2	**Collect Date**	08/05/2015 13:43	**GCAL ID**	21508071806
	Receive Date	08/07/2015 10:30	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	10	08/11/2015 22:51	JCK	565291

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	2.40U	2.40	50.0	ug/L
75-65-0	**t-Butanol (TBA)**	**71.8J**	**2.90**	**100**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	2.36U	2.36	50.0	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**90.1**	**0.770**	**50.0**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	2.34U	2.34	50.0	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	376U	376	1000	ug/L
64-17-5	Ethanol	1250U	1250	10000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**220**	**10.1**	**200**	**ug/L**
762-75-4	tert-butyl formate (TBF)	4.87U	4.87	500	ug/L
71-43-2	**Benzene**	**199**	**1.11**	**50.0**	**ug/L**
108-88-3	**Toluene**	**409**	**1.22**	**50.0**	**ug/L**
100-41-4	**Ethylbenzene**	**20.6J**	**1.09**	**50.0**	**ug/L**
1330-20-7	**Xylene (total)**	**1920**	**1.79**	**150**	**ug/L**
91-20-3	**Naphthalene**	**116**	**1.76**	**50.0**	**ug/L**
107-06-2	1,2-Dichloroethane	1.16U	1.16	50.0	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	500	519	ug/L	104	78 - 130
1868-53-7	Dibromofluoromethane	500	507	ug/L	101	77 - 127
2037-26-5	Toluene d8	500	533	ug/L	107	76 - 134
17060-07-0	1,2-Dichloroethane-d4	500	488	ug/L	98	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
08/07/2015 16:00	564968	EPA 8011	1	08/12/2015 16:48	ARW	565387

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

RW-3	**Collect Date**	08/05/2015 14:15	**GCAL ID**	21508071807
	Receive Date	08/07/2015 10:30	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	100	08/11/2015 23:12	JCK	565291

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	**t-amyl methyl ether (TAME)**	**464J**	**24.0**	**500**	**ug/L**
75-65-0	**t-Butanol (TBA)**	**3330**	**29.0**	**1000**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	23.6U	23.6	500	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**6460**	**7.70**	**500**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	23.4U	23.4	500	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	3760U	3760	10000	ug/L
64-17-5	Ethanol	12500U	12500	100000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**21000**	**101**	**2000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	48.7U	48.7	5000	ug/L
71-43-2	**Benzene**	**4710**	**11.1**	**500**	**ug/L**
108-88-3	**Toluene**	**7870**	**12.2**	**500**	**ug/L**
100-41-4	**Ethylbenzene**	**908**	**10.9**	**500**	**ug/L**
1330-20-7	**Xylene (total)**	**7760**	**17.9**	**1500**	**ug/L**
91-20-3	**Naphthalene**	**642**	**17.6**	**500**	**ug/L**
107-06-2	1,2-Dichloroethane	11.6U	11.6	500	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	5000	5170	ug/L	103	78 - 130
1868-53-7	Dibromofluoromethane	5000	4940	ug/L	99	77 - 127
2037-26-5	Toluene d8	5000	5370	ug/L	107	76 - 134
17060-07-0	1,2-Dichloroethane-d4	5000	4720	ug/L	94	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
08/07/2015 16:00	564968	EPA 8011	1	08/12/2015 17:07	ARW	565387

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

RW-4	**Collect Date**	08/05/2015 15:00	**GCAL ID**	21508071808
	Receive Date	08/07/2015 10:30	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	200	08/11/2015 20:26	TJB	565291

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	**t-amyl methyl ether (TAME)**	**743J**	**48.0**	**1000**	**ug/L**
75-65-0	**t-Butanol (TBA)**	**9020**	**58.0**	**2000**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	47.2U	47.2	1000	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**20200**	**15.4**	**1000**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	46.8U	46.8	1000	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	7520U	7520	20000	ug/L
64-17-5	Ethanol	25000U	25000	200000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**11900**	**203**	**4000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	97.4U	97.4	10000	ug/L
71-43-2	**Benzene**	**4680**	**22.2**	**1000**	**ug/L**
108-88-3	**Toluene**	**5720**	**24.4**	**1000**	**ug/L**
100-41-4	**Ethylbenzene**	**1050**	**21.8**	**1000**	**ug/L**
1330-20-7	**Xylene (total)**	**6190**	**35.8**	**3000**	**ug/L**
91-20-3	**Naphthalene**	**1100**	**35.2**	**1000**	**ug/L**
107-06-2	1,2-Dichloroethane	23.2U	23.2	1000	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	10000	10300	ug/L	103	78 - 130
1868-53-7	Dibromofluoromethane	10000	10100	ug/L	101	77 - 127
2037-26-5	Toluene d8	10000	10700	ug/L	107	76 - 134
17060-07-0	1,2-Dichloroethane-d4	10000	9670	ug/L	97	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
08/07/2015 16:00	564968	EPA 8011	1	08/12/2015 17:25	ARW	565387

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

RW-5	**Collect Date**	08/05/2015 15:44	**GCAL ID**	21508071809
	Receive Date	08/07/2015 10:30	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	500	08/11/2015 20:47	TJB	565291

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	**t-amyl methyl ether (TAME)**	**2150J**	**120**	**2500**	**ug/L**
75-65-0	t-Butanol (TBA)	145U	145	5000	ug/L
108-20-3	diisopropyl Ether (DIPE)	118U	118	2500	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**10600**	**38.5**	**2500**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	117U	117	2500	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	18800U	18800	50000	ug/L
64-17-5	Ethanol	62500U	62500	500000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**19500**	**507**	**10000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	243U	243	25000	ug/L
71-43-2	**Benzene**	**20000**	**55.5**	**2500**	**ug/L**
108-88-3	**Toluene**	**33200**	**60.9**	**2500**	**ug/L**
100-41-4	**Ethylbenzene**	**3060**	**54.5**	**2500**	**ug/L**
1330-20-7	**Xylene (total)**	**18100**	**89.4**	**7500**	**ug/L**
91-20-3	**Naphthalene**	**2780**	**88.0**	**2500**	**ug/L**
107-06-2	1,2-Dichloroethane	58.1U	58.1	2500	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	25000	25100	ug/L	100	78 - 130
1868-53-7	Dibromofluoromethane	25000	25000	ug/L	100	77 - 127
2037-26-5	Toluene d8	25000	26000	ug/L	104	76 - 134
17060-07-0	1,2-Dichloroethane-d4	25000	23900	ug/L	96	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
08/07/2015 16:00	564968	EPA 8011	1	08/12/2015 17:43	ARW	565387

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

DUPLICATE-1	**Collect Date**	08/05/2015 12:14	**GCAL ID**	21508071810
	Receive Date	08/07/2015 10:30	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	500	08/11/2015 21:08	TJB	565291

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	**t-amyl methyl ether (TAME)**	**2130J**	**120**	**2500**	**ug/L**
75-65-0	**t-Butanol (TBA)**	**22100**	**145**	**5000**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	118U	118	2500	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**47900**	**38.5**	**2500**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	117U	117	2500	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	18800U	18800	50000	ug/L
64-17-5	Ethanol	62500U	62500	500000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**42900**	**507**	**10000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	243U	243	25000	ug/L
71-43-2	**Benzene**	**14100**	**55.5**	**2500**	**ug/L**
108-88-3	**Toluene**	**22500**	**60.9**	**2500**	**ug/L**
100-41-4	**Ethylbenzene**	**2820**	**54.5**	**2500**	**ug/L**
1330-20-7	**Xylene (total)**	**15500**	**89.4**	**7500**	**ug/L**
91-20-3	**Naphthalene**	**2750**	**88.0**	**2500**	**ug/L**
107-06-2	1,2-Dichloroethane	58.1U	58.1	2500	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	25000	25500	ug/L	102	78 - 130
1868-53-7	Dibromofluoromethane	25000	24900	ug/L	100	77 - 127
2037-26-5	Toluene d8	25000	26300	ug/L	105	76 - 134
17060-07-0	1,2-Dichloroethane-d4	25000	24400	ug/L	98	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
08/07/2015 16:00	564968	EPA 8011	1	08/12/2015 18:01	ARW	565387

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

FIELD BLANK-1	**Collect Date**	08/05/2015 11:10	**GCAL ID**	21508071811
	Receive Date	08/07/2015 10:30	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	08/08/2015 02:58	CJR	564997

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	0.290U	0.290	10.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	50.2	ug/L	100	78 - 130
1868-53-7	Dibromofluoromethane	50	51.3	ug/L	103	77 - 127
2037-26-5	Toluene d8	50	53.4	ug/L	107	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	49.3	ug/L	99	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
08/07/2015 16:00	564968	EPA 8011	1	08/12/2015 18:19	ARW	565387

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

TRIP BLANK-1	**Collect Date**	08/05/2015 00:00	**GCAL ID**	21508071812
	Receive Date	08/07/2015 10:30	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	08/08/2015 03:19	CJR	564997

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	0.290U	0.290	10.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	49.9	ug/L	100	78 - 130
1868-53-7	Dibromofluoromethane	50	52.2	ug/L	104	77 - 127
2037-26-5	Toluene d8	50	52.7	ug/L	105	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	49.6	ug/L	99	71 - 127

GC/MS Volatiles QC Summary

Analytical Batch 564997	Client ID	MB564997		LCS564997				LCSD564997				
	GCAL ID	1475043		1475044				1475045				
	Sample Type	MB		LCS				LCSD				
	Prep Date	NA		NA				NA				
	Analysis Date	08/07/2015 23:25		08/07/2015 21:28				08/07/2015 22:06				
	Matrix	Water		Water				Water				
EPA 8260B		Units Result	ug/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
t-amyl methyl ether (TAME)	994-05-8	0.240U	0.240	50.0	50.2	100	70 - 130	50.0	50.2	100	0	50
t-Butanol (TBA)	75-65-0	0.290U	0.290	50.0	54.8	110	60 - 140	50.0	50.0	100	9	50
diisopropyl Ether (DIPE)	108-20-3	0.236U	0.236	50.0	57.1	114	70 - 130	50.0	58.3	117	2	50
tert-Butyl methyl ether (MTBE)	1634-04-4	0.077U	0.077	50.0	54.4	109	71 - 125	50.0	53.8	108	1	50
Ethyl tert-butyl ether (ETBE)	637-92-3	0.234U	0.234	50.0	49.9	100	70 - 130	50.0	50.3	101	1	50
Ethyl tert-butanol (ETBA)	624-95-3	37.6U	37.6	2550	2350	92	70 - 130	2550	2130	84	10	50
Ethanol	64-17-5	125U	125	25200	26100	104	70 - 130	25200	24700	98	6	50
tert-amyl alcohol (TAA)	75-85-4	1.01U	1.01	200	190	95	70 - 130	200	177	89	7	50
tert-butyl formate (TBF)	762-75-4	0.487U	0.487	50.0	57.7	115	70 - 130	50.0	59.2	118	3	50
Benzene	71-43-2	0.111U	0.111	50.0	53.4	107	70 - 129	50.0	53.4	107	0	50
Toluene	108-88-3	0.122U	0.122	50.0	52.5	105	72 - 120	50.0	52.5	105	0	50
Ethylbenzene	100-41-4	0.109U	0.109	50.0	55.4	111	74 - 126	50.0	56.1	112	1	50
Xylene (total)	1330-20-7	0.179U	0.179	150	175	117	74 - 127	150	175	117	0	50
Naphthalene	91-20-3	0.176U	0.176	50.0	51.0	102	57 - 138	50.0	49.3	99	3	50
1,2-Dichloroethane	107-06-2	0.116U	0.116	50.0	52.2	104	71 - 129	50.0	51.9	104	1	50
Surrogate												
4-Bromofluorobenzene	460-00-4	49.3	99	50	50.2	100	78 - 130	50	49.6	99	1	NA
Dibromofluoromethane	1868-53-7	52.6	105	50	50.2	100	77 - 127	50	50.5	101	1	NA
Toluene d8	2037-26-5	53.3	107	50	49.5	99	76 - 134	50	49.3	99	0	NA
1,2-Dichloroethane-d4	17060-07-0	48.9	98	50	51.4	103	71 - 127	50	50.9	102	1	NA

Analytical Batch 565291	Client ID	MB565291		LCS565291				LCSD565291				
	GCAL ID	1476330		1476331				1476332				
	Sample Type	MB		LCS				LCSD				
	Prep Date	NA		NA				NA				
	Analysis Date	08/11/2015 16:30		08/11/2015 14:40				08/11/2015 15:01				
	Matrix	Water		Water				Water				
EPA 8260B		Units Result	ug/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
t-amyl methyl ether (TAME)	994-05-8	0.240U	0.240	50.0	48.1	96	70 - 130	50.0	47.3	95	2	50
t-Butanol (TBA)	75-65-0	0.290U	0.290	50.0	50.2	100	60 - 140	50.0	50.1	100	0	50
diisopropyl Ether (DIPE)	108-20-3	0.236U	0.236	50.0	55.0	110	70 - 130	50.0	53.4	107	3	50
tert-Butyl methyl ether (MTBE)	1634-04-4	0.077U	0.077	50.0	41.5	83	71 - 125	50.0	40.3	81	3	50
Ethyl tert-butyl ether (ETBE)	637-92-3	0.234U	0.234	50.0	48.3	97	70 - 130	50.0	46.9	94	3	50
Ethyl tert-butanol (ETBA)	624-95-3	37.6U	37.6	2550	2250	88	70 - 130	2550	2160	85	4	50
Ethanol	64-17-5	125U	125	25200	27200	108	70 - 130	25200	26400	105	3	50
tert-amyl alcohol (TAA)	75-85-4	1.01U	1.01	200	177	89	70 - 130	200	174	87	2	50
tert-butyl formate (TBF)	762-75-4	0.487U	0.487	50.0	54.6	109	70 - 130	50.0	51.3	103	6	50
Benzene	71-43-2	0.111U	0.111	50.0	42.4	85	70 - 129	50.0	39.6	79	7	50
Toluene	108-88-3	0.122U	0.122	50.0	44.2	88	72 - 120	50.0	41.2	82	7	50
Ethylbenzene	100-41-4	0.109U	0.109	50.0	47.9	96	74 - 126	50.0	44.0	88	8	50
Xylene (total)	1330-20-7	0.179U	0.179	150	149	99	74 - 127	150	137	91	8	50
Naphthalene	91-20-3	0.176U	0.176	50.0	41.2	82	57 - 138	50.0	40.3	81	2	50
1,2-Dichloroethane	107-06-2	0.116U	0.116	50.0	42.3	85	71 - 129	50.0	40.6	81	4	50
Surrogate												
4-Bromofluorobenzene	460-00-4	49.4	99	50	50.4	101	78 - 130	50	49.6	99	2	NA
Dibromofluoromethane	1868-53-7	52.5	105	50	50.1	100	77 - 127	50	50.3	101	0	NA
Toluene d8	2037-26-5	53.2	106	50	50.5	101	76 - 134	50	49.5	99	2	NA
1,2-Dichloroethane-d4	17060-07-0	49.4	99	50	50.2	100	71 - 127	50	50.5	101	1	NA

GC Semi-Volatiles QC Summary

Analytical Batch	Client ID	MB564968		LCS564968				LCSD564968				
565387	GCAL ID	1474943		1474944				1474945				
Prep Batch	Sample Type	MB		LCS				LCSD				
564968	Prep Date	08/07/2015 16:00		08/07/2015 16:00				08/07/2015 16:00				
Prep Method	Analysis Date	08/12/2015 13:25		08/12/2015 13:44				08/12/2015 14:03				
EPA 8011	Matrix	Water		Water				Water				
EPA 8011		Units Result	ug/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
1,2-Dibromoethane	106-93-4	0.00750U	0.00750	0.135	0.160	118	55 - 141	0.136	0.147	108	8	40

LAB USE ONLY

Access Analytical - Chain of Custody Record

Sales Order #: _____ PO #: _____ Access Quote #: _____ Project Work Order #: _____ Laboratory ID: _____

Company Name: Enviro-Test Services
Report To: Teate + Faris
Address: P.O. Box 2237
City: Irmo State: SC Zip: 29063
Phone: 803-413-4936 Fax:
Email: terryteate@aol.com
Project ID: Broad River BP
Sampled By: T. Teate

Preservative: (*see codes)
Container Type: (*see codes)

ACCESS ANALYTICAL, INC.
7478 Carlisle Street
Irmo, SC 29063
Phone: (803) 781-4243
Fax: 781-4303
www.axs-inc.com

*Preservative Codes (place corresponding # in block above analysis field): 0 = None, 1 = HCl, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Na2S2O3, 6 = Method 5035 set w/ NaHSO4 & CH3OH, 7 = NaOH+ZnOAC, 8 = H3PO4

*Matrix Codes (place corresponding code in matrix column): GW = ground water, WW = waste water, DW = drinking water, S = soil, SL = sludge, A = air, IW = industrial waste, WO = waste oil, OT = other (specify in comments section)

*Program Area Codes: CWA = Clean Water Act (for wastewaters), SDWA = Safe Drinking Water Act (for drinking waters), SHW = Solid and Hazardous Waste (for solid, ground waters and waste samples)

*Container Type: G = Glass, P = Plastic

Sample ID/Description	Date Collected:	Time Collected:	Type: (grab or composite)	Matrix: (see codes)	Program Area (see codes)	TOTAL # of containers	BTEX, MTBE, 1,2 DCA	8-SC, Oxygenates	EDB - 8011
MW-1	8-5-15	1125	G	GW	SHW	6	X	X	X
MW-2	"	1212	"	"	"	"	"	"	"
MW-4	"	1655	"	"	"	"	"	"	"
MW-5	"	1618	"	"	"	"	"	"	"
RW-1	"	1255	"	"	"	"	"	"	"
RW-2	"	1343	"	"	"	"	"	"	"
RW-3	"	1415	"	"	"	"	"	"	"
RW-4	"	1500	"	"	"	"	"	"	"
RW-5	"	1544	"	"	"	"	"	"	"
Duplicate-1	"	1214	"	"	"	"	"	"	"

Client ID: 4565 - Access Analytical SDG: 215080718

NOTES / COMMENTS
(If sample is a composite please use space below to note start/finish times & dates)

1 2 3 4 5 6 7 8 9 10

Turnaround Time:
- ✓ Standard
- ___ RUSH*
- *Date Required: _____
(For rush work, results emailed/faxed by end of business day on date required)

Project Location:
- ✓ SC
- ___ NC
- ___ Other (specify) _____

Relinquished By:	Received By:	Date (mm-dd-yy)	Time (24HR)	Samples Rec'd on Ice	Sample Temp. Upon Receipt (°C)	
Terry L Teate	[illegible]	8-6-15	1105	___Y ___N	____(°C)	____(N/A)
[illegible] Martin	Fedex	8-6-15	1700	___Y ___N	____(°C)	____(N/A)
Fedex	[illegible]	8-7-15	1030	✓Y ___N	3.1 0.2 (°C)	EZH (N/A)
5935 7504 8926				___Y ___N	____(°C)	____(N/A)

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Pg ____ of ____

LAB USE ONLY

Access Analytical - Chain of Custody Record

Sales Order #: _____ PO #: _____ Access Quote #: _____ Project Work Order #: _____ Laboratory ID: _____

Company Name: Enviro-Test Services
Report To: Teate + Faris
Address: P.O. Box 2237
City: Irmo State: SC Zip: 29063
Phone: 803-413-4936 Fax:
Email: Terry Teate @ aol.com
Project ID: Broad River BP
Sampled By: T. Teate

Preservative (*see codes):
Container Type (*see codes):

ACCESS ANALYTICAL, INC.
7478 Carlisle Street
Irmo, SC 29063
Phone: (803) 781-4243
Fax: 781-4303
www.axs-inc.com

*Preservative Codes (place corresponding # in block above analysis field): 0 = None, 1 = HCL, 2 = HNO_3, 3 = H_2SO_4, 4 = NaOH, 5 = Na_2SO_3, 6 = Method 8035 kit w/ $NaHSO_4$ & CH3OH, 7 = NaOH/ZnOAC, 8 = H_3PO_4

*Matrix Codes (place corresponding code in matrix column): GW = ground water, WW = waste water, DW = drinking water, S = soil, SL = sludge, A = air, IW = industrial waste, WO = waste oil, DT = other (specify in comments section)

*Program Area Codes: CWA = Clean Water Act (for wastewaters), SDWA = Safe Drinking Water Act (for drinking waters), SHW = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

*Container Type: G = Glass, P = Plastic

Sample ID/Description	Date Collected:	Time Collected:	Type: (Lab to complete)	Matrix: (see codes)	Program: Area: (see codes)	TOTAL # of containers	↓ REQUESTED LAB ANALYSIS: ↓ Btex, N, Mtbe, 1,2DCA	8-SC Oxygenates	EDB - 8011
Field Blank-1	8-5-15	1110	G	DI	SDWA	6	X	X	X
Trip Blank-1	↓		G	DI		1	X		

Client ID: 4565 - Access Analytical
SDG: 215080718

NOTES / COMMENTS
(if sample is a composite please use space below to note start/finish times & dates)
11
12

Turnaround Time:
✓ Standard
___ RUSH*
*Date Required: _____
(For rush work, results emailed/faxed by end of business day on date required)

Project Location:
✓ SC
___ NC
___ Other
(specify) _____

Relinquished By:	Received By:	Date (mm-dd-yy)	Time (24HR)	Samples Rec'd on Ice	Sample Temp. Upon Receipt (°C):	
Terry L Teate	A Mart	8-6-15	1105	___Y ___N	___(°C)	___(N/A)
[illegible]	Fedex	8-6-15	1700	___Y ___N	___(°C)	___(N/A)
Fedex	[illegible]	8-7-15	1030	✓Y ___N	3.1 0.2 (°C)	EZ4 (N/A)
5035 7504 8926				___Y ___N	___(°C)	___(N/A)

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Page of

GCAL

SAMPLE RECEIVING CHECKLIST

215080718

SAMPLE DELIVERY GROUP 215080718	
Client PM SAK 4565 - Access Analytical	**Transport Method** FEDEX
Profile Number 79922	**Received By** Lofton, Katie E.
Line Item(s) 2 - Water BTEX//Naph/MTBE/ EDBby8260/Pb/PAH/EDB	**Receive Date(s)** 08/07/15

CHECKLIST	YES	NO	NA
Were all samples received using proper thermal preservation?	☑	☐	☐
When used, were all custody seals intact?	☑	☐	☐
Were all samples received in proper containers?	☑	☐	☐
Were all samples received using proper chemical preservation?	☑	☐	☐
Was preservative added to any container at the lab?	☐	☑	☐
Were all containers received in good condition?	☑	☐	☐
Were all VOA vials received with no head space?	☑	☐	☐
Do all sample labels match the Chain of Custody?	☑	☐	☐
Did the Chain of Custody list the sampling technician?	☑	☐	☐
Was the COC maintained i.e. all signatures, dates and time of receipt included?	☑	☐	☐

COOLERS

Airbill	Thermometer ID: E24	Temp(°C)
5035 7504 8926		3.1
		0.2

DISCREPANCIES

None

LAB PRESERVATIONS

None

NOTES

Revision 1.4

Page 1 of 1

APPENDIX C
NOT INCLUDED

APPENDIX D
NOT INCLUDED

APPENDIX E
NOT INCLUDED

APPENDIX F
NOT INCLUDED

APPENDIX G
DISPOSAL MANIFEST(S)

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No.

2. Page 1 of 1

3. Generator's Name and Mailing Address
ENVIRO-TEST Services
P.O. Box 2237
Irmo, SC
4. Generator's Phone (803) 413-4936

5. Transporter 1 Company Name — 6. US EPA ID Number

A. State Transporter's ID

7. Transporter 2 Company Name — 8. US EPA ID Number

B. Transporter 1 Phone

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address
Clear Water Solutions
35 Brendon Way
Greenville, SC 29611

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone 706-254-4050

11. WASTE DESCRIPTION	12. Containers No.	Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON-HAZARDOUS PETROLEUM CONTAMINATED SOIL				
b. NON-HAZARDOUS PETROLEUM CONTAMINATED (WATER)	02	Drum	75	gals
c.				
d.				

G. Additional Descriptions for Materials Listed Above
Purge Water From Sample Event at Broad River BP DHEC Site # 11946

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name — Signature — Date (Month Day Year)

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Terry L. Teate — Signature: Terry L Teate — Date: 08 20 15

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Date (Month Day Year)

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in Item 19.

Printed/Typed Name: Chadwick W. Brouster — Signature: Chadwick W Brouster — Date: 08 20 15

NON-HAZARDOUS WASTE — GENERATOR — TRANSPORTER — FACILITY

F-14 © 2002 LABELMASTER® (800) 621-5808 www.labelmaster.com

Rev. 395

APPENDIX H
NOT INCLUDED

APPENDIX I
NOT INCLUDED

APPENDIX J
NOT INCLUDED

APPENDIX K
SCDHEC CONTRACTOR CHECKLIST

Contractor Checklist

For each report submitted to the UST Management Division, the contractor will be required to verify that all data elements for the required scope of work have been provided. For items not required for the scope of work, the N/A box should be checked. For items required and not completed or provided, the No box should be checked and a thorough description of the reason must be provided.

Item #	Item	Yes	No	N/A
1	Is Facility Name, Permit #, and address provided?	☒	☐	☐
2	Is UST Owner/Operator name, address, & phone number provided?	☒	☐	☐
3	Is name, address, & phone number of current property owner provided?	☒	☐	☐
4	Is the DHEC Certified UST Site Rehabilitation Contractor's Name, Address, telephone number, and certification number provided?	☒	☐	☐
5	Is the name, address, telephone number, and certification number of the well driller that installed borings/monitoring wells provided?	☐	☐	☒
6	Is the name, address, telephone number, and certification number of the certified laboratory(ies) performing analytical analyses provided?	☒	☐	☐
7	Has the facility history been summarized?	☒	☐	☐
8	Has the regional geology and hydrogeology been described?	☒	☐	☐
9	Are the receptor survey results provided as required?	☐	☐	☒
10	Has current use of the site and adjacent land been described?	☒	☐	☐
11	Has the site-specific geology and hydrogeology been described?	☒	☐	☐
12	Has the primary soil type been described?	☒	☐	☐
13	Have field screening results been described?	☐	☐	☒
14	Has a description of the soil sample collection and preservation been detailed?	☐	☐	☒
15	Has the field screening methodology and procedure been detailed?	☐	☐	☒
16	Has the monitoring well installation and development dates been provided?	☐	☐	☒
17	Has the method of well development been detailed?	☐	☐	☒
18	Has justification been provided for the locations of the monitoring wells?	☐	☐	☒
19	Have the monitoring wells been labeled in accordance with the UST QAPP guidelines?	☐	☐	☒
20	Has the groundwater sampling methodology been detailed?	☒	☐	☐
21	Have the groundwater sampling dates and groundwater measurements been provided?	☒	☐	☐
22	Has the purging methodology been detailed?	☒	☐	☐
23	Has the volume of water purged from each well been provided along with measurements to verify that purging is complete?	☒	☐	☐
24	If free-product is present, has the thickness been provided?	☒	☐	☐
25	Does the report include a brief discussion of the assessment done and the results?	☒	☐	☐
26	Does the report include a brief discussion of the aquifer evaluation and results?	☐	☐	☒
27	Does the report include a brief discussion of the fate & transport models used?	☐	☐	☒

Item #	Item	Yes	No	N/A
28	Are the site-conceptual model tables included? (Tier 1 Risk Evaluation)	☐	☐	☒
29	Have the exposure pathways been analyzed? (Tier 2 Risk Evaluation)	☐	☐	☒
30	Have the SSTLs for each compound and pathway been calculated? (Tier 2 Risk Evaluation)	☐	☐	☒
31	Have recommendations for further action been provided and explained?	☒	☐	☐
32	Has the soil analytical data for the site been provided in tabular format? (Table 1)	☐	☐	☒
33	Has the potentiometric data for the site been provided in tabular format? (Table 2)	☒	☐	☐
34	Has the current and historical laboratory data been provided in tabular format?	☒	☐	☐
35	Have the aquifer characteristics been provided and summarized on the appropriate form?	☐	☐	☒
36	Have the Site conceptual model tables been included? (Tier 1 Risk Evaluation)	☐	☐	☒
37	Has the topographic map been provided with all required elements? (Figure 1)	☒	☐	☐
38	Has the site base map been provided with all required elements? (Figure 2)	☒	☐	☐
39	Have the CoC site maps been provided? (Figure 3 & Figure 4)	☒	☐	☐
40	Has the site potentiometric map been provided? (Figure 5)	☒	☐	☐
41	Have the geologic cross-sections been provided? (Figure 6)	☐	☐	☒
42	Have maps showing the predicted migration of the CoCs through time been provided? (Tier 2 Risk Evaluation)	☐	☐	☒
43	Has the site survey been provided and include all necessary elements? (Appendix A)	☐	☐	☒
44	Have the sampling logs, chain of custody forms, and the analytical data package been included with all required elements? (Appendix B)	☒	☐	☐
45	Is the laboratory performing the analyses properly certified?	☒	☐	☐
46	Has the tax map been included with all necessary elements? (Appendix C)	☐	☐	☒
47	Have the soil boring/field screening logs been provided? (Appendix D)	☐	☐	☒
48	Have the well completion logs and SCDHEC Form 1903 been provided? (Appendix E)	☐	☐	☒
49	Have the aquifer evaluation forms, data, graphs, equations, etc. been provided? (Appendix F)	☐	☐	☒
50	Have the disposal manifests been provided? (Appendix G)	☒	☐	☐
51	Has a copy of the local zoning regulations been provided? (Appendix H)	☐	☐	☒
52	Has all fate and transport modeling been provided? (Appendix I)	☐	☐	☒
53	Have copies of all access agreements obtained by the contractor been provided? (Appendix J)	☐	☐	☒
54	Has a copy of this form been attached to the final report and are explanations for any missing or incomplete data been provided?	☒	☐	☐

Explanation for missing and incomplete information?

100% ACA FP Removal Verification

D H E C

Underground Storage Tank Management Division
Field Data Information Sheet – Monitoring Well Gauging

Site Information		
Date: 9/23/15	Site ID #: 11946	Site Name: Broad River Amoco
County: Richland	Project Manager: S. Utz	Field Personnel: S. Utz S. Briney

Well Gauging Information

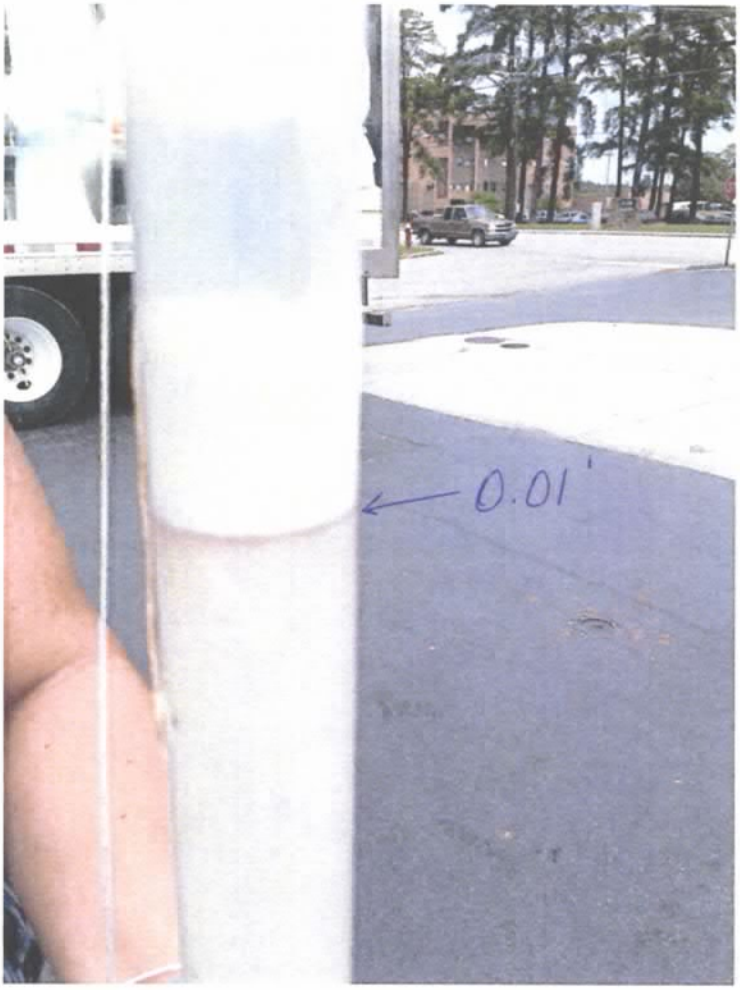
Well ID:	Total Well Depth (ft.)	Screened Interval (ft.)	Depth to Free Product (ft.)	Depth to Ground water (ft.)	Free Product Thickness (ft.)	Confirmed with Bailer?	Photos Taken ?	Well Pad OK?	Bolts in Well Cover?	Water in Well Vault?
MW-1			—	21.60	—	—	—	No pad	Yes	Yes
MW-2			—	17.96'	—	Yes [illegible]	—	No pad	Yes	No
MW-4			—	12.26'	—	—	—	Yes	NO	NO
MW-5			—	15.92'	—	—	—	Yes	No	Yes
RW-1			17.87	17.88'	0.01	Yes	Yes Pic 1 Pic 2	Yes	NO	NO
RW-2			—	17.76'	—	—	—	Yes	NO	No
RW-3			—	18.32'	—	—	—	Yes	NO	NO
RW-4			—	16.89'	—	—	—	Yes	NO	NO
RW-5			17.95'	18.06'	0.11'	Yes [illegible]	Yes Pic 3 Pic 4	Yes	NO	Yes

Notes: MW-2 bolt is D shaped and would not thread correctly so I left it out.

100% Not met

Signature: S Utz

UST Section DOCKETING



Bailer check of FP # detected in RW-1
9-23-15

Bailer check of LP detected in RW-5.
9-23-15

D H E C

PROMOTE PROTECT PROSPER

W. Marshall Taylor Jr., Acting Director

Promoting and protecting the health of the public and the environment

MR FREDERICK N CECCHINI
4335 BROAD RIVER RD
COLUMBIA SC 29210-4009

SEP 2 4 2015

UST DOCKETING 5744

Re: **CASE Report Review**
Broad River Amoco, 4335 Broad River Rd., Columbia, SC
UST Permit #11946; CA# 46916
Release Reported January 4, 2011
Corrective Action System Evaluation (CASE) Report received August 27, 2015
Site visit conducted September 23, 2015
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced report. Agency personnel visited the referenced site to conduct verification gauging on September 23, 2015. Free phase product was detected in recovery well RW-1 at 0.01 ft thickness and in RW-5 at 0.11 ft thickness. The FP reduction is currently at 99.34%. Please resume active corrective action activities.

The next quarterly CASE report documenting corrective action activities is **due or before November 28, 2015**.

On all correspondence regarding this site, please reference UST Permit #11964. If you have questions concerning this correspondence, feel free to contact me by telephone at (803) 898-0634, by fax at (803) 898-0673 or by email utzst@dhec.sc.gov.

Sincerely,

Sonya T. Utz, Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

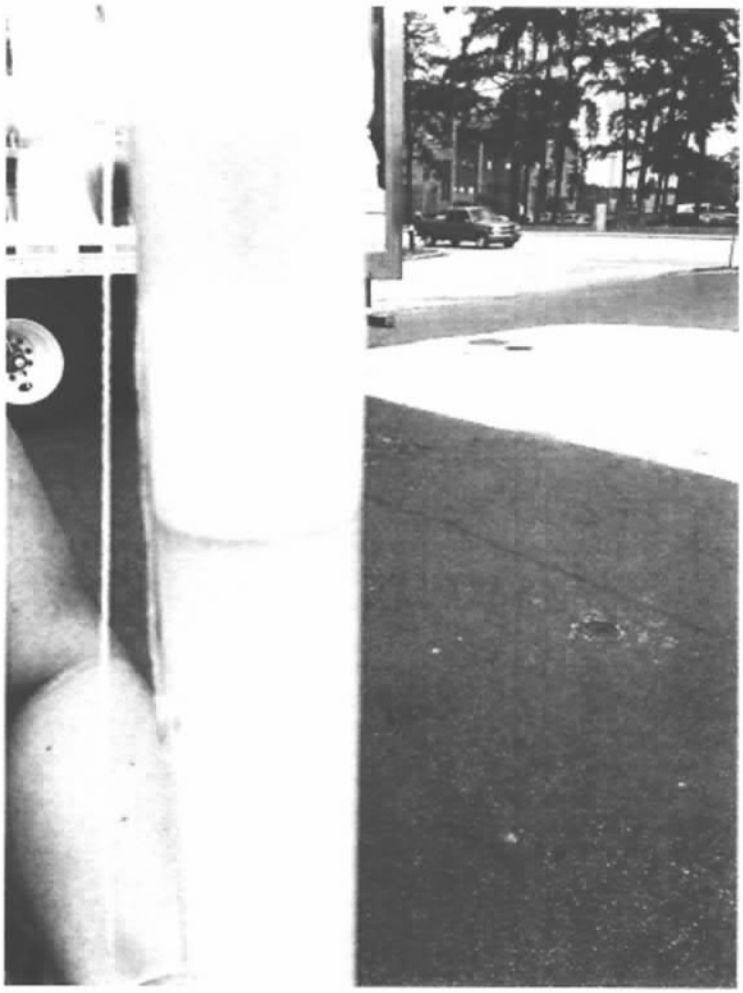
enc: FP reduction table
Photos of FP in RW-1 and RW-5

cc: Enviro-Test Services, Inc., P.O. Box 2237, Irmo, SC 29063 (w/enc)
Technical File (w/enc)

UST Permit # 11946
Broad River Amoco
9/23/2015 CASE review

MW ID		FP Thickness
MW-1	Initial	0.01
	Target	0.01
	Initial > Target	0
	Subsequent	0.01
	Subsequent > Target	0
MW-2	Initial	1.43
	Target	0.01
	Initial > Target	1.42
	Subsequent	0.01
	Subsequent > Target	0
MW-4	Initial	2.25
	Target	0.01
	Initial > Target	2.24
	Subsequent	0.01
	Subsequent > Target	0
MW-5	Initial	6.26
	Target	0.01
	Initial > Target	6.25
	Subsequent	0.01
	Subsequent > Target	0
RW-1	Initial	5.3
	Target	0.01
	Initial > Target	5.29
	Subsequent	0.01
	Subsequent > Target	0
RW-2	Initial	0.01
	Target	0.01
	Initial > Target	0
	Subsequent	0.01
	Subsequent > Target	0
RW-3	Initial	0.01
	Target	0.01
	Initial > Target	0
	Subsequent	0.01
	Subsequent > Target	0
RW-4	Initial	0.01
	Target	0.01
	Initial > Target	0
	Subsequent	0.01
	Subsequent > Target	0
RW-5	Initial	0.03
	Target	0.01
	Initial > Target	0.02
	Subsequent	0.11
	Subsequent > Target	0.1
Totals	Initial thickness > Target	15.22
	Subsequent > Target	0.1

Free Product Thickness Reduction 99.34296978 %



Boiler check of FP detector in RW-1
9-23-15

Bailer chuck of PP detected in RW 5
9-23-15

ENVIRO-TEST SERVICES

UST
JAN 25 2016
DIVISION

January 24, 2016

Sonya T. Utz, Hydrogeologist
Underground Storage Tank Section
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

58 Week

Re: Corrective Action System Evaluation Report – 2nd Quarter 2015
Broad River Amoco
4335 Broad River Rd., Columbia
Richland County, South Carolina
UST Permit #11946; CA #46916

Dear Ms. Utz;

Enviro-Test Services, Inc. (ETS) has completed the Corrective Action System Evaluation (CASE) in order to document the corrective action activities at the Broad River Amoco site located in Columbia, South Carolina. The pertinent information regarding this assessment, including conclusions, is presented on the following pages and in the attached Figures, Tables, and Appendices.

Based on the analytical data collected during this evaluation, it is apparent that the free-phase petroleum product previously observed on the property is no longer present in any of the monitoring wells or recovery wells designated as Site Specific Target Level (SSTL) wells. Therefore, according to the requirements of this corrective action contract, ETS has achieved 100% reduction in the total free product thickness in the SSTL wells.

If you should have any questions regarding the results of this assessment, or should you need additional information, please do not hesitate to contact our office.

Sincerely,
Enviro-Test Services, Inc.
Contractor Certification #14

MICHAEL L. FARIS
REGISTERED
No.
2379
SOUTH CAROLINA
PROFESSIONAL GEOLOGIST

Michael L. Faris, P.G. (#2379)
Hydrogeologist

Terry L. Teate
President / Sr. Project Manager

cc: Fredrick Cecchini

RECEIVED
JAN 25 2016
SC Department of
Health and Environmental
Control

Background

The subject site is located in northwest Richland County in Columbia, South Carolina and is situated on the southwest side of Broad River Road, a five-lane local thoroughfare. The site is comprised of approximately 0.85 acres and is currently owned and operated as a petroleum retail facility, convenience store and restaurant (Broad River BP).

A 1939 aerial photograph from the Richland County Geographic Information System (GIS) shows that the subject property was utilized for agriculture and was partially wooded. Broad River Road appears as a two-lane road. Information available through the Richland County Assessor's Office indicates the property was owned by B.O. Derrick in 1955 and a 1959 aerial photograph indicates that the property had apparently been developed as a petroleum retail facility. Subsequently, the property was acquired by Associated Oils of South Carolina, Inc. in February 1988, and the previous UST system (B.O. Derrick) was properly closed, as reported to the SCDHEC in 1989. Reportedly, the closure included proper abandonment by removal of one 2,000-gallon UST and one 3,000-gallon UST. Additionally, the property redevelopment activities of 1988 and 1989 reportedly included the demolition of pre-existing structures and construction of the existing store building, dispenser islands and UST system. Subsequently, the property was acquired by Mr. Frederick N. Cecchini in June 1997, and Mr. Cecchini remains the current owner.

UST #	Product	Date Installed	Currently in use (Yes or No)	If not in use, Date Removed
1	Gasoline (2,000 gallon)	(?)	No	1989
2	Gasoline (3,000 gallon)	(?)	No	1989
3	Diesel (3,000 gallon)	1989	Yes	-
4	Gasoline Unleaded (3,000 gallon)	1989	Yes	-
5	Gasoline Plus (3,000 gallon)	1989	Yes	-
6	Gasoline Plus (8,000 gallon)	1989	Yes	-
7	Gasoline Super (8,000 gallon)	1989	Yes	-
8	Kerosene (1,000 gallon)	1989	Yes	-

Reportedly, no soil samples were collected for analysis at the time of proper abandonment of the previous UST system as reported to SCDHEC in 1989. In December 2010, a Phase II Subsurface Investigation was performed by Partner Engineering and Science, Inc. of El Segundo, California. The Phase II investigation included the installation of four soil borings and a Temporary Monitoring Well Permit (Approval No. 4053) was obtained from the SCDHEC for the purpose of groundwater sample collection. Reportedly, the soil borings extended to terminal depths of 26 feet below land surface (BLS) utilizing direct push penetration technology with continuous soil sample collection.

Drilling refusal was encountered in all four soil borings before groundwater was encountered; therefore, no groundwater samples were collected for laboratory analysis. Eight soil samples (two from each soil boring) were submitted for laboratory analysis for Volatile Organic Compounds (VOC) and Polynuclear Aromatic Hydrocarbons (PAH). The laboratory analytical results indicated the detection of various VOC and PAH chemical compounds at concentrations deemed reportable to the SCDHEC.

An Initial Groundwater Assessment (IGWA) was completed by Enviro-Test Services, Inc. during January, 2011 and an IGWA report was submitted on February 4, 2011. On January 20, 2011, the soil boring for monitoring well MW-1 was installed. The soil sample from the 10 to 15 feet sampling interval yielded the highest PID reading of 1,782 ppm and accordingly was submitted for laboratory analysis for BTEX, MTBE, naphthalene, PAH and lead. Moderately elevated concentrations of toluene, ethylbenzene, xylenes and naphthalene were detected in the soil sample. Saturated sediments were encountered at the depth interval of 35 to 40 feet below grade level (BGL). As such, monitoring well MW-1 was installed to a depth of 40 feet BGL and was screened from 40 to 20 feet BGL. On January 21, 2011, a groundwater sample was collected from monitoring well MW-1 and laboratory analysis for BTEX, naphthalene, MTBE, PAH and lead was performed. The depth to groundwater in monitoring well MW-1 was measured from the top-of-casing to be 20.92 feet. The groundwater sample yielded COC concentrations as follows: benzene (929 ug/l), toluene (10,300 ug/l), ethylbenzene (684 ug/l), MTBE (243 ug/l) and naphthalene (922 ug/l). Following review of the IGWA report, the SCDHEC requested a Tier I Assessment in correspondence dated February 7, 2011.

Field activities for the Tier I Assessment were commenced on February 24 and 25, 2011 with the completion of soil borings SB-1 through SB-9. Laboratory analysis of soil samples for BTEX, MTBE and PAH yielded elevated concentrations of benzene and naphthalene above RBSL in soil borings SB-1 (10 ft), SB-2 (5 ft), SB-3 (8 ft) and 5 (6 ft) which were installed proximal to the existing UST basin (SB-1 and SB-2) and product pipeline/dispenser islands (SB-3 and SB-5). Monitoring wells MW-2, MW-3 and MW-4 were completed on February 25, 2011 and were subsequently sampled on March 5, 2011. Laboratory analysis of the groundwater samples yielded concentrations of benzene as follows: MW-1 (1,760 ug/l), MW-2 (1,650 ug/l), MW-3 (9.93 ug/l) and MW-4 (1,830 ug/l). Additionally, concentrations of MTBE were also detected in wells MW-2 (3,420 ug/l) and MW-4 (3,100 ug/l). Naphthalene by EPA method 8260 was detected in wells MW-1 (4,070J ug/l), MW-2 (462J ug/l) and MW-4 (598 ug/l). Also, elevated concentrations of toluene were detected in wells MW-1 (16,400 ug/l) and MW-2 (3,230 ug/l) and ethylbenzene in wells MW-1 (1,270 ug/l) and MW-4 (1,270 ug/l). A Tier I Assessment Report was submitted to SCDHEC on April 8, 2011.

Subsequent to review of the Tier I Assessment Report, the Technical Project Manager and Section Manager, as applicable, expressed concern regarding the depth of the screened interval of each monitoring well in relation to the measured groundwater levels due to the fact that none of the monitoring wells were bracketing the water table of the site surficial aquifer.

Enviro-Test Services, Inc. stated that during soil boring and monitoring well installations no saturated sediments were encountered until the 35 to 40-ft depth interval of drilling at each well location; therefore, the monitoring wells were installed at depths somewhat deeper than preferable. Also, during drilling activities for installation of monitoring well MW-4, where elevated COC's were later detected in the March 5, 2011 groundwater sample, no petroleum hydrocarbon odors or elevated PID readings were noted to be present in apparent vadose soils; however, upon encountering saturated soils at approximately 35 feet, strong odors and elevated PID readings were readily apparent. Consequently, the Technical Project Manager decided that an additional monitoring well (MW-5) should be installed at a shallower, bracketing depth to determine the availability of groundwater for sample collection in what appeared to be unsaturated, vadose soils. Accordingly, on May 27, 2011 monitoring well MW-5 was installed to a depth of 20 feet, with a 10-ft screen at a location adjacent to the north corner of the existing convenience store building. The infiltration of groundwater was noted to be exceedingly slow; as such, groundwater was allowed to seep into the well casing for several days. On June 3, 2011, the depth to groundwater was measured at 13.80 feet and free product (gasoline) of a degraded appearance was measured at 13.68 feet (a free product thickness of 0.12 feet). Again, on June 20, 2011, depth to the groundwater was measured at 14.05 feet and free product at 13.75 feet (a free product thickness of 0.30 feet). These findings were submitted to the DHEC Project Manager on June 20, 2011.

Based on the results of the Tier I Assessment, a Tier II was requested. The Tier II was completed in 2013, with a report dated May 28, 2013, and the horizontal and vertical extent of the contaminant plume was delineated. This site is currently in the corrective action section of the UST Program in order to remove the free-phase product associated with the release contaminant plume.

The subject property is bounded by Broad River Road to the northeast, then by the South Carolina Law Enforcement Division (SLED). The adjacent property to the southeast is a nail and beauty salon. The adjacent property to the southwest is commercially utilized as a nursery school and day care (Play Pal Day Care). The Play Pal Day Care facility encompasses two properties fronting Dothan Road. The subject property is bounded to the northwest by Dothan Road and a commercially utilized property beyond (MDC Associates, an apparent mechanical engineering firm). The commercial usage of the subject property and adjacent properties is expected to remain the same in the future.

Site Geography

In general, the site is located on the west side of a topographically ridge extending southeast to northwest. Broad River Road lies at or near the crest of the apparent topographic ridge. Storm water runoff on the east side of the ridge ultimately flows into the Broad River located approximately 2 miles east of the site. On the west side of the ridge, storm water runoff flows toward Stoop Creek located approximately 1,650 feet to the southwest (near the southwest dead end of Dothan Road). From this point, Stoop Creek flows southward approximately 2.6 miles before emptying into the Saluda River.

In the general vicinity, numerous surface water features are evident on the USGS topographic map including several unnamed creeks (apparently spring fed) and several small to medium-sized surface water impoundments. In relative close proximity to the site, three surface water features are apparent on the west side of the topographic ridge and three on the east side of the topographic ridge. These surface water features are visibly apparent of Figure 1, a topographic site location map. On the west side of the topographic ridge, located approximately 1,430 feet to the northwest is a small pond with an estimated surface elevation of 265 feet MSL, approximately 1,680 feet to the southwest is the aforementioned Stoop Creek (estimated surface elevation of 233 feet MSL) and approximately 2,370 feet to the south-southeast is an apparent spring-fed creek (estimated surface elevation of 252 feet MSL at depicted point of emergence). On the east side of the topographic ridge, located approximately 1,240 feet to the northeast is an apparent spring-fed creek (estimated surface elevation of 248 feet MSL at the depicted point of emergence), approximately 1,820 feet to the east-northeast is an apparent spring-fed creek (estimated surface elevation of 230 feet MSL at the depicted point of emergence) and approximately 2,480 feet to the southeast is an apparent incised, spring-fed creek (estimated surface elevation of 235 feet MSL at the depicted point of emergence). Estimated surface elevations were obtained via the Richland County GIS utilizing a topographic option depicting contour intervals of two feet. For purposes of estimation, the depicted contours are deemed to be reasonably reliable.

According to the USGS Topographic Quadrangle Map of *Columbia North, South Carolina*, dated 1972 and revised in 1990, the elevation of the site is approximately 275 feet above mean sea level (MSL). The topography surrounding the site is relatively flat toward the north and east, but slopes downward toward the west/southwest. The topography in the general vicinity of the site slopes downward toward the west/southwest. A Topographic Site Location Map is included as Figure 1. A Site Base Map is included as Figure 2.

Regional Geology and Hydrogeology

The Broad River Amoco (BP) lies within the Lower Piedmont Physiographic Provence in close proximity and northwest of the contact zone, the "fall line", with the Upper Coastal Plain Physiographic Provence. The dominant rock types of the general area are related to the Carolina Slate Belt and specifically the Precambrian to Early Cambrian, Persimmon Fork Formation which is comprised primarily of green-gray to blue-gray, moderately metamorphosed, felsic volcanic (metavolcanic) tuffs and to a lesser extent mafic metavolcanic tuffs. These rocks occur as very weathered to moderately weathered outcrops in the site study area and are most often visible at areas of excavation related to road and building construction.

In the general vicinity, the uppermost aquifer generally occurs under unconfined conditions and receives water from precipitation, which infiltrates the unsaturated surface soils and migrates downward to the saturated zone. Underlying the uppermost aquifer is the fractured bedrock aquifer in which groundwater occurs in fractures, joints and faults. The fractured bedrock aquifer is often an important water resource for rural residences and commercial and light industrial properties at areas where municipal water supply is unavailable or unfeasible. Well yields are typically 1 to 350 gpm in the crystalline and metamorphic rocks with the larger yields located in areas of intensely fractured metamorphic rocks.

Site Geology and Hydrogeology

Based on the data collected during the Tier I and Tier II Assessments, it is apparent that groundwater can be found in several stratified layers or zones at the site. The most shallow water encountered at the site was generally found between 15' - 20' below ground level. This shallow water was very slow to accumulate in the boreholes. Typically it took at least several days to over a week for the water levels to come to equilibrium. It is likely that this most shallow water is present in small volume in the sandy clayey silt due to localized recharge, perching, and soil capillarity. The soils become more clayey (a silty clay) and mostly dry beginning at approximately 25' bgl. The second layer or zone of water encountered in the subsurface was typically found at an approximate depth of 35'-40'. The water in this second water-bearing zone was under significant hydraulic pressure and immediately entered the boreholes and rose upward many feet in the boreholes/wells.

The two layers of water are clearly connected as contamination has been identified at both depths during this Tier II investigation. There appears to be an aquitard comprised of mostly dry silty clay (with a small % of sand) between the two above-described zones of water across the area of study. Because the contaminants have been identified at both depths in and near the source area, there clearly is transmissivity between the two layers. Therefore, the silty clay is not considered a true aquiclude, but is acting at least as a partially confining unit.

Summary of Findings

Gauging

On December 17, 2016, ETS personnel located and gauged monitoring wells MW-1, MW-2, MW-3, MW-4, and MW-5, as well as recovery wells RW-1, RW-2, RW-3, RW-4, RW-5. Prior to the initiation of any gauging, purging or sampling activities, clean plastic sheeting was placed on the ground surface around each well in order to provide a clean work area. Each well was opened and gauged with a decontaminated electronic water level indicator to the nearest 0.01-foot. Fluid levels and total depths of the monitoring wells were recorded on field data sheets in indelible ink.

Groundwater flow direction(s) of the water table / perched aquifer and second water bearing zone were determined to be generally toward the east, north, and northwest. The current potentiometric data are summarized in Table 2. A Generalized Potentiometric Surface Map, displaying groundwater elevations at each sampled well and groundwater flow directions for the water table aquifer / second water bearing zone is included as Figure 5.

Purging

The wells to be sampled were purged with a low flow peristaltic pump with disposable tubing. Prior to purging, the well volumes were calculated using the diameter of the well, the static water level and the total depth of the well. The flow rate of the peristaltic pump remained low in order to minimize agitation of the water column.

Temperature, pH, specific conductivity, dissolved oxygen, and turbidity were measured and recorded throughout the purging process and purging continued until these parameters stabilized, typically in three to five well volumes. Stabilization occurs when pH measurements remain constant within 0.1 Standard Unit (SU), or reproducible to within 0.1 (SU), specific conductance varies no more that 5 percent, the temperature is constant for at least three consecutive readings and the turbidity has stabilized. Wells purged to dryness were considered sufficiently purged. Samples were collected immediately after the purging process was complete.

Prior to commencement of purging, the purging meters were calibrated according to manufacturer's specifications. Also, the meters' calibration was checked mid-way through and after the purging activities. The calibration checks indicated that the meters remained calibrated within the acceptable ranges of the meters' standards throughout the purging activities. The purging data were recorded on field data sheets in indelible ink. The Purge Meter Calibration Data Sheets and Monitoring Well Purging Data Sheets are included in Appendix B.

Groundwater Sampling

Groundwater samples were collected from monitoring wells MW-1, MW-2, MW-3, MW-4, and MW-5, as well as recovery wells RW-1, RW-2, RW-3, RW-4, RW-5. Each sample was placed into pre-labeled, laboratory-prepared sample containers utilizing a low flow peristaltic pump with disposable tubing via the straw method.

Purging parameters were again measured and recorded immediately after sample collection at each well. In order to further ensure sample integrity, samples were immediately placed on ice in an insulated cooler upon collection and entered into chain of custody. A field blank was collected at the completion of each day of sampling activities. A laboratory-prepared trip blank was included with the insulated sample cooler to ensure cross-contamination did not occur between the collected groundwater samples.

A duplicate sample was collected from monitoring wells MW-5 (Duplicate 1).

The groundwater samples were submitted to Access Analytical, Inc. and analyzed by Gulf Coast Analytical Laboratories, Inc. (GCAL) a South Carolina certified laboratory (certification #73006), for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, methyl tertiary-butyl ether (MTBE) and 1,2-dichloroethane (1,2-DCA) by EPA method 8260B, as well as for EDB by EPA method 8011.

Groundwater samples were also analyzed for the following eight oxygenates: di-isopropyl ether (DIPE), ethanol, ethyl tert-butyl alcohol (ETBA), ethyl tert-butyl either (ETBE), tert-amyl alcohol (TAA), tert-amyl methyl either (TAME), tert-butyl alcohol (TBA) and tert-butyl formate (TBF).

The laboratory analytical results from this assessment (current) are tabulated in Table 3. Results from previous groundwater sampling events are tabulated with the data from this assessment (current and historical) in Table 4. CoC detected at concentrations above the RBSLs established by SCDHEC are indicated in bold type. The complete laboratory analytical results, including chain-of-custody documentation, are included as Appendix B. A Groundwater CoC Site Map,

indicating the January 2016 CoC concentrations in the groundwater at each monitoring well, is included as Figure 4.

Disposal

A total of 85 gallons of contaminated purge water and decontamination fluids were collected during this assessment. The fluids are awaiting disposal at an approved facility. The waste manifest will be forwarded as soon as it is received from the waste facility.

A disposal manifest for the contaminated purge water and decontamination fluids generated during this assessment are included in Appendix G.

Contractor Checklist

The SCDHEC QAPP Contractor Checklist is included in Appendix K.

SSTL Reduction Calculation

The Free-Phase Product Reduction Calculation worksheet is included as Table 5.

Conclusions and Recommendations

Based on the data collected during this assessment, it appears that elevated concentrations of several Chemicals of Concern remain present at the site. However, based on the analytical data collected during this evaluation, it is apparent that the free-phase petroleum product previously observed on the property is no longer present in any of the monitoring wells or recovery wells gauged during this evaluation.

Therefore, according to the requirements of this corrective action contract, ETS has achieved 100% reduction in the total free product thickness in the SSTL wells.

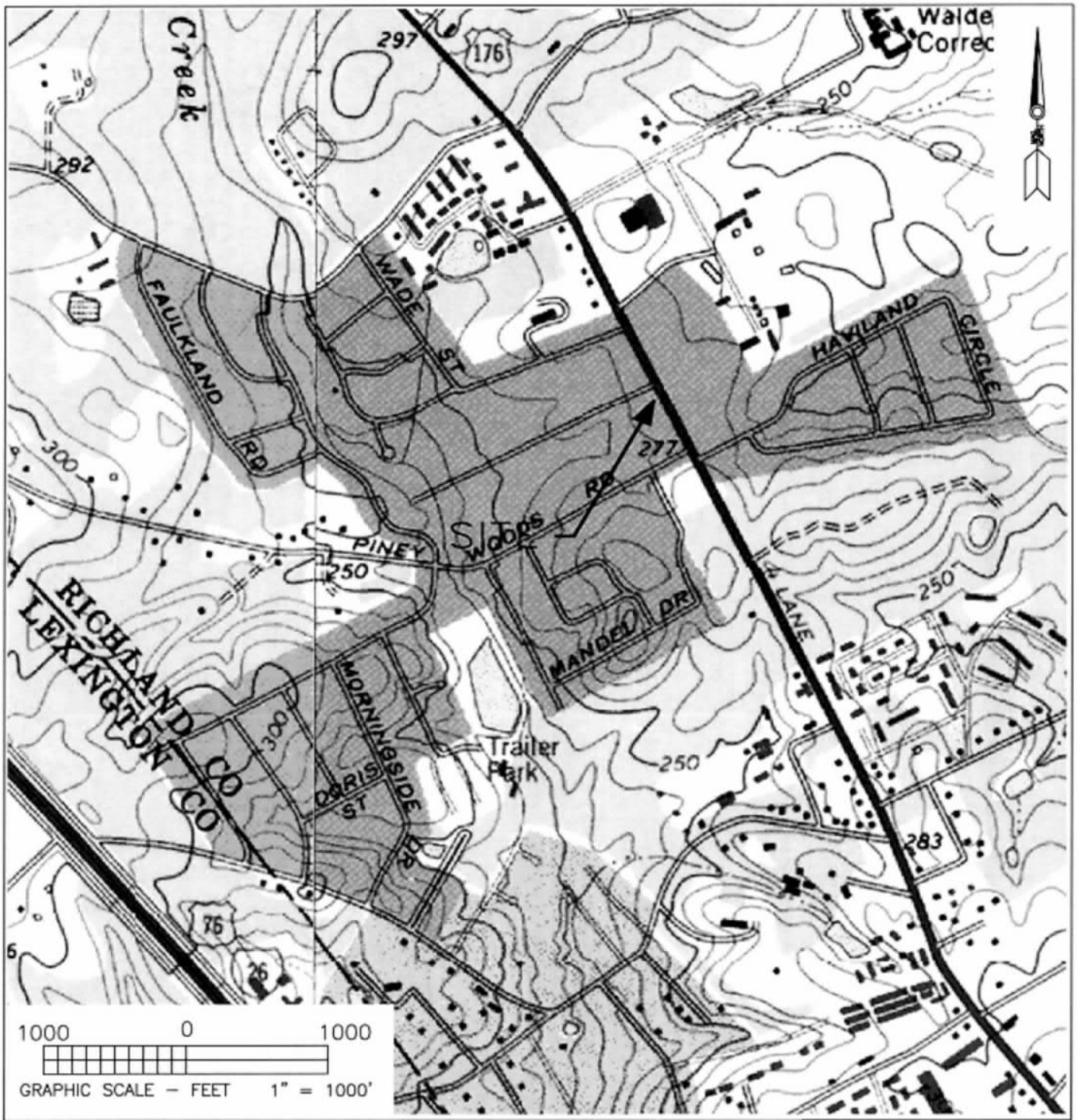
References

Maybin and Nystrom, 1997, revised by Willoughby, Howard and Nystrom, 2005. Generalized Geologic Map of South Carolina; South Carolina Department of Natural Resources Geological Survey.

USGS Open-File Report 2005-1323, Preliminary integrated geologic map databases for the United States: Alabama, Florida, Georgia, Mississippi, North Carolina, and South Carolina, http://pubs.usgs.gov/of/2005/1323/

FIGURES

Figure 1 – Site Location Map (Topographic)
Figure 2 – Site Base Map
Figure 3 – Not Included
Figure 4 – Groundwater CoC Map
Figure 5 – Potentiometric Map



PROJECT:

CORRECTIVE ACTION SYSTEM EVAL.
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:

SITE LOCATION MAP

FIGURE 1

DATE:

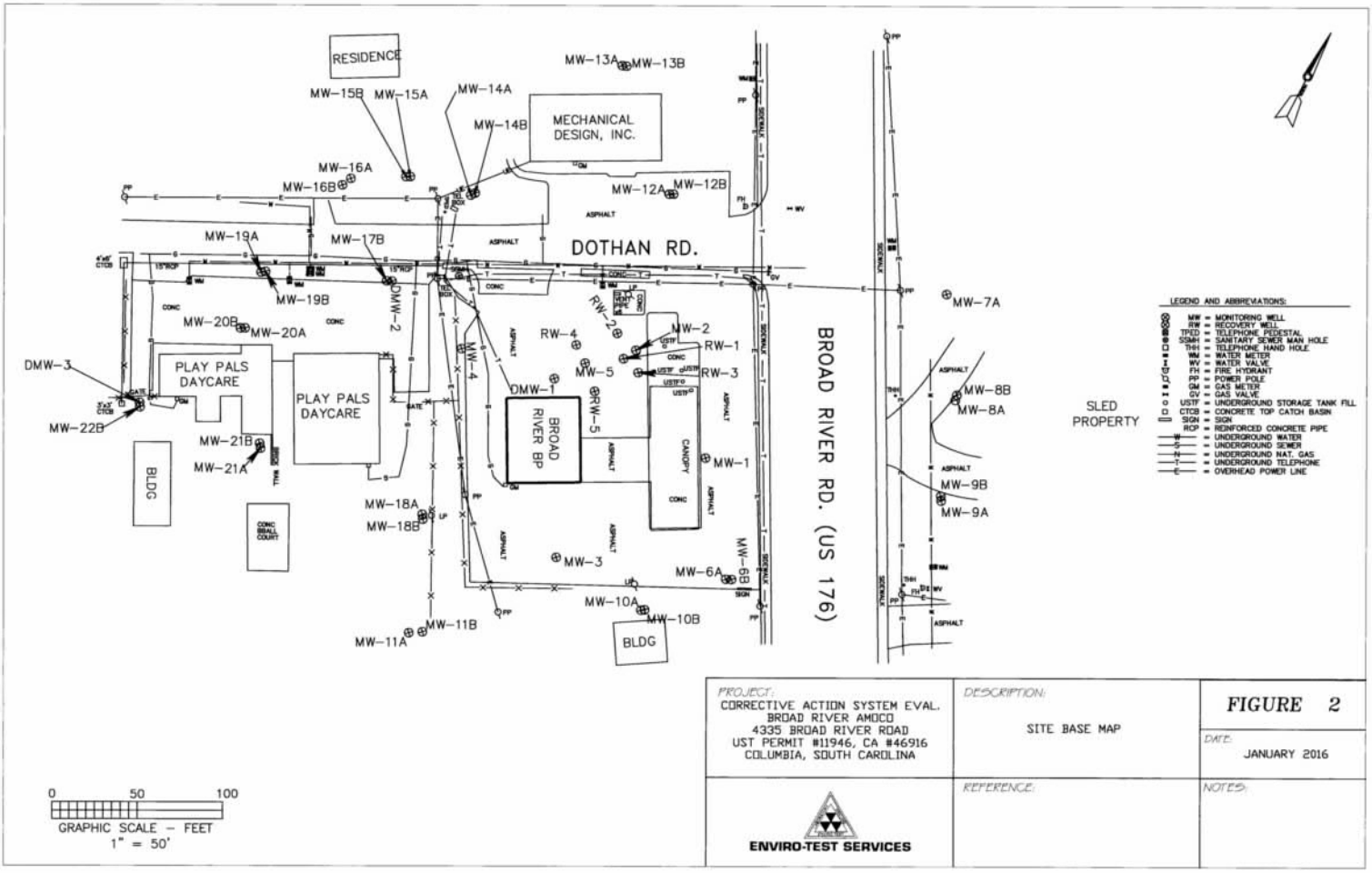
JANUARY 2016

ENVIRO-TEST SERVICES

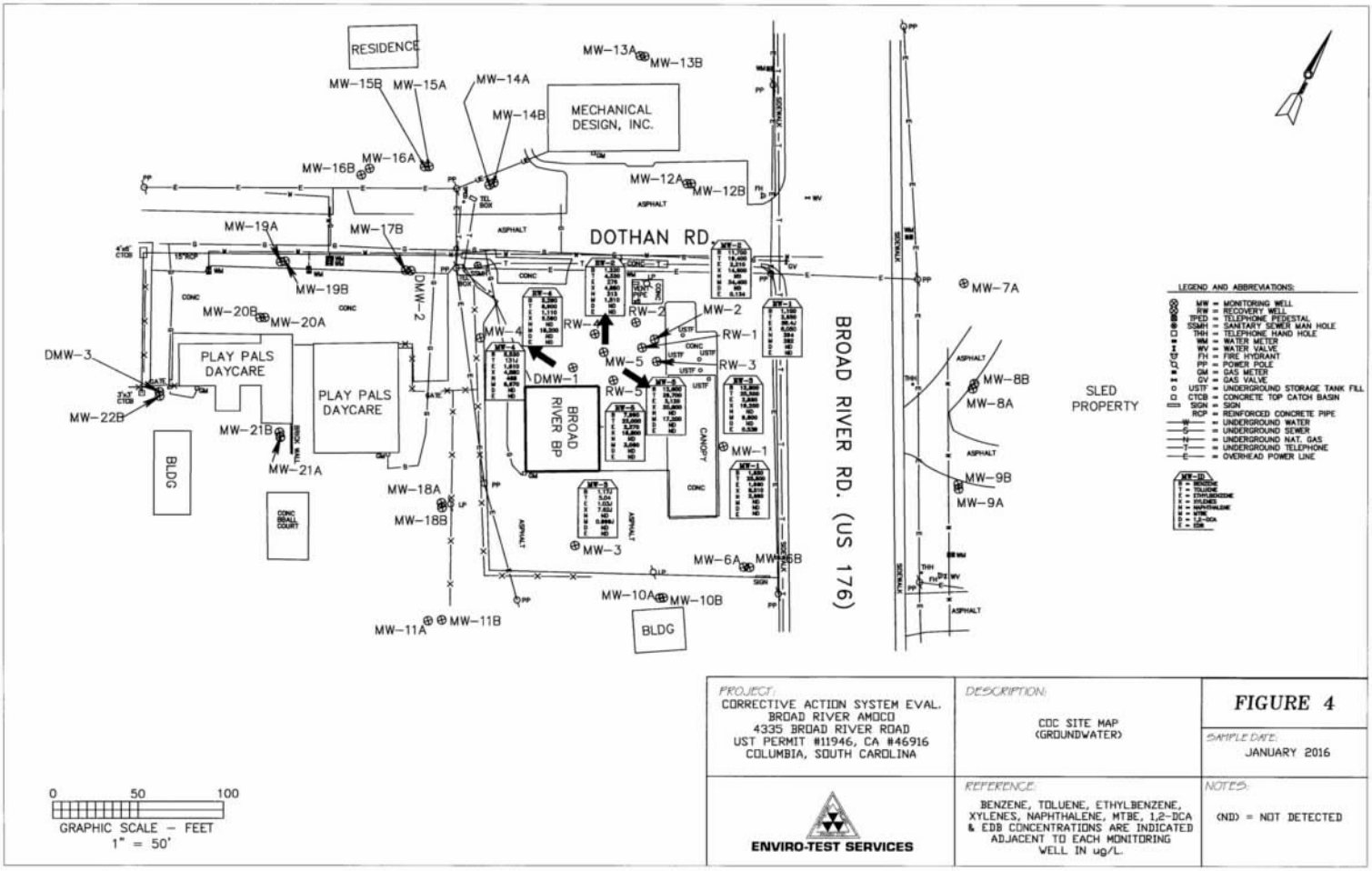
REFERENCE:

U.S.G.S. TOPOGRAPHIC MAP
(7.5 MINUTE SERIES)
COLUMBIA NORTH - 1972, REV. 1990
SOUTH CAROLINA QUADRANGLE

LEGEND:



PROJECT: CORRECTIVE ACTION SYSTEM EVAL. BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: SITE BASE MAP	**FIGURE 2**
		DATE: JANUARY 2016
ENVIRO-TEST SERVICES	REFERENCE:	NOTES:



PROJECT:
CORRECTIVE ACTION SYSTEM EVAL.
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
CDC SITE MAP
(GROUNDWATER)

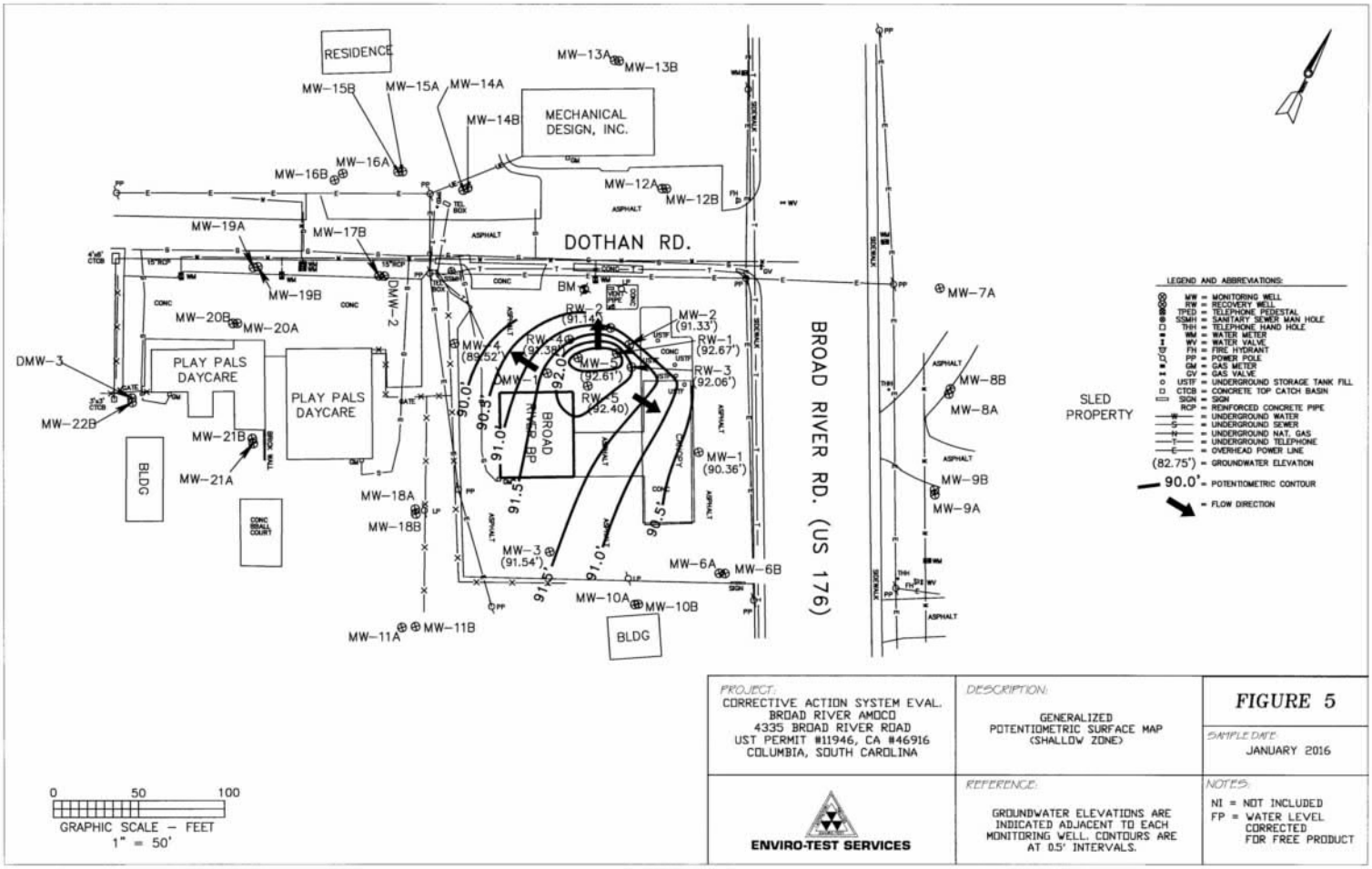
FIGURE 4

SAMPLE DATE:
JANUARY 2016

ENVIRO-TEST SERVICES

REFERENCE:
BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, NAPHTHALENE, MTBE, 1,2-DCA & EDB CONCENTRATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL IN ug/L.

NOTES:
(ND) = NOT DETECTED



PROJECT: CORRECTIVE ACTION SYSTEM EVAL. BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: GENERALIZED POTENTIOMETRIC SURFACE MAP (SHALLOW ZONE)	**FIGURE 5** SAMPLE DATE: JANUARY 2016
ENVIRO-TEST SERVICES	REFERENCE: GROUNDWATER ELEVATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL. CONTOURS ARE AT 0.5' INTERVALS.	NOTES: NI = NOT INCLUDED FP = WATER LEVEL CORRECTED FOR FREE PRODUCT

TABLES

Table 1 – Not Included
Table 2 – Potentiometric Data
Table 3 – Groundwater Analytical Data (Current)
Table 4 – Groundwater Analytical Data
(Current & Historical)
Table 5 – Free-Phase Product Reduction Calculation

APPENDICES

A. Not Included
B. Purging Data Sheets and Laboratory Analytical Data
C. Not Included
D. Not Included
E. Not Included
F. Not Included
G. Disposal Manifest(s)
H. Not Included
I. Not Included
J. Not Included
K. SCDHEC Contractor Checklist

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and January 17, 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-1	1/21/2011	40.0	20.0 - 40.0	101.84	20.92	N/A	N/A	N/A	80.92
	3/5/2011	40.0	20.0 - 40.0	101.84	14.45	N/A	N/A	N/A	87.39
	3/5/2013	40.0	20.0 - 40.0	101.84	18.62	N/A	N/A	N/A	83.22
	3/6/2014	40.0	20.0 - 40.0	101.84	15.90	N/A	N/A	N/A	85.94
	8/5/2015	40.0	20.0 - 40.0	101.84	18.84	N/A	N/A	N/A	83.00
	1/17/2016	40.0	20.0 - 40.0	101.84	11.48	N/A	N/A	N/A	90.36
MW-2	3/5/2011	28.0	18.0 - 28.0	101.13	13.50	N/A	N/A	N/A	87.63
	3/6/2013	28.0	18.0 - 28.0	101.13	17.66	16.32	1.34	16.70	84.43
	3/5/2014	28.0	18.0 - 28.0	101.13	11.57	10.15	1.42	10.53	90.60
	8/5/2015	28.0	18.0 - 28.0	101.13	16.44	N/A	N/A	N/A	84.69
	1/17/2016	28.0	18.0 - 28.0	101.13	9.80	N/A	N/A	N/A	91.33
MW-3	3/5/2011	31.0	21.0 - 31.0	101.09	13.72	N/A	N/A	N/A	87.37
	3/6/2013	31.0	21.0 - 31.0	101.09	17.94	N/A	N/A	N/A	83.15
	3/7/2014	31.0	21.0 - 31.0	101.09	11.57	N/A	N/A	N/A	89.52
	1/17/2016	31.0	21.0 - 31.0	101.09	9.55	N/A	N/A	N/A	91.54
MW-4	3/5/2011	25.0	15.0 - 25.0	97.02	9.15	N/A	N/A	N/A	87.87
	3/6/2013	25.0	15.0 - 25.0	97.02	12.41	10.10	2.31	10.75	86.27
	3/5/2014	25.0	15.0 - 25.0	97.02	9.74	7.50	2.24	8.10	88.92
	8/5/2015	25.0	15.0 - 25.0	97.02	10.76	N/A	N/A	N/A	86.26
	1/17/2016	25.0	15.0 - 25.0	97.02	7.50	N/A	N/A	N/A	89.52
MW-5	6/20/2011	20.0	10.0 - 20.0	101.34	14.05	13.75	0.30	13.83	87.51
	3/6/2013	20.0	10.0 - 20.0	101.34	19.63	16.80	2.83	17.59	83.75
	3/5/2014	20.0	10.0 - 20.0	101.34	15.75	8.12	7.63	10.18	91.16
	8/5/2015	20.0	10.0 - 20.0	101.34	14.04	N/A	N/A	N/A	87.30
	1/17/2016	20.0	10.0 - 20.0	101.34	8.73	N/A	N/A	N/A	92.61
MW-6A	3/6/2013	25.5	15.5 - 25.5	101.84	18.00	N/A	N/A	N/A	83.84
	3/5/2014	25.5	15.5 - 25.5	101.84	15.15	N/A	N/A	N/A	86.69

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and January 17, 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-6B	3/6/2013	38.5	28.5 - 38.5	101.91	18.05	N/A	N/A	N/A	83.86
	3/5/2014	38.5	28.5 - 38.5	101.91	13.30	N/A	N/A	N/A	88.61
MW-7A	3/6/2013	24.0	14.0 - 24.0	100.04	16.60	N/A	N/A	N/A	83.44
	3/5/2014	24.0	14.0 - 24.0	100.04	11.00	N/A	N/A	N/A	89.04
MW-8A	3/6/2013	23.0	13.0 - 23.0	100.45	16.84	N/A	N/A	N/A	83.61
	3/5/2014	23.0	13.0 - 23.0	100.45	12.04	N/A	N/A	N/A	88.41
MW-8B	3/6/2013	37.5	27.5 - 37.5	100.37	16.60	N/A	N/A	N/A	83.77
	3/5/2014	37.5	27.5 - 37.5	100.37	10.45	N/A	N/A	N/A	89.92
MW-9A	3/6/2013	23.0	13.0 - 23.0	101.36	18.61	N/A	N/A	N/A	82.75
	3/6/2014	23.0	13.0 - 23.0	101.36	11.50	N/A	N/A	N/A	89.86
MW-9B	3/6/2013	31.5	21.5 - 31.5	101.38	17.60	N/A	N/A	N/A	83.78
	3/6/2014	31.5	21.5 - 31.5	101.38	11.65	N/A	N/A	N/A	89.73
MW-10A	3/6/2013	17.5	7.5 - 17.5	97.20	11.05	N/A	N/A	N/A	86.15
	3/6/2014	17.5	7.5 - 17.5	97.20	2.80	N/A	N/A	N/A	94.40
MW-10B	3/6/2013	39.0	29.0 - 39.0	97.34	13.87	N/A	N/A	N/A	83.47
	3/6/2014	39.0	29.0 - 39.0	97.34	7.54	N/A	N/A	N/A	89.80
MW-11A	3/6/2013	20.0	10.0 - 20.0	89.93	10.52	N/A	N/A	N/A	79.41
	3/6/2014	20.0	10.0 - 20.0	89.93	9.50	N/A	N/A	N/A	80.43
MW-11B	3/6/2013	35.0	29.0 - 39.0	90.26	10.30	N/A	N/A	N/A	79.96
	3/6/2014	35.0	29.0 - 39.0	90.26	9.47	N/A	N/A	N/A	80.79
MW-12A	3/6/2013	20.0	10.0 - 20.0	99.26	13.95	N/A	N/A	N/A	85.31
	3/6/2014	20.0	10.0 - 20.0	99.26	16.20	N/A	N/A	N/A	83.06
MW-12B	3/6/2013	36.5	26.5 - 36.5	99.35	16.72	N/A	N/A	N/A	82.63
	3/6/2014	36.5	26.5 - 36.5	99.35	11.87	N/A	N/A	N/A	87.48
MW-13A	3/25/2013	22.0	12.0 - 22.0	98.70	19.80	N/A	N/A	N/A	78.90
	3/5/2014	22.0	12.0 - 22.0	98.70	N/A	N/A	N/A	N/A	N/A

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and January 17, 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-13B	3/6/2013	33.5	23.5 - 33.5	98.69	19.88	N/A	N/A	N/A	78.81
	3/6/2014	33.5	23.5 - 33.5	98.69	16.12	N/A	N/A	N/A	82.57
MW-14A	3/6/2013	20.0	10.0 - 20.0	97.49	14.52	N/A	N/A	N/A	82.97
	3/6/2014	20.0	10.0 - 20.0	97.49	11.10	N/A	N/A	N/A	86.39
MW-14B	3/6/2013	38.5	28.5 - 38.5	97.45	17.27	N/A	N/A	N/A	80.18
	3/6/2014	38.5	28.5 - 38.5	97.45	12.45	N/A	N/A	N/A	85.00
MW-15A	3/25/2013	17.0	7.0 - 17.0	96.87	16.01	N/A	N/A	N/A	80.86
	3/6/2014	17.0	7.0 - 17.0	96.87	15.58	N/A	N/A	N/A	81.29
MW-15B	3/6/2013	40.0	30.0 - 40.0	96.82	17.60	N/A	N/A	N/A	79.22
	3/6/2014	40.0	30.0 - 40.0	96.82	14.10	N/A	N/A	N/A	82.72
MW-16A	3/25/2013	18.0	8.0 - 18.0	95.95	16.21	N/A	N/A	N/A	79.74
	3/5/2014	18.0	8.0 - 18.0	95.95	N/A	N/A	N/A	N/A	N/A
MW-16B	3/6/2013	37.0	27.0 - 37.0	95.68	16.75	N/A	N/A	N/A	78.93
	3/5/2014	37.0	27.0 - 37.0	95.68	N/A	N/A	N/A	N/A	N/A
MW-17B	3/6/2013	39.5	29.5 - 39.5	92.69	9.05	N/A	N/A	N/A	83.64
	3/5/2014	39.5	29.5 - 39.5	92.69	6.04	N/A	N/A	N/A	86.65
MW-18A	3/6/2013	13.0	3.0 - 13.0	88.20	0.85	N/A	N/A	N/A	87.35
	3/5/2014	13.0	3.0 - 13.0	88.20	0.82	N/A	N/A	N/A	87.38
MW-18B	3/6/2013	35.0	25.0 - 35.0	88.30	1.05	N/A	N/A	N/A	87.25
	3/5/2014	35.0	25.0 - 35.0	88.30	0.78	N/A	N/A	N/A	87.52
MW-19A	3/6/2013	15.0	5.0 - 15.0	91.63	7.95	N/A	N/A	N/A	83.68
	3/5/2014	15.0	5.0 - 15.0	91.63	6.02	N/A	N/A	N/A	85.61
MW-19B	3/6/2013	34.0	24.0 - 34.0	91.69	8.35	N/A	N/A	N/A	83.34
	3/5/2014	34.0	24.0 - 34.0	91.69	7.58	N/A	N/A	N/A	84.11
MW-20A	3/6/2013	15.0	5.0 - 15.0	88.67	5.05	N/A	N/A	N/A	83.62
	3/5/2014	15.0	5.0 - 15.0	88.67	4.97	N/A	N/A	N/A	83.70
MW-20B	3/6/2013	35.0	25.0 - 35.0	88.61	4.11	N/A	N/A	N/A	84.50
	3/5/2014	35.0	25.0 - 35.0	88.61	3.62	N/A	N/A	N/A	84.99

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and January 17, 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-21A	3/6/2013	12.0	2.0 - 12.0	87.16	0.85	N/A	N/A	N/A	86.31
	3/5/2014	12.0	2.0 - 12.0	87.16	0.65	N/A	N/A	N/A	86.51
MW-21B	3/6/2013	35.0	25.0 - 35.0	87.23	1.35	N/A	N/A	N/A	85.88
	3/5/2014	35.0	25.0 - 35.0	87.23	0.85	N/A	N/A	N/A	86.38
MW-22B	3/6/2013	35.0	25.0 - 35.0	87.40	2.10	N/A	N/A	N/A	85.30
	3/5/2014	35.0	25.0 - 35.0	87.40	1.45	N/A	N/A	N/A	85.95
RW-1	3/6/2013	40.0	20.0 - 40.0	101.21	17.26	17.11	0.15	17.15	84.06
	3/5/2014	40.0	20.0 - 40.0	101.21	15.78	9.10	6.68	10.90	90.31
	8/5/2015	40.0	20.0 - 40.0	101.21	16.30	N/A	N/A	N/A	84.91
	1/17/2016	40.0	20.0 - 40.0	101.21	8.54	N/A	N/A	N/A	92.67
RW-2	3/6/2013	40.0	20.0 - 40.0	100.96	16.96	N/A	N/A	N/A	84.00
	3/5/2014	40.0	20.0 - 40.0	100.96	10.65	N/A	N/A	N/A	90.31
	8/5/2015	40.0	20.0 - 40.0	100.96	16.58	N/A	N/A	N/A	84.38
	1/17/2016	40.0	20.0 - 40.0	100.96	9.82	N/A	N/A	N/A	91.14
RW-3	3/6/2013	41.0	21.0 - 41.0	101.44	17.41	17.36	0.05	17.37	84.07
	3/5/2014	41.0	21.0 - 41.0	101.44	10.58	10.52	0.06	10.54	90.90
	8/5/2015	41.0	21.0 - 41.0	101.44	17.00	N/A	N/A	N/A	84.44
	1/17/2016	41.0	21.0 - 41.0	101.44	9.38	N/A	N/A	N/A	92.06
RW-4	3/6/2013	40.5	20.5 - 40.5	100.83	16.73	N/A	N/A	N/A	84.10
	3/7/2014	40.5	20.5 - 40.5	100.83	10.50	N/A	N/A	N/A	90.33
	8/5/2015	40.5	20.5 - 40.5	100.83	16.70	N/A	N/A	N/A	84.13
	1/17/2016	40.5	20.5 - 40.5	100.83	9.45	N/A	N/A	N/A	91.38
RW-5	3/6/2013	38.5	18.5 - 38.5	101.62	17.64	17.58	0.06	17.6	84.02
	3/5/2014	38.5	18.5 - 38.5	101.62	10.88	10.58	0.30	10.66	90.96
	8/5/2015	38.5	18.5 - 38.5	101.62	15.04	N/A	N/A	N/A	86.58
	1/17/2016	38.5	18.5 - 38.5	101.62	9.22	N/A	N/A	N/A	92.40

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and January 17, 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
DMW-1	3/6/2013	65.0	60.0 - 65.0	101.16	18.21	N/A	N/A	N/A	82.95
	3/7/2014	65.0	60.0 - 65.0	101.16	14.07	N/A	N/A	N/A	87.09
DMW-2	3/6/2013	65.0	60.0 - 65.0	92.63	9.40	N/A	N/A	N/A	83.23
	3/7/2014	65.0	60.0 - 65.0	92.63	5.94	N/A	N/A	N/A	86.69
DMW-3	3/6/2013	65.0	60.0 - 65.0	87.41	2.10	N/A	N/A	N/A	85.31
	3/5/2014	65.0	60.0 - 65.0	87.41	1.40	N/A	N/A	N/A	86.01

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured
NL - Not Located

Table 3 – Current Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
January 17, 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**
MW-1	1/17/2016	**1,650**	**25,500**	**1,660**	8,510	ND(**44.0**)	ND(19.3)	ND(**29.0**)	ND(0.00750)
MW-2	1/17/2016	**11,700**	**19,400**	**2,210**	**14,600**	ND(**44.0**)	**34,400**	ND(**29.0**)	**0.134**
MW-3	1/17/2016	1.17J	5.04	1.03J	7.62J	ND(0.176)	0.999J	ND(0.116)	ND(0.00750)
MW-4	1/17/2016	**5,530**	131J	**1,610**	4,880	**468**	**6,670**	ND(**5.81**)	ND(0.00750)
MW-5	1/17/2016	**12,600**	**29,700**	**3,120**	**20,800**	ND(**44.0**)	**17,200**	ND(**29.0**)	ND(0.00750)
MW-6A	1/17/2016	Not Sampled							
MW-6B	1/17/2016	Not Sampled							
MW-7A	1/17/2016	Not Sampled							
MW-8A	1/17/2016	Not Sampled							
MW-8B	1/17/2016	Not Sampled							
MW-9A	1/17/2016	Not Sampled							
MW-9B	1/17/2016	Not Sampled							
MW-10A	1/17/2016	Not Sampled							
MW-10B	1/17/2016	Not Sampled							
MW-11A	1/17/2016	Not Sampled							
MW-11B	1/17/2016	Not Sampled							
MW-12A	1/17/2016	Not Sampled							
MW-12B	1/17/2016	Not Sampled							
MW-13A	1/17/2016	Not Sampled							
MW-13B	1/17/2016	Not Sampled							
MW-14A	1/17/2016	Not Sampled							
MW-14B	1/17/2016	Not Sampled							
MW-15A	1/17/2016	Not Sampled							
MW-15B	1/17/2016	Not Sampled							

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
January 17, 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**
MW-16A	1/17/2016	Abandoned							
MW-16B	1/17/2016	Abandoned							
MW-17B	1/17/2016	Not Sampled							
MW-18A	1/17/2016	Not Sampled							
MW-18B	1/17/2016	Not Sampled							
MW-19A	1/17/2016	Not Sampled							
MW-19B	1/17/2016	Not Sampled							
MW-20A	1/17/2016	Not Sampled							
MW-20B	1/17/2016	Not Sampled							
MW-21A	1/17/2016	Not Sampled							
MW-21B	1/17/2016	Not Sampled							
MW-22B	1/17/2016	Not Sampled							
RW-1	1/17/2016	**1,100**	**2,650**	88.4J	8,050	**394**	**282**	ND(2.90)	ND(0.00750)
RW-2	1/17/2016	**1,220**	**4,330**	276	4,880	**313**	**1,510**	ND(5.81)	ND(0.00750)
RW-3	1/17/2016	**12,800**	**25,500**	**2,860**	**19,200**	ND(**44.0**)	**9,600**	ND(**29.0**)	**0.539**
RW-4	1/17/2016	**5,290**	**6,900**	**1,110**	6,590	ND(**35.2**)	**18,200**	ND(**23.2**)	ND(0.00750)
RW-5	1/17/2016	**7,990**	**22,000**	**2,270**	**18,800**	ND(**35.2**)	**3,060**	ND(**23.2**)	ND(0.00750)
DMW-1	1/17/2016	Not Sampled							
DMW-2	1/17/2016	Not Sampled							
DMW-3	1/17/2016	Not Sampled							
Duplicate 1 (MW-5)	1/17/2016	**12,500**	**30,100**	**3,160**	**21,300**	ND(**44.0**)	**17,600**	ND(**29.0**)	ND(0.00750)
Field Blank 1	1/17/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)
Trip Blank 1	1/17/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current Groundwater Analytical Data
--8 Oxygenates--
Broad River Amoco; UST Permit #11946
January 17, 2016

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	---	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW-1	1/17/2016	ND(59.0)	ND(31,200)	ND(9,400)	ND(58.5)	3,170J	ND(60.0)	ND(72.5)	ND(122)
MW-2	1/17/2016	ND(59.0)	ND(31,200)	ND(9,400)	ND(58.5)	34,900	444J	14,700	ND(122)
MW-3	1/17/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	46.8	ND(0.240)	6.08J	ND(0.487)
MW-4	1/17/2016	ND(11.8)	ND(6,250)	ND(1,880)	ND(11.7)	1,360	176J	1,600	ND(24.3)
MW-5	1/17/2016	ND(59.0)	ND(31,200)	ND(9,400)	ND(58.5)	6,030	473J	ND(72.5)	ND(122)
MW-6A	1/17/2016	Not Sampled							
MW-6B	1/17/2016	Not Sampled							
MW-7A	1/17/2016	Not Sampled							
MW-8A	1/17/2016	Not Sampled							
MW-8B	1/17/2016	Not Sampled							
MW-9A	1/17/2016	Not Sampled							
MW-9B	1/17/2016	Not Sampled							
MW-10A	1/17/2016	Not Sampled							
MW-10B	1/17/2016	Not Sampled							
MW-11A	1/17/2016	Not Sampled							
MW-11B	1/17/2016	Not Sampled							
MW-12A	1/17/2016	Not Sampled							
MW-12B	1/17/2016	Not Sampled							
MW-13A	1/17/2016	Not Sampled							
MW-13B	1/17/2016	Not Sampled							
MW-14A	1/17/2016	Not Sampled							
MW-14B	1/17/2016	Not Sampled							
MW-15A	1/17/2016	Not Sampled							
MW-15B	1/17/2016	Not Sampled							

Note: All units expressed in µg/L (PPB) N/A - Not Analyzed
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current Groundwater Analytical Data
--8 Oxygenates--
Broad River Amoco; UST Permit #11946
January 17, 2016

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	---	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW-16A	1/17/2016	Abandoned							
MW-16B	1/17/2016	Abandoned							
MW-17B	1/17/2016	Not Sampled							
MW-18A	1/17/2016	Not Sampled							
MW-18B	1/17/2016	Not Sampled							
MW-19A	1/17/2016	Not Sampled							
MW-19B	1/17/2016	Not Sampled							
MW-20A	1/17/2016	Not Sampled							
MW-20B	1/17/2016	Not Sampled							
MW-21A	1/17/2016	Not Sampled							
MW-21B	1/17/2016	Not Sampled							
MW-22B	1/17/2016	Not Sampled							
RW-1	1/17/2016	ND(5.90)	ND(3,120)	ND(940)	ND(5.85)	487J	22.7J	ND(7.25)	ND(12.2)
RW-2	1/17/2016	ND(11.8)	ND(6,250)	ND(1,880)	ND(11.7)	429J	ND(12.0)	549	ND(24.3)
RW-3	1/17/2016	ND(59.0)	ND(31,200)	ND(9,400)	ND(58.5)	34,200	320J	4,680	ND(122)
RW-4	1/17/2016	ND(47.2)	ND(25,000)	ND(7,520)	ND(46.8)	9,470	117J	6,730	ND(97.4)
RW-5	1/17/2016	ND(47.2)	ND(25,000)	ND(7,520)	ND(46.8)	2,520J	189J	ND(58.0)	ND(97.4)
DMW-1	1/17/2016	Not Sampled							
DMW-2	1/17/2016	Not Sampled							
DMW-3	1/17/2016	Not Sampled							
Duplicate 1 (MW-2)	1/17/2016	ND(59.0)	ND(31,200)	ND(9,400)	ND(58.5)	7,660	512J	1,520J	ND(122)
Field Blank 1	1/17/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	1.01U	ND(0.240)	ND(0.290)	ND(0.487)
Trip Blank 1	1/17/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	1.01U	ND(0.240)	21.5	ND(0.487)

Note: All units expressed in µg/L (PPB) N/A - Not Analyzed
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and January 17, 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-1	3/5/2011	**1,760**	**18,400**	**1,270**	5,140	**4,070J**	<83.9	<121	<0.0032	**18**
	3/8/2013	**2,480**	**12,800**	**1,550**	5,650	**623**	**70.8 J**	ND(**11.6**)	ND (0.0039)	14 J
	3/6/2014	**3,080**	**35,100**	**3,130**	**13,300**	**754J**	ND(38.5)	ND(**58.1**)	ND(0.0063)	NA
	8/5/2015	**2,360J**	**34,300**	**3,310**	**14,400**	**2,660**	ND(38.5)	ND(**58.1**)	ND(0.00750)	NA
	1/17/2016	**1,650**	**25,500**	**1,660**	8,510	ND(**44.0**)	ND(19.3)	ND(**29.0**)	ND(0.00750)	NA
MW-2	3/5/2011	**1,650**	**3,230**	422	2,190	**462J**	**3,420**	<12.1	**1.42**	<15
	3/6/2013	**1.34' Free Product**								
	3/5/2014	**1.42' Free Product**								
	8/5/2015	**14,100**	**23,300**	**2,930J**	**15,500**	**5,050**	**47,000**	ND(**116**)	ND(0.00750)	NA
	1/17/2016	**11,700**	**19,400**	**2,210**	**14,600**	ND(**44.0**)	**34,400**	ND(**29.0**)	**0.134**	NA
MW-3	3/5/2011	<15	10.4	9.52	30.6	4.74J	7.91	<0.121	<0.0032	<15
	3/8/2013	0.417 J	1.05	0.408 J	1.72 J	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/7/2014	2.04J	20.9J	2.81J	17.3J	7.44J	ND(0.770)	ND(1.16)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	1.17J	5.04	1.03J	7.62J	ND(0.176)	0.999J	ND(0.116)	ND(0.00750)	NA
MW-4	3/5/2011	**1,830**	198	**1,270**	3,160	**598**	**3,100**	<12.1	<0.0032	<15
	3/6/2013	**2.31' Free Product**								
	3/5/2014	**2.24' Free Product**								
	8/5/2015	**5,720**	309J	**2,390**	7,180	**934**	**4,060**	ND(**11.6**)	ND(0.00750)	NA
	1/17/2016	**5,530**	131J	**1,610**	4,880	**468**	**6,670**	ND(**5.81**)	ND(0.00750)	NA
MW-5	6/20/2011	**0.30' Free Product**								
	3/6/2013	**2.83' Free Product**								
	3/5/2014	**7.63' Free Product**								
	8/5/2015	**18,700**	**36,000**	**3,540**	**20,100**	**2,950**	**25,700**	ND(**58.1**)	ND(0.00750)	NA
	1/17/2016	**12,600**	**29,700**	**3,120**	**20,800**	ND(**44.0**)	**17,200**	ND(**29.0**)	ND(0.00750)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and January 17, 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15** (Action Level)
MW-6A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	13 J
	3/5/2014	ND(0.111)	0.469J	ND(0.109)	1.63J	2.43J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-6B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	**19**
	3/5/2014	0.372J	2.96J	2.15J	13.9J	13.1	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-7A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	1.06J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-8A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	6.8 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-8B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-9A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.62	0.642 J	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.21J	0.667J	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and January 17, 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-9B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.79	0.675 J	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.51J	0.668J	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-10A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-10B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-11A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.00	ND (0.116)	ND (0.0039)	11 J
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.67J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-11B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.12	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	0.940J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-12A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.486J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and January 17, 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-12B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.359J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-13A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	7.8 J
	3/5/2014	Insufficient Water								
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-13B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.322J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-14A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.329J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-14B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.277J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-15A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	5.3 J
	3/6/2014	ND(0.111)	ND(0.122)	0.166J	0.893J	0.454J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and January 17, 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-15B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-16A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	**35**
	3/5/2014	Abandoned								
	8/5/2015	Abandoned								
	1/17/2016	Abandoned								
MW-16B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	Abandoned								
	8/5/2015	Abandoned								
	1/17/2016	Abandoned								
MW-17B	3/6/2013	**6.58**	2.47	1.1 J	3.87 J	ND (0.352	**244**	ND (0.232)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(1.11)	3.27J	ND(1.09)	9.61J	12.8J	**420**	ND(1.16)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-18A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.42	ND (0.116)	ND (0.0039)	**590**
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.363J	2.82J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-18B	3/6/2013	ND (0.111)	0.459 J	ND (0.109)	2.03 J	ND (0.176)	0.841 J	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.225J	0.416J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and January 17, 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-19A	3/6/2013	0.566 J	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	1.97J	1.87J	0.941J	6.10J	3.67J	0.644J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-19B	3/6/2013	0.253 J	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	0.329J	0.349J	0.123J	1.07J	1.33J	1.11J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-20A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.15	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	0.991J	0.505J	2.92J	3.50J	0.526J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-20B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.25	ND (0.116)	ND (0.0039)	8.77 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.492J	18.1	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-21A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	12 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
MW-21B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.34	ND (0.116)	ND (0.0039)	6.8 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	5.75	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and January 17, 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-22B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.83	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	2.64J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
RW-1	3/6/2013	**0.15' Free Product**								
	3/5/2014	**6.68' Free Product**								
	8/5/2015	**4,060**	**21,500**	**2,770**	**24,100**	**1,670**	**2,080**	ND(**23.2**)	ND(0.00750)	NA
	1/17/2016	**1,100**	**2,650**	88.4J	8,050	**394**	**282**	ND(2.90)	ND(0.00750)	NA
RW-2	3/8/2013	**9,420**	**12,800**	**2,030**	**11,000**	**565 J**	**9100**	**224 J**	**1.65**	ND (3.8)
	3/5/2014	**11,000**	**18,500**	**1,580**	9,850	**299J**	**26,900**	**58.1J**	ND(0.0063)	NA
	8/5/2015	**199**	409	20.6J	1,920	**116**	**90.1**	ND(1.16)	ND(0.00750)	NA
	1/17/2016	**1,220**	**4,330**	276	4,880	**313**	**1,510**	ND(5.81)	ND(0.00750)	NA
RW-3	3/6/2013	**0.05' Free Product**								
	3/5/2014	**0.06' Free Product**								
	8/5/2015	**4,710**	**7,870**	**908**	7,760	**642**	**6,460**	ND(**11.6**)	ND(0.00750)	NA
	1/17/2016	**12,800**	**25,500**	**2,860**	**19,200**	ND(**44.0**)	**9,600**	ND(**29.0**)	**0.539**	NA
RW-4	3/8/2013	**3,390**	**1,730**	**977**	4,900	**210 J**	**4,460**	**ND (5.81)**	ND (0.0039)	12 J
	3/7/2014	**2,960**	**4,070**	378J	3,500	**186J**	**9,160**	**ND(11.6)**	ND(0.0063)	NA
	8/5/2015	**4,680**	**5,720**	**1,050**	6,190	**1,100**	**20,200**	ND(**23.2**)	ND(0.00750)	NA
	1/17/2016	**5,290**	**6,900**	**1,110**	6,590	ND(**35.2**)	**18,200**	ND(**23.2**)	ND(0.00750)	NA
RW-5	3/6/2013	**0.06' Free Product**								
	3/5/2014	**0.30' Free Product**								
	8/5/2015	**20,000**	**33,200**	**3,060**	**18,100**	**2,780**	**10,600**	ND(**58.1**)	ND(0.00750)	NA
	1/17/2016	**7,990**	**22,000**	**2,270**	**18,800**	ND(**35.2**)	**3,060**	ND(**23.2**)	ND(0.00750)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and January 17, 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15** (Action Level)
DMW-1	3/8/2013	**507**	ND (1.22)	ND (1.09	ND (0.179)	ND (1.76)	**131**	**14.2 J**	ND (0.0039)	ND (3.8)
	3/7/2014	ND(0.111)	0.827J	ND(0.109)	1.17J	ND(0.176)	**159**	2.60J	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
DMW-2	3/6/2013	4.12	0.548 J	ND (0.109)	0.805 J	ND (0.176)	**153**	ND (0.116)	ND (0.0039)	ND (3.8)
	3/7/2014	0.669J	3.63J	1.90J	10.7J	13.2	**89.2**	ND(0.232)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
DMW-3	3/6/2013	0.281 J	0.497 J	ND (0.109)	ND (0.179	ND (0.176)	1.76	ND (0.116)	ND (0.0039)	**120**
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.33J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Broad River Amoco; UST Permit #11946

Table 5 - Free-Phase Product Reduction Calculation

January 17, 2016

Well		Product Thickness (feet)	Product Thickness >SSTL Thickness (feet)
MW-1	Initial Thickness	0.00	
	SSTL Thickness	0.01	
	Initial > SSTL	0.00	0.00
	Subsequent (1/17/16)	0.00	
	Subsequent >SSTL	0.00	0.00
MW-2	Initial Thickness	1.43	
	SSTL Thickness	0.01	
	Initial > SSTL	1.42	1.42
	Subsequent (1/17/16)	0.00	
	Subsequent >SSTL	-0.01	0.00
MW-4	Initial Thickness	2.25	
	SSTL Thickness	0.01	
	Initial > SSTL	2.24	2.24
	Subsequent (1/17/16)	0.00	
	Subsequent >SSTL	0.00	0.00
MW-5	Initial Thickness	6.26	
	SSTL Thickness	0.01	
	Initial > SSTL	6.25	6.25
	Subsequent (1/17/16)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-1	Initial Thickness	5.30	
	SSTL Thickness	0.01	
	Initial > SSTL	5.29	5.29
	Subsequent (1/17/16)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-2	Initial Thickness	0.00	
	SSTL Thickness	0.01	
	Initial > SSTL	0.00	0.00
	Subsequent (1/17/16)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-3	Initial Thickness	0.01	
	SSTL Thickness	0.01	
	Initial > SSTL	0.00	0.00
	Subsequent (1/17/16)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-4	Initial Thickness	0.00	
	SSTL Thickness	0.01	
	Initial > SSTL	0.00	0.00
	Subsequent (1/17/16)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-5	Initial Thickness	0.03	
	SSTL Thickness	0.01	
	Initial > SSTL	0.02	0.02
	Subsequent (1/17/16)	0.00	
	Subsequent >SSTL	0.00	0.00
Total	Initial > SSTL		15.28
	Subsequent >SSTL		0.00

Free-Phase Product Thickness Reduction = 100%

APPENDIX A
NOT INCLUDED

APPENDIX B

PURGING DATA SHEETS &
LABORATORY ANALYTICAL DATA

ENVIRO-TEST SERVICES

Purge Meter Calibration Data Sheet

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cde, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Cool 40° Rain in AM Clear afternoon

pH / Specific Conductivity Meter

Model & Serial #: (check one)
- ✓ Hanna HI9824 – S/N 886328
- ____ Hanna HI9824 – S/N 871936

Dissolved Oxygen Meter

Model & Serial #: (check one)
- ____ YSI 58 Dissolved Oxygen – S/N 510
- ✓ YSI 550A Dissolved Oxy. – S/N 06A280

Turbidity Meter

Model & Serial #: (check one)
- ✓ Micro-TPW 2000 – S/N 201401347

Initial Calibration

pH Calibration:	4.0 / 7.0 / 10	Spec. Cond. Calibration:	997	Turbidity Calibration:	0.2 / 9.9 / 998 /
pH Standard:	4.01 / 7.00 / 10.01	Spec. Cond. Standard:	1000 uS/cm	Turbidity Standard:	0.02 / 10.0 / 1000 /

Date: 1-17-16 Time: 940

Midday Calibration Check

pH Calibration:	4.0 / 6.9 / 10.0	Spec. Cond. Calibration:	1007	Turbidity Calibration:	0.2 / 10.1 / 1008 /
pH Standard:	4.01 / 7.00 / 10.01	Spec. Cond. Standard:	1000 uS/cm	Turbidity Standard:	0.02 / 10.0 / 1000 /

Date: 1-17-16 Time: 1230

End-of-Day Calibration Check

pH Calibration:	4.2 / 7.0 / 9.9	Spec. Cond. Calibration:	1004	Turbidity Calibration:	0.2 / 10.1 / 999 /
pH Standard:	4.01 / 7.00 / 10.01	Spec. Cond. Standard:	1000 uS/cm	Turbidity Standard:	0.02 / 10.0 / 1000 /

Date: 1-17-16 Time: 1610

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 1-17-16

Site Data

Facility Name: Broad River AMOCO Facility Location: 4335 Broad River Rd Columbia SC

UST Permit # 11946 Field Personnel: Terry TeaTe (full names) Weather: 40° LT Rain

Well Data

Well Number: MW-1 Diameter (in): 2" Well Volume (gal): 4.6

Total Depth: 40' Static Water Level: 11.48 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2.0	2.0	2.0					.5
Time (military)									
pH (standard units)	7.9	7.8	7.8	7.8					7.8
Specific Cond. (µS/cm)	43	58	72	102					88
Water Temp (°C)	20.5	19.9	20.4	20.8					20.6
Turbidity (mild, moderate, strong)	1.98	3.46	2.83	2.91					2.81
Dissolved Oxygen	0.35	0.39	0.46	0.44					0.40

Sample Collection Time: 1008

Remarks: _____

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 1-17-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cdo, SC

UST Permit # 11946 Field Personnel: Terry Tea Te (full names) Weather: 40° Cool Rain Stopped

Well Data

Well Number: MW-2 Diameter (in): 2" Well Volume (gal): 2.9

Total Depth: 28' Static Water Level: 9.80 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2.0	2.0	1					.5
Time (military)		~~2.0~~	~~2.0~~	X					~~.5~~
pH (standard units)	8.2	8.3	8.2	8.2					8.2
Specific Cond. (µS/cm)	106	68	138	121					118
Water Temp (°C)	20.4	20.6	21.0	20.9					21.2
Turbidity (mild, moderate, strong)	9.56	5.93	7.66	9.01					8.72
Dissolved Oxygen	0.36	0.39	0.41	0.39					0.38

Sample Collection Time: 1047

Remarks: _____

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 1-17-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cdc, SC

UST Permit # 11946 Field Personnel: _____ (full names) Weather: 40° cool clear

Well Data

Well Number: MW-3 Diameter (in): 2" Well Volume (gal): 3.4

Total Depth: 31' Static Water Level: 9.55 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2.0	2.0	2.0					1
Time (military)									
pH (standard units)	8.3	8.3	8.3	8.2					8.2
Specific Cond. (µS/cm)	187	277	130	118					128
Water Temp (°C)	18.4	18.9	18.5	18.9					19.1
Turbidity (mild, moderate, strong)	2.43	15.44	135.8	140.8					128.7
Dissolved Oxygen	0.39	0.37	0.35	0.96					0.88

Sample Collection Time: 1120

Remarks: _____

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 1-17-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd Cde, SC

UST Permit # 11946 Field Personnel: Terry TeaTe (full names) Weather: 40° cool & clear

Well Data

Well Number: MW-4 Diameter (in): 2" Well Volume (gal): 2.8

Total Depth: 25' Static Water Level: 7.50 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2	2	1					1
Time (military)									
pH (standard units)	8.4	8.4	8.5	8.4					8.4
Specific Cond. (µS/cm)	326	209	337	305					287
Water Temp (°C)	17.9	18.5	19.0	19.2					19.4
Turbidity (mild, moderate, strong)	87.77	76.21	78.94	75.22					81.33
Dissolved Oxygen	0.75	0.75	0.71	0.82					0.70

Sample Collection Time: 1156

Remarks:

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 1-17-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Colo, SC

UST Permit # 11946 Field Personnel: Terry TeaTe (full names) Weather: 40° Cool, clear, Sunny

Well Data

Well Number: MW-5 Diameter (in): 2" Well Volume (gal): 1.8

Total Depth: 20 Static Water Level: 8.73 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1.5	1	1					1
Time (military)									
pH (standard units)	8.6	8.6	8.5	8.5					8.5
Specific Cond. (µS/cm)	207	284	277	265					209
Water Temp (°C)	19.9	21.2	21.1	21.4					21.1
Turbidity (mild, moderate, strong)	8.40	10.39	10.78	9.72					10.18
Dissolved Oxygen	0.67	0.66	0.78	0.82					0.75

Sample Collection Time: 1233

Remarks: Duplicate 1

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 1-17-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Colo, SC

UST Permit # 11946 Field Personnel: Terry Tea Te (full names) Weather: Sunny clear 42°

Well Data

Well Number: RW-1 Diameter (in): 4" Well Volume (gal): 20.5

Total Depth: 40' Static Water Level: 8.54 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		5	5	2					1
Time (military)									
pH (standard units)	8.8	8.9	8.8	8.8					8.8
Specific Cond. (µS/cm)	114	141	99	128					109
Water Temp (°C)	20.5	22.1	22.4	22.5					22.1
Turbidity (mild, moderate, strong)	159.1	81.96	25.23	27.11					24.17
Dissolved Oxygen	2.22	2.45	2.47	2.40					2.38

Sample Collection Time: 1309

Remarks: _____

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 1-17-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Colo, SC

UST Permit # 11946 Field Personnel: Terry Tea Te (full names) Weather: Cool clear 40°

Well Data

Well Number: RW-2 Diameter (in): 4" Well Volume (gal): 19.7

Total Depth: 40' Static Water Level: 9.82 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		5	2	2	2				1
Time (military)									
pH (standard units)		8.8	8.8	8.6	8.5				8.5
Specific Cond. (µS/cm)		25	23	12	18				31
Water Temp (°C)		22.1	22.7	23.2	22.4				22.5
Turbidity (mild, moderate, strong)		4.53	3.81	5.81	5.08				4.17
Dissolved Oxygen		1.11	0.90	0.80	0.85				0.88

Sample Collection Time: 1345

Remarks: _____

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 1-17-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Colo, SC

UST Permit # 11946 Field Personnel: Terry TeaTe (full names) Weather: Cool/clear 42°

Well Data

Well Number: RW-3 Diameter (in): 4" Well Volume (gal): 19.9

Total Depth: 41 Static Water Level: 9.38 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		3	3	2					.5
Time (military)									
pH (standard units)	8.5	8.5	8.5	8.4					8.5
Specific Cond. (µS/cm)	126	129	69	111					102
Water Temp (°C)	19.7	21.1	21.2	21.4					21.2
Turbidity (mild, moderate, strong)	191.2	151.5	87.06	89.06					84.22
Dissolved Oxygen	0.85	0.89	0.98	1.10					1.02

Sample Collection Time: 1422

Remarks: _____

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 1-17-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cdo, SC

UST Permit # 11946 Field Personnel: Terry TeaTe (full names) Weather: Clear, Sunny Cool

Well Data

Well Number: RW-4 Diameter (in): 4" Well Volume (gal): 20.2

Total Depth: 40.5 Static Water Level: 9.45 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		3	3	2					.5
Time (military)									
pH (standard units)	8.3	8.3	8.3	8.3					8.3
Specific Cond. (µS/cm)	120	122	156	131					148
Water Temp (°C)	20.4	22.1	22.7	22.5					22.5
Turbidity (mild, moderate, strong)	146.6	140.9	181.4	172.3					161.3
Dissolved Oxygen	0.88	0.80	0.88	0.81					0.80

Sample Collection Time: 1505

Remarks: _____

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 1-17-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cdo, SC

UST Permit # 11946 Field Personnel: Terry Tea Te (full names) Weather: Sunny Clear Cool

Well Data

Well Number: RW-5 Diameter (in): 4" Well Volume (gal): 19.1

Total Depth: 38.5 Static Water Level: 9.22 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		3	3	3					1
Time (military)									
pH (standard units)	8.6	8.7	8.7	8.6					8.6
Specific Cond. (µS/cm)	190	153	162	131					188
Water Temp (°C)	19.2	20.1	20.4	20.9					20.7
Turbidity (mild, moderate, strong)	112.7	120.4	156.4	149.3					131.8
Dissolved Oxygen	0.75	0.83	0.87	0.77					0.80

Sample Collection Time: 1551

Remarks: _____

ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT
Enviro-Test Services
P.O. Box 2237
Irmo, SC 29063

ATTENTION
Terry Teate

PROJECT ID
Broad River Amoco

LABORATORY REPORT NUMBER
216011907

DATE
01/21/2016

Primary Data Review By

Authorized Signature

Secondary Data Review By

Ashley B. Amick
Project Manager, Access Analytical, Inc.
aamick@accessanalyticalinc.com

PLEASE NOTE:

- **Unless otherwise noted, all analysis on this report performed at Gulf Coast Analytical Labs (GCAL), 7979 Innovation Park Dr., Baton Rouge, LA 70820.**
- **GCAL is SCDHEC certified laboratory # 73006, NCDENR certified lab # 618, GA certified lab # LA-01955, NELAP certified laboratory # 01955**
- Local support services for this project are provided by Access Analytical, Inc.. Access Analytical is a representative of GCAL serving clients in the SC/NC/GA areas. All questions regarding this report should be directed to your local Access Analytical representative at 803.781.4243 or toll free at 888.315.4243.

GCAL
ANALYTICAL LABORATORIES, LLC

NELAP CERTIFICATE NUMBER: 01955
DOD ELAP CERTIFICATE NUMBER: L14-243

ANALYTICAL RESULTS

PERFORMED BY

GCAL, LLC
7979 Innovation Park Dr.
Baton Rouge, LA 70820

Report Date 01/21/2016

GCAL Report 216011907

Project Broad River Amoco

Deliver To	***Additional Recipients***
Terry Teate Enviro-Test Services P.O. Box 2237 Irmo, SC 29063 803-732-5770	NONE

PJLA Testing DoD ELAP

ISO 17025

Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

Common Abbreviations that may be Utilized in this Report

ND	Indicates the result was Not Detected at the specified reporting limit
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DL	Diluted analysis – when appended to Client Sample ID
LOD	Limit of Detection
LOQ	Limit of Quantitation
RE	Re-analysis
00:01	Reported as a time equivalent to 12:00 AM

Reporting Flags that may be Utilized in this Report

J or I	Indicates the result is between the MDL and LOQ
J	DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria
U	Indicates the compound was analyzed for but not detected
B or V	Indicates the analyte was detected in the associated Method Blank
Q	Indicates a non-compliant QC Result (See Q Flag Application Report)
*	Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
E	The result is estimated because it exceeded the instrument calibration range
E	Metals - % diference for the serial dilution is > 10%

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.

Authorized Signature
GCAL Report 216011907

Certifications

10/02/2015

Certification	Certification Number
DOD ELAP	L14-243
Alabama	01955
Arkansas	12-060-0
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
USDA Soil Permit	P330-10-00117

Case Narrative

Client: Access Analytical **Report:** 216011907

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

VOLATILES MASS SPECTROMETRY

In the EPA 8260B analysis, samples 21601190701 (MW-1), 21601190702 (MW-2), 21601190704 (MW-4), 21601190705 (MW-5), 21601190706 (RW-1), 21601190707 (RW-2), 21601190708 (RW-3), 21601190709 (RW-4), 21601190710 (RW-5) and 21601190711 (DUPLICATE 1) had to be diluted to bracket the concentration of target compounds within the calibration range of the instrument. The dilutions are reflected in elevated detection limits.

SEMI-VOLATILES GAS CHROMATOGRAPHY

In the 8011 analysis, the RPD between the primary and confirmation result is greater than 40 for 1,2-Dibromoethane for samples 21601190702 (MW-1) and 21601190708 (RW-3). The higher results are reported.

Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21601190701	MW-1	Water	01/17/2016 10:08	01/19/2016 09:50
21601190702	MW-2	Water	01/17/2016 10:47	01/19/2016 09:50
21601190703	MW-3	Water	01/17/2016 11:20	01/19/2016 09:50
21601190704	MW-4	Water	01/17/2016 11:56	01/19/2016 09:50
21601190705	MW-5	Water	01/17/2016 12:33	01/19/2016 09:50
21601190706	RW-1	Water	01/17/2016 13:09	01/19/2016 09:50
21601190707	RW-2	Water	01/17/2016 13:45	01/19/2016 09:50
21601190708	RW-3	Water	01/17/2016 14:22	01/19/2016 09:50
21601190709	RW-4	Water	01/17/2016 15:05	01/19/2016 09:50
21601190710	RW-5	Water	01/17/2016 15:51	01/19/2016 09:50
21601190711	DUPLICATE 1	Water	01/17/2016 12:35	01/19/2016 09:50
21601190712	FIELD BLANK	Water	01/17/2016 09:52	01/19/2016 09:50
21601190713	TRIP BLANK	Water	01/17/2016 00:01	01/19/2016 09:50

Summary of Compounds Detected

MW-1

Collect Date 01/17/2016 10:08 **GCAL ID** 21601190701
Receive Date 01/19/2016 09:50 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
75-85-4	tert-amyl alcohol (TAA)	3170J	253	5000	ug/L
71-43-2	Benzene	1650	27.8	1250	ug/L
108-88-3	Toluene	25500	30.5	1250	ug/L
100-41-4	Ethylbenzene	1660	27.3	1250	ug/L
1330-20-7	Xylene (total)	8510	44.7	3750	ug/L

MW-2

Collect Date 01/17/2016 10:47 **GCAL ID** 21601190702
Receive Date 01/19/2016 09:50 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	444J	60.0	1250	ug/L
75-65-0	t-Butanol (TBA)	14700	72.5	2500	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	34400	19.3	1250	ug/L
75-85-4	tert-amyl alcohol (TAA)	34900	253	5000	ug/L
71-43-2	Benzene	11700	27.8	1250	ug/L
108-88-3	Toluene	19400	30.5	1250	ug/L
100-41-4	Ethylbenzene	2210	27.3	1250	ug/L
1330-20-7	Xylene (total)	14600	44.7	3750	ug/L

EPA 8011

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.134	0.00750	0.020	ug/L

MW-3

Collect Date 01/17/2016 11:20 **GCAL ID** 21601190703
Receive Date 01/19/2016 09:50 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
75-65-0	t-Butanol (TBA)	6.08J	0.290	10.0	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.999J	0.077	5.00	ug/L
75-85-4	tert-amyl alcohol (TAA)	46.8	1.01	20.0	ug/L
71-43-2	Benzene	1.17J	0.111	5.00	ug/L
108-88-3	Toluene	5.04	0.122	5.00	ug/L

Summary of Compounds Detected

MW-3

Collect Date 01/17/2016 11:20 **GCAL ID** 21601190703
Receive Date 01/19/2016 09:50 **Matrix** Water

EPA 8260B (Continued)

CAS#	Parameter	Result	DL	LOQ	Units
100-41-4	Ethylbenzene	1.03J	0.109	5.00	ug/L
1330-20-7	Xylene (total)	7.62J	0.179	15.0	ug/L

MW-4

Collect Date 01/17/2016 11:56 **GCAL ID** 21601190704
Receive Date 01/19/2016 09:50 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	176J	12.0	250	ug/L
75-65-0	t-Butanol (TBA)	1600	14.5	500	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	6670	3.85	250	ug/L
75-85-4	tert-amyl alcohol (TAA)	1360	50.7	1000	ug/L
71-43-2	Benzene	5530	5.55	250	ug/L
108-88-3	Toluene	131J	6.09	250	ug/L
100-41-4	Ethylbenzene	1610	5.45	250	ug/L
1330-20-7	Xylene (total)	4880	8.94	750	ug/L
91-20-3	Naphthalene	468	8.80	250	ug/L

MW-5

Collect Date 01/17/2016 12:33 **GCAL ID** 21601190705
Receive Date 01/19/2016 09:50 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	473J	60.0	1250	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	17200	19.3	1250	ug/L
75-85-4	tert-amyl alcohol (TAA)	6030	253	5000	ug/L
71-43-2	Benzene	12600	27.8	1250	ug/L
108-88-3	Toluene	29700	30.5	1250	ug/L
100-41-4	Ethylbenzene	3120	27.3	1250	ug/L
1330-20-7	Xylene (total)	20800	44.7	3750	ug/L

Summary of Compounds Detected

RW-1

Collect Date 01/17/2016 13:09 **GCAL ID** 21601190706
Receive Date 01/19/2016 09:50 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	22.7J	6.00	125	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	282	1.93	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	487J	25.3	500	ug/L
71-43-2	Benzene	1100	2.78	125	ug/L
108-88-3	Toluene	2650	3.05	125	ug/L
100-41-4	Ethylbenzene	88.4J	2.73	125	ug/L
1330-20-7	Xylene (total)	8050	4.47	375	ug/L
91-20-3	Naphthalene	394	4.40	125	ug/L

RW-2

Collect Date 01/17/2016 13:45 **GCAL ID** 21601190707
Receive Date 01/19/2016 09:50 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
75-65-0	t-Butanol (TBA)	549	14.5	500	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	1510	3.85	250	ug/L
75-85-4	tert-amyl alcohol (TAA)	429J	50.7	1000	ug/L
71-43-2	Benzene	1220	5.55	250	ug/L
108-88-3	Toluene	4330	6.09	250	ug/L
100-41-4	Ethylbenzene	276	5.45	250	ug/L
1330-20-7	Xylene (total)	4880	8.94	750	ug/L
91-20-3	Naphthalene	313	8.80	250	ug/L

RW-3

Collect Date 01/17/2016 14:22 **GCAL ID** 21601190708
Receive Date 01/19/2016 09:50 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	320J	60.0	1250	ug/L
75-65-0	t-Butanol (TBA)	4680	72.5	2500	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	9600	19.3	1250	ug/L
75-85-4	tert-amyl alcohol (TAA)	34200	253	5000	ug/L
71-43-2	Benzene	12800	27.8	1250	ug/L
108-88-3	Toluene	25500	30.5	1250	ug/L
100-41-4	Ethylbenzene	2860	27.3	1250	ug/L
1330-20-7	Xylene (total)	19200	44.7	3750	ug/L

Summary of Compounds Detected

RW-3

Collect Date 01/17/2016 14:22 **GCAL ID** 21601190708
Receive Date 01/19/2016 09:50 **Matrix** Water

EPA 8011

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.539	0.00750	0.020	ug/L

RW-4

Collect Date 01/17/2016 15:05 **GCAL ID** 21601190709
Receive Date 01/19/2016 09:50 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	117J	48.0	1000	ug/L
75-65-0	t-Butanol (TBA)	6730	58.0	2000	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	18200	15.4	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	9470	203	4000	ug/L
71-43-2	Benzene	5290	22.2	1000	ug/L
108-88-3	Toluene	6900	24.4	1000	ug/L
100-41-4	Ethylbenzene	1110	21.8	1000	ug/L
1330-20-7	Xylene (total)	6590	35.8	3000	ug/L

RW-5

Collect Date 01/17/2016 15:51 **GCAL ID** 21601190710
Receive Date 01/19/2016 09:50 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	189J	48.0	1000	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	3060	15.4	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	2520J	203	4000	ug/L
71-43-2	Benzene	7990	22.2	1000	ug/L
108-88-3	Toluene	22000	24.4	1000	ug/L
100-41-4	Ethylbenzene	2270	21.8	1000	ug/L
1330-20-7	Xylene (total)	18800	35.8	3000	ug/L

DUPLICATE 1

Collect Date 01/17/2016 12:35 **GCAL ID** 21601190711
Receive Date 01/19/2016 09:50 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	512J	60.0	1250	ug/L
75-65-0	t-Butanol (TBA)	1520J	72.5	2500	ug/L

Summary of Compounds Detected

DUPLICATE 1

Collect Date 01/17/2016 12:35 **GCAL ID** 21601190711
Receive Date 01/19/2016 09:50 **Matrix** Water

EPA 8260B (Continued)

CAS#	Parameter	Result	DL	LOQ	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	17600	19.3	1250	ug/L
75-85-4	tert-amyl alcohol (TAA)	7660	253	5000	ug/L
71-43-2	Benzene	12500	27.8	1250	ug/L
108-88-3	Toluene	30100	30.5	1250	ug/L
100-41-4	Ethylbenzene	3160	27.3	1250	ug/L
1330-20-7	Xylene (total)	21300	44.7	3750	ug/L

TRIP BLANK

Collect Date 01/17/2016 00:01 **GCAL ID** 21601190713
Receive Date 01/19/2016 09:50 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
75-65-0	t-Butanol (TBA)	21.5	0.290	10.0	ug/L

Sample Results

MW-1	**Collect Date**	01/17/2016 10:08	**GCAL ID**	21601190701
	Receive Date	01/19/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	250	01/19/2016 13:09	CLS	577240

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	60.0U	60.0	1250	ug/L
75-65-0	t-Butanol (TBA)	72.5U	72.5	2500	ug/L
108-20-3	diisopropyl Ether (DIPE)	59.0U	59.0	1250	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	19.3U	19.3	1250	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	58.5U	58.5	1250	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	9400U	9400	25000	ug/L
64-17-5	Ethanol	31200U	31200	250000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**3170J**	**253**	**5000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	122U	122	12500	ug/L
71-43-2	**Benzene**	**1650**	**27.8**	**1250**	**ug/L**
108-88-3	**Toluene**	**25500**	**30.5**	**1250**	**ug/L**
100-41-4	**Ethylbenzene**	**1660**	**27.3**	**1250**	**ug/L**
1330-20-7	**Xylene (total)**	**8510**	**44.7**	**3750**	**ug/L**
91-20-3	Naphthalene	44.0U	44.0	1250	ug/L
107-06-2	1,2-Dichloroethane	29.0U	29.0	1250	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	12500	12700	ug/L	102	78 - 130
1868-53-7	Dibromofluoromethane	12500	12400	ug/L	99	77 - 127
2037-26-5	Toluene d8	12500	13600	ug/L	109	76 - 134
17060-07-0	1,2-Dichloroethane-d4	12500	12100	ug/L	97	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
01/20/2016 11:00	577236	EPA 8011	1	01/20/2016 17:26	ARW	577396

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-2

Collect Date	01/17/2016 10:47	**GCAL ID**	21601190702
Receive Date	01/19/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	250	01/19/2016 13:29	CLS	577240

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	**t-amyl methyl ether (TAME)**	**444J**	**60.0**	**1250**	**ug/L**
75-65-0	**t-Butanol (TBA)**	**14700**	**72.5**	**2500**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	59.0U	59.0	1250	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**34400**	**19.3**	**1250**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	58.5U	58.5	1250	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	9400U	9400	25000	ug/L
64-17-5	Ethanol	31200U	31200	250000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**34900**	**253**	**5000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	122U	122	12500	ug/L
71-43-2	**Benzene**	**11700**	**27.8**	**1250**	**ug/L**
108-88-3	**Toluene**	**19400**	**30.5**	**1250**	**ug/L**
100-41-4	**Ethylbenzene**	**2210**	**27.3**	**1250**	**ug/L**
1330-20-7	**Xylene (total)**	**14600**	**44.7**	**3750**	**ug/L**
91-20-3	Naphthalene	44.0U	44.0	1250	ug/L
107-06-2	1,2-Dichloroethane	29.0U	29.0	1250	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	12500	12500	ug/L	100	78 - 130
1868-53-7	Dibromofluoromethane	12500	12600	ug/L	101	77 - 127
2037-26-5	Toluene d8	12500	13700	ug/L	110	76 - 134
17060-07-0	1,2-Dichloroethane-d4	12500	11800	ug/L	94	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
01/20/2016 11:00	577236	EPA 8011	1	01/20/2016 17:43	ARW	577396

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	**1,2-Dibromoethane**	**0.134**	**0.00750**	**0.020**	**ug/L**

Sample Results

MW-3	**Collect Date**	01/17/2016 11:20	**GCAL ID**	21601190703
	Receive Date	01/19/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	01/19/2016 14:07	CLS	577240

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	**t-Butanol (TBA)**	**6.08J**	**0.290**	**10.0**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**0.999J**	**0.077**	**5.00**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**46.8**	**1.01**	**20.0**	**ug/L**
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	**Benzene**	**1.17J**	**0.111**	**5.00**	**ug/L**
108-88-3	**Toluene**	**5.04**	**0.122**	**5.00**	**ug/L**
100-41-4	**Ethylbenzene**	**1.03J**	**0.109**	**5.00**	**ug/L**
1330-20-7	**Xylene (total)**	**7.62J**	**0.179**	**15.0**	**ug/L**
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	49.3	ug/L	99	78 - 130
1868-53-7	Dibromofluoromethane	50	50.8	ug/L	102	77 - 127
2037-26-5	Toluene d8	50	56.6	ug/L	113	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.8	ug/L	98	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
01/20/2016 11:00	577236	EPA 8011	1	01/20/2016 18:00	ARW	577396

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-4	**Collect Date**	01/17/2016 11:56	**GCAL ID**	21601190704
	Receive Date	01/19/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	50	01/19/2016 14:27	CLS	577240

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	**t-amyl methyl ether (TAME)**	**176J**	**12.0**	**250**	**ug/L**
75-65-0	**t-Butanol (TBA)**	**1600**	**14.5**	**500**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	11.8U	11.8	250	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**6670**	**3.85**	**250**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	11.7U	11.7	250	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	1880U	1880	5000	ug/L
64-17-5	Ethanol	6250U	6250	50000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**1360**	**50.7**	**1000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	24.3U	24.3	2500	ug/L
71-43-2	**Benzene**	**5530**	**5.55**	**250**	**ug/L**
108-88-3	**Toluene**	**131J**	**6.09**	**250**	**ug/L**
100-41-4	**Ethylbenzene**	**1610**	**5.45**	**250**	**ug/L**
1330-20-7	**Xylene (total)**	**4880**	**8.94**	**750**	**ug/L**
91-20-3	**Naphthalene**	**468**	**8.80**	**250**	**ug/L**
107-06-2	1,2-Dichloroethane	5.81U	5.81	250	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	2500	2570	ug/L	103	78 - 130
1868-53-7	Dibromofluoromethane	2500	2390	ug/L	96	77 - 127
2037-26-5	Toluene d8	2500	2730	ug/L	109	76 - 134
17060-07-0	1,2-Dichloroethane-d4	2500	2370	ug/L	95	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
01/20/2016 11:00	577236	EPA 8011	1	01/20/2016 18:17	ARW	577396

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-5	**Collect Date**	01/17/2016 12:33	**GCAL ID**	21601190705
	Receive Date	01/19/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	250	01/19/2016 14:46	CLS	577240

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	**t-amyl methyl ether (TAME)**	**473J**	**60.0**	**1250**	**ug/L**
75-65-0	t-Butanol (TBA)	72.5U	72.5	2500	ug/L
108-20-3	diisopropyl Ether (DIPE)	59.0U	59.0	1250	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**17200**	**19.3**	**1250**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	58.5U	58.5	1250	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	9400U	9400	25000	ug/L
64-17-5	Ethanol	31200U	31200	250000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**6030**	**253**	**5000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	122U	122	12500	ug/L
71-43-2	**Benzene**	**12600**	**27.8**	**1250**	**ug/L**
108-88-3	**Toluene**	**29700**	**30.5**	**1250**	**ug/L**
100-41-4	**Ethylbenzene**	**3120**	**27.3**	**1250**	**ug/L**
1330-20-7	**Xylene (total)**	**20800**	**44.7**	**3750**	**ug/L**
91-20-3	Naphthalene	44.0U	44.0	1250	ug/L
107-06-2	1,2-Dichloroethane	29.0U	29.0	1250	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	12500	12700	ug/L	102	78 - 130
1868-53-7	Dibromofluoromethane	12500	12500	ug/L	100	77 - 127
2037-26-5	Toluene d8	12500	13700	ug/L	110	76 - 134
17060-07-0	1,2-Dichloroethane-d4	12500	11900	ug/L	95	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
01/20/2016 11:00	577236	EPA 8011	1	01/20/2016 18:34	ARW	577396

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

RW-1	**Collect Date**	01/17/2016 13:09	**GCAL ID**	21601190706
	Receive Date	01/19/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	25	01/19/2016 15:06	CLS	577240

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	**t-amyl methyl ether (TAME)**	**22.7J**	**6.00**	**125**	**ug/L**
75-65-0	t-Butanol (TBA)	7.25U	7.25	250	ug/L
108-20-3	diisopropyl Ether (DIPE)	5.90U	5.90	125	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**282**	**1.93**	**125**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	5.85U	5.85	125	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	940U	940	2500	ug/L
64-17-5	Ethanol	3120U	3120	25000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**487J**	**25.3**	**500**	**ug/L**
762-75-4	tert-butyl formate (TBF)	12.2U	12.2	1250	ug/L
71-43-2	**Benzene**	**1100**	**2.78**	**125**	**ug/L**
108-88-3	**Toluene**	**2650**	**3.05**	**125**	**ug/L**
100-41-4	**Ethylbenzene**	**88.4J**	**2.73**	**125**	**ug/L**
1330-20-7	**Xylene (total)**	**8050**	**4.47**	**375**	**ug/L**
91-20-3	**Naphthalene**	**394**	**4.40**	**125**	**ug/L**
107-06-2	1,2-Dichloroethane	2.90U	2.90	125	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	1250	1290	ug/L	103	78 - 130
1868-53-7	Dibromofluoromethane	1250	1260	ug/L	101	77 - 127
2037-26-5	Toluene d8	1250	1350	ug/L	108	76 - 134
17060-07-0	1,2-Dichloroethane-d4	1250	1210	ug/L	97	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
01/20/2016 11:00	577236	EPA 8011	1	01/20/2016 18:51	ARW	577396

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

RW-2

Collect Date	01/17/2016 13:45	GCAL ID	21601190707
Receive Date	01/19/2016 09:50	Matrix	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	50	01/19/2016 15:45	CLS	577240

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	12.0U	12.0	250	ug/L
75-65-0	**t-Butanol (TBA)**	**549**	**14.5**	**500**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	11.8U	11.8	250	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**1510**	**3.85**	**250**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	11.7U	11.7	250	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	1880U	1880	5000	ug/L
64-17-5	Ethanol	6250U	6250	50000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**429J**	**50.7**	**1000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	24.3U	24.3	2500	ug/L
71-43-2	**Benzene**	**1220**	**5.55**	**250**	**ug/L**
108-88-3	**Toluene**	**4330**	**6.09**	**250**	**ug/L**
100-41-4	**Ethylbenzene**	**276**	**5.45**	**250**	**ug/L**
1330-20-7	**Xylene (total)**	**4880**	**8.94**	**750**	**ug/L**
91-20-3	**Naphthalene**	**313**	**8.80**	**250**	**ug/L**
107-06-2	1,2-Dichloroethane	5.81U	5.81	250	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	2500	2550	ug/L	102	78 - 130
1868-53-7	Dibromofluoromethane	2500	2450	ug/L	98	77 - 127
2037-26-5	Toluene d8	2500	2760	ug/L	110	76 - 134
17060-07-0	1,2-Dichloroethane-d4	2500	2440	ug/L	98	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
01/20/2016 11:00	577236	EPA 8011	1	01/20/2016 19:07	ARW	577396

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

RW-3

Collect Date	01/17/2016 14:22	**GCAL ID**	21601190708
Receive Date	01/19/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	250	01/19/2016 16:04	CLS	577240

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	**t-amyl methyl ether (TAME)**	**320J**	**60.0**	**1250**	**ug/L**
75-65-0	**t-Butanol (TBA)**	**4680**	**72.5**	**2500**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	59.0U	59.0	1250	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**9600**	**19.3**	**1250**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	58.5U	58.5	1250	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	9400U	9400	25000	ug/L
64-17-5	Ethanol	31200U	31200	250000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**34200**	**253**	**5000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	122U	122	12500	ug/L
71-43-2	**Benzene**	**12800**	**27.8**	**1250**	**ug/L**
108-88-3	**Toluene**	**25500**	**30.5**	**1250**	**ug/L**
100-41-4	**Ethylbenzene**	**2860**	**27.3**	**1250**	**ug/L**
1330-20-7	**Xylene (total)**	**19200**	**44.7**	**3750**	**ug/L**
91-20-3	Naphthalene	44.0U	44.0	1250	ug/L
107-06-2	1,2-Dichloroethane	29.0U	29.0	1250	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	12500	12600	ug/L	101	78 - 130
1868-53-7	Dibromofluoromethane	12500	12400	ug/L	99	77 - 127
2037-26-5	Toluene d8	12500	13600	ug/L	109	76 - 134
17060-07-0	1,2-Dichloroethane-d4	12500	12000	ug/L	96	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
01/20/2016 11:00	577236	EPA 8011	1	01/20/2016 19:41	ARW	577396

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	**1,2-Dibromoethane**	**0.539**	**0.00750**	**0.020**	**ug/L**

Sample Results

RW-4

Collect Date	01/17/2016 15:05	**GCAL ID**	21601190709
Receive Date	01/19/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	200	01/19/2016 16:24	CLS	577240

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	**t-amyl methyl ether (TAME)**	**117J**	**48.0**	**1000**	**ug/L**
75-65-0	**t-Butanol (TBA)**	**6730**	**58.0**	**2000**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	47.2U	47.2	1000	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**18200**	**15.4**	**1000**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	46.8U	46.8	1000	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	7520U	7520	20000	ug/L
64-17-5	Ethanol	25000U	25000	200000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**9470**	**203**	**4000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	97.4U	97.4	10000	ug/L
71-43-2	**Benzene**	**5290**	**22.2**	**1000**	**ug/L**
108-88-3	**Toluene**	**6900**	**24.4**	**1000**	**ug/L**
100-41-4	**Ethylbenzene**	**1110**	**21.8**	**1000**	**ug/L**
1330-20-7	**Xylene (total)**	**6590**	**35.8**	**3000**	**ug/L**
91-20-3	Naphthalene	35.2U	35.2	1000	ug/L
107-06-2	1,2-Dichloroethane	23.2U	23.2	1000	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	10000	10100	ug/L	101	78 - 130
1868-53-7	Dibromofluoromethane	10000	9820	ug/L	98	77 - 127
2037-26-5	Toluene d8	10000	10600	ug/L	106	76 - 134
17060-07-0	1,2-Dichloroethane-d4	10000	9660	ug/L	97	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
01/20/2016 11:00	577236	EPA 8011	1	01/20/2016 19:58	ARW	577396

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

RW-5	**Collect Date**	01/17/2016 15:51	**GCAL ID**	21601190710
	Receive Date	01/19/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	200	01/19/2016 16:43	CLS	577240

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	**t-amyl methyl ether (TAME)**	**189J**	**48.0**	**1000**	**ug/L**
75-65-0	t-Butanol (TBA)	58.0U	58.0	2000	ug/L
108-20-3	diisopropyl Ether (DIPE)	47.2U	47.2	1000	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**3060**	**15.4**	**1000**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	46.8U	46.8	1000	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	7520U	7520	20000	ug/L
64-17-5	Ethanol	25000U	25000	200000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**2520J**	**203**	**4000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	97.4U	97.4	10000	ug/L
71-43-2	**Benzene**	**7990**	**22.2**	**1000**	**ug/L**
108-88-3	**Toluene**	**22000**	**24.4**	**1000**	**ug/L**
100-41-4	**Ethylbenzene**	**2270**	**21.8**	**1000**	**ug/L**
1330-20-7	**Xylene (total)**	**18800**	**35.8**	**3000**	**ug/L**
91-20-3	Naphthalene	35.2U	35.2	1000	ug/L
107-06-2	1,2-Dichloroethane	23.2U	23.2	1000	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	10000	10200	ug/L	102	78 - 130
1868-53-7	Dibromofluoromethane	10000	9840	ug/L	98	77 - 127
2037-26-5	Toluene d8	10000	10800	ug/L	108	76 - 134
17060-07-0	1,2-Dichloroethane-d4	10000	9810	ug/L	98	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
01/20/2016 11:00	577236	EPA 8011	1	01/20/2016 20:15	ARW	577396

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

DUPLICATE 1

Collect Date	01/17/2016 12:35	**GCAL ID**	21601190711
Receive Date	01/19/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	250	01/19/2016 17:02	CLS	577240

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	**t-amyl methyl ether (TAME)**	**512J**	**60.0**	**1250**	**ug/L**
75-65-0	**t-Butanol (TBA)**	**1520J**	**72.5**	**2500**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	59.0U	59.0	1250	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**17600**	**19.3**	**1250**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	58.5U	58.5	1250	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	9400U	9400	25000	ug/L
64-17-5	Ethanol	31200U	31200	250000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**7660**	**253**	**5000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	122U	122	12500	ug/L
71-43-2	**Benzene**	**12500**	**27.8**	**1250**	**ug/L**
108-88-3	**Toluene**	**30100**	**30.5**	**1250**	**ug/L**
100-41-4	**Ethylbenzene**	**3160**	**27.3**	**1250**	**ug/L**
1330-20-7	**Xylene (total)**	**21300**	**44.7**	**3750**	**ug/L**
91-20-3	Naphthalene	44.0U	44.0	1250	ug/L
107-06-2	1,2-Dichloroethane	29.0U	29.0	1250	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	12500	12700	ug/L	102	78 - 130
1868-53-7	Dibromofluoromethane	12500	12300	ug/L	98	77 - 127
2037-26-5	Toluene d8	12500	13800	ug/L	110	76 - 134
17060-07-0	1,2-Dichloroethane-d4	12500	12100	ug/L	97	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
01/20/2016 11:00	577236	EPA 8011	1	01/20/2016 20:31	ARW	577396

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

FIELD BLANK

Collect Date	01/17/2016 09:52	**GCAL ID**	21601190712
Receive Date	01/19/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	01/19/2016 18:01	CLS	577240

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	0.290U	0.290	10.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48.5	ug/L	97	78 - 130
1868-53-7	Dibromofluoromethane	50	50.5	ug/L	101	77 - 127
2037-26-5	Toluene d8	50	54.4	ug/L	109	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	49.3	ug/L	99	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
01/20/2016 11:00	577236	EPA 8011	1	01/20/2016 20:48	ARW	577396

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

TRIP BLANK

Collect Date	01/17/2016 00:01	**GCAL ID**	21601190713
Receive Date	01/19/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	01/19/2016 18:20	CLS	577240

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	**t-Butanol (TBA)**	**21.5**	**0.290**	**10.0**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48.6	ug/L	97	78 - 130
1868-53-7	Dibromofluoromethane	50	50.9	ug/L	102	77 - 127
2037-26-5	Toluene d8	50	54.2	ug/L	108	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50.4	ug/L	101	71 - 127

GC/MS Volatiles QC Summary

Analytical Batch 577240	Client ID	MB577240		LCS577240				LCSD577240				
	GCAL ID	1530771		1530772				1530773				
	Sample Type	MB		LCS				LCSD				
	Prep Date	NA		NA				NA				
	Analysis Date	01/19/2016 12:28		01/19/2016 10:57				01/19/2016 11:17				
	Matrix	Water		Water				Water				
EPA 8260B		Units Result	ug/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
t-amyl methyl ether (TAME)	994-05-8	0.240U	0.240	50.0	50.0	100	70 - 130	50.0	48.9	98	2	50
t-Butanol (TBA)	75-65-0	0.290U	0.290	50.0	49.6	99	60 - 140	50.0	48.1	96	3	50
diisopropyl Ether (DIPE)	108-20-3	0.236U	0.236	50.0	50.8	102	70 - 130	50.0	49.4	99	3	50
tert-Butyl methyl ether (MTBE)	1634-04-4	0.077U	0.077	50.0	51.5	103	71 - 125	50.0	50.4	101	2	50
Ethyl tert-butyl ether (ETBE)	637-92-3	0.234U	0.234	50.0	49.4	99	70 - 130	50.0	48.7	97	1	50
Ethyl tert-butanol (ETBA)	624-95-3	37.6U	37.6	2550	2300	90	70 - 130	2550	2250	88	2	50
Ethanol	64-17-5	125U	125	25200	22800	90	70 - 130	25200	20700	82	10	50
tert-amyl alcohol (TAA)	75-85-4	1.01U	1.01	200	205	103	70 - 130	200	196	98	4	50
tert-butyl formate (TBF)	762-75-4	0.487U	0.487	50.0	48.8	98	70 - 130	50.0	46.0	92	6	50
Benzene	71-43-2	0.111U	0.111	50.0	54.7	109	70 - 129	50.0	52.5	105	4	50
Toluene	108-88-3	0.122U	0.122	50.0	55.6	111	72 - 120	50.0	53.4	107	4	50
Ethylbenzene	100-41-4	0.109U	0.109	50.0	55.7	111	74 - 126	50.0	54.7	109	2	50
Xylene (total)	1330-20-7	0.179U	0.179	150	171	114	74 - 127	150	164	109	4	50
Naphthalene	91-20-3	0.176U	0.176	50.0	41.7	83	57 - 138	50.0	38.0	76	9	50
1,2-Dichloroethane	107-06-2	0.116U	0.116	50.0	51.7	103	71 - 129	50.0	49.1	98	5	50
Surrogate												
4-Bromofluorobenzene	460-00-4	50.5	101	50	49.3	99	78 - 130	50	49	98	NA	NA
Dibromofluoromethane	1868-53-7	50.9	102	50	49.8	100	77 - 127	50	50.2	100	NA	NA
Toluene d8	2037-26-5	56	112	50	51.3	103	76 - 134	50	51.4	103	NA	NA
1,2-Dichloroethane-d4	17060-07-0	48.3	97	50	51.9	104	71 - 127	50	49.7	99	NA	NA

GC Semi-Volatiles QC Summary

Analytical Batch	Client ID	MB577236		LCS577236				LCSD577236				
577396	GCAL ID	1530760		1530761				1530762				
Prep Batch	Sample Type	MB		LCS				LCSD				
577236	Prep Date	01/20/2016 11:00		01/20/2016 11:00				01/20/2016 11:00				
Prep Method	Analysis Date	01/20/2016 16:36		01/20/2016 16:52				01/20/2016 17:09				
EPA 8011	Matrix	Water		Water				Water				
EPA 8011		Units Result	ug/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
1,2-Dibromoethane	106-93-4	0.00750U	0.00750	0.271	0.314	116	60 - 140	0.274	0.349	127	11	40

LAB USE ONLY

Access Analytical - Chain of Custody Record

Sales Order #: _____ PO #: _____ Access Quote #: _____ Project Work Order #: _____ Laboratory ID: GCal

Company Name: Enviro-Test Services
Report To: Terry TeaTe
Address: P.O. Box 2237
City: Irmo State: SC Zip: 29063
Phone: 803-413-4936 Fax:
Email: TerryTeaTe@Aol.com
Project ID: Broad River Amoco
Sampled By: Terry TeaTe

Preservative: (*see codes)
Container Type: (*see codes)

Sample ID/Description	Date Collected:	Time Collected:	Type: (grab or composite)	Matrix: (see codes)	Program Area (see codes)	TOTAL # of containers	↓ REQUESTED LAB ANALYSIS: ↓ BTEX, MTBE, Naph	1,2-DCA	8 SC-Oxygenates	EDB - 8011
MW-1	1-17-16	1008	G	GW	SHW	6	X	X	X	X
MW-2		1047								
MW-3		1120								
MW-4		1156								
MW-5		1233								
RW-1		1309								
RW-2		1345								
RW-3		1422								
RW-4		1505								
RW-5		1551								

Client ID: 4565 - Access Analytical SDG: 216011907 PM: SAK

NOTES / COMMENTS
(If sample is a composite, please see grab below to note start/finish times & dates)
1 2 3 4 5 6 7 8 9 10

Turnaround Time:
___ Standard
___ RUSH*
*Date Required: 1-22
(For rush work, results emailed/faxed by end of business day on date required)

Project Location:
✓ SC
___ NC
___ Other
(specify) _____

Relinquished By:	Received By:	Date (mm-dd-yy)	Time (24HR)	Samples Rec'd on Ice	Sample Temp. Upon Receipt (°C):	
Terry L. Teate/Agent		1-18-16	1439	___Y ___N	___(°C)	___(N/A)
Adv	Fedex	1-18-16	1700	___Y ___N	___(°C)	___(N/A)
FedEx	Duane McCune	1-19-16	9:50	1 Y ___N	3 (°C)	___(N/A)
5035 7505 1576				___Y ___N	___(°C)	___(N/A)

ACCESS ANALYTICAL, INC.
7478 Carlisle Street
Irmo, SC 29063
Phone: (803) 781-4243
Fax: 781-4303
www.axs-inc.com

*Preservative Codes (place corresponding # in block above analysis field): 0 = None, 1 = HCl, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Na2SO3, 6 = Method 5035 set w/ NaHSO4 & CH3OH, 7 = NaOH/ZnOAC, 8 = H3PO4

*Matrix Codes (place corresponding code in matrix column): GW = ground water, WW = waste water, DW = drinking water, S = soil, SL = sludge, A = air, IW = industrial waste, WO = waste oil, OT = other (specify in comments section)

*Program Area Codes: CWA = Clean Water Act (for wastewaters), SDWA = Safe Drinking Water Act (for drinking waters), SHW = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

*Container Type: G = Glass, P = Plastic

See Reverse for Terms and Conditions

Original Copy - Returned w/Report
Yellow Copy - Access File Copy
Pink Copy - Client Copy

Pg ____ of ____

LAB USE ONLY

Access Analytical - Chain of Custody Record

Sales Order #: _____ PO #: _____ Access Quote #: _____ Project Work Order #: _____ Laboratory ID: GCal

Company Name: ENVIRO-Test Services
Report To: Terry Teate
Address: P.O.Box 2237
City: Irmo State: SC Zip: 29063
Phone: 803-413-4936 Fax:
Email: terryteate@aol.com
Project ID: Broad River AMOCO
Sampled By: Terry Teate

Preservative (*see codes):
Container Type (*see codes):

ACCESS ANALYTICAL, INC.
7478 Carlisle Street
Irmo, SC 29063
Phone: (803) 781-4243
Fax: 781-4303
www.axs-inc.com

*Preservative Codes (place corresponding # in Block above analyses field): 0 = None, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Na2S2O3, 6 = Method 5035 set w/ NaHSO4 & CH3OH, 7 = NaOH+ZnOAC, 8 = H3PO4

*Matrix Codes (place corresponding code in matrix column): GW = ground water, WW = waste water, DW = drinking water, S = soil, SL = sludge, A = air, IW = industrial waste, WO = waste oil, OT = other (specify in comments section)

*Program Area Codes: CWA = Clean Water Act (for wastewaters), SDWA = Safe Drinking Water Act (for drinking waters), SHW = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

*Container Type: G = Glass, P = Plastic

Sample ID/Description	Date Collected	Time Collected	Type: (grab or composite)	Matrix* (see codes)	Program Area* (see codes)	TOTAL # of containers	↓ REQUESTED LAB ANALYSIS: ↓ BTEX, MTBE, Naph	1,2-DCA	8-SC Oxygenates	EDB-8011
Duplicate 1	1-17-16	1235	G	GW	SHW	6	X	X	X	X
Field Blank	〃	952	〃	〃	〃	6	X	X	X	X
Trip Blank	〃		〃	〃	〃	1	X	X	X	

NOTES / COMMENTS
(If sample is a composite please use space below to note start/finish times & dates)
11

Client ID: 4565 - Access Analytical
SDG: 216011907
PM: SAK

Turnaround Time:	Project Location:	Relinquished By:	Received By:	Date (mm-dd-yy)	Time (24HR)	Samples Rec'd on Ice	Sample Temp. Upon Receipt (°C)	
___ Standard ___ RUSH* *Date Required: 1-22 (For rush work, results emailed/faxed by end of business day on date required)	√ SC ___ NC ___ Other (specify) ___	Terry L. Teate	Apart	1-18-16	1439	___Y ___N	___(°C)	___(N/A)
		AM	Fedex	1-18-16	17:00	___Y ___N	___(°C)	___(N/A)
		FedEx	Doug McClure	1-19-16	9:50	✓ Y ___N	3.6 Bad 4	___(N/A)
		5035 7605 1576				___Y ___N	___(°C)	___(N/A)

See Reverse for Terms and Conditions

Original Copy - Returned w/Report
Yellow Copy - Access File Copy
Pink Copy - Client Copy

Pg ____ of ____

CHECKLIST

GCAL

SAMPLE RECEIVING CHECKLIST

SAMPLE DELIVERY GROUP 216011907	
Client PM SAK 4565 - Access Analytical	Transport Method FEDEX
Profile Number 79922	Received By Lofton, Katie E.
Line Item(s) 2 - Water BTEX//Naph/MTBE/ EDBby8260/Pb/PAH/EDB	Receive Date(s) 01/19/16

CHECKLIST	YES	NO	NA
Were all samples received using proper thermal preservation?	☑	☐	☐
When used, were all custody seals intact?	☑	☐	☐
Were all samples received in proper containers?	☑	☐	☐
Were all samples received using proper chemical preservation?	☑	☐	☐
Was preservative added to any container at the lab?	☐	☑	☐
Were all containers received in good condition?	☑	☐	☐
Were all VOC water samples received without head space?	☑	☐	☐
Do all sample labels match the Chain of Custody?	☑	☐	☐
Did the Chain of Custody list the sampling technician?	☑	☐	☐
Was the COC maintained i.e. all signatures, dates and time of receipt included?	☑	☐	☐

COOLERS	
Airbill Thermometer ID: E24	Temp(°C)
5035 7505 1576	3.6

DISCREPANCIES
None

LAB PRESERVATIONS
None

NOTES	

Revision 1.4

Page 1 of 1

APPENDIX C
NOT INCLUDED

APPENDIX D
NOT INCLUDED

APPENDIX E
NOT INCLUDED

APPENDIX F
NOT INCLUDED

APPENDIX G
DISPOSAL MANIFEST(S)

C 215714

Crandall

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. 24162 | 2. Page 1 of 1

GENERATOR

3. Generator's Name and Mailing Address
Enviro-Test Services
1621 Lake Murray Blvd
Columbia, SC 29212

4. Generator's Phone (803) 413-4936

5. Transporter 1 Company Name: Enviro-Test Services | 6. US EPA ID Number | A. Transporter's Phone: (803) 732-5770

7. Transporter 2 Company Name | 8. US EPA ID Number | B. Transporter's Phone

9. Designated Facility Name and Site Address
Crandall Corporation
100 Rich Lex Dr
Lexington, SC 29072

10. US EPA ID Number: SCD981864499 | C. Facility's Phone: (803) 791-4800

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt./Vol.
a. Non Hazardous Waste, Petroleum Contact Water	01	TT	85	G
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Broad River Amoco Sample Event For Corrective Action Case Report
Infotrac 800-535-5053 Registrant Crandall Corp DHEC Site # 11946
Srv Call ID: GLB0224162
IIA: ENV004 - Dysnt-DW

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
X Terry Teate	X Jay L. Teate	01	21	96

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
X Terry Teate	X Jay L. Teate	01	21	96

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in item 19.

Printed/Typed Name	Signature	Month	Day	Year
Phil Stucker		01	21	96

GENERATOR COPY

12-BLC-M5

C 215714

Crandall

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . . | Manifest Document No. 24162 | 2. Page 1 of 1

3. Generator's Name and Mailing Address: Enviro-Test Services
1621 Lake Murray Blvd
Columbia, SC 29212
4. Generator's Phone ((803)) 412-4936

5. Transporter 1 Company Name: Enviro-Test Services | 6. US EPA ID Number . . . . . | A. Transporter's Phone (803) 722-5770

7. Transporter 2 Company Name | 8. US EPA ID Number . . . . . | B. Transporter's Phone

9. Designated Facility Name and Site Address
Crandall Corporation
100 Rich Lex Dr
Lexington, SC 29072
10. US EPA ID Number SCD981864499 | C. Facility's Phone (803) 791-4800

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt./Vol.
a. Non Hazardous Waste, Petroleum Contact Water	01	TT	85	G
b.				
c.				
d				

D Additional Descriptions for Materials Listed Above

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Broad River Amoco Sample Event For Corrective Action Case Report
Infotrac 800-535-5053 Registrant Crandall Corp DHEC Site # 11946
Srv Call ID: GLB0224162
IIA: ENV004- Defunt-DW

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name: Terry Teate | Signature: Terry L. Teate | Month 12 Day 21 Year 16

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Terry Teate | Signature: Terry L. Teate | Month 12 Day 21 Year 16

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Month . Day . Year .

19. Discrepancy Indication Space

20 Facility Owner or Operator Certification of receipt of waste materials covered by this manifest except as noted in item 19.

Printed/Typed Name: Phil Stocker | Signature | Month 12 Day 21 Year 16

GENERATOR COPY

APPENDIX H
NOT INCLUDED

APPENDIX I
NOT INCLUDED

APPENDIX J
NOT INCLUDED

APPENDIX K
SCDHEC CONTRACTOR CHECKLIST

Contractor Checklist

For each report submitted to the UST Management Division, the contractor will be required to verify that all data elements for the required scope of work have been provided. For items not required for the scope of work, the N/A box should be checked. For items required and not completed or provided, the No box should be checked and a thorough description of the reason must be provided.

Item #	Item	Yes	No	N/A
1	Is Facility Name, Permit #, and address provided?	☒	☐	☐
2	Is UST Owner/Operator name, address, & phone number provided?	☒	☐	☐
3	Is name, address, & phone number of current property owner provided?	☒	☐	☐
4	Is the DHEC Certified UST Site Rehabilitation Contractor's Name, Address, telephone number, and certification number provided?	☒	☐	☐
5	Is the name, address, telephone number, and certification number of the well driller that installed borings/monitoring wells provided?	☐	☐	☒
6	Is the name, address, telephone number, and certification number of the certified laboratory(ies) performing analytical analyses provided?	☒	☐	☐
7	Has the facility history been summarized?	☒	☐	☐
8	Has the regional geology and hydrogeology been described?	☒	☐	☐
9	Are the receptor survey results provided as required?	☐	☐	☒
10	Has current use of the site and adjacent land been described?	☒	☐	☐
11	Has the site-specific geology and hydrogeology been described?	☒	☐	☐
12	Has the primary soil type been described?	☒	☐	☐
13	Have field screening results been described?	☐	☐	☒
14	Has a description of the soil sample collection and preservation been detailed?	☐	☐	☒
15	Has the field screening methodology and procedure been detailed?	☐	☐	☒
16	Has the monitoring well installation and development dates been provided?	☐	☐	☒
17	Has the method of well development been detailed?	☐	☐	☒
18	Has justification been provided for the locations of the monitoring wells?	☐	☐	☒
19	Have the monitoring wells been labeled in accordance with the UST QAPP guidelines?	☐	☐	☒
20	Has the groundwater sampling methodology been detailed?	☒	☐	☐
21	Have the groundwater sampling dates and groundwater measurements been provided?	☒	☐	☐
22	Has the purging methodology been detailed?	☒	☐	☐
23	Has the volume of water purged from each well been provided along with measurements to verify that purging is complete?	☒	☐	☐
24	If free-product is present, has the thickness been provided?	☒	☐	☐
25	Does the report include a brief discussion of the assessment done and the results?	☒	☐	☐
26	Does the report include a brief discussion of the aquifer evaluation and results?	☐	☐	☒
27	Does the report include a brief discussion of the fate & transport models used?	☐	☐	☒

Item #	Item	Yes	No	N/A
28	Are the site-conceptual model tables included? (Tier 1 Risk Evaluation)	☐	☐	☒
29	Have the exposure pathways been analyzed? (Tier 2 Risk Evaluation)	☐	☐	☒
30	Have the SSTLs for each compound and pathway been calculated? (Tier 2 Risk Evaluation)	☐	☐	☒
31	Have recommendations for further action been provided and explained?	☒	☐	☐
32	Has the soil analytical data for the site been provided in tabular format? (Table 1)	☐	☐	☒
33	Has the potentiometric data for the site been provided in tabular format? (Table 2)	☒	☐	☐
34	Has the current and historical laboratory data been provided in tabular format?	☒	☐	☐
35	Have the aquifer characteristics been provided and summarized on the appropriate form?	☐	☐	☒
36	Have the Site conceptual model tables been included? (Tier 1 Risk Evaluation)	☐	☐	☒
37	Has the topographic map been provided with all required elements? (Figure 1)	☒	☐	☐
38	Has the site base map been provided with all required elements? (Figure 2)	☒	☐	☐
39	Have the CoC site maps been provided? (Figure 3 & Figure 4)	☒	☐	☐
40	Has the site potentiometric map been provided? (Figure 5)	☒	☐	☐
41	Have the geologic cross-sections been provided? (Figure 6)	☐	☐	☒
42	Have maps showing the predicted migration of the CoCs through time been provided? (Tier 2 Risk Evaluation)	☐	☐	☒
43	Has the site survey been provided and include all necessary elements? (Appendix A)	☐	☐	☒
44	Have the sampling logs, chain of custody forms, and the analytical data package been included with all required elements? (Appendix B)	☒	☐	☐
45	Is the laboratory performing the analyses properly certified?	☒	☐	☐
46	Has the tax map been included with all necessary elements? (Appendix C)	☐	☐	☒
47	Have the soil boring/field screening logs been provided? (Appendix D)	☐	☐	☒
48	Have the well completion logs and SCDHEC Form 1903 been provided? (Appendix E)	☐	☐	☒
49	Have the aquifer evaluation forms, data, graphs, equations, etc. been provided? (Appendix F)	☐	☐	☒
50	Have the disposal manifests been provided? (Appendix G)	☒	☐	☐
51	Has a copy of the local zoning regulations been provided? (Appendix H)	☐	☐	☒
52	Has all fate and transport modeling been provided? (Appendix I)	☐	☐	☒
53	Have copies of all access agreements obtained by the contractor been provided? (Appendix J)	☐	☐	☒
54	Has a copy of this form been attached to the final report and are explanations for any missing or incomplete data been provided?	☒	☐	☐

Broad River Amoco
CASE Report
UST Permit #11946; CA #46916

Explanation for missing and incomplete information?

D H E C

PROMOTE PROTECT PROSPER

Catherine E. Heigel, Director

Promoting and protecting the health of the public and the environment

MR FREDERICK CECCHINI
4335 BROAD RIVER ROAD
COLUMBIA SC 29210

FEB 0 4 2016

Re: **CASE Report Review/Notification of Verification Period**
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit #11946; CA #46916
Release reported January 4, 2011
CASE Report received January 25, 2016
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank Management Division (UST Division) of the South Carolina Department of Health and Environmental Control (Agency) has received the referenced report submitted by Enviro-Test Services. Based on the submitted data and SCDHEC staff verification gauging data, no wells contain measureable free-phase product and therefore the site has achieved 100% free product thickness reduction. The UST Division has reviewed and noted the recommendations in the referenced CASE report.

At this time, corrective action activities should be completely suspended. All monitoring wells listed in the corrective action bid appendix should be gauged 30 days after the 100% free product thickness reduction goal was achieved (January 17, 2016). If the 100% free product thickness goal is maintained at that time, the site will enter the two quarter post corrective action verification period. During the verification period, all monitoring wells listed in the appendix should be sampled or gauged quarterly. **Wells containing measurable free product should not be sampled.** All samples are to be analyzed for the parameters listed in the bid appendix in addition to dissolved oxygen, ferrous iron, methane, nitrate, and sulfate. **Please have your contractor submit the next CASE report on or before April 25, 2016**.

On all correspondence regarding this facility, please reference **UST Permit #11946**. If you have any questions regarding this correspondence, please contact me at (803) 898-0607 or by email at thrasham@dhec.sc.gov.

Sincerely,

Ashleigh Thrash

Ashleigh Thrash, Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Enviro-Test Services, Inc., PO Box 2237, Irmo, SC 29063
Technical file

Art A. Shrader - Re: Your Concerns in Purchasing Broad River Amoco (UST Permit number 11946)

LOC

From: Art A. Shrader
To: Patel, Bhrugesh
Date: 2/25/2011 7:33 AM
Subject: Re: Your Concerns in Purchasing Broad River Amoco (UST Permit number 11946)

Dear Mr. Patel,

Based on the Phase II report that was received on January 4, 2011 we directed Mr. Cecchini to install one groundwater monitoring well. The report of findings was received February 4, 2011 that confirmed groundwater is impacted and requested three additional monitoring wells be installed. That report is due on or before April 10, 2011. Until the assessment is completed that defines the size of the problem, I cannot give you an estimated date when a NFA letter will be issued. The Regulatory Section has determined Mr. Cecchini is responsible for assessment and cleanup actions for the release reported January 4, 2011.

I am not aware of any laws or regulations that prohibit the use or development of properties where a petroleum release has occurred. Any future work required by the Department should not cause any damage to the building, disrupt deliveries, prevent access to customers, or block main access routes. To further assure you, any required activities associated with the petroleum release would be performed by a SC Certified Site Rehabilitation Contractor who maintains specific levels of insurance coverage for General and Professional Liability and Pollution/Property Damage. Such coverage is required by Section IV of the SUPERB Site Rehabilitation and Fund Access Regulations R. 61-98.

The release of petroleum products from the UST is qualified to receive funding from the State Underground Petroleum Environmental Response Bank (SUPERB) Account once the $25,000 deductible has been met. This means that reasonable costs to up to $1,000,000 can be paid by the SUPERB Account for site rehabilitation actions associated with this release. Should costs exceed $1,000,000, Mr. Cecchini, the tank owner at the time of the release, is responsible for those rehabilitation costs. If a new release is confirmed by the Department in the future, the tank owner at that time would be responsible for rehabilitation of that new release.

I hope this information has answered your questions.

Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

>>> Bhrugesh Patel <bhrugesh.p@gmail.com> 2/24/2011 9:57 PM >>>
Dear Arthur,
I am a prospective buyer who was in the process of purchasing Broad River Amoco (4335 Broad River RD Columbia 29210). Unfortunately after performing the phase 2 on the property, contamination was discovered. The current owner has already been approved for the SUPERB and DHEC is already working on the property.
My questions are, what is the process that will take place and how long will the process take before we might know DHEC will give the property a NFA letter?
What are consequences the owner will suffer after the findings through the monitoring wells? (can the property be ordered to shut down)
The file has been opened on the current owner, if we do go ahead and close a deal, does the issue get transferred to us (the new owner) or the previous owner is liable for the issue?
From what I understand the current owner is liable for $25,000 and the State program will cover the rest up to $1Million. Are their any chances the issue will cost more than that?

Thank you for your time.

Bhrugesh Patel

February 22, 2016

UST
FEB 2 2 2016
DIVISION

ENVIRO-TEST SERVICES

RECEIVED
FEB 22 2016
SC Department of
Health and Environmental
Control

Ashleigh Thrash, Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

UST
60 feet
DOCKETING

RE: 30 Day Verification Period
Broad River Amoco 4335 Broad River Rd. Columbia, SC
UST Permit #11946; CA #46916
CASE Report received January 25, 2016
Richland County

Dear Ms. Thrash,

Enviro-Test personal Terry Teate and Keith Schmalz gauged the wells listed below 33 days after the 100% free product reduction goal was achieved. The wells were checked with an Interface Probe and then confirmed by visual inspection with a Teflon Bailer.
The 100% free product goal has been maintained and now the two quarter post corrective action verification period has began and the next Case Report will be submitted on or before April 25, 2016.

	Free Product	Ground Water Level
MW-1	0.00	10.10
MW-2	0.00	9.74
MW-3	0.00	9.76
MW-4	0.00	9.48
MW-5	0.00	9.92
RW-1	0.00	8.69
RW-2	0.00	10.04
RW-3	0.00	9.76
RW-4	0.00	9.85
RW-5	0.00	9.53

If you have any questions please feel free to call me at 413-4936

Thank You,
Terry L. Teate
Terry L. Teate
Project Manager
Enviro-Test Services Inc.

D H E C
PROMOTE PROTECT PROSPER
Catherine E. Heigel, Director
Promoting and protecting the health of the public and the environment

UST 61tech DOCKETING

MR FREDERICK N CECCHINI
4335 BROAD RIVER ROAD
COLUMBIA SC 29210

FEB 2 4 2016

Re: **Notification of Verification Period**
Former Bowman's Transportation, 1117 Woodruff Rd., Greenville, SC
UST Permit #11946; CA #46916
Release reported January 4, 2011
30 Day Post 100% FP Reduction Gauging Data received February 22, 2016
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank Management Division (UST Division) of the South Carolina Department of Health and Environmental Control (Agency) has received the referenced data submitted by Enviro-Test Services. Based on the submitted data, all wells have maintained the 100% reduction in free product goal for the past 33 days. Therefore, the two quarter post corrective action verification period commenced on February 20, 2016.

In accordance with the bid specifications, two quarters of gauging and groundwater sampling events will be conducted. All monitoring wells and gauging points listed in the bid appendix should be sampled or gauged and the results should be submitted in Corrective Action Site Evaluation (CASE) reports. According to the contract, the groundwater samples are to be analyzed for BTEX + Naphthalene + MtBE, 8 oxygenates, EDB, dissolved oxygen, ferrous iron, methane, nitrate and sulfate. Any wells containing measurable free-phase product should be gauged only and no sample should be collected. **Please have your contractor submit the next CASE on or before June 20, 2016.**

On all correspondence regarding this facility, please reference **UST Permit #11946.** If you have any questions regarding this correspondence, please contact me at (803) 898-0607 or by email at thrasham@dhec.sc.gov.

Sincerely,

Ashleigh Thrash

Ashleigh Thrash, Hydrogeologist
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

cc: Enviro-Test Services, PO Box 2237, Irmo, SC 29063
Technical file

D H E C
PROMOTE PROTECT PROSPER
Catherine E. Heigel, Director
Promoting and protecting the health of the public and the environment

MR FREDERICK N CECCHINI
4335 BROAD RIVER ROAD
COLUMBIA SC 29210

MAR 0 3 2016

UST DOCKETING 62 fee

Re: **Notification of Verification Period**
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit #11946; CA #46916
Release reported January 4, 2011
30 Day Post 100% FP Reduction Gauging Data received February 22, 2016
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank Management Division (UST Division) of the South Carolina Department of Health and Environmental Control (Agency) has received the referenced data submitted by Enviro-Test Services. Based on the submitted data, all wells have maintained the 100% reduction in free product goal for the past 33 days. Therefore, the two quarter post corrective action verification period commenced on February 20, 2016.

In accordance with the bid specifications, two quarters of gauging and groundwater sampling events will be conducted. All monitoring wells and gauging points listed in the bid appendix should be sampled or gauged and the results should be submitted in Corrective Action Site Evaluation (CASE) reports. According to the contract, the groundwater samples are to be analyzed for BTEX + Naphthalene + MtBE, 8 oxygenates, EDB, dissolved oxygen, ferrous iron, methane, nitrate and sulfate. Any wells containing measurable free-phase product should be gauged only and no sample should be collected. The next sampling and gauging event should be conducted on or after May 20, 2016. **Please have your contractor submit the next CASE on or before June 20, 2016.**

On all correspondence regarding this facility, please reference **UST Permit #11946.** If you have any questions regarding this correspondence, please contact me at (803) 898-0607 or by email at thrasham@dhec.sc.gov.

Sincerely,

Ashleigh Thrash

Ashleigh Thrash, Hydrogeologist
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

cc: Enviro-Test Services, PO Box 2237, Irmo, SC 29063
Technical file

ENVIRO-TEST SERVICES

UST
JUN 2 4 2016
PROGRAM

UST
623tech
DOCKETING

June 21, 2016

Kimberly Kuhn, Hydrogeologist
Underground Storage Tank Section
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Re: Corrective Action Verification Sampling Report – 2nd Quarter 2016
Broad River Amoco
4335 Broad River Rd., Columbia
Richland County, South Carolina
UST Permit #11946; CA #46916

Dear Ms. Kuhn;

Enviro-Test Services, Inc. (ETS) has completed the Corrective Action Verification Sampling in order to document the corrective action activities at the Broad River Amoco site located in Columbia, South Carolina. The pertinent information regarding this assessment, including conclusions, is presented on the following pages and in the attached Figures, Tables, and Appendices.

Based on the analytical data collected during this assessment, it is apparent that the free-phase petroleum product previously observed on the property is no longer present in any of the monitoring wells or recovery wells designated as Site Specific Target Level (SSTL) wells. Therefore, according to the requirements of this corrective action contract, ETS has achieved 100% reduction in the total free product thickness in the SSTL wells.

If you should have any questions regarding the results of this assessment, or should you need additional information, please do not hesitate to contact our office.

Sincerely,
Enviro-Test Services, Inc.
Contractor Certification #14

MICHAEL L. FARIS
REGISTERED
No. 2379
SOUTH CAROLINA
PROFESSIONAL GEOLOGIST

Michael L. Faris, P.G. (#2379)
Hydrogeologist

Terry L. Teate
President, Sr. Project Manager

cc: Fredrick Cecchini

Background

The subject site is located in northwest Richland County in Columbia, South Carolina and is situated on the southwest side of Broad River Road, a five-lane local thoroughfare. The site is comprised of approximately 0.85 acres and is currently owned and operated as a petroleum retail facility, convenience store and restaurant (Broad River BP).

A 1939 aerial photograph from the Richland County Geographic Information System (GIS) shows that the subject property was utilized for agriculture and was partially wooded. Broad River Road appears as a two-lane road. Information available through the Richland County Assessor's Office indicates the property was owned by B.O. Derrick in 1955 and a 1959 aerial photograph indicates that the property had apparently been developed as a petroleum retail facility. Subsequently, the property was acquired by Associated Oils of South Carolina, Inc. in February 1988, and the previous UST system (B.O. Derrick) was properly closed, as reported to the SCDHEC in 1989. Reportedly, the closure included proper abandonment by removal of one 2,000-gallon UST and one 3,000-gallon UST. Additionally, the property redevelopment activities of 1988 and 1989 reportedly included the demolition of pre-existing structures and construction of the existing store building, dispenser islands and UST system. Subsequently, the property was acquired by Mr. Frederick N. Cecchini in June 1997, and Mr. Cecchini remains the current owner.

UST #	Product	Date Installed	Currently in use (Yes or No)	If not in use, Date Removed
1	Gasoline (2,000 gallon)	(?)	No	1989
2	Gasoline (3,000 gallon)	(?)	No	1989
3	Diesel (3,000 gallon)	1989	Yes	-
4	Gasoline Unleaded (3,000 gallon)	1989	Yes	-
5	Gasoline Plus (3,000 gallon)	1989	Yes	-
6	Gasoline Plus (8,000 gallon)	1989	Yes	-
7	Gasoline Super (8,000 gallon)	1989	Yes	-
8	Kerosene (1,000 gallon)	1989	Yes	-

Reportedly, no soil samples were collected for analysis at the time of proper abandonment of the previous UST system as reported to SCDHEC in 1989. In December 2010, a Phase II Subsurface Investigation was performed by Partner Engineering and Science, Inc. of El Segundo, California. The Phase II investigation included the installation of four soil borings and a Temporary Monitoring Well Permit (Approval No. 4053) was obtained from the SCDHEC for the purpose of groundwater sample collection. Reportedly, the soil borings extended to terminal depths of 26 feet below land surface (BLS) utilizing direct push penetration technology with continuous soil sample collection.

Drilling refusal was encountered in all four soil borings before groundwater was encountered; therefore, no groundwater samples were collected for laboratory analysis. Eight soil samples (two from each soil boring) were submitted for laboratory analysis for Volatile Organic Compounds (VOC) and Polynuclear Aromatic Hydrocarbons (PAH). The laboratory analytical results indicated the detection of various VOC and PAH chemical compounds at concentrations deemed reportable to the SCDHEC.

An Initial Groundwater Assessment (IGWA) was completed by Enviro-Test Services, Inc. during January, 2011 and an IGWA report was submitted on February 4, 2011. On January 20, 2011, the soil boring for monitoring well MW-1 was installed. The soil sample from the 10 to 15 feet sampling interval yielded the highest PID reading of 1,782 ppm and accordingly was submitted for laboratory analysis for BTEX, MTBE, naphthalene, PAH and lead. Moderately elevated concentrations of toluene, ethylbenzene, xylenes and naphthalene were detected in the soil sample. Saturated sediments were encountered at the depth interval of 35 to 40 feet below grade level (BGL). As such, monitoring well MW-1 was installed to a depth of 40 feet BGL and was screened from 40 to 20 feet BGL. On January 21, 2011, a groundwater sample was collected from monitoring well MW-1 and laboratory analysis for BTEX, naphthalene, MTBE, PAH and lead was performed. The depth to groundwater in monitoring well MW-1 was measured from the top-of-casing to be 20.92 feet. The groundwater sample yielded COC concentrations as follows: benzene (929 ug/l), toluene (10,300 ug/l), ethylbenzene (684 ug/l), MTBE (243 ug/l) and naphthalene (922 ug/l). Following review of the IGWA report, the SCDHEC requested a Tier I Assessment in correspondence dated February 7, 2011.

Field activities for the Tier I Assessment were commenced on February 24 and 25, 2011 with the completion of soil borings SB-1 through SB-9. Laboratory analysis of soil samples for BTEX, MTBE and PAH yielded elevated concentrations of benzene and naphthalene above RBSL in soil borings SB-1 (10 ft), SB-2 (5 ft), SB-3 (8 ft) and 5 (6 ft) which were installed proximal to the existing UST basin (SB-1 and SB-2) and product pipeline/dispenser islands (SB-3 and SB-5). Monitoring wells MW-2, MW-3 and MW-4 were completed on February 25, 2011 and were subsequently sampled on March 5, 2011. Laboratory analysis of the groundwater samples yielded concentrations of benzene as follows: MW-1 (1,760 ug/l), MW-2 (1,650 ug/l), MW-3 (9.93 ug/l) and MW-4 (1,830 ug/l). Additionally, concentrations of MTBE were also detected in wells MW-2 (3,420 ug/l) and MW-4 (3,100 ug/l). Naphthalene by EPA method 8260 was detected in wells MW-1 (4,070J ug/l), MW-2 (462J ug/l) and MW-4 (598 ug/l). Also, elevated concentrations of toluene were detected in wells MW-1 (16,400 ug/l) and MW-2 (3,230 ug/l) and ethylbenzene in wells MW-1 (1,270 ug/l) and MW-4 (1,270 ug/l). A Tier I Assessment Report was submitted to SCDHEC on April 8, 2011.

Subsequent to review of the Tier I Assessment Report, the Technical Project Manager and Section Manager, as applicable, expressed concern regarding the depth of the screened interval of each monitoring well in relation to the measured groundwater levels due to the fact that none of the monitoring wells were bracketing the water table of the site surficial aquifer.

Enviro-Test Services, Inc. stated that during soil boring and monitoring well installations no saturated sediments were encountered until the 35 to 40-ft depth interval of drilling at each well location; therefore, the monitoring wells were installed at depths somewhat deeper than preferable. Also, during drilling activities for installation of monitoring well MW-4, where elevated COC's were later detected in the March 5, 2011 groundwater sample, no petroleum hydrocarbon odors or elevated PID readings were noted to be present in apparent vadose soils; however, upon encountering saturated soils at approximately 35 feet, strong odors and elevated PID readings were readily apparent. Consequently, the Technical Project Manager decided that an additional monitoring well (MW-5) should be installed at a shallower, bracketing depth to determine the availability of groundwater for sample collection in what appeared to be unsaturated, vadose soils. Accordingly, on May 27, 2011 monitoring well MW-5 was installed to a depth of 20 feet, with a 10-ft screen at a location adjacent to the north corner of the existing convenience store building. The infiltration of groundwater was noted to be exceedingly slow; as such, groundwater was allowed to seep into the well casing for several days. On June 3, 2011, the depth to groundwater was measured at 13.80 feet and free product (gasoline) of a degraded appearance was measured at 13.68 feet (a free product thickness of 0.12 feet). Again, on June 20, 2011, depth to the groundwater was measured at 14.05 feet and free product at 13.75 feet (a free product thickness of 0.30 feet). These findings were submitted to the DHEC Project Manager on June 20, 2011.

Based on the results of the Tier I Assessment, a Tier II was requested. The Tier II was completed in 2013, with a report dated May 28, 2013, and the horizontal and vertical extent of the contaminant plume was delineated. This site is currently in the corrective action section of the UST Program in order to remove the free-phase product associated with the release contaminant plume.

The subject property is bounded by Broad River Road to the northeast, then by the South Carolina Law Enforcement Division (SLED). The adjacent property to the southeast is a nail and beauty salon. The adjacent property to the southwest is commercially utilized as a nursery school and day care (Play Pal Day Care). The Play Pal Day Care facility encompasses two properties fronting Dothan Road. The subject property is bounded to the northwest by Dothan Road and a commercially utilized property beyond (MDC Associates, an apparent mechanical engineering firm). The commercial usage of the subject property and adjacent properties is expected to remain the same in the future.

Site Geography

In general, the site is located on the west side of a topographically ridge extending southeast to northwest. Broad River Road lies at or near the crest of the apparent topographic ridge. Storm water runoff on the east side of the ridge ultimately flows into the Broad River located approximately 2 miles east of the site. On the west side of the ridge, storm water runoff flows toward Stoop Creek located approximately 1,650 feet to the southwest (near the southwest dead end of Dothan Road). From this point, Stoop Creek flows southward approximately 2.6 miles before emptying into the Saluda River.

In the general vicinity, numerous surface water features are evident on the USGS topographic map including several unnamed creeks (apparently spring fed) and several small to medium-sized surface water impoundments. In relative close proximity to the site, three surface water features are apparent on the west side of the topographic ridge and three on the east side of the topographic ridge. These surface water features are visibly apparent of Figure 1, a topographic site location map. On the west side of the topographic ridge, located approximately 1,430 feet to the northwest is a small pond with an estimated surface elevation of 265 feet MSL, approximately 1,680 feet to the southwest is the aforementioned Stoop Creek (estimated surface elevation of 233 feet MSL) and approximately 2,370 feet to the south-southeast is an apparent spring-fed creek (estimated surface elevation of 252 feet MSL at depicted point of emergence). On the east side of the topographic ridge, located approximately 1,240 feet to the northeast is an apparent spring-fed creek (estimated surface elevation of 248 feet MSL at the depicted point of emergence), approximately 1,820 feet to the east-northeast is an apparent spring-fed creek (estimated surface elevation of 230 feet MSL at the depicted point of emergence) and approximately 2,480 feet to the southeast is an apparent incised, spring-fed creek (estimated surface elevation of 235 feet MSL at the depicted point of emergence). Estimated surface elevations were obtained via the Richland County GIS utilizing a topographic option depicting contour intervals of two feet. For purposes of estimation, the depicted contours are deemed to be reasonably reliable.

According to the USGS Topographic Quadrangle Map of *Columbia North, South Carolina*, dated 1972 and revised in 1990, the elevation of the site is approximately 275 feet above mean sea level (MSL). The topography surrounding the site is relatively flat toward the north and east, but slopes downward toward the west/southwest. The topography in the general vicinity of the site slopes downward toward the west/southwest. A Topographic Site Location Map is included as Figure 1. A Site Base Map is included as Figure 2.

Regional Geology and Hydrogeology

The Broad River Amoco (BP) lies within the Lower Piedmont Physiographic Provence in close proximity and northwest of the contact zone, the "fall line", with the Upper Coastal Plain Physiographic Provence. The dominant rock types of the general area are related to the Carolina Slate Belt and specifically the Precambrian to Early Cambrian, Persimmon Fork Formation which is comprised primarily of green-gray to blue-gray, moderately metamorphosed, felsic volcanic (metavolcanic) tuffs and to a lesser extent mafic metavolcanic tuffs. These rocks occur as very weathered to moderately weathered outcrops in the site study area and are most often visible at areas of excavation related to road and building construction.

In the general vicinity, the uppermost aquifer generally occurs under unconfined conditions and receives water from precipitation, which infiltrates the unsaturated surface soils and migrates downward to the saturated zone. Underlying the uppermost aquifer is the fractured bedrock aquifer in which groundwater occurs in fractures, joints and faults. The fractured bedrock aquifer is often an important water resource for rural residences and commercial and light industrial properties at areas where municipal water supply is unavailable or unfeasible. Well yields are typically 1 to 350 gpm in the crystalline and metamorphic rocks with the larger yields located in areas of intensely fractured metamorphic rocks.

Site Geology and Hydrogeology

Based on the data collected during the Tier I and Tier II Assessments, it is apparent that groundwater can be found in several stratified layers or zones at the site. The most shallow water encountered at the site was generally found between 15' - 20' below ground level. This shallow water was very slow to accumulate in the boreholes. Typically it took at least several days to over a week for the water levels to come to equilibrium. It is likely that this most shallow water is present in small volume in the sandy clayey silt due to localized recharge, perching, and soil capillarity. The soils become more clayey (a silty clay) and mostly dry beginning at approximately 25' bgl. The second layer or zone of water encountered in the subsurface was typically found at an approximate depth of 35'-40'. The water in this second water-bearing zone was under significant hydraulic pressure and immediately entered the boreholes and rose upward many feet in the boreholes/wells.

The two layers of water are clearly connected as contamination has been identified at both depths during this Tier II investigation. There appears to be an aquitard comprised of mostly dry silty clay (with a small % of sand) between the two above-described zones of water across the area of study. Because the contaminants have been identified at both depths in and near the source area, there clearly is transmissivity between the two layers. Therefore, the silty clay is not considered a true aquiclude, but is acting at least as a partially confining unit.

Summary of Findings

Gauging

ETS personnel mobilized to the site on June 7, 8, and 9 and located and gauged all of the monitoring wells and recovery wells associated with the release. Prior to the initiation of any gauging, purging or sampling activities, clean plastic sheeting was placed on the ground surface around each well in order to provide a clean work area. Each well was opened and gauged with a decontaminated electronic water level indicator to the nearest 0.01-foot. Fluid levels and total depths of the monitoring wells were recorded on field data sheets in indelible ink.

Groundwater in the water table / perched aquifer appeared to flow in a radial pattern, generally toward the east, north, and west. Groundwater in the second water bearing zone appeared to flow in a radial pattern, generally toward the southeast, northwest, and west. Groundwater in the three deep monitoring wells appeared to flow generally toward the northwest.

The current and historical potentiometric data are summarized in Table 2. Generalized Potentiometric Surface Maps, displaying groundwater elevations at each sampled well and groundwater flow directions for the water table aquifer, second water bearing zone, and deep zone are included as Figures 5A, 5B, and 5C.

Purging

The wells were purged utilizing a low flow pump and disposable tubing prior to sampling. Prior to purging, the well volumes were calculated using the diameter of the well, the static water level and the total depth of the well. The pumps were operated a low rate so as to not excessively agitate the recharge water.

Temperature, pH, specific conductivity, dissolved oxygen, and turbidity were measured and recorded throughout the purging process and purging continued until these parameters stabilized, typically in three to five well volumes. Stabilization occurs when pH measurements remain constant within 0.1 Standard Unit (SU), or reproducible to within 0.1 (SU), dissolved oxygen remains constant within 0.2 mg/L, and specific conductance, temperature, and turbidity vary no more than 5 percent, and the turbidity has stabilized or is below 10 Nephelometric Turbidity Units (NTU). Wells purged to dryness were considered sufficiently purged. Samples were collected immediately after the purging process was complete.

Prior to commencement of purging, the purging meters were calibrated according to manufacturer's specifications. Also, the meters' calibration was checked mid-way through and after the purging activities. The calibration checks indicated that the meters remained calibrated within the acceptable ranges of the meters' standards throughout the purging activities. The purging data were recorded on field data sheets in indelible ink. The Purge Meter Calibration Data Sheets and Monitoring Well Purging Data Sheets are included in Appendix B.

Groundwater Sampling

Groundwater samples were collected from all monitoring wells and recovery wells associated with the release. Each sample was placed into pre-labeled, laboratory-prepared sample containers utilizing a low flow peristaltic pump with disposable tubing via the straw method.

Purging parameters were again measured and recorded immediately after sample collection at each well. In order to further ensure sample integrity, samples were immediately placed on ice in an insulated cooler upon collection and entered into chain of custody. A field blank was collected at the completion of each day of sampling activities. A laboratory-prepared trip blank was included with each insulated sample cooler to ensure cross-contamination did not occur between the collected groundwater samples.

Duplicate samples were collected from wells RW-4 (Duplicate 1), MW-19B (Duplicate 2), and MW-21B (Duplicate 3).

The groundwater samples were submitted to Access Analytical, Inc. and analyzed by Gulf Coast Analytical Laboratories, Inc. (GCAL) a South Carolina certified laboratory (certification #73006), for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, methyl tertiary-butyl ether (MTBE) and 1,2-dichloroethane (1,2-DCA) by EPA method 8260B, as well as for EDB by EPA method 8011.

Groundwater samples were also analyzed for the following eight oxygenates: di-isopropyl ether (DIPE), ethanol, ethyl tert-butyl alcohol (ETBA), ethyl tert-butyl either (ETBE), tert-amyl alcohol (TAA), tert-amyl methyl either (TAME), tert-butyl alcohol (TBA) and tert-butyl formate (TBF). Groundwater samples from each well were also analyzed for nitrate, sulfate, ferrous iron, and methane.

The laboratory analytical results from this assessment (current) are tabulated in Table 3. Results from previous groundwater sampling events are tabulated with the data from this assessment (current and historical) in Table 4. CoC detected at concentrations above the RBSLs established by SCDHEC are indicated in bold type. The complete laboratory analytical results, including chain-of-custody documentation, are included as Appendix B. A Groundwater CoC Site Map, indicating the June 2016 CoC concentrations in the groundwater at each monitoring well, is included as Figure 4.

Disposal

A total of 150 gallons of contaminated purge water and decontamination fluids were collected during this assessment. The fluids are awaiting disposal at an approved facility. The waste manifest will be forwarded as soon as it is received from the waste facility.

A disposal manifest for the contaminated purge water and decontamination fluids generated during this assessment are included in Appendix G.

Contractor Checklist

The SCDHEC QAPP Contractor Checklist is included in Appendix K.

SSTL Reduction Calculation

The Free-Phase Product Reduction Calculation worksheet is included as Table 5.

Conclusions and Recommendations

Based on the data collected during this verification sampling, it appears that elevated concentrations of several Chemicals of Concern remain present at the site. However, it is apparent that dissolved phase concentrations of chemicals of concern have generally decreased across the site. The free-phase product previously observed on the property is no longer present in any of the monitoring wells or recovery wells gauged during this event. Therefore, according to the requirements of this corrective action contract, ETS has achieved 100% reduction in the total free product thickness in the SSTL wells.

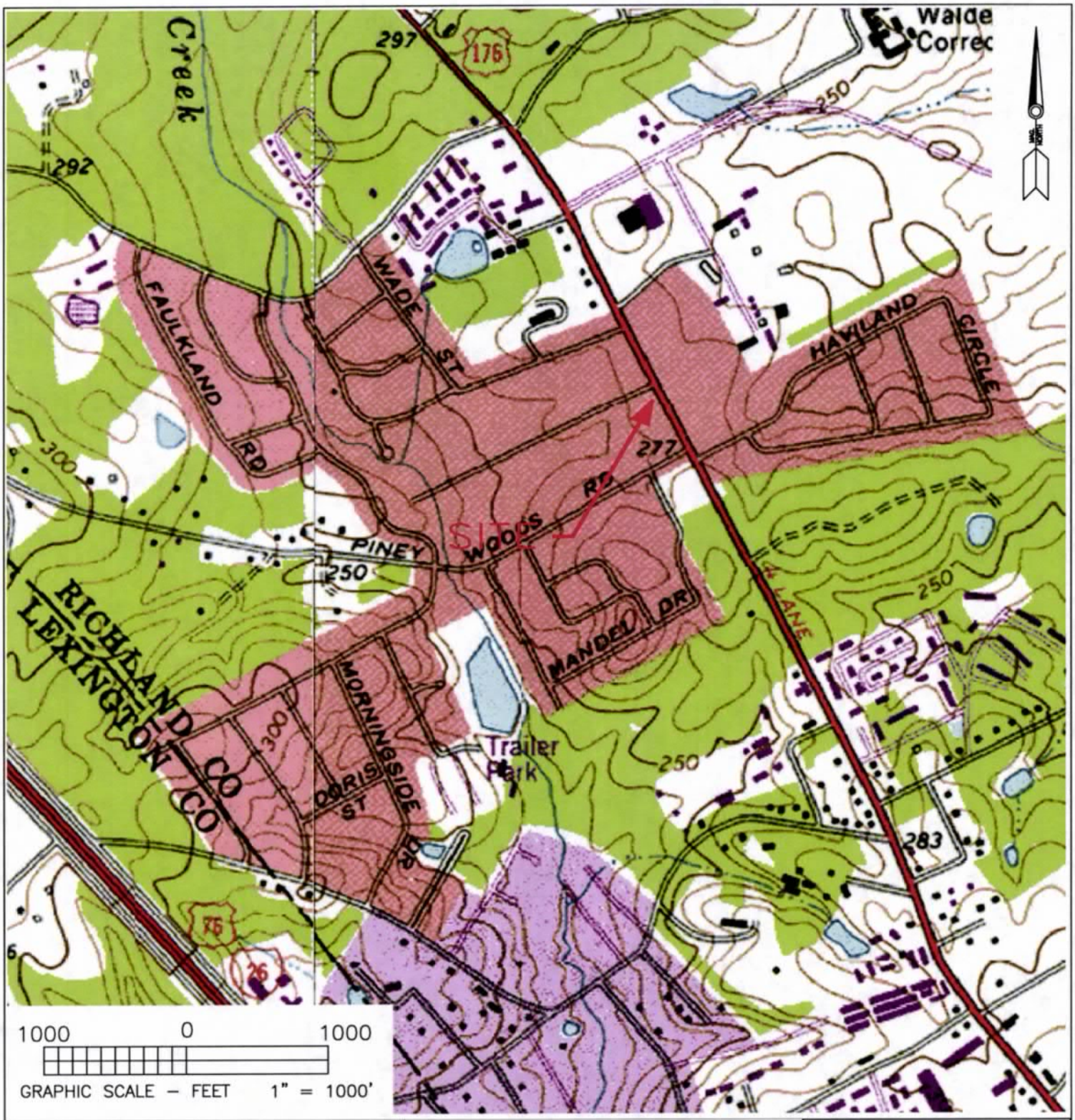
References

Maybin and Nystrom, 1997, revised by Willoughby, Howard and Nystrom, 2005. Generalized Geologic Map of South Carolina; South Carolina Department of Natural Resources Geological Survey.

USGS Open-File Report 2005-1323, Preliminary integrated geologic map databases for the United States: Alabama, Florida, Georgia, Mississippi, North Carolina, and South Carolina, http://pubs.usgs.gov/of/2005/1323/

FIGURES

Figure 1 – Site Location Map (Topographic)
Figure 2 – Site Base Map
Figure 3 – Not Included
Figure 4 – Groundwater CoC Map
Figure 5A – Potentiometric Map (Shallow)
Figure 5B – Potentiometric Map (Intermediate)
Figure 5C – Potentiometric Map (Deep)



PROJECT:
CORRECTIVE ACTION SYSTEM EVAL.
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
SITE LOCATION MAP

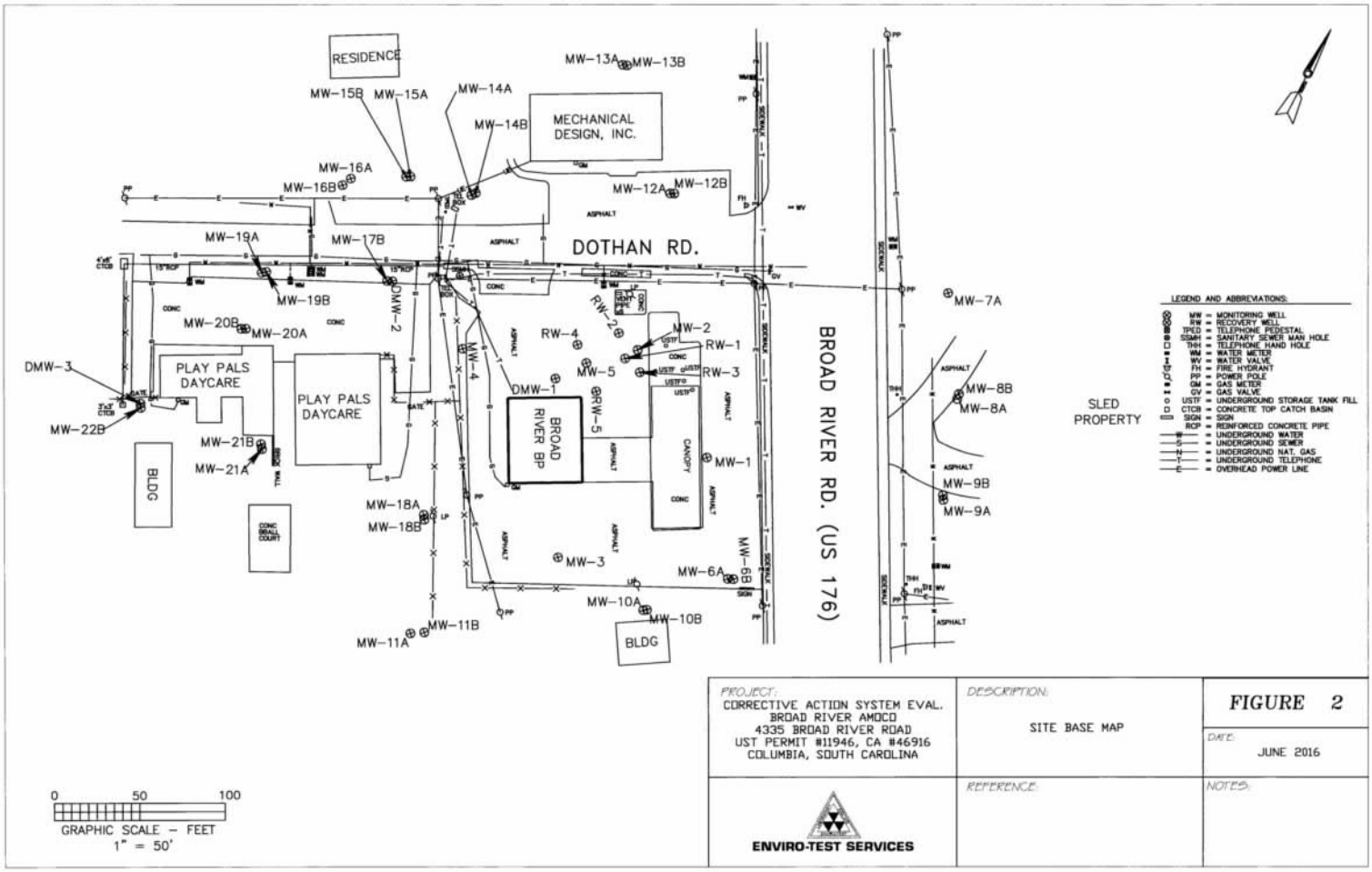
FIGURE 1

DATE:
JUNE 2016

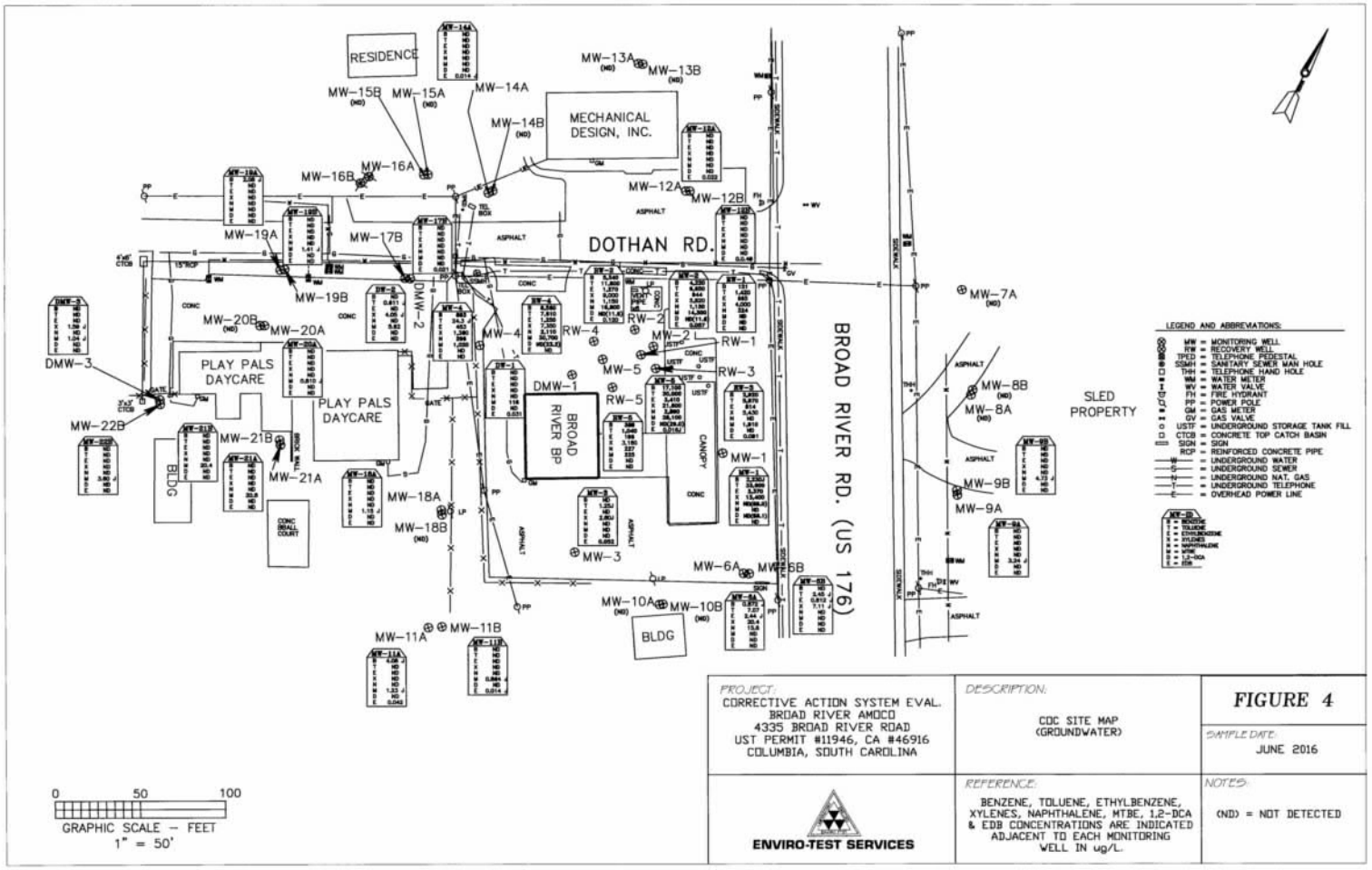
ENVIRO-TEST SERVICES

REFERENCE:
U.S.G.S. TOPOGRAPHIC MAP
(7.5 MINUTE SERIES)
COLUMBIA NORTH – 1972, REV. 1990
SOUTH CAROLINA QUADRANGLE

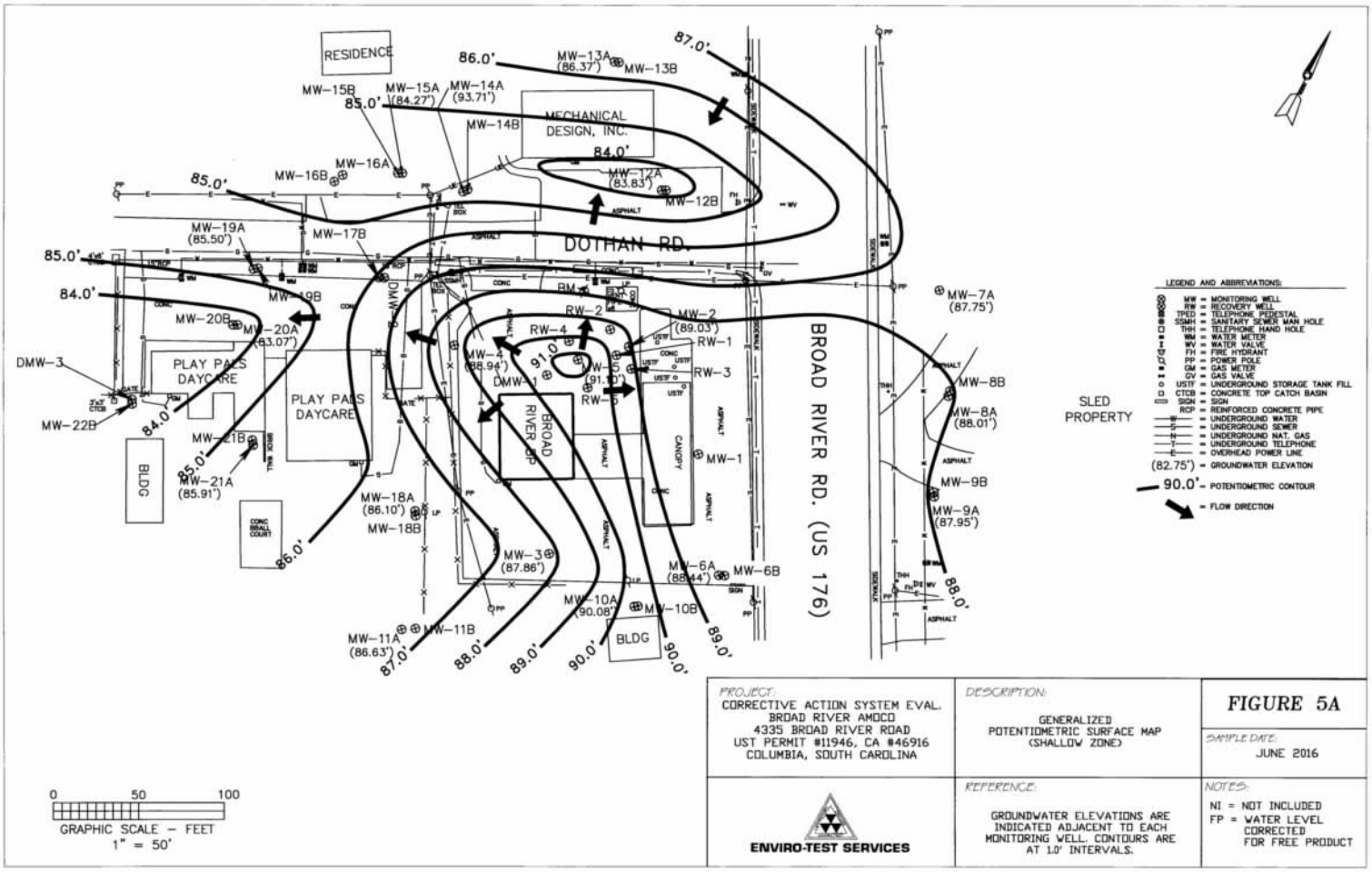
LEGEND:



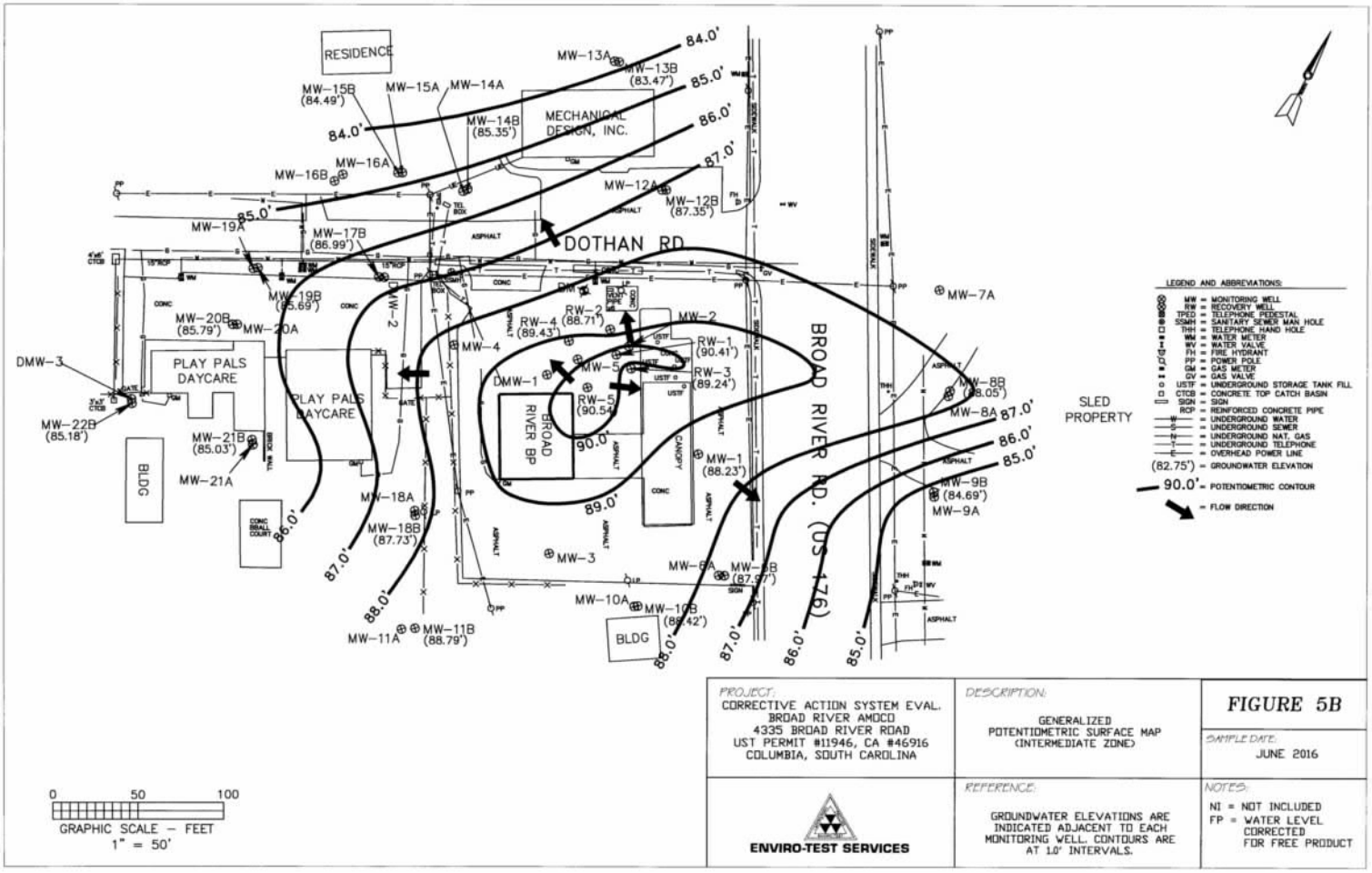
PROJECT: CORRECTIVE ACTION SYSTEM EVAL. BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: SITE BASE MAP	**FIGURE 2** DATE: JUNE 2016
ENVIRO-TEST SERVICES	REFERENCE:	NOTES:



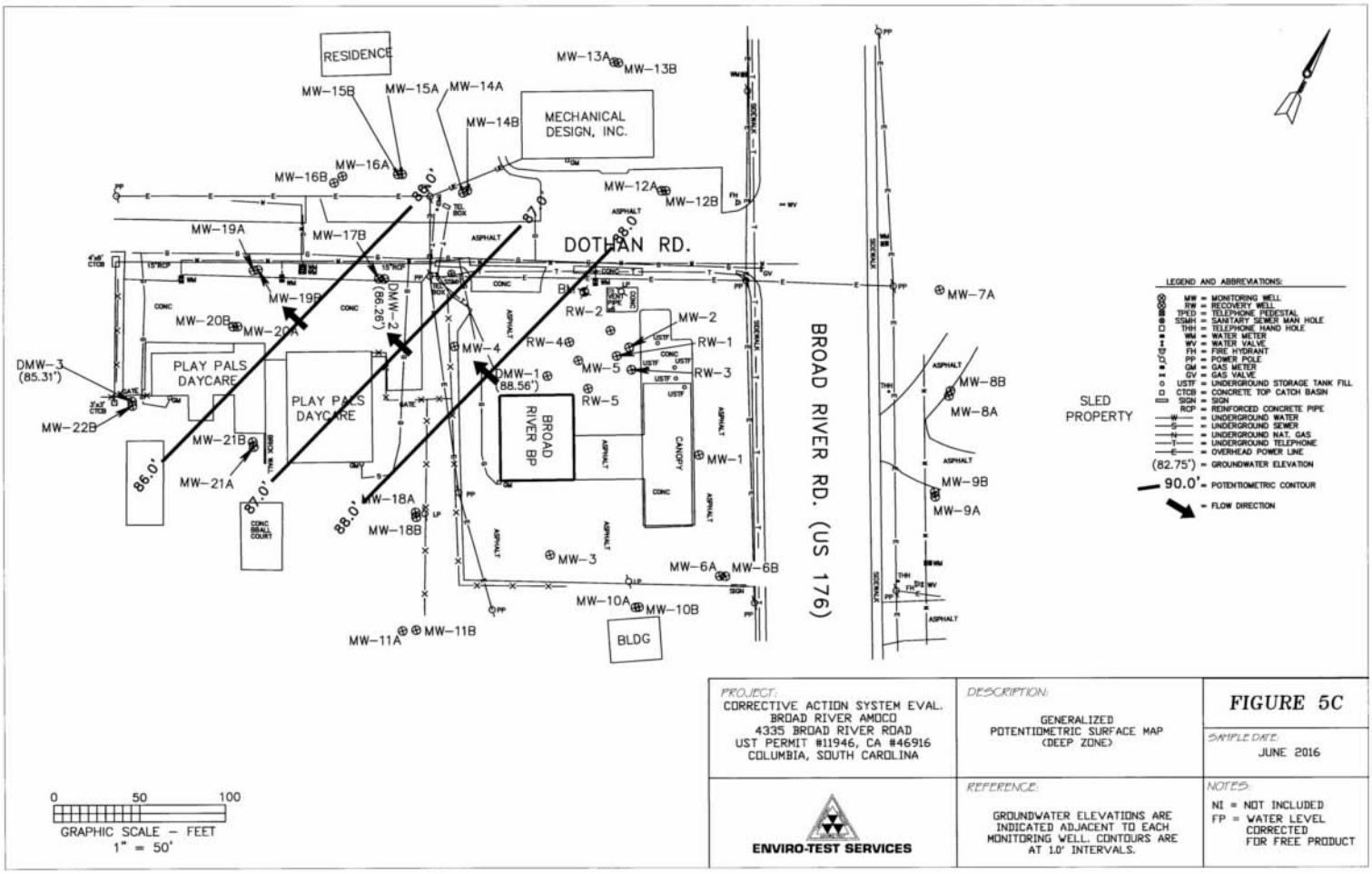
PROJECT: CORRECTIVE ACTION SYSTEM EVAL. BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: CDC SITE MAP (GROUNDWATER)	**FIGURE 4** SAMPLE DATE: JUNE 2016
ENVIRO-TEST SERVICES	REFERENCE: BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, NAPHTHALENE, MTBE, 1,2-DCA & EDB CONCENTRATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL IN ug/L.	NOTES: (ND) = NOT DETECTED



PROJECT: CORRECTIVE ACTION SYSTEM EVAL. BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: GENERALIZED POTENTIOMETRIC SURFACE MAP (SHALLOW ZONE)	**FIGURE 5A** SAMPLE DATE: JUNE 2016
ENVIRO-TEST SERVICES	REFERENCE: GROUNDWATER ELEVATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL. CONTOURS ARE AT 1.0' INTERVALS.	NOTES: NI = NOT INCLUDED FP = WATER LEVEL CORRECTED FOR FREE PRODUCT



PROJECT: CORRECTIVE ACTION SYSTEM EVAL. BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: GENERALIZED POTENTIOMETRIC SURFACE MAP (INTERMEDIATE ZONE)	**FIGURE 5B**
		SAMPLE DATE: JUNE 2016
ENVIRO-TEST SERVICES	REFERENCE: GROUNDWATER ELEVATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL. CONTOURS ARE AT 1.0' INTERVALS.	NOTES: NI = NOT INCLUDED FP = WATER LEVEL CORRECTED FOR FREE PRODUCT



PROJECT: CORRECTIVE ACTION SYSTEM EVAL. BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: GENERALIZED POTENTIOMETRIC SURFACE MAP (DEEP ZONE)	**FIGURE 5C** SAMPLE DATE: JUNE 2016
ENVIRO-TEST SERVICES	REFERENCE: GROUNDWATER ELEVATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL. CONTOURS ARE AT 1.0' INTERVALS.	NOTES: NI = NOT INCLUDED FP = WATER LEVEL CORRECTED FOR FREE PRODUCT

TABLES

Table 1 – Not Included
Table 2 – Potentiometric Data
Table 3 – Groundwater Analytical Data (Current)
Table 4 – Groundwater Analytical Data
(Current & Historical)
Table 5 – Free-Phase Product Reduction Calculation

APPENDICES

A. Not Included
B. Purging Data Sheets & Laboratory Analytical Data
C. Not Included
D. Not Included
E. Not Included
F. Not Included
G. Disposal Manifest(s)
H. Not Included
I. Not Included
J. Not Included
K. SCDHEC Contractor Checklist

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and June 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-1	1/21/2011	40.0	20.0 - 40.0	101.84	20.92	N/A	N/A	N/A	80.92
	3/5/2011	40.0	20.0 - 40.0	101.84	14.45	N/A	N/A	N/A	87.39
	3/5/2013	40.0	20.0 - 40.0	101.84	18.62	N/A	N/A	N/A	83.22
	3/6/2014	40.0	20.0 - 40.0	101.84	15.90	N/A	N/A	N/A	85.94
	8/5/2015	40.0	20.0 - 40.0	101.84	18.84	N/A	N/A	N/A	83.00
	6/7/2016	40.0	20.0 - 40.0	101.84	13.61	N/A	N/A	N/A	88.23
MW-2	3/5/2011	28.0	18.0 - 28.0	101.13	13.50	N/A	N/A	N/A	87.63
	3/6/2013	28.0	18.0 - 28.0	101.13	17.66	16.32	1.34	16.70	84.43
	3/5/2014	28.0	18.0 - 28.0	101.13	11.57	10.15	1.42	10.53	90.60
	8/5/2015	28.0	18.0 - 28.0	101.13	16.44	N/A	N/A	N/A	84.69
	6/7/2016	28.0	18.0 - 28.0	101.13	12.10	N/A	N/A	N/A	89.03
MW-3	3/5/2011	31.0	21.0 - 31.0	101.09	13.72	N/A	N/A	N/A	87.37
	3/6/2013	31.0	21.0 - 31.0	101.09	17.94	N/A	N/A	N/A	83.15
	3/7/2014	31.0	21.0 - 31.0	101.09	11.57	N/A	N/A	N/A	89.52
	8/5/2015	31.0	21.0 - 31.0	101.09	N/A	N/A	N/A	N/A	N/A
	6/7/2016	31.0	21.0 - 31.0	101.09	13.23	N/A	N/A	N/A	87.86
MW-4	3/5/2011	25.0	15.0 - 25.0	97.02	9.15	N/A	N/A	N/A	87.87
	3/6/2013	25.0	15.0 - 25.0	97.02	12.41	10.10	2.31	10.75	86.27
	3/5/2014	25.0	15.0 - 25.0	97.02	9.74	7.50	2.24	8.10	88.92
	8/5/2015	25.0	15.0 - 25.0	97.02	N/A	N/A	N/A	N/A	N/A
	6/7/2016	25.0	15.0 - 25.0	97.02	8.08	N/A	N/A	N/A	88.94
MW-5	6/20/2011	20.0	10.0 - 20.0	101.34	14.05	13.75	0.30	13.83	87.51
	3/6/2013	20.0	10.0 - 20.0	101.34	19.63	16.80	2.83	17.59	83.75
	3/5/2014	20.0	10.0 - 20.0	101.34	15.75	8.12	7.63	10.18	91.16
	8/5/2015	20.0	10.0 - 20.0	101.34	14.04	N/A	N/A	N/A	87.30
	6/7/2016	20.0	10.0 - 20.0	101.34	10.24	N/A	N/A	N/A	91.10

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and June 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-6A	3/6/2013	25.5	15.5 - 25.5	101.84	18.00	N/A	N/A	N/A	83.84
	3/5/2014	25.5	15.5 - 25.5	101.84	15.15	N/A	N/A	N/A	86.69
	8/5/2015	25.5	15.5 - 25.5	101.84	N/A	N/A	N/A	N/A	N/A
	6/7/2016	25.5	15.5 - 25.5	101.84	13.40	N/A	N/A	N/A	88.44
MW-6B	3/6/2013	38.5	28.5 - 38.5	101.91	18.05	N/A	N/A	N/A	83.86
	3/5/2014	38.5	28.5 - 38.5	101.91	13.30	N/A	N/A	N/A	88.61
	8/5/2015	38.5	28.5 - 38.5	101.91	N/A	N/A	N/A	N/A	N/A
	6/7/2016	38.5	28.5 - 38.5	101.91	13.94	N/A	N/A	N/A	87.97
MW-7A	3/6/2013	24.0	14.0 - 24.0	100.04	16.60	N/A	N/A	N/A	83.44
	3/5/2014	24.0	14.0 - 24.0	100.04	11.00	N/A	N/A	N/A	89.04
	8/5/2015	24.0	14.0 - 24.0	100.04	N/A	N/A	N/A	N/A	N/A
	6/7/2016	24.0	14.0 - 24.0	100.04	12.29	N/A	N/A	N/A	87.75
MW-8A	3/6/2013	23.0	13.0 - 23.0	100.45	16.84	N/A	N/A	N/A	83.61
	3/5/2014	23.0	13.0 - 23.0	100.45	12.04	N/A	N/A	N/A	88.41
	8/5/2015	23.0	13.0 - 23.0	100.45	N/A	N/A	N/A	N/A	N/A
	6/7/2016	23.0	13.0 - 23.0	100.45	12.44	N/A	N/A	N/A	88.01
MW-8B	3/6/2013	37.5	27.5 - 37.5	100.37	16.60	N/A	N/A	N/A	83.77
	3/5/2014	37.5	27.5 - 37.5	100.37	10.45	N/A	N/A	N/A	89.92
	8/5/2015	37.5	27.5 - 37.5	100.37	N/A	N/A	N/A	N/A	N/A
	6/7/2016	37.5	27.5 - 37.5	100.37	12.32	N/A	N/A	N/A	88.05
MW-9A	3/6/2013	23.0	13.0 - 23.0	101.36	18.61	N/A	N/A	N/A	82.75
	3/6/2014	23.0	13.0 - 23.0	101.36	11.50	N/A	N/A	N/A	89.86
	8/5/2015	23.0	13.0 - 23.0	101.36	N/A	N/A	N/A	N/A	N/A
	6/7/2016	23.0	13.0 - 23.0	101.36	13.41	N/A	N/A	N/A	87.95
MW-9B	3/6/2013	31.5	21.5 - 31.5	101.38	17.60	N/A	N/A	N/A	83.78
	3/6/2014	31.5	21.5 - 31.5	101.38	11.65	N/A	N/A	N/A	89.73
	8/5/2015	31.5	21.5 - 31.5	101.38	N/A	N/A	N/A	N/A	N/A
	6/7/2016	31.5	21.5 - 31.5	101.38	13.35	N/A	N/A	N/A	88.03

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and June 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-10A	3/6/2013	17.5	7.5 - 17.5	97.20	11.05	N/A	N/A	N/A	86.15
	3/6/2014	17.5	7.5 - 17.5	97.20	2.80	N/A	N/A	N/A	94.40
	8/5/2015	17.5	7.5 - 17.5	97.20	N/A	N/A	N/A	N/A	N/A
	6/7/2016	17.5	7.5 - 17.5	97.20	7.12	N/A	N/A	N/A	90.08
MW-10B	3/6/2013	39.0	29.0 - 39.0	97.34	13.87	N/A	N/A	N/A	83.47
	3/6/2014	39.0	29.0 - 39.0	97.34	7.54	N/A	N/A	N/A	89.80
	8/5/2015	39.0	29.0 - 39.0	97.34	N/A	N/A	N/A	N/A	N/A
	6/7/2016	39.0	29.0 - 39.0	97.34	8.92	N/A	N/A	N/A	88.42
MW-11A	3/6/2013	20.0	10.0 - 20.0	89.93	10.52	N/A	N/A	N/A	79.41
	3/6/2014	20.0	10.0 - 20.0	89.93	9.50	N/A	N/A	N/A	80.43
	8/5/2015	20.0	10.0 - 20.0	89.93	N/A	N/A	N/A	N/A	N/A
	6/7/2016	20.0	10.0 - 20.0	89.93	3.30	N/A	N/A	N/A	86.63
MW-11B	3/6/2013	35.0	29.0 - 39.0	90.26	10.30	N/A	N/A	N/A	79.96
	3/6/2014	35.0	29.0 - 39.0	90.26	9.47	N/A	N/A	N/A	80.79
	8/5/2015	35.0	29.0 - 39.0	90.26	N/A	N/A	N/A	N/A	N/A
	6/7/2016	35.0	29.0 - 39.0	90.26	1.47	N/A	N/A	N/A	88.79
MW-12A	3/6/2013	20.0	10.0 - 20.0	99.26	13.95	N/A	N/A	N/A	85.31
	3/6/2014	20.0	10.0 - 20.0	99.26	16.20	N/A	N/A	N/A	83.06
	8/5/2015	20.0	10.0 - 20.0	99.26	N/A	N/A	N/A	N/A	N/A
	6/8/2016	20.0	10.0 - 20.0	99.26	15.43	N/A	N/A	N/A	83.83
MW-12B	3/6/2013	36.5	26.5 - 36.5	99.35	16.72	N/A	N/A	N/A	82.63
	3/6/2014	36.5	26.5 - 36.5	99.35	11.87	N/A	N/A	N/A	87.48
	8/5/2015	36.5	26.5 - 36.5	99.35	N/A	N/A	N/A	N/A	N/A
	6/8/2016	36.5	26.5 - 36.5	99.35	12.00	N/A	N/A	N/A	87.35

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and June 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-13A	3/25/2013	22.0	12.0 - 22.0	98.70	19.80	N/A	N/A	N/A	78.90
	3/5/2014	22.0	12.0 - 22.0	98.70	N/A	N/A	N/A	N/A	N/A
	8/5/2015	22.0	12.0 - 22.0	98.70	N/A	N/A	N/A	N/A	N/A
	6/8/2016	22.0	12.0 - 22.0	98.70	12.33	N/A	N/A	N/A	86.37
MW-13B	3/6/2013	33.5	23.5 - 33.5	98.69	19.88	N/A	N/A	N/A	78.81
	3/6/2014	33.5	23.5 - 33.5	98.69	16.12	N/A	N/A	N/A	82.57
	8/5/2015	33.5	23.5 - 33.5	98.69	N/A	N/A	N/A	N/A	N/A
	6/8/2016	33.5	23.5 - 33.5	98.69	15.22	N/A	N/A	N/A	83.47
MW-14A	3/6/2013	20.0	10.0 - 20.0	97.49	14.52	N/A	N/A	N/A	82.97
	3/6/2014	20.0	10.0 - 20.0	97.49	11.10	N/A	N/A	N/A	86.39
	8/5/2015	20.0	10.0 - 20.0	97.49	N/A	N/A	N/A	N/A	N/A
	6/8/2016	20.0	10.0 - 20.0	97.49	3.78	N/A	N/A	N/A	93.71
MW-14B	3/6/2013	38.5	28.5 - 38.5	97.45	17.27	N/A	N/A	N/A	80.18
	3/6/2014	38.5	28.5 - 38.5	97.45	12.45	N/A	N/A	N/A	85.00
	8/5/2015	38.5	28.5 - 38.5	97.45	N/A	N/A	N/A	N/A	N/A
	6/8/2016	38.5	28.5 - 38.5	97.45	12.10	N/A	N/A	N/A	85.35
MW-15A	3/25/2013	17.0	7.0 - 17.0	96.87	16.01	N/A	N/A	N/A	80.86
	3/6/2014	17.0	7.0 - 17.0	96.87	15.58	N/A	N/A	N/A	81.29
	8/5/2015	17.0	7.0 - 17.0	96.87	N/A	N/A	N/A	N/A	N/A
	6/8/2016	17.0	7.0 - 17.0	96.87	12.60	N/A	N/A	N/A	84.27
MW-15B	3/6/2013	40.0	30.0 - 40.0	96.82	17.60	N/A	N/A	N/A	79.22
	3/6/2014	40.0	30.0 - 40.0	96.82	14.10	N/A	N/A	N/A	82.72
	8/5/2015	40.0	30.0 - 40.0	96.82	N/A	N/A	N/A	N/A	N/A
	6/8/2016	40.0	30.0 - 40.0	96.82	12.33	N/A	N/A	N/A	84.49

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and June 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-16A	3/25/2013	18.0	8.0 - 18.0	95.95	16.21	N/A	N/A	N/A	79.74
	3/5/2014	18.0	8.0 - 18.0	95.95	N/A	N/A	N/A	N/A	N/A
	8/5/2015	18.0	8.0 - 18.0	95.95	N/A	N/A	N/A	N/A	N/A
	6/8/2016	18.0	8.0 - 18.0	95.95	N/A	N/A	N/A	N/A	N/A
MW-16B	3/6/2013	37.0	27.0 - 37.0	95.68	16.75	N/A	N/A	N/A	78.93
	3/5/2014	37.0	27.0 - 37.0	95.68	N/A	N/A	N/A	N/A	N/A
	8/5/2015	37.0	27.0 - 37.0	95.68	N/A	N/A	N/A	N/A	N/A
	6/8/2016	37.0	27.0 - 37.0	95.68	N/A	N/A	N/A	N/A	N/A
MW-17B	3/6/2013	39.5	29.5 - 39.5	92.69	9.05	N/A	N/A	N/A	83.64
	3/5/2014	39.5	29.5 - 39.5	92.69	6.04	N/A	N/A	N/A	86.65
	8/5/2015	39.5	29.5 - 39.5	92.69	N/A	N/A	N/A	N/A	N/A
	6/9/2016	39.5	29.5 - 39.5	92.69	5.70	N/A	N/A	N/A	86.99
MW-18A	3/6/2013	13.0	3.0 - 13.0	88.20	0.85	N/A	N/A	N/A	87.35
	3/5/2014	13.0	3.0 - 13.0	88.20	0.82	N/A	N/A	N/A	87.38
	8/5/2015	13.0	3.0 - 13.0	88.20	N/A	N/A	N/A	N/A	N/A
	6/9/2016	13.0	3.0 - 13.0	88.20	2.10	N/A	N/A	N/A	86.10
MW-18B	3/6/2013	35.0	25.0 - 35.0	88.30	1.05	N/A	N/A	N/A	87.25
	3/5/2014	35.0	25.0 - 35.0	88.30	0.78	N/A	N/A	N/A	87.52
	8/5/2015	35.0	25.0 - 35.0	88.30	N/A	N/A	N/A	N/A	N/A
	6/9/2016	35.0	25.0 - 35.0	88.30	0.57	N/A	N/A	N/A	87.73
MW-19A	3/6/2013	15.0	5.0 - 15.0	91.63	7.95	N/A	N/A	N/A	83.68
	3/5/2014	15.0	5.0 - 15.0	91.63	6.02	N/A	N/A	N/A	85.61
	8/5/2015	15.0	5.0 - 15.0	91.63	N/A	N/A	N/A	N/A	N/A
	6/9/2016	15.0	5.0 - 15.0	91.63	6.13	N/A	N/A	N/A	85.50
MW-19B	3/6/2013	34.0	24.0 - 34.0	91.69	8.35	N/A	N/A	N/A	83.34
	3/5/2014	34.0	24.0 - 34.0	91.69	7.58	N/A	N/A	N/A	84.11
	8/5/2015	34.0	24.0 - 34.0	91.69	N/A	N/A	N/A	N/A	N/A
	6/9/2016	34.0	24.0 - 34.0	91.69	6.00	N/A	N/A	N/A	85.69

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and June 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-20A	3/6/2013	15.0	5.0 - 15.0	88.67	5.05	N/A	N/A	N/A	83.62
	3/5/2014	15.0	5.0 - 15.0	88.67	4.97	N/A	N/A	N/A	83.70
	8/5/2015	15.0	5.0 - 15.0	88.67	N/A	N/A	N/A	N/A	N/A
	6/9/2016	15.0	5.0 - 15.0	88.67	5.60	N/A	N/A	N/A	83.07
MW-20B	3/6/2013	35.0	25.0 - 35.0	88.61	4.11	N/A	N/A	N/A	84.50
	3/5/2014	35.0	25.0 - 35.0	88.61	3.62	N/A	N/A	N/A	84.99
	8/5/2015	35.0	25.0 - 35.0	88.61	N/A	N/A	N/A	N/A	N/A
	6/9/2016	35.0	25.0 - 35.0	88.61	2.82	N/A	N/A	N/A	85.79
MW-21A	3/6/2013	12.0	2.0 - 12.0	87.16	0.85	N/A	N/A	N/A	86.31
	3/5/2014	12.0	2.0 - 12.0	87.16	0.65	N/A	N/A	N/A	86.51
	8/5/2015	12.0	2.0 - 12.0	87.16	N/A	N/A	N/A	N/A	N/A
	6/9/2016	12.0	2.0 - 12.0	87.16	1.25	N/A	N/A	N/A	85.91
MW-21B	3/6/2013	35.0	25.0 - 35.0	87.23	1.35	N/A	N/A	N/A	85.88
	3/5/2014	35.0	25.0 - 35.0	87.23	0.85	N/A	N/A	N/A	86.38
	8/5/2015	35.0	25.0 - 35.0	87.23	N/A	N/A	N/A	N/A	N/A
	6/9/2016	35.0	25.0 - 35.0	87.23	2.20	N/A	N/A	N/A	85.03
MW-22B	3/6/2013	35.0	25.0 - 35.0	87.40	2.10	N/A	N/A	N/A	85.30
	3/5/2014	35.0	25.0 - 35.0	87.40	1.45	N/A	N/A	N/A	85.95
	8/5/2015	35.0	25.0 - 35.0	87.40	N/A	N/A	N/A	N/A	N/A
	6/9/2016	35.0	25.0 - 35.0	87.40	2.22	N/A	N/A	N/A	85.18

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
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NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and June 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
RW-1	3/6/2013	40.0	20.0 - 40.0	101.21	17.26	17.11	0.15	17.15	84.06
	3/5/2014	40.0	20.0 - 40.0	101.21	15.78	9.10	6.68	10.90	90.31
	8/5/2015	40.0	20.0 - 40.0	101.21	16.30	N/A	N/A	N/A	84.91
	6/8/2016	40.0	20.0 - 40.0	101.21	10.80	N/A	N/A	N/A	90.41
RW-2	3/6/2013	40.0	20.0 - 40.0	100.96	16.96	N/A	N/A	N/A	84.00
	3/5/2014	40.0	20.0 - 40.0	100.96	10.65	N/A	N/A	N/A	90.31
	8/5/2015	40.0	20.0 - 40.0	100.96	16.58	N/A	N/A	N/A	84.38
	6/8/2016	40.0	20.0 - 40.0	100.96	12.25	N/A	N/A	N/A	88.71
RW-3	3/6/2013	41.0	21.0 - 41.0	101.44	17.41	17.36	0.05	17.37	84.07
	3/5/2014	41.0	21.0 - 41.0	101.44	10.58	10.52	0.06	10.54	90.90
	8/5/2015	41.0	21.0 - 41.0	101.44	17.00	N/A	N/A	N/A	84.44
	6/8/2016	41.0	21.0 - 41.0	101.44	12.20	N/A	N/A	N/A	89.24
RW-4	3/6/2013	40.5	20.5 - 40.5	100.83	16.73	N/A	N/A	N/A	84.10
	3/7/2014	40.5	20.5 - 40.5	100.83	10.50	N/A	N/A	N/A	90.33
	8/5/2015	40.5	20.5 - 40.5	100.83	16.70	N/A	N/A	N/A	84.13
	6/8/2016	40.5	20.5 - 40.5	100.83	11.40	N/A	N/A	N/A	89.43
RW-5	3/6/2013	38.5	18.5 - 38.5	101.62	17.64	17.58	0.06	17.6	84.02
	3/5/2014	38.5	18.5 - 38.5	101.62	10.88	10.58	0.30	10.66	90.96
	8/5/2015	38.5	18.5 - 38.5	101.62	15.04	N/A	N/A	N/A	86.58
	6/8/2016	38.5	18.5 - 38.5	101.62	11.08	N/A	N/A	N/A	90.54

Note:
* Corrected WL = Static WL - (Product Thickness x Product Gravity)
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Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and June 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
DMW-1	3/6/2013	65.0	60.0 - 65.0	101.16	18.21	N/A	N/A	N/A	82.95
	3/7/2014	65.0	60.0 - 65.0	101.16	14.07	N/A	N/A	N/A	87.09
	8/5/2015	65.0	60.0 - 65.0	101.16	N/A	N/A	N/A	N/A	N/A
	6/8/2016	65.0	60.0 - 65.0	101.16	12.60	N/A	N/A	N/A	88.56
DMW-2	3/6/2013	65.0	60.0 - 65.0	92.63	9.40	N/A	N/A	N/A	83.23
	3/7/2014	65.0	60.0 - 65.0	92.63	5.94	N/A	N/A	N/A	86.69
	8/5/2015	65.0	60.0 - 65.0	92.63	N/A	N/A	N/A	N/A	N/A
	6/9/2016	65.0	60.0 - 65.0	92.63	6.37	N/A	N/A	N/A	86.26
DMW-3	3/6/2013	65.0	60.0 - 65.0	87.41	2.10	N/A	N/A	N/A	85.31
	3/5/2014	65.0	60.0 - 65.0	87.41	1.40	N/A	N/A	N/A	86.01
	8/5/2015	65.0	60.0 - 65.0	87.41	N/A	N/A	N/A	N/A	N/A
	6/9/2016	65.0	60.0 - 65.0	87.41	2.10	N/A	N/A	N/A	85.31

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured NL - Not Located

Table 3 – Current Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
June 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**
MW-1	6/7/2016	**2,230J**	**33,600**	**3,370**	**13,400**	**ND(88.0)**	ND(38.5)	**ND(58.1)**	ND(0.00750)
MW-2	6/7/2016	**4,220**	**6,650**	**944**	5,820	**1,130**	**14,300**	**ND(11.6)**	**0.057**
MW-3	6/7/2016	ND(0.111)	1.25J	ND(0.109)	2.80J	ND(0.176)	ND(0.077)	ND(0.116)	**0.052**
MW-4	6/7/2016	**863**	24.3J	453	1,360	**296**	**1,020**	ND(1.16)	ND(0.00750)
MW-5	6/7/2016	**17,100**	**30,000**	**3,410**	**21,600**	**2,890**	**28,100**	**ND(29.0)**	0.016J
MW-6A	6/7/2016	0.872J	7.07	2.44J	20.4	15.8	ND(0.077)	ND(0.116)	ND(0.00750)
MW-6B	6/7/2016	ND(0.111)	2.45J	0.812J	7.11J	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)
MW-7A	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)
MW-8A	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)
MW-8B	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)
MW-9A	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.24J	ND(0.116)	ND(0.00750)
MW-9B	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	4.73J	ND(0.116)	ND(0.00750)
MW-10A	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)
MW-10B	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)
MW-11A	6/7/2016	4.08J	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.23J	ND(0.116)	0.042
MW-11B	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	0.864J	ND(0.116)	0.014J
MW-12A	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	0.022
MW-12B	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	0.049
MW-13A	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)
MW-13B	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)
MW-14A	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	0.014J
MW-14B	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)
MW-15A	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)
MW-15B	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)
MW-16A	6/8/2016	Abandoned							
MW-16B	6/8/2016	Abandoned							
MW-17B	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	0.021

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
June 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**
MW-18A	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.15J	ND(0.116)	ND(0.00750)
MW-18B	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)
MW-19A	6/9/2016	2.08J	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)
MW-19B	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.41J	ND(0.116)	ND(0.00750)
MW-20A	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	0.810J	ND(0.116)	ND(0.00750)
MW-20B	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)
MW-21A	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	20.8	ND(0.116)	ND(0.00750)
MW-21B	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	20.4	ND(0.116)	ND(0.00750)
MW-22B	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.60J	ND(0.116)	ND(0.00750)
RW-1	6/8/2016	**121**	**1,420**	665	4,000	**324**	ND(0.770)	ND(1.16)	ND(0.00750)
RW-2	6/8/2016	**5,340**	**11,800**	**1,270**	9,000	**1,150**	**16,800**	**ND(11.6)**	**0.120**
RW-3	6/8/2016	**2,920**	**5,970**	**814**	5,430	ND(17.6U)	**1,910**	**ND(11.6)**	**0.091**
RW-4	6/8/2016	**6,560**	**7,610**	**1,250**	7,350	**2,110**	**30,700**	**ND(23.2)**	ND(0.00750)
RW-5	6/8/2016	**388**	**1,040**	196	3,160	**227**	**225**	ND(1.16)	ND(0.00750)
DMW-1	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	**116**	ND(0.116)	0.031
DMW-2	6/9/2016	ND(0.111)	0.611J	ND(0.109)	4.05J	ND(0.176)	5.92	ND(0.116)	ND(0.00750)
DMW-3	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	1.59J	ND(0.176)	1.04J	ND(0.116)	ND(0.00750)
Duplicate 1 (RW-4)	6/8/2016	**1,170**	**1,490**	283	1,510	ND(8.80)	**5,330**	**ND(5.81)**	ND(0.00750)
Duplicate 2 (MW-19B)	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	1.42J	ND(0.176)	1.44J	ND(0.116)	0.013J
Duplicate 3 (MW-21B)	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	20.8	ND(0.116)	ND(0.00750)
Field Blank 1	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)
Field Blank 2	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)
Field Blank 3	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)
Trip Blank 1	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	NA
Trip Blank 2	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	NA
Trip Blank 3	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current Groundwater Analytical Data
--8 Oxygenates--
Broad River Amoco; UST Permit #11946
June 2016

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	---	**150**	**10,000**	**N/A**	**47**	**240**	**128**	**1,400**	**N/A**
MW-1	6/7/2016	ND(118)	**ND(62,500)**	ND(18,800)	ND(117)	**4,130J**	ND(120)	**ND(7,500)**	ND(243)
MW-2	6/7/2016	ND(23.6)	**ND(12,500)**	ND(3,760)	ND(23.4)	**23,200**	ND(24)	**6,170**	ND(48.7)
MW-3	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	42	ND(0.240)	ND(15.0)	ND(0.487)
MW-4	6/7/2016	ND(2.36)	ND(1,250)	ND(376)	ND(2.34)	**373**	30.4J	265	ND(4.87)
MW-5	6/7/2016	ND(59.0)	**ND(31,200)**	ND(9,400)	**ND(58.5)**	**12,300**	**797J**	**ND(3,750)**	ND(122)
MW-6A	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(15.0)	ND(0.487)
MW-6B	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(15.0)	ND(0.487)
MW-7A	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-8A	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-8B	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-9A	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-9B	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-10A	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-10B	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-11A	6/7/2016	0.440J	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(15.0)	ND(0.487)
MW-11B	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(15.0)	ND(0.487)
MW-12A	6/8/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-12B	6/8/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-13A	6/8/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-13B	6/8/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-14A	6/8/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-14B	6/8/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-15A	6/8/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-15B	6/8/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-16A	6/8/2016	Abandoned							
MW-16B	6/8/2016	Abandoned							
MW-17B	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)

Note: All units expressed in µg/L (PPB) N/A - Not Analyzed
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current Groundwater Analytical Data
--8 Oxygenates--
Broad River Amoco; UST Permit #11946
June 2016

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	---	**150**	**10,000**	**N/A**	**47**	**240**	**128**	**1,400**	**N/A**
MW-18A	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-18B	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-19A	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-19B	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-20A	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-20B	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-21A	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-21B	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-22B	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
RW-1	6/8/2016	ND(2.36)	ND(1,250)	ND(376)	ND(2.34)	ND(10.1)	ND(2.40)	ND(150)	ND(4.87)
RW-2	6/8/2016	ND(23.6)	**ND(12,500)**	ND(3,760)	ND(23.4)	**13,700**	ND(24)	**11,700**	ND(48.7)
RW-3	6/8/2016	ND(23.6)	**ND(12,500)**	ND(3,760)	ND(23.4)	**8,330**	**138J**	ND(1,500)	ND(48.7)
RW-4	6/8/2016	ND(47.2)	**ND(25,000)**	ND(7,520)	ND(46.8)	**11,900**	**743J**	**9,020**	ND(97.4)
RW-5	6/8/2016	ND(2.36)	ND(1,250)	ND(376)	ND(2.34)	**546**	20.5J	ND(150)	ND(4.87)
DMW-1	6/8/2016	0.992J	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
DMW-2	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
DMW-3	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
Duplicate 1 (RW-4)	6/8/2016	ND(11.8)	ND(6,250)	ND(1,880)	ND(11.7)	**ND(2,180)**	72.6J	1,220	ND(24.3)
Duplicate 2 (MW-19B)	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(15.0)	ND(0.487)
Duplicate 3 (MW-21B)	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(15.0)	ND(0.487)
Field Blank 1	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
Field Blank 2	6/8/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
Field Blank 3	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
Trip Blank 1	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
Trip Blank 2	6/8/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
Trip Blank 3	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)

Note: All units expressed in µg/L (PPB) N/A - Not Analyzed
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current Groundwater Analytical Data
--Nitrate, Sulfate, Ferrous Iron, Methane, Dissolved Oxygen--
Broad River Amoco; UST Permit #11946
June 2016

Monitor Well ID	Date Sampled	Nitrate	Sulfate	Ferrous Iron	Methane*	Dissolved Oxygen
MW-1	6/7/2016	ND (0.008)	ND (1.1)	0.3	1,680	1.44
MW-2	6/7/2016	ND (0.008)	4.4J	1.2	2,130	1.10
MW-3	6/7/2016	0.113	4.8J	0.2	ND (0.435)	1.63
MW-4	6/7/2016	0.144	ND (1.1)	1.8	2410	1.31
MW-5	6/7/2016	ND (0.008)	ND (1.1)	1.8	4640	1.37
MW-6A	6/7/2016	0.274	1.9J	0.4	0.675J	2.10
MW-6B	6/7/2016	4.70	1.2J	0.2	ND (0.435)	3.07
MW-7A	6/7/2016	0.048	ND (1.1)	0.6	ND (0.435)	3.55
MW-8A	6/7/2016	0.026	1.2J	0.4	ND (0.435)	2.14
MW-8B	6/7/2016	0.355	1.6J	0.8	ND (0.435)	3.87
MW-9A	6/7/2016	0.086	ND (1.1)	3.4	375	1.39
MW-9B	6/7/2016	0.126	2.9J	2.2	ND (0.435)	2.15
MW-10A	6/7/2016	1.53	2.8J	1.2	ND (0.435)	2.94
MW-10B	6/7/2016	0.164	8.3	0.8	ND (0.435)	2.99
MW-11A	6/7/2016	0.258	5.2	0.4	24.4	1.10
MW-11B	6/7/2016	0.456	4.2J	0.2	0.458J	1.13
MW-12A	6/8/2016	0.027	ND (1.1)	0.8	ND (0.435)	1.32
MW-12B	6/8/2016	0.094	1.5J	0.0	ND (0.435)	3.48
MW-13A	6/8/2016	0.034	4.8J	0.6	ND (0.435)	2.90
MW-13B	6/8/2016	0.738	1.5J	0.4	ND (0.435)	4.21
MW-14A	6/8/2016	ND (0.008)	2.1J	0.0	ND (0.435)	0.81
MW-14B	6/8/2016	4.52	1.2J	0.2	ND (0.435)	2.59
MW-15A	6/8/2016	3.54	1.7J	0.8	0.687J	2.17
MW-15B	6/8/2016	6.93	1.3J	0.0	ND (0.435)	3.09
MW-16A	6/8/2016	Abandoned				
MW-16B	6/8/2016	Abandoned				
MW-17B	6/9/2016	0.126	1.4J	0.0	591	1.24

Note: All units* expressed in mg/L (PPM) *Methane is expressed in ug/L (PPB)
ND( ) - Not Detected Above Method Detection Limit (limit in mg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit
MCL = Maximum Contaminant Level

Table 3 – Current Groundwater Analytical Data
--Nitrate, Sulfate, Ferrous Iron, Methane, Dissolved Oxygen--
Broad River Amoco; UST Permit #11946
June 2016

Monitor Well ID	Date Sampled	Nitrate	Sulfate	Ferrous Iron	Methane	Dissolved Oxygen
MW-18A	6/9/2016	0.082	3.1J	1.8	5.43	1.5
MW-18B	6/9/2016	ND (0.008)	1.7J	2.4	3.58	1.18
MW-19A	6/9/2016	ND (0.008)	1.6J	0.0	2,190	1
MW-19B	6/9/2016	ND (0.008)	1.7J	2.4	0.966	2.12
MW-20A	6/9/2016	0.107	1.2J	0.8	223	0.8
MW-20B	6/9/2016	ND (0.008)	16.8	0.2	47.5	1.51
MW-21A	6/9/2016	0.016	1.6J	0.6	ND (0.435)	1.11
MW-21B	6/9/2016	ND (0.008)	ND (1.1)	0.6	ND (0.435)	1.09
MW-22B	6/9/2016	0.025	3.0J	0.2	0.79	1.97
RW-1	6/8/2016	0.047	4.4J	0.2	21.1	2.14
RW-2	6/8/2016	0.070	2.1J	0.6	745	1.94
RW-3	6/8/2016	ND (0.008)	2.6J	0.6	1,010	1.12
RW-4	6/8/2016	ND (0.008)	1.6J	0.4	2,730	1.28
RW-5	6/8/2016	ND (0.008)	5.9J	2.2	214	1.16
DMW-1	6/8/2016	ND (0.008)	2.6J	0.0	ND (0.435)	2.18
DMW-2	6/9/2016	0.627	18.5	0.2	ND (0.435)	3.71
DMW-3	6/9/2016	0.359	62.1	0.0	ND (0.435)	2.58
Duplicate 1 (RW-4)	6/8/2016	ND (0.008)	ND (1.1)	0.4	1,070	1.28
Duplicate 2 (MW-19B)	6/9/2016	ND (0.008)	2.3	2.4	0.79	2.12
Duplicate 3 (MW-21B)	6/9/2016	ND (0.008)	1.3	0.6	ND (0.435)	1.09

Note: All units expressed in mg/L (PPM) *Methane is expressed in ug/L (PPB)
ND( ) - Not Detected Above Method Detection Limit (limit in mg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit
MCL = Maximum Contaminant Level

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and June 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	N/A	5	1,000	700	10,000	25	40	5 (MCL)	0.05	15 (Action Level)
MW-1	3/5/2011	**1,760**	**18,400**	**1,270**	5,140	**4,070J**	**<83.9**	**<121**	<0.0032	**18**
	3/8/2013	**2,480**	**12,800**	**1,550**	5,650	**623**	**70.8 J**	ND(**11.6**)	ND (0.0039)	14 J
	3/6/2014	**3,080**	**35,100**	**3,130**	**13,300**	**754J**	ND(38.5)	ND(**58.1**)	ND(0.0063)	NA
	8/5/2015	**2,360J**	**34,300**	**3,310**	**14,400**	**2,660**	ND(38.5)	ND(**58.1**)	ND(0.00750)	NA
	6/7/2016	**2,230J**	**33,600**	**3,370**	**13,400**	**ND(88.0)**	ND(38.5)	**ND(58.1)**	ND(0.00750)	NA
MW-2	3/5/2011	**1,650**	**3,230**	422	2,190	**462J**	**3,420**	<12.1	**1.42**	<15
	3/6/2013	**1.34' Free Product**								
	3/5/2014	**1.42' Free Product**								
	8/5/2015	**14,100**	**23,300**	**2,930J**	**15,500**	**5,050**	**47,000**	ND(**116**)	ND(0.00750)	NA
	6/7/2016	**4,220**	**6,650**	**944**	5,820	**1,130**	**14,300**	**ND(11.6)**	**0.057**	NA
MW-3	3/5/2011	<15	10.4	9.52	30.6	4.74J	7.91	<0.121	<0.0032	<15
	3/8/2013	0.417 J	1.05	0.408 J	1.72 J	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/7/2014	2.04J	20.9J	2.81J	17.3J	7.44J	ND(0.770)	ND(1.16)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/7/2016	ND(0.111)	1.25J	ND(0.109)	2.80J	ND(0.176)	ND(0.077)	ND(0.116)	**0.052**	NA
MW-4	3/5/2011	**1,830**	198	**1,270**	3,160	**598**	**3,100**	**<12.1**	<0.0032	<15
	3/6/2013	**2.31' Free Product**								
	3/5/2014	**2.24' Free Product**								
	8/5/2015	**5,720**	309J	**2,390**	7,180	**934**	**4,060**	ND(**11.6**)	ND(0.00750)	NA
	6/7/2016	**863**	24.3J	453	1,360	**296**	**1,020**	ND(1.16)	ND(0.00750)	NA
MW-5	6/20/2011	**0.30' Free Product**								
	3/6/2013	**2.83' Free Product**								
	3/5/2014	**7.63' Free Product**								
	8/5/2015	**18,700**	**36,000**	**3,540**	**20,100**	**2,950**	**25,700**	ND(**58.1**)	ND(0.00750)	NA
	6/7/2016	**17,100**	**30,000**	**3,410**	**21,600**	**2,890**	**28,100**	**ND(29.0)**	0.016J	NA

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Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and June 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15** (Action Level)
MW-6A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	13 J
	3/5/2014	ND(0.111)	0.469J	ND(0.109)	1.63J	2.43J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/7/2016	0.872J	7.07	2.44J	20.4	15.8	ND(0.077)	ND(0.116)	ND(0.00750)	NA
MW-6B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	**19**
	3/5/2014	0.372J	2.96J	2.15J	13.9J	13.1	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/7/2016	ND(0.111)	2.45J	0.812J	7.11J	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
MW-7A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	1.06J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
MW-8A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	6.8 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
MW-8B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
MW-9A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.62	0.642 J	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.21J	0.667J	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.24J	ND(0.116)	ND(0.00750)	NA
MW-9B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.79	0.675 J	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.51J	0.668J	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	4.73J	ND(0.116)	ND(0.00750)	NA

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Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and June 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	N/A	5	1,000	700	10,000	25	40	5 (MCL)	0.05	15 (Action Level)
MW-10A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
MW-10B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
MW-11A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.00	ND (0.116)	ND (0.0039)	11 J
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.67J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/7/2016	4.08J	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.23J	ND(0.116)	0.042	NA
MW-11B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.12	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	0.940J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	0.864J	ND(0.116)	0.014J	NA
MW-12A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.486J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	0.022	NA
MW-12B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.359J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	0.049	NA
MW-13A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	7.8 J
	3/5/2014	Insufficient Water								NA
	8/5/2015	Not Sampled								
	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
MW-13B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.322J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA

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Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and June 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15** (Action Level)
MW-14A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.329J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	0.014J	NA
MW-14B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.277J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
MW-15A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	5.3 J
	3/6/2014	ND(0.111)	ND(0.122)	0.166J	0.893J	0.454J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
MW-15B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
MW-16A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	**35**
	3/5/2014	Abandoned								
	8/5/2015	Abandoned								
	6/8/2016	Abandoned								
MW-16B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	Abandoned								
	8/5/2015	Abandoned								
	6/8/2016	Abandoned								
MW-17B	3/6/2013	**6.58**	2.47	1.1 J	3.87 J	ND (0.352	**244**	ND (0.232)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(1.11)	3.27J	ND(1.09)	9.61J	12.8J	**420**	ND(1.16)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	0.021	NA

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Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and June 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	N/A	5	1,000	700	10,000	25	40	5 (MCL)	0.05	15 (Action Level)
MW-18A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.42	ND (0.116)	ND (0.0039)	**590**
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.363J	2.82J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.15J	ND(0.116)	ND(0.00750)	NA
MW-18B	3/6/2013	ND (0.111)	0.459 J	ND (0.109)	2.03 J	ND (0.176)	0.841 J	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.225J	0.416J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
MW-19A	3/6/2013	0.566 J	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	1.97J	1.87J	0.941J	6.10J	3.67J	0.644J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/9/2016	2.08J	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
MW-19B	3/6/2013	0.253 J	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	0.329J	0.349J	0.123J	1.07J	1.33J	1.11J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.41J	ND(0.116)	ND(0.00750)	NA
MW-20A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.15	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	0.991J	0.505J	2.92J	3.50J	0.526J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	0.810J	ND(0.116)	ND(0.00750)	NA
MW-20B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.25	ND (0.116)	ND (0.0039)	8.77 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.492J	18.1	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
MW-21A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	12 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	20.8	ND(0.116)	ND(0.00750)	NA

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Broad River Amoco; UST Permit #11946
Historical and June 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-21B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.34	ND (0.116)	ND (0.0039)	6.8 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	5.75	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	20.4	ND(0.116)	ND(0.00750)	NA
MW-22B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.83	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	2.64J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.60J	ND(0.116)	ND(0.00750)	NA
RW-1	3/6/2013	**0.15' Free Product**								
	3/5/2014	**6.68' Free Product**								
	8/5/2015	**4,060**	**21,500**	**2,770**	**24,100**	**1,670**	**2,080**	ND(**23.2**)	ND(0.00750)	NA
	6/8/2016	**121**	**1,420**	665	4,000	**324**	ND(0.770)	ND(1.16)	ND(0.00750)	NA
RW-2	3/8/2013	**9,420**	**12,800**	**2,030**	**11,000**	**565 J**	**9,100**	**224 J**	**1.65**	ND (3.8)
	3/5/2014	**11,000**	**18,500**	**1,580**	9,850	**299J**	**26,900**	**58.1J**	ND(0.0063)	NA
	8/5/2015	**199**	409	20.6J	1,920	**116**	**90.1**	ND(1.16)	ND(0.00750)	NA
	6/8/2016	**5,340**	**11,800**	**1,270**	9,000	**1,150**	**16,800**	ND(11.6)	**0.120**	NA
RW-3	3/6/2013	**0.05' Free Product**								
	3/5/2014	**0.06' Free Product**								
	8/5/2015	**4,710**	**7,870**	**908**	7,760	**642**	**6,460**	ND(**11.6**)	ND(0.00750)	NA
	6/8/2016	**2,920**	**5,970**	**814**	5,430	ND(17.6U)	**1,910**	**ND(11.6)**	**0.091**	NA
RW-4	3/8/2013	**3,390**	**1,730**	**977**	4,900	**210 J**	**4,460**	**ND (5.81)**	ND (0.0039)	12 J
	3/7/2014	**2,960**	**4,070**	378J	3,500	**186J**	**9,160**	**ND(11.6)**	ND(0.0063)	NA
	8/5/2015	**4,680**	**5,720**	**1,050**	6,190	**1,100**	**20,200**	ND(**23.2**)	ND(0.00750)	NA
	6/8/2016	**6,560**	**7,610**	**1,250**	7,350	**2,110**	**30,700**	**ND(23.2)**	ND(0.00750)	NA
RW-5	3/6/2013	**0.06' Free Product**								
	3/5/2014	**0.30' Free Product**								
	8/5/2015	**20,000**	**33,200**	**3,060**	**18,100**	**2,780**	**10,600**	ND(**58.1**)	ND(0.00750)	NA
	6/8/2016	**388**	**1,040**	196	3,160	**227**	**225**	ND(1.16)	ND(0.00750)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and June 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15** (Action Level)
DMW-1	3/8/2013	**507**	ND (1.22)	ND (1.09	ND (0.179)	ND (1.76)	**131**	**14.2 J**	ND (0.0039)	ND (3.8)
	3/7/2014	ND(0.111)	0.827J	ND(0.109)	1.17J	ND(0.176)	**159**	2.60J	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	**116**	ND(0.116)	0.031	NA
DMW-2	3/6/2013	4.12	0.548 J	ND (0.109)	0.805 J	ND (0.176)	**153**	ND (0.116)	ND (0.0039)	ND (3.8)
	3/7/2014	0.669J	3.63J	1.90J	10.7J	13.2	**89.2**	ND(0.232)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/9/2016	ND(0.111)	0.611J	ND(0.109)	4.05J	ND(0.176)	5.92	ND(0.116)	ND(0.00750)	NA
DMW-3	3/6/2013	0.281 J	0.497 J	ND (0.109)	ND (0.179	ND (0.176)	1.76	ND (0.116)	ND (0.0039)	**120**
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.33J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	1.59J	ND(0.176)	1.04J	ND(0.116)	ND(0.00750)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Broad River Amoco; UST Permit #11946

Table 5 - Free-Phase Product Reduction Calculation

June 2016

Well		Product Thickness (feet)	Product Thickness >SSTL Thickness (feet)
MW-1	Initial Thickness	0.00	
	SSTL Thickness	0.01	
	Initial > SSTL	0.00	0.00
	Subsequent (6/7/16)	0.00	
	Subsequent >SSTL	0.00	0.00
MW-2	Initial Thickness	1.43	
	SSTL Thickness	0.01	
	Initial > SSTL	1.42	1.42
	Subsequent (6/7/16)	0.00	
	Subsequent >SSTL	-0.01	0.00
MW-4	Initial Thickness	2.25	
	SSTL Thickness	0.01	
	Initial > SSTL	2.24	2.24
	Subsequent (6/7/16)	0.00	
	Subsequent >SSTL	0.00	0.00
MW-5	Initial Thickness	6.26	
	SSTL Thickness	0.01	
	Initial > SSTL	6.25	6.25
	Subsequent (6/7/16)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-1	Initial Thickness	5.30	
	SSTL Thickness	0.01	
	Initial > SSTL	5.29	5.29
	Subsequent (6/7/16)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-2	Initial Thickness	0.00	
	SSTL Thickness	0.01	
	Initial > SSTL	0.00	0.00
	Subsequent (6/7/16)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-3	Initial Thickness	0.01	
	SSTL Thickness	0.01	
	Initial > SSTL	0.00	0.00
	Subsequent (6/7/16)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-4	Initial Thickness	0.00	
	SSTL Thickness	0.01	
	Initial > SSTL	0.00	0.00
	Subsequent (6/7/16)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-5	Initial Thickness	0.03	
	SSTL Thickness	0.01	
	Initial > SSTL	0.02	0.02
	Subsequent (6/7/16)	0.00	
	Subsequent >SSTL	0.00	0.00
Total	Initial > SSTL		15.28
	Subsequent >SSTL		0.00

Free-Phase Product Thickness Reduction = 100%

APPENDIX A
NOT INCLUDED

APPENDIX B
PURGING DATA SHEETS &
LABORATORY ANALYTICAL DATA

ENVIRO-TEST SERVICES

Purge Meter Calibration Data Sheet

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry TeaTe (full names) Weather: Cool in AM, Hot in AF 67° 98°

pH / Specific Conductivity Meter

Model & Serial #: (check one)
- ___ Hanna HI9824 – S/N 886328
- ✓ Hanna HI9824 – S/N 871936

Dissolved Oxygen Meter

Model & Serial #: (check one)
- ___ YSI 58 Dissolved Oxygen – S/N 510
- ✓ YSI 550A Dissolved Oxy. – S/N 06A280

Turbidity Meter

Model & Serial #: (check one) ✓ Micro-TPW 2000 – S/N 201401347

Initial Calibration

pH Calibration:	4.0 / 7.0 / 10.0	Spec. Cond. Calibration:	1000	Turbidity Calibration:	.02 / 10.0 / 1000	Date: 6-7-16
pH Standard:	4.01 / 7.00 / 10.01	Spec. Cond. Standard:	1000 us/cm	Turbidity Standard:	0.02 / 10.0 / 1000	Time: 610

Midday Calibration Check

pH Calibration:	4.0 / 7.2 / 10.0	Spec. Cond. Calibration:	1005	Turbidity Calibration:	ReCal 10.0 .02 / 13.0 / 1002	Date: 6-7-16
pH Standard:	4.01 / 7.00 / 10.01	Spec. Cond. Standard:	1000 us/cm	Turbidity Standard:	0.02 / 10.0 / 1000	Time: 1258

End-of-Day Calibration Check

pH Calibration:	4.0 / 7.1 / 10.0	Spec. Cond. Calibration:	1000	Turbidity Calibration:	.02 / 10.0 / 1001	Date: 6-7-16
pH Standard:	4.01 / 7.00 / 10.01	Spec. Cond. Standard:	1000	Turbidity Standard:	0.02 / 10.0 / 1000	Time: 1615

ENVIRO-TEST SERVICES

Purge Meter Calibration Data Sheet

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: 68-98°

pH / Specific Conductivity Meter

Model & Serial #: (check one) ____ Hanna HI9824 – S/N 886328

✓ Hanna HI9824 – S/N 871936

Dissolved Oxygen Meter

Model & Serial #: (check one) ____ YSI 58 Dissolved Oxygen – S/N 510

✓ YSI 550A Dissolved Oxy. – S/N 06A280

Turbidity Meter

Model & Serial #: (check one) ✓ Micro-TPW 2000 – S/N 201401347

Initial Calibration

pH Calibration:	4.0 / 7.0 / 10.1	Spec. Cond. Calibration:	Recal 1000 / 982	Turbidity Calibration:	.02 / 10 / 1000 Recal / 1012
pH Standard:	4.01 / 7.00 / 10.01	Spec. Cond. Standard:	1000 uS/cm	Turbidity Standard:	0.02 / 10.0 / 1000

Date: 6-8-16 Time: 0545

Midday Calibration Check

pH Calibration:	4.1 / 7.3 Recal / 10.0	Spec. Cond. Calibration:	1000	Turbidity Calibration:	.02 / 10 / 1000
pH Standard:	4.01 / 7.00 / 10.01	Spec. Cond. Standard:	1000 uS/cm	Turbidity Standard:	0.02 / 10.0 / 1000

Date: 6-8-16 Time: 1210

End-of-Day Calibration Check

pH Calibration:	4.0 / 7.0 / 10.0	Spec. Cond. Calibration:	1005	Turbidity Calibration:	.02 / 11 / 1000
pH Standard:	4.01 / 7.00 / 10.01	Spec. Cond. Standard:	1000 uS/cm	Turbidity Standard:	0.02 / 10.0 / 1000

Date: 6-8-16 Time: 1630

ENVIRO-TEST SERVICES

Purge Meter Calibration Data Sheet

Site Data

Facility Name: Broad River Amoco Facility Location: 4835 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry TeaTe (full names) Weather: 68-98 clear Sunny

pH / Specific Conductivity Meter

Model & Serial #: (check one) ___ Hanna HI9824 – S/N 886328

V Hanna HI9824 – S/N 871936

Dissolved Oxygen Meter

Model & Serial #: (check one) ___ YSI 58 Dissolved Oxygen – S/N 510

V YSI 550A Dissolved Oxy. – S/N 06A280

Turbidity Meter

Model & Serial #: (check one) V Micro-TPW 2000 – S/N 201401347

Initial Calibration

pH Calibration:	4.0	7.0	10.0	Spec. Cond. Calibration:	1000	Turbidity Calibration:	.02 / 10.0 / 1000
pH Standard:	4.01	7.00	10.01	Spec. Cond. Standard:	1000 uS/cm	Turbidity Standard:	0.02 / 10.0 / 1000

Date: 6-9-16 Time: 0620

Midday Calibration Check

pH Calibration:	4.0	7.0	10.4 (10.0 ReCal)	Spec. Cond. Calibration:	1021 (1000 ReCal)	Turbidity Calibration:	0.2 / 11.08 (10.0 ReCal) / 1000
pH Standard:	4.01	7.00	10.01	Spec. Cond. Standard:	1000 uS/cm	Turbidity Standard:	0.02 / 10.0 / 1000

Date: 6-9-16 Time: 1235

End-of-Day Calibration Check

pH Calibration:	4.1	7.1	10.0	Spec. Cond. Calibration:	1001	Turbidity Calibration:	0.2 / 10.03 / 997
pH Standard:	4.01	7.00	10.01	Spec. Cond. Standard:	1000 uS/cm	Turbidity Standard:	0.02 / 10.0 / 1000

Date: 6-9-16 Time: 1538

ENVIRO-TEST SERVICES

Monitoring Well Purging Data Sheet

Date: 6-7-16

Site Data

Facility Name: Broad River AMOCO Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-1 Diameter (in): 2" Well Volume (gal): 4.3

Total Depth: 40.0' Static Water Level: 13.61 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	1.5	1.5					.2
Time (military)									
pH (standard units)	7.5	7.3	7.3	7.3					7.3
Specific Cond. (µS/cm)	60	55	42	77					70
Water Temp (°C)	22.7	23.1	23.0	22.8					22.8
Turbidity (mild, moderate, strong)	7.76	31.97	29.88	28.45					28.30
Dissolved Oxygen	2.28	1.53	1.30	1.50					1.44

Sample Collection Time: 0620

Remarks: FE = 0.3 mg/L

ENVIRO-TEST SERVICES

Monitoring Well Purging Data Sheet

Date: 6-7-16

Site Data

Facility Name: Broad River AMOCO Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-2 Diameter (in): 2" Well Volume (gal): 2.5

Total Depth: 28.0' Static Water Level: 12.10 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	1	1.5					.5
Time (military)									
pH (standard units)	8.1	8.0	7.9	7.9					7.9
Specific Cond. (µS/cm)	100	106	111	137					105
Water Temp (°C)	24.6	24.8	24.1	24.1					24.0
Turbidity (mild, moderate, strong)	10.95	11.38	10.82	10.11					10.04
Dissolved Oxygen	2.04	1.12	0.92	1.04					1.10

Sample Collection Time: 0655

Remarks: FE = 1.2 mg/L

ENVIRO-TEST SERVICES

Monitoring Well Purging Data Sheet

Date: 6-7-16

Site Data

Facility Name: Broad River AMOCO Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-3 Diameter (in): 2" Well Volume (gal): 2.8

Total Depth: 31.0' Static Water Level: 13.23 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	.5	.5					.2
Time (military)									
pH (standard units)	7.1	7.5	7.9	7.9					7.9
Specific Cond. (µS/cm)	171	149	251	222					212
Water Temp (°C)	22.6	22.7	22.0	21.8					21.8
Turbidity (mild, moderate, strong)	332.8	267.0	127.3	125.7					122.1
Dissolved Oxygen	3.92	2.98	1.94	1.75					1.63

Sample Collection Time: 0738

Remarks: FE = 0.2 mg/L

ENVIRO-TEST SERVICES

Monitoring Well Purging Data Sheet

Date: 6-7-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-4 Diameter (in): 2" Well Volume (gal): 2.7

Total Depth: 25.0' Static Water Level: 8.08 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	1	1					.5
Time (military)									
pH (standard units)	8.1	8.1	8.1	8.1					8.1
Specific Cond. (µS/cm)	132	143	272	223					220
Water Temp (°C)	23.2	22.8	22.7	22.7					22.4
Turbidity (mild, moderate, strong)	158.8	191.3	376.6	372.9					370.9
Dissolved Oxygen	1.53	1.07	1.18	1.04					1.31

Sample Collection Time: 0805

Remarks: FE = 1.8 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-7-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-5 Diameter (in): 2" Well Volume (gal): 1.5

Total Depth: 20' Static Water Level: 10.24 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		.5	.5	1					.5
Time (military)									
pH (standard units)	8.1	8.1	8.0	8.1					8.1
Specific Cond. (µS/cm)	267	280	291	295					287
Water Temp (°C)	25.0	24.6	25.1	24.8					24.9
Turbidity (mild, moderate, strong)	12.89	67.21	35.07	32.29					31.88
Dissolved Oxygen	1.61	0.95	1.41	1.39					1.37

Sample Collection Time: 0850

Remarks: FE = 1.8 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-7-16

Site Data

Facility Name: Broad River AMOCO Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-6A Diameter (in): 2" Well Volume (gal): 1.9

Total Depth: 25.5 Static Water Level: 13.40 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		.5	.5	1					.2
Time (military)									
pH (standard units)	7.5	7.2	7.2	7.2					7.2
Specific Cond. (µS/cm)	43	39	51	53					58
Water Temp (°C)	23.2	23.1	23.5	23.8					23.6
Turbidity (mild, moderate, strong)	4.31	301.4	973.1	967.4					965.7
Dissolved Oxygen	2.20	2.02	1.97	2.02					2.10

Sample Collection Time: 0933

Remarks: FE = 0.4 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-7-16

Site Data

Facility Name: Broad River AMOCO Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-6B Diameter (in): 2" Well Volume (gal): 4.0

Total Depth: 38.5' Static Water Level: 13.94 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		.5	.5	1					.5
Time (military)									
pH (standard units)	7.1	7.0	6.6	6.6					6.6
Specific Cond. (µS/cm)	90	62	79	77					64
Water Temp (°C)	23.4	22.8	22.8	23.4					23.2
Turbidity (mild, moderate, strong)	12.04	69.67	2.84	2.58					2.81
Dissolved Oxygen	4.92	3.29	3.16	3.14					3.07

Sample Collection Time: 1007

Remarks: FE = 0.2 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-7 16

Site Data

Facility Name: Broad River AMOCO Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-7A Diameter (in): 2" Well Volume (gal): 1.9

Total Depth: 24.0' Static Water Level: 12.29 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	.5	.5					.5
Time (military)									
pH (standard units)	7.8	7.7	7.7	7.7					7.7
Specific Cond. (µS/cm)	14	16	23	21					21
Water Temp (°C)	22.6	21.4	21.1	21.3					21.3
Turbidity (mild, moderate, strong)	61.84	75.55	72.22	70.25					68.31
Dissolved Oxygen	4.28	3.72	3.67	3.59					3.55

Sample Collection Time: 1104

Remarks: FE = 0.6 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: _____

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-8A Diameter (in): 2" Well Volume (gal): 1.7

Total Depth: 23.0' Static Water Level: 12.44 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	.5	.5					.2
Time (military)									
pH (standard units)	7.5	7.5	7.4	7.4					7.4
Specific Cond. (µS/cm)	45	30	32	39					44
Water Temp (°C)	22.6	22.1	22.4	22.4					22.2
Turbidity (mild, moderate, strong)	3.70	11.79	115.4	117.2					121.2
Dissolved Oxygen	3.22	2.64	2.07	2.01					2.14

Sample Collection Time: 1140

Remarks: FE = 0.4 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-7-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-8B Diameter (In): 2" Well Volume (gal): 4.1

Total Depth: 37.5' Static Water Level: 12.32' Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	1	.5					.5
Time (military)									
pH (standard units)	7.0	7.4	7.5	7.5					7.5
Specific Cond. (µS/cm)	48	33	26	30					30
Water Temp (°C)	22.4	22.5	22.0	21.8					21.9
Turbidity (mild, moderate, strong)	25.51	24.47	9.21	8.50					7.96
Dissolved Oxygen	4.87	4.42	4.52	4.11					3.87

Sample Collection Time: 1208

Remarks: FE = 0.8 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-7-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-9A Diameter (In): 2" Well Volume (gal): 1.5

Total Depth: 23.0' Static Water Level: 13.41' Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		.5	1	1					.5
Time (military)									
pH (standard units)	7.6	8.1	7.9	7.9					7.9
Specific Cond. (µS/cm)	32	36	66	77					70
Water Temp (°C)	21.7	22.0	22.1	21.9					21.8
Turbidity (mild, moderate, strong)	17.41	288.9	208.0	202.9					212.1
Dissolved Oxygen	2.21	1.50	1.39	1.37					1.39

Sample Collection Time: 1302

Remarks: FE = 3.4 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-7-16

Site Data

Facility Name: Broad River AMOCO Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-9B Diameter (In): 2" Well Volume (gal): 2.9

Total Depth: 31.5' Static Water Level: 13.35 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		.5	1	2					.5
Time (military)									
pH (standard units)	7.6	7.6	7.6	7.6					7.6
Specific Cond. (µS/cm)	41	56	52	46					40
Water Temp (°C)	22.2	22.1	21.9	22.0					21.9
Turbidity (mild, moderate, strong)	7.83	19.29	105.1	103.7					101.2
Dissolved Oxygen	4.01	2.38	2.29	2.18					2.15

Sample Collection Time: 1348

Remarks: FE = 2.2 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: _____

Site Data

Facility Name: Broad River AMOCO Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-10A Diameter (in): 2" Well Volume (gal): 1.69

Total Depth: 17.5 Static Water Level: 7.12 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		.5	1	1					.5
Time (military)									
pH (standard units)	8.7	8.3	8.3	8.3					8.3
Specific Cond. (µS/cm)	105	46	150	171					180
Water Temp (°C)	23.2	21.8	21.3	21.2					21.0
Turbidity (mild, moderate, strong)	99.68	204.5	301.3	297.8					284.4
Dissolved Oxygen	4.38	3.50	3.32	3.01					2.94

Sample Collection Time: 1417

Remarks: FE = 1.2 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-7-16

Site Data

Facility Name: Broad River AMOCO Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-10B Diameter (In): 2" Well Volume (gal): 4.9

Total Depth: 39.0 Static Water Level: 8.92 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		.5	.5	1					.5
Time (military)									
pH (standard units)	8.2	8.2	8.1	8.1					8.1
Specific Cond. (µS/cm)	118	84	111	127					119
Water Temp (°C)	21.9	21.6	22.0	21.8					21.9
Turbidity (mild, moderate, strong)	10.29	23.84	16.92	15.83					15.04
Dissolved Oxygen	3.65	3.09	2.88	3.28					2.99

Sample Collection Time: 1450

Remarks: FE = 0.8 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-7-16

Site Data

Facility Name: Broad River AMOCO Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-11A Diameter (in): 2" Well Volume (gal): 2.7

Total Depth: 20.0 Static Water Level: 3.30 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		.5	1	1					.5
Time (military)									
pH (standard units)	8.2	8.2	8.2	8.2					8.2
Specific Cond. (µS/cm)	182	189	90	101					112
Water Temp (°C)	22.6	21.3	20.3	20.1					20.3
Turbidity (mild, moderate, strong)	5.01	4.47	3.58	0.96					1.08
Dissolved Oxygen	1.49	1.24	1.33	1.13					1.10

Sample Collection Time: 1522

Remarks: FE = 0.4 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-7-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-11B Diameter (in): 2" Well Volume (gal): 5.4

Total Depth: 35.0 Static Water Level: 1.47 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		.5	1	1.5					.2
Time (military)									
pH (standard units)	8.3	8.3	8.3	8.3					8.3
Specific Cond. (µS/cm)	108	147	121	118					115
Water Temp (°C)	22.5	20.6	21.0	20.8					20.8
Turbidity (mild, moderate, strong)	0.78	1.15	5.40	5.29					5.22
Dissolved Oxygen	1.57	1.72	1.30	1.31					1.31

Sample Collection Time: 1605

Remarks: FE = 0.2 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-8-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-12A Diameter (in): 2" Well Volume (gal): 0.7

Total Depth: 20.0' Static Water Level: 15.43 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		.5	1	1					.2
Time (military)									
pH (standard units)	8.2	8.0	7.9	7.9					7.9
Specific Cond. (µS/cm)	72	73	59	51					47
Water Temp (°C)	22.0	22.1	22.3	22.1					22.0
Turbidity (mild, moderate, strong)	33.91	51.36	1100	1089					1064
Dissolved Oxygen	2.73	1.57	1.62	1.44					1.32

Sample Collection Time: 0950

Remarks: FE = 0.8 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-8-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-12B Diameter (in): 2" Well Volume (gal): 3.9

Total Depth: 36.5 Static Water Level: 12.00 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		.5	.5	1					.2
Time (military)									
pH (standard units)	8.0	8.0	8.0	8.1					8.0
Specific Cond. (µS/cm)	38	92	60	72					78
Water Temp (°C)	22.9	22.3	22.3	22.1					22.2
Turbidity (mild, moderate, strong)	8.86	132.3	7.04	6.19					7.58
Dissolved Oxygen	4.04	3.74	3.51	3.65					3.48

Sample Collection Time: 1028

Remarks: FE = 0.0 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-8-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-13A Diameter (in): 2" Well Volume (gal): 1.5

Total Depth: 22.0' Static Water Level: 12.33' Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	1	1					.5
Time (military)									
pH (standard units)	8.6	8.5	8.4	8.4					8.4
Specific Cond. (µS/cm)	81	69	71	77					104
Water Temp (°C)	21.3	22.0	21.9	22.1					22.0
Turbidity (mild, moderate, strong)	146.9	352.1	272.4	269.8					260.3
Dissolved Oxygen	4.60	3.59	2.87	2.91					2.90

Sample Collection Time: 1107

Remarks: FE = 0.6 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-8-16

Site Data

Facility Name: Broad River AMOCO Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-13 B Diameter (In): 2" Well Volume (gal): 2.9

Total Depth: 33.5 Static Water Level: 15.22 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	1	.5					.5
Time (military)									
pH (standard units)	8.4	8.5	8.5	8.5					8.5
Specific Cond. (µS/cm)	178	152	189	188					185
Water Temp (°C)	20.8	20.5	20.6	20.1					20.3
Turbidity (mild, moderate, strong)	67.95	81.62	11.88	10.62					10.94
Dissolved Oxygen	5.51	5.30	4.99	4.07					4.21

Sample Collection Time: 1204

Remarks: FE = 0.4

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-8-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-14A Diameter (in): 2" Well Volume (gal): 2.6

Total Depth: 20.0 Static Water Level: 3.78 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		.5	1	1					.5
Time (military)									
pH (standard units)	8.0	7.6	7.3	7.3					7.3
Specific Cond. (µS/cm)	93	75	85	88					80
Water Temp (°C)	25.4	23.2	22.8	22.1					22.4
Turbidity (mild, moderate, strong)	183.0	10.46	107.3	104.1					103.7
Dissolved Oxygen	1.55	1.27	0.96	0.88					0.81

Sample Collection Time: 1310

Remarks: FE = 0.0 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-8-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-14B Diameter (in): 2" Well Volume (gal): 4.3

Total Depth: 38.5 Static Water Level: 12.10 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	1	1					.5
Time (military)									
pH (standard units)	7.7	7.8	7.9	8.0					8.0
Specific Cond. (µS/cm)	168	115	149	214					205
Water Temp (°C)	23.9	21.9	22.2	22.5					22.3
Turbidity (mild, moderate, strong)	5.14	58.22	39.89	39.46					37.48
Dissolved Oxygen	3.37	3.03	2.70	2.70					2.59

Sample Collection Time: 1356

Remarks: FE = 0.2 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-8-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-15A Diameter (in): 2" Well Volume (gal): 0.7

Total Depth: 17.0' Static Water Level: 12.60 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	1.5	1					1
Time (military)									
pH (standard units)	7.4	7.5	7.3	7.3					7.3
Specific Cond. (µS/cm)	383	223	248	239					237
Water Temp (°C)	23.1	20.9	20.9	20.7					20.5
Turbidity (mild, moderate, strong)	238.8	287.8	1100	1079					1063
Dissolved Oxygen	3.46	2.58	2.41	2.33					2.17

Sample Collection Time: 1445

Remarks: FE = 0.8 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-8-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-15B Diameter (in): 2" Well Volume (gal): 4.5

Total Depth: 40.0' Static Water Level: 12.33 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	.5	1					.5
Time (military)									
pH (standard units)	8.1	8.1	8.1	8.1					8.1
Specific Cond. (µS/cm)	163	111	163	170					188
Water Temp (°C)	22.9	21.4	20.6	21.0					20.9
Turbidity (mild, moderate, strong)	6.62	4.29	2.99	2.09					2.28
Dissolved Oxygen	3.46	2.75	3.29	3.01					3.09

Sample Collection Time: 1527

Remarks: FE = 0.0 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-9-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-17B Diameter (in): 2" Well Volume (gal): 5.5

Total Depth: 39.5 Static Water Level: 5.70 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	1	1					.2
Time (military)									
pH (standard units)	8.4	8.1	8.1	8.1					8.1
Specific Cond. (µS/cm)	267	212	157	148					144
Water Temp (°C)	24.3	24.2	23.3	23.1					23.1
Turbidity (mild, moderate, strong)	1.04	0.80	0.71	0.46					0.58
Dissolved Oxygen	2.70	1.05	1.35	1.24					1.24

Sample Collection Time: 0640

Remarks: FE = 0.0 mg/L

ENVIRO-TEST SERVICES

Monitoring Well Purging Data Sheet

Date: 6-9-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-18A Diameter (in): 2" Well Volume (gal): 1.7

Total Depth: 13.0' Static Water Level: 2.10 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	1	1					.5
Time (military)									
pH (standard units)	8.2	8.1	8.1	8.1					8.1
Specific Cond. (µS/cm)	365	393	450	451					467
Water Temp (°C)	22.7	21.2	22.1	22.0					22.1
Turbidity (mild, moderate, strong)	373.2	1100	1039	1021					1018
Dissolved Oxygen	2.39	1.32	1.22	1.55					1.50

Sample Collection Time: 0805

Remarks: FE = 1.8 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-9-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-18B Diameter (in): 2" Well Volume (gal): 5.6

Total Depth: 35.0' Static Water Level: 0.57' Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	.5	1					.2
Time (military)									
pH (standard units)	8.3	8.3	8.2	8.2					8.2
Specific Cond. (µS/cm)	171	228	233	118					121
Water Temp (°C)	24.8	22.0	20.4	22.1					22.2
Turbidity (mild, moderate, strong)	7.15	0.88	10.04	9.76					9.32
Dissolved Oxygen	1.21	1.03	1.36	1.24					1.18

Sample Collection Time: 0848

Remarks: FE = 2.4 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-9-16

Site Data

Facility Name: Broad River AMOCO Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW 19A Diameter (In): 2" Well Volume (gal): 1.4

Total Depth: 15.0 Static Water Level: 6.13 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	1	.5					.5
Time (military)									
pH (standard units)	7.9	7.8	7.8	7.8	7.8				7.8
Specific Cond. (µS/cm)	244	39	40	44	40				40
Water Temp (°C)	27.7	26.0	24.9	24.8	24.7				24.9
Turbidity (mild, moderate, strong)	105.1	67.60	822.4	357.3	353.8				350.8
Dissolved Oxygen	1.44	0.88	0.86	0.95	1.02				1.00

Sample Collection Time: 1240

Remarks: FE = 0.0 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-9-16

Site Data

Facility Name: Broad River AMOCO Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-19B Diameter (In): 2" Well Volume (gal): _____

Total Depth: 34.0 Static Water Level: 6.00 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	1.5	1					.2
Time (military)									
pH (standard units)	8.3	8.3	8.3	8.3					8.3
Specific Cond. (µS/cm)	282	270	288	312					308
Water Temp (°C)	26.2	24.6	25.1	25.0					24.9
Turbidity (mild, moderate, strong)	19.02	197.3	131.1	128.4					122.6
Dissolved Oxygen	2.93	2.33	2.23	2.04					2.12

Sample Collection Time: 1323

Remarks: Duplicate # 2 FE = 2.4 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-9-16

Site Data

Facility Name: Broad River AMOCO Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-20A Diameter (in): 2" Well Volume (gal): 1.5

Total Depth: 15.0 Static Water Level: 5.60 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	1	1					.2
Time (military)									
pH (standard units)	7.7	7.5	7.6	7.6	7.6				7.6
Specific Cond. (µS/cm)	102	115	72	71	80				67
Water Temp (°C)	26.1	24.7	24.2	24.2	24.0				24.0
Turbidity (mild, moderate, strong)	120.0	1100	1100	473.1	467.8				461.3
Dissolved Oxygen	1.69	0.86	0.70	0.92	0.88				0.80

Sample Collection Time: 0935

Remarks: FE = 0.8 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-9-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-20B Diameter (in): 2" Well Volume (gal): 5.2

Total Depth: 35' Static Water Level: 2.82 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	1	1.5					.2
Time (military)									
pH (standard units)	8.1	8.2	8.1	8.1					8.1
Specific Cond. (µS/cm)	135	152	146	144					138
Water Temp (°C)	27.3	25.1	23.2	23.1					23.2
Turbidity (mild, moderate, strong)	13.25	144.2	19.92	18.05					18.11
Dissolved Oxygen	1.30	1.18	1.15	1.50					1.51

Sample Collection Time: 1007

Remarks: FE = 0.2 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-9-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-21A Diameter (in): 2" Well Volume (gal): 1.7

Total Depth: 12.0 Static Water Level: 1.25 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		.5	1	1					.2
Time (military)									
pH (standard units)	8.0	8.0	7.9	7.9	7.9				7.9
Specific Cond. (µS/cm)	115	116	105	102	121				111
Water Temp (°C)	22.8	23.6	21.8	21.9	21.7				21.8
Turbidity (mild, moderate, strong)	40.13	1100	1100	861.3	850.9				837.2
Dissolved Oxygen	1.49	1.14	1.00	0.92	1.02				1.11

Sample Collection Time: 1434

Remarks: FE = 0.6 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-9-16

Site Data

Facility Name: Broad River AMOCO Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-21B Diameter (in): 2" Well Volume (gal): 5.3

Total Depth: 35.0 Static Water Level: 2.20 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	1	1					.2
Time (military)									
pH (standard units)	7.9	8.0	8.0	8.0					8.0
Specific Cond. (µS/cm)	88	109	88	111					127
Water Temp (°C)	23.5	23.1	21.8	21.9					21.8
Turbidity (mild, moderate, strong)	215.4	138.9	58.38	55.72					53.17
Dissolved Oxygen	1.22	0.89	0.86	1.17					1.09

Sample Collection Time: 1518

Remarks: Duplicate # 3 FE = 0.6 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-9-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW22B Diameter (in): 2" Well Volume (gal): 5.3

Total Depth: 35.0 Static Water Level: 2.22 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		.5	1	1.5					.2
Time (military)									
pH (standard units)	8.1	8.1	8.1	8.1					8.1
Specific Cond. (µS/cm)	233	225	135	127					130
Water Temp (°C)	24.0	21.8	21.5	21.5					21.7
Turbidity (mild, moderate, strong)	4.03	8.45	44.93	41.13					40.78
Dissolved Oxygen	3.41	2.24	2.13	1.85					1.97

Sample Collection Time: 1051

Remarks: FE = 0.2 mg/L

ENVIRO-TEST SERVICES

Monitoring Well Purging Data Sheet

Date: 6-8-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-D1 Diameter (in): 2" Well Volume (gal): 8.5

Total Depth: 65.0' Static Water Level: 12.60 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	1.5	1					.2
Time (military)									
pH (standard units)	8.6	8.5	8.6	8.6					8.6
Specific Cond. (µS/cm)	451	771	353	388					370
Water Temp (°C)	28.0	27.7	25.1	24.8					24.4
Turbidity (mild, moderate, strong)	131.7	4.83	18.88	18.19					17.47
Dissolved Oxygen	2.42	2.30	2.28	2.33					2.18

Sample Collection Time: 1612

Remarks: FE= 0.0 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-9-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-D2 Diameter (In): 2" Well Volume (gal): 9.5

Total Depth: 65.0' Static Water Level: 6.37 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2	1	1.5					.5
Time (military)									
pH (standard units)	8.3	8.5	8.4	8.5					8.5
Specific Cond. (µS/cm)	270	227	205	189					194
Water Temp (°C)	25.8	22.5	21.9	21.8					21.9
Turbidity (mild, moderate, strong)	1.42	1.08	46.10	45.07					41.37
Dissolved Oxygen	4.65	3.96	4.06	3.82					3.71

Sample Collection Time: 0722

Remarks: FE = 0.2 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-9-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: MW-D3 Diameter (In): 2" Well Volume (gal): 10.2

Total Depth: 65 Static Water Level: 2.10 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	2	2					.5
Time (military)									
pH (standard units)	8.3	8.5	8.4	8.4					8.4
Specific Cond. (µS/cm)	225	411	366	329					344
Water Temp (°C)	24.5	21.9	20.3	20.4					20.3
Turbidity (mild, moderate, strong)	0.44	2.20	6.81	7.97					7.08
Dissolved Oxygen	3.18	2.86	2.81	2.62					2.58

Sample Collection Time: 1134

Remarks: FE = 0.0 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-8-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: RW-1 Diameter (In): 2" Well Volume (gal): 4.7

Total Depth: 40.0' Static Water Level: 10.80 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	2	1					.5
Time (military)									
pH (standard units)	9.0	9.0	8.8	8.8					8.8
Specific Cond. (µS/cm)	122	171	145	105					94
Water Temp (°C)	23.8	23.7	23.3	23.3					23.1
Turbidity (mild, moderate, strong)	20.64	17.31	11.78	11.15					10.71
Dissolved Oxygen	3.40	2.95	2.18	2.41					2.14

Sample Collection Time: 0554

Remarks: FE- 0.2 mg/L 7/6-L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-8-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: RW-2 Diameter (in): 2" Well Volume (gal): 4.5

Total Depth: 40.0' Static Water Level: 12.25 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	2	2					.2
Time (military)									
pH (standard units)	8.7	8.7	8.3	8.3					8.3
Specific Cond. (µS/cm)	52	62	50	54					53
Water Temp (°C)	24.0	23.2	23.4	23.4					23.2
Turbidity (mild, moderate, strong)	2.55	4.54	2.89	2.74					2.23
Dissolved Oxygen	2.05	1.31	1.54	1.81					1.94

Sample Collection Time: 0640

Remarks: FE = 0.6 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-8-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: RW-3 Diameter (in): 2" Well Volume (gal): 4.6

Total Depth: 41.0' Static Water Level: 12.20 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	2	2					.2
Time (military)									
pH (standard units)	8.7	8.6	8.6	8.6					8.6
Specific Cond. (µS/cm)	103	73	139	105					112
Water Temp (°C)	23.2	22.8	22.1	22.6					22.0
Turbidity (mild, moderate, strong)	21.57	60.89	55.50	49.23					47.23
Dissolved Oxygen	1.77	1.09	1.12	1.03					1.12

Sample Collection Time: 0725

Remarks: FE = 0.6 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-8-16

Site Data

Facility Name: Broad River AMOCO Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: RW-4 Diameter (in): 2" Well Volume (gal): 4.7

Total Depth: 40.5 Static Water Level: 11.40 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	2	3					.2
Time (military)									
pH (standard units)	8.7	8.7	8.5	8.5					8.5
Specific Cond. (µS/cm)	80	76	101	84					95
Water Temp (°C)	24.1	23.6	23.4	23.3					23.3
Turbidity (mild, moderate, strong)	10.38	19.14	71.21	70.52					71.44
Dissolved Oxygen	1.52	1.39	1.44	1.32					1.28

Sample Collection Time: 0758

Remarks: Duplicate # 1 FE = 0.4 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 6-8-16

Site Data

Facility Name: Broad River AMOCO Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Clear Cool in AM 72° Hot in PM 98°

Well Data

Well Number: RW-5 Diameter (In): 2" Well Volume (gal): 4.4

Total Depth: 38.5 Static Water Level: 11.08 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	2	2					.2
Time (military)									
pH (standard units)	8.5	8.5	8.5	8.5					8.5
Specific Cond. (µS/cm)	187	155	172	132					128
Water Temp (°C)	22.4	22.7	22.3	22.4					22.4
Turbidity (mild, moderate, strong)	15.55	4319	60.92	58.21					53.07
Dissolved Oxygen	2.10	1.18	1.16	1.14					1.16

Sample Collection Time: 0838

Remarks: FE = 2.2 mg/L

ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT
Envrio-Test Services

Irmo, SC 29063

ATTENTION
Michael Farris

PROJECT ID
Broad River Amoco

LABORATORY REPORT NUMBER
216060811

DATE
06/16/2016

Primary Data Review By

Robyn Migues/Director Data Del

Authorized Signature

Secondary Data Review By

Ashley B. Amick
Project Manager, Access Analytical, Inc.
aamick@accessanalyticalinc.com

PLEASE NOTE:

- **Unless otherwise noted, all analysis on this report performed at Gulf Coast Analytical Labs (GCAL), 7979 Innovation Park Dr., Baton Rouge, LA 70820.**
- **GCAL is SCDHEC certified laboratory # 73006, NCDENR certified lab # 618, GA certified lab # LA-01955, NELAP certified laboratory # 01955**
- Local support services for this project are provided by Access Analytical, Inc.. Access Analytical is a representative of GCAL serving clients in the SC/NC/GA areas. All questions regarding this report should be directed to your local Access Analytical representative at 803.781.4243 or toll free at 888.315.4243.

GCAL
ANALYTICAL LABORATORIES, LLC

NELAP CERTIFICATE NUMBER: 01955
DOD ELAP CERTIFICATE NUMBER: L14-243

ANALYTICAL RESULTS

PERFORMED BY

GCAL, LLC
7979 Innovation Park Dr.
Baton Rouge, LA 70820

Report Date 06/16/2016

GCAL Report 216060811

Project Broad River Amoco

Deliver To	***Additional Recipients***
Michael Farris Envrio-Test Services Irmo, SC 29063	NONE

PJLA Testing DoD ELAP

ISO 17025

Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

Common Abbreviations that may be Utilized in this Report

ND	Indicates the result was Not Detected at the specified reporting limit
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DL	Diluted analysis – when appended to Client Sample ID
LOD	Limit of Detection
LOQ	Limit of Quantitation
RE	Re-analysis
CF	HPLC or GC Confirmation
00:01	Reported as a time equivalent to 12:00 AM

Reporting Flags that may be Utilized in this Report

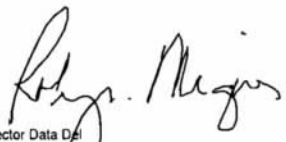
J or I	Indicates the result is between the MDL and LOQ
J	DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria
U	Indicates the compound was analyzed for but not detected
B or V	Indicates the analyte was detected in the associated Method Blank
Q	Indicates a non-compliant QC Result (See Q Flag Application Report)
*	Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
E	The result is estimated because it exceeded the instrument calibration range
E	Metals - % diference for the serial dilution is > 10%
P	RPD between primary and confirmation result is greater than 40

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.



Robyn Migues/Director Data Del

Authorized Signature
GCAL Report 216060811

Certifications

Certification	Certification Number
DOD ELAP	L14-243
Alabama	01955
Arkansas	12-060-0
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
USDA Soil Permit	P330-10-00117

Case Narrative

Client: Access Analytical **Report:** 216060811

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

VOLATILES MASS SPECTROMETRY

In the EPA 8260B analysis, samples 21606081101 (MW-1), 21606081102 (MW-2), 21606081104 (MW-4) and 21606081105 (MW-5) had to be diluted to bracket the concentration of target compounds within the calibration range of the instrument. The dilutions are reflected in elevated detection limits.

VOLATILES GAS CHROMATOGRAPHY

In the EPA RSK-175 analysis, samples 21606081101 (MW-1), 21606081102 (MW-2), 21606081104 (MW-4), 21606081105 (MW-5) and 21606081111 (MW-9A) had to be diluted to bracket the concentration of target analyte(s) within the calibration range of the instrument. The recovery for the surrogate is reported as diluted out.

CONVENTIONALS

In the EPA 353.2 Rev. 2 Nitrate analysis, sample 21606081107 (MW-6B) and 21606081113 (MW-10A) had to be diluted in order to bracket the Nitrate + Nitrite and/or Nitrite concentrations within the calibration range of the instrument. The Nitrate is based on the difference between the Nitrate + Nitrite and the Nitrite. The dilution is reflected in the elevated reporting limit. These samples were originally run within holding time but needed dilutions that were performed outside the 48-hour holding time.

Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21606081101	MW-1	Water	06/07/2016 06:20	06/08/2016 09:50
21606081102	MW-2	Water	06/07/2016 06:55	06/08/2016 09:50
21606081103	MW-3	Water	06/07/2016 07:38	06/08/2016 09:50
21606081104	MW-4	Water	06/07/2016 08:05	06/08/2016 09:50
21606081105	MW-5	Water	06/07/2016 08:50	06/08/2016 09:50
21606081106	MW-6A	Water	06/07/2016 09:33	06/08/2016 09:50
21606081107	MW-6B	Water	06/07/2016 10:07	06/08/2016 09:50
21606081108	MW-7A	Water	06/07/2016 11:04	06/08/2016 09:50
21606081109	MW-8A	Water	06/07/2016 11:40	06/08/2016 09:50
21606081110	MW-8B	Water	06/07/2016 12:08	06/08/2016 09:50
21606081111	MW-9A	Water	06/07/2016 13:02	06/08/2016 09:50
21606081112	MW-9B	Water	06/07/2016 13:48	06/08/2016 09:50
21606081113	MW-10A	Water	06/07/2016 14:17	06/08/2016 09:50
21606081114	MW-10B	Water	06/07/2016 14:50	06/08/2016 09:50
21606081115	MW-11A	Water	06/07/2016 15:22	06/08/2016 09:50
21606081116	MW-11B	Water	06/07/2016 15:05	06/08/2016 09:50
21606081117	FIELD BLANK	Water	06/07/2016 06:08	06/08/2016 09:50
21606081118	TRIP BLANK	Water	06/07/2016 00:01	06/08/2016 09:50

Summary of Compounds Detected

MW-1

Collect Date 06/07/2016 06:20 **GCAL ID** 21606081101
Receive Date 06/08/2016 09:50 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
75-85-4	tert-amyl alcohol (TAA)	4130J	507	10000	ug/L
71-43-2	Benzene	2230J	55.5	2500	ug/L
108-88-3	Toluene	33600	60.9	2500	ug/L
100-41-4	Ethylbenzene	3370	54.5	2500	ug/L
1330-20-7	Xylene (total)	13400	89.4	7500	ug/L

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	1680	21.8	100	ug/L

MW-2

Collect Date 06/07/2016 06:55 **GCAL ID** 21606081102
Receive Date 06/08/2016 09:50 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
75-65-0	t-Butanol (TBA)	6170	1500	2000	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	14300	7.70	500	ug/L
75-85-4	tert-amyl alcohol (TAA)	23200	101	2000	ug/L
71-43-2	Benzene	4220	11.1	500	ug/L
108-88-3	Toluene	6650	12.2	500	ug/L
100-41-4	Ethylbenzene	944	10.9	500	ug/L
1330-20-7	Xylene (total)	5820	17.9	1500	ug/L
91-20-3	Naphthalene	1130	17.6	500	ug/L

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	2130	21.8	100	ug/L

Summary of Compounds Detected

MW-2

Collect Date 06/07/2016 06:55 **GCAL ID** 21606081102
Receive Date 06/08/2016 09:50 **Matrix** Water

EPA 8011

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.057	0.00750	0.020	ug/L

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	4.4J	1.1	5.0	mg/L

MW-3

Collect Date 06/07/2016 07:38 **GCAL ID** 21606081103
Receive Date 06/08/2016 09:50 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
75-85-4	tert-amyl alcohol (TAA)	41.5	1.01	20.0	ug/L
108-88-3	Toluene	1.25J	0.122	5.00	ug/L
1330-20-7	Xylene (total)	2.80J	0.179	15.0	ug/L

EPA 8011

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.052P	0.00750	0.020	ug/L

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.113	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	4.8J	1.1	5.0	mg/L

Summary of Compounds Detected

MW-4

Collect Date 06/07/2016 08:05 **GCAL ID** 21606081104
Receive Date 06/08/2016 09:50 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	30.4J	2.40	50.0	ug/L
75-65-0	t-Butanol (TBA)	265	150	200	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	1020	0.770	50.0	ug/L
75-85-4	tert-amyl alcohol (TAA)	373	10.1	200	ug/L
71-43-2	Benzene	863	1.11	50.0	ug/L
108-88-3	Toluene	24.3J	1.22	50.0	ug/L
100-41-4	Ethylbenzene	453	1.09	50.0	ug/L
1330-20-7	Xylene (total)	1360	1.79	150	ug/L
91-20-3	Naphthalene	296	1.76	50.0	ug/L

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	2410	43.5	200	ug/L

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.144	0.008	0.010	mg/L-N

MW-5

Collect Date 06/07/2016 08:50 **GCAL ID** 21606081105
Receive Date 06/08/2016 09:50 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	797J	60.0	1250	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	28100	19.3	1250	ug/L
75-85-4	tert-amyl alcohol (TAA)	12300	253	5000	ug/L
71-43-2	Benzene	17100	27.8	1250	ug/L
108-88-3	Toluene	30000	30.5	1250	ug/L
100-41-4	Ethylbenzene	3410	27.3	1250	ug/L
1330-20-7	Xylene (total)	21600	44.7	3750	ug/L
91-20-3	Naphthalene	2890	44.0	1250	ug/L

Summary of Compounds Detected

MW-5

Collect Date 06/07/2016 08:50
Receive Date 06/08/2016 09:50
GCAL ID 21606081105
Matrix Water

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	4640	43.5	200	ug/L

EPA 8011

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.016JP	0.00750	0.020	ug/L

MW-6A

Collect Date 06/07/2016 09:33
Receive Date 06/08/2016 09:50
GCAL ID 21606081106
Matrix Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
71-43-2	Benzene	0.872J	0.111	5.00	ug/L
108-88-3	Toluene	7.07	0.122	5.00	ug/L
100-41-4	Ethylbenzene	2.44J	0.109	5.00	ug/L
1330-20-7	Xylene (total)	20.4	0.179	15.0	ug/L
91-20-3	Naphthalene	15.8	0.176	5.00	ug/L

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.675J	0.435	2.00	ug/L

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.274	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.9J	1.1	5.0	mg/L

Summary of Compounds Detected

MW-6B

Collect Date 06/07/2016 10:07 **GCAL ID** 21606081107
Receive Date 06/08/2016 09:50 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
108-88-3	Toluene	2.45J	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.812J	0.109	5.00	ug/L
1330-20-7	Xylene (total)	7.11J	0.179	15.0	ug/L

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	4.70	0.041	0.050	mg/L-N

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.2J	1.1	5.0	mg/L

MW-7A

Collect Date 06/07/2016 11:04 **GCAL ID** 21606081108
Receive Date 06/08/2016 09:50 **Matrix** Water

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.048	0.008	0.010	mg/L-N

MW-8A

Collect Date 06/07/2016 11:40 **GCAL ID** 21606081109
Receive Date 06/08/2016 09:50 **Matrix** Water

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.026	0.008	0.010	mg/L-N

Summary of Compounds Detected

MW-8A

Collect Date 06/07/2016 11:40 **GCAL ID** 21606081109
Receive Date 06/08/2016 09:50 **Matrix** Water

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.2J	1.1	5.0	mg/L

MW-8B

Collect Date 06/07/2016 12:08 **GCAL ID** 21606081110
Receive Date 06/08/2016 09:50 **Matrix** Water

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.355	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.6J	1.1	5.0	mg/L

MW-9A

Collect Date 06/07/2016 13:02 **GCAL ID** 21606081111
Receive Date 06/08/2016 09:50 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	3.24J	0.077	5.00	ug/L

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	375	8.70	40.0	ug/L

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.086	0.008	0.010	mg/L-N

Summary of Compounds Detected

MW-9B

Collect Date 06/07/2016 13:48 **GCAL ID** 21606081112
Receive Date 06/08/2016 09:50 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	4.73J	0.077	5.00	ug/L

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.126	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	2.9J	1.1	5.0	mg/L

MW-10A

Collect Date 06/07/2016 14:17 **GCAL ID** 21606081113
Receive Date 06/08/2016 09:50 **Matrix** Water

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	1.53	0.164	0.200	mg/L-N

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	2.8J	1.1	5.0	mg/L

MW-10B

Collect Date 06/07/2016 14:50 **GCAL ID** 21606081114
Receive Date 06/08/2016 09:50 **Matrix** Water

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.164	0.008	0.010	mg/L-N

Summary of Compounds Detected

MW-10B

Collect Date 06/07/2016 14:50 **GCAL ID** 21606081114
Receive Date 06/08/2016 09:50 **Matrix** Water

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	8.3	1.1	5.0	mg/L

MW-11A

Collect Date 06/07/2016 15:22 **GCAL ID** 21606081115
Receive Date 06/08/2016 09:50 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
108-20-3	diisopropyl Ether (DIPE)	0.440J	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	1.23J	0.077	5.00	ug/L
71-43-2	Benzene	4.08J	0.111	5.00	ug/L

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	24.4	0.435	2.00	ug/L

EPA 8011

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.042P	0.00750	0.020	ug/L

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.258	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	5.2	1.1	5.0	mg/L

Summary of Compounds Detected

MW-11B	**Collect Date**	06/07/2016 15:05	**GCAL ID**	21606081116
	Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	0.864J	0.077	5.00	ug/L

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.458J	0.435	2.00	ug/L

EPA 8011

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.014JP	0.00750	0.020	ug/L

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.456	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	4.2J	1.1	5.0	mg/L

Sample Results

MW-1	**Collect Date**	06/07/2016 06:20	**GCAL ID**	21606081101
	Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	500	06/14/2016 15:39	CJR	588483

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	120U	120	2500	ug/L
75-65-0	t-Butanol (TBA)	7500U	7500	10000	ug/L
108-20-3	diisopropyl Ether (DIPE)	118U	118	2500	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	38.5U	38.5	2500	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	117U	117	2500	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	18800U	18800	50000	ug/L
64-17-5	Ethanol	62500U	62500	500000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**4130J**	**507**	**10000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	243U	243	25000	ug/L
71-43-2	**Benzene**	**2230J**	**55.5**	**2500**	**ug/L**
108-88-3	**Toluene**	**33600**	**60.9**	**2500**	**ug/L**
100-41-4	**Ethylbenzene**	**3370**	**54.5**	**2500**	**ug/L**
1330-20-7	**Xylene (total)**	**13400**	**89.4**	**7500**	**ug/L**
91-20-3	Naphthalene	88.0U	88.0	2500	ug/L
107-06-2	1,2-Dichloroethane	58.1U	58.1	2500	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	25000	26500	ug/L	106	78 - 130
1868-53-7	Dibromofluoromethane	25000	26600	ug/L	106	77 - 127
2037-26-5	Toluene d8	25000	26800	ug/L	107	76 - 134
17060-07-0	1,2-Dichloroethane-d4	25000	25600	ug/L	102	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	50	06/14/2016 14:24	BMR	588499

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**1680**	**21.8**	**100**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	Diluted Out	ug/L	0*	40 - 143

Sample Results

MW-1

Collect Date	06/07/2016 06:20	**GCAL ID**	21606081101
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 14:10	588039	EPA 8011	1	06/11/2016 01:38	MEG	588305

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/08/2016 15:57	SMR	588047

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.008U	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 10:53	DJH	588406

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.1U	1.1	5.0	mg/L

MW-2

Collect Date	06/07/2016 06:55	**GCAL ID**	21606081102
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	100	06/14/2016 16:01	CJR	588483

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	24.0U	24.0	500	ug/L
75-65-0	**t-Butanol (TBA)**	**6170**	**1500**	**2000**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	23.6U	23.6	500	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**14300**	**7.70**	**500**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	23.4U	23.4	500	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	3760U	3760	10000	ug/L
64-17-5	Ethanol	12500U	12500	100000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**23200**	**101**	**2000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	48.7U	48.7	5000	ug/L
71-43-2	**Benzene**	**4220**	**11.1**	**500**	**ug/L**
108-88-3	**Toluene**	**6650**	**12.2**	**500**	**ug/L**

Sample Results

MW-2	**Collect Date**	06/07/2016 06:55	**GCAL ID**	21606081102
	Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	100	06/14/2016 16:01	CJR	588483

CAS#	Parameter	Result	DL	LOQ	Units
100-41-4	**Ethylbenzene**	**944**	**10.9**	**500**	**ug/L**
1330-20-7	**Xylene (total)**	**5820**	**17.9**	**1500**	**ug/L**
91-20-3	**Naphthalene**	**1130**	**17.6**	**500**	**ug/L**
107-06-2	1,2-Dichloroethane	11.6U	11.6	500	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	5000	5210	ug/L	104	78 - 130
1868-53-7	Dibromofluoromethane	5000	4960	ug/L	99	77 - 127
2037-26-5	Toluene d8	5000	5520	ug/L	110	76 - 134
17060-07-0	1,2-Dichloroethane-d4	5000	4650	ug/L	93	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	50	06/14/2016 14:39	BMR	588499

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**2130**	**21.8**	**100**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	Diluted Out	ug/L	0*	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 14:10	588039	EPA 8011	1	06/11/2016 02:29	MEG	588367

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	**1,2-Dibromoethane**	**0.057**	**0.00750**	**0.020**	**ug/L**

Sample Results

MW-2

Collect Date 06/07/2016 06:55 **GCAL ID** 21606081102
Receive Date 06/08/2016 09:50 **Matrix** Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/08/2016 16:01	SMR	588047

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.008U	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 10:55	DJH	588406

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**4.4J**	**1.1**	**5.0**	**mg/L**

MW-3

Collect Date 06/07/2016 07:38 **GCAL ID** 21606081103
Receive Date 06/08/2016 09:50 **Matrix** Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 10:29	LBH	588483

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**41.5**	**1.01**	**20.0**	**ug/L**
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	**Toluene**	**1.25J**	**0.122**	**5.00**	**ug/L**
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	**Xylene (total)**	**2.80J**	**0.179**	**15.0**	**ug/L**
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-3	**Collect Date**	06/07/2016 07:38	**GCAL ID**	21606081103
	Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 10:29	LBH	588483

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	50	ug/L	100	78 - 130
1868-53-7	Dibromofluoromethane	50	50.7	ug/L	101	77 - 127
2037-26-5	Toluene d8	50	53.4	ug/L	107	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	47.3	ug/L	95	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 15:11	BMR	588499

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.435U	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	39.4	ug/L	97	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 14:10	588039	EPA 8011	1	06/11/2016 02:12	MEG	588305

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	**1,2-Dibromoethane**	**0.052P**	**0.00750**	**0.020**	**ug/L**

Sample Results

MW-3

Collect Date	06/07/2016 07:38	**GCAL ID**	21606081103
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/08/2016 16:02	SMR	588047

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.113**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 10:56	DJH	588406

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**4.8J**	**1.1**	**5.0**	**mg/L**

MW-4

Collect Date	06/07/2016 08:05	**GCAL ID**	21606081104
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	10	06/14/2016 16:23	CJR	588483

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	**t-amyl methyl ether (TAME)**	**30.4J**	**2.40**	**50.0**	**ug/L**
75-65-0	**t-Butanol (TBA)**	**265**	**150**	**200**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	2.36U	2.36	50.0	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**1020**	**0.770**	**50.0**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	2.34U	2.34	50.0	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	376U	376	1000	ug/L
64-17-5	Ethanol	1250U	1250	10000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**373**	**10.1**	**200**	**ug/L**
762-75-4	tert-butyl formate (TBF)	4.87U	4.87	500	ug/L
71-43-2	**Benzene**	**863**	**1.11**	**50.0**	**ug/L**
108-88-3	**Toluene**	**24.3J**	**1.22**	**50.0**	**ug/L**
100-41-4	**Ethylbenzene**	**453**	**1.09**	**50.0**	**ug/L**
1330-20-7	**Xylene (total)**	**1360**	**1.79**	**150**	**ug/L**
91-20-3	**Naphthalene**	**296**	**1.76**	**50.0**	**ug/L**

Sample Results

MW-4	**Collect Date**	06/07/2016 08:05	**GCAL ID**	21606081104
	Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	10	06/14/2016 16:23	CJR	588483

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	1.16U	1.16	50.0	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	500	516	ug/L	103	78 - 130
1868-53-7	Dibromofluoromethane	500	498	ug/L	100	77 - 127
2037-26-5	Toluene d8	500	544	ug/L	109	76 - 134
17060-07-0	1,2-Dichloroethane-d4	500	502	ug/L	100	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	100	06/14/2016 15:23	BMR	588499

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**2410**	**43.5**	**200**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	Diluted Out	ug/L	0*	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 14:10	588039	EPA 8011	1	06/11/2016 02:29	MEG	588305

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-4

Collect Date	06/07/2016 08:05	**GCAL ID**	21606081104
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/08/2016 16:03	SMR	588047

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.144**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 10:57	DJH	588406

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.1U	1.1	5.0	mg/L

MW-5

Collect Date	06/07/2016 08:50	**GCAL ID**	21606081105
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	250	06/14/2016 16:45	CJR	588483

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	**t-amyl methyl ether (TAME)**	**797J**	**60.0**	**1250**	**ug/L**
75-65-0	t-Butanol (TBA)	3750U	3750	5000	ug/L
108-20-3	diisopropyl Ether (DIPE)	59.0U	59.0	1250	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**28100**	**19.3**	**1250**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	58.5U	58.5	1250	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	9400U	9400	25000	ug/L
64-17-5	Ethanol	31200U	31200	250000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**12300**	**253**	**5000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	122U	122	12500	ug/L
71-43-2	**Benzene**	**17100**	**27.8**	**1250**	**ug/L**
108-88-3	**Toluene**	**30000**	**30.5**	**1250**	**ug/L**
100-41-4	**Ethylbenzene**	**3410**	**27.3**	**1250**	**ug/L**
1330-20-7	**Xylene (total)**	**21600**	**44.7**	**3750**	**ug/L**
91-20-3	**Naphthalene**	**2890**	**44.0**	**1250**	**ug/L**

Sample Results

MW-5	**Collect Date**	06/07/2016 08:50	**GCAL ID**	21606081105
	Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	250	06/14/2016 16:45	CJR	588483

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	29.0U	29.0	1250	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	12500	13200	ug/L	106	78 - 130
1868-53-7	Dibromofluoromethane	12500	12600	ug/L	101	77 - 127
2037-26-5	Toluene d8	12500	13400	ug/L	107	76 - 134
17060-07-0	1,2-Dichloroethane-d4	12500	11900	ug/L	95	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	100	06/14/2016 15:35	BMR	588499

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**4640**	**43.5**	**200**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	Diluted Out	ug/L	0*	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 14:10	588039	EPA 8011	1	06/11/2016 02:45	MEG	588305

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	**1,2-Dibromoethane**	**0.016JP**	**0.00750**	**0.020**	**ug/L**

Sample Results

MW-5

Collect Date	06/07/2016 08:50	**GCAL ID**	21606081105
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/08/2016 16:04	SMR	588047

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.008U	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 10:58	DJH	588406

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.1U	1.1	5.0	mg/L

MW-6A

Collect Date	06/07/2016 09:33	**GCAL ID**	21606081106
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 11:59	LBH	588483

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	**Benzene**	**0.872J**	**0.111**	**5.00**	**ug/L**
108-88-3	**Toluene**	**7.07**	**0.122**	**5.00**	**ug/L**
100-41-4	**Ethylbenzene**	**2.44J**	**0.109**	**5.00**	**ug/L**
1330-20-7	**Xylene (total)**	**20.4**	**0.179**	**15.0**	**ug/L**
91-20-3	**Naphthalene**	**15.8**	**0.176**	**5.00**	**ug/L**

Sample Results

MW-6A	**Collect Date**	06/07/2016 09:33	**GCAL ID**	21606081106
	Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 11:59	LBH	588483

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	52.1	ug/L	104	78 - 130
1868-53-7	Dibromofluoromethane	50	52.6	ug/L	105	77 - 127
2037-26-5	Toluene d8	50	51.9	ug/L	104	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	47.6	ug/L	95	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 15:56	BMR	588499

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**0.675J**	**0.435**	**2.00**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	33.7	ug/L	83	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 14:10	588039	EPA 8011	1	06/11/2016 03:35	MEG	588367

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-6A

Collect Date	06/07/2016 09:33	**GCAL ID**	21606081106
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/08/2016 16:06	SMR	588047

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.274**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 10:59	DJH	588406

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**1.9J**	**1.1**	**5.0**	**mg/L**

MW-6B

Collect Date	06/07/2016 10:07	**GCAL ID**	21606081107
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 11:38	LBH	588483

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	**Toluene**	**2.45J**	**0.122**	**5.00**	**ug/L**
100-41-4	**Ethylbenzene**	**0.812J**	**0.109**	**5.00**	**ug/L**
1330-20-7	**Xylene (total)**	**7.11J**	**0.179**	**15.0**	**ug/L**
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-6B

Collect Date	06/07/2016 10:07	**GCAL ID**	21606081107
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 11:38	LBH	588483

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	51.7	ug/L	103	78 - 130
1868-53-7	Dibromofluoromethane	50	52.9	ug/L	106	77 - 127
2037-26-5	Toluene d8	50	52.6	ug/L	105	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.6	ug/L	97	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 16:05	BMR	588499

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.435U	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	38.7	ug/L	96	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 14:10	588039	EPA 8011	1	06/11/2016 03:19	MEG	588305

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-6B

Collect Date	06/07/2016 10:07	**GCAL ID**	21606081107
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	5	06/10/2016 16:57	DMT	588272

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**4.70**	**0.041**	**0.050**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 11:03	DJH	588406

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**1.2J**	**1.1**	**5.0**	**mg/L**

MW-7A

Collect Date	06/07/2016 11:04	**GCAL ID**	21606081108
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 12:21	LBH	588483

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-7A	**Collect Date**	06/07/2016 11:04	**GCAL ID**	21606081108
	Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 12:21	LBH	588483

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	50	ug/L	100	78 - 130
1868-53-7	Dibromofluoromethane	50	52.8	ug/L	106	77 - 127
2037-26-5	Toluene d8	50	54.4	ug/L	109	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.5	ug/L	97	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 16:32	BMR	588499

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.435U	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	40.3	ug/L	100	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 14:10	588039	EPA 8011	1	06/11/2016 03:52	MEG	588305

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-7A

Collect Date	06/07/2016 11:04	**GCAL ID**	21606081108
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/08/2016 16:10	SMR	588047

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.048**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 11:04	DJH	588406

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.1U	1.1	5.0	mg/L

MW-8A

Collect Date	06/07/2016 11:40	**GCAL ID**	21606081109
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 12:43	LBH	588483

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-8A	**Collect Date**	06/07/2016 11:40	**GCAL ID**	21606081109
	Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 12:43	LBH	588483

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	50.2	ug/L	100	78 - 130
1868-53-7	Dibromofluoromethane	50	53.9	ug/L	108	77 - 127
2037-26-5	Toluene d8	50	54	ug/L	108	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.5	ug/L	97	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 16:38	BMR	588499

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.435U	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	37.6	ug/L	93	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 14:10	588039	EPA 8011	1	06/11/2016 04:09	MEG	588305

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-8A

Collect Date	06/07/2016 11:40	**GCAL ID**	21606081109
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/08/2016 16:12	SMR	588047

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.026**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 11:04	DJH	588406

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**1.2J**	**1.1**	**5.0**	**mg/L**

MW-8B

Collect Date	06/07/2016 12:08	**GCAL ID**	21606081110
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 13:05	LBH	588483

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L

Sample Results

MW-8B	**Collect Date**	06/07/2016 12:08	**GCAL ID**	21606081110
	Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 13:05	LBH	588483

CAS#	Parameter	Result	DL	LOQ	Units
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	51.4	ug/L	103	78 - 130
1868-53-7	Dibromofluoromethane	50	53.1	ug/L	106	77 - 127
2037-26-5	Toluene d8	50	53	ug/L	106	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	49.7	ug/L	99	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 16:44	BMR	588499

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.435U	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	36.2	ug/L	89	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 14:10	588039	EPA 8011	1	06/11/2016 04:26	MEG	588305

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-8B

Collect Date	06/07/2016 12:08	**GCAL ID**	21606081110
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/08/2016 16:13	SMR	588047

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.355**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 11:05	DJH	588406

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**1.6J**	**1.1**	**5.0**	**mg/L**

MW-9A

Collect Date	06/07/2016 13:02	**GCAL ID**	21606081111
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 13:27	LBH	588483

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**3.24J**	**0.077**	**5.00**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-9A	**Collect Date**	06/07/2016 13:02	**GCAL ID**	21606081111
	Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 13:27	LBH	588483

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48.9	ug/L	98	78 - 130
1868-53-7	Dibromofluoromethane	50	53.2	ug/L	106	77 - 127
2037-26-5	Toluene d8	50	53.3	ug/L	107	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50.3	ug/L	101	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	20	06/14/2016 16:54	BMR	588499

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**375**	**8.70**	**40.0**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	Diluted Out	ug/L	0*	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 14:10	588039	EPA 8011	1	06/11/2016 04:43	MEG	588305

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-9A

Collect Date	06/07/2016 13:02	**GCAL ID**	21606081111
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/08/2016 16:14	SMR	588047

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.086**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 11:06	DJH	588406

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.1U	1.1	5.0	mg/L

MW-9B

Collect Date	06/07/2016 13:48	**GCAL ID**	21606081112
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 13:49	LBH	588483

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**4.73J**	**0.077**	**5.00**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-9B	**Collect Date**	06/07/2016 13:48	**GCAL ID**	21606081112
	Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 13:49	LBH	588483

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	49.2	ug/L	98	78 - 130
1868-53-7	Dibromofluoromethane	50	54.3	ug/L	109	77 - 127
2037-26-5	Toluene d8	50	53.3	ug/L	107	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	49.6	ug/L	99	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 17:03	BMR	588499

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.435U	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	34.6	ug/L	85	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 14:10	588039	EPA 8011	1	06/11/2016 05:00	MEG	588305

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-9B

Collect Date	06/07/2016 13:48	**GCAL ID**	21606081112
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/08/2016 16:15	SMR	588047

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.126**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 11:07	DJH	588406

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**2.9J**	**1.1**	**5.0**	**mg/L**

MW-10A

Collect Date	06/07/2016 14:17	**GCAL ID**	21606081113
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 14:11	LBH	588483

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-10A	**Collect Date**	06/07/2016 14:17	**GCAL ID**	21606081113
	Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 14:11	LBH	588483

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48.9	ug/L	98	78 - 130
1868-53-7	Dibromofluoromethane	50	53.9	ug/L	108	77 - 127
2037-26-5	Toluene d8	50	53.9	ug/L	108	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	49.4	ug/L	99	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 17:10	BMR	588499

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.435U	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	36.4	ug/L	90	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 14:10	588039	EPA 8011	1	06/11/2016 05:17	MEG	588305

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-10A

Collect Date	06/07/2016 14:17	GCAL ID	21606081113
Receive Date	06/08/2016 09:50	Matrix	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	20	06/10/2016 16:58	DMT	588272

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**1.53**	**0.164**	**0.200**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 11:08	DJH	588406

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**2.8J**	**1.1**	**5.0**	**mg/L**

MW-10B

Collect Date	06/07/2016 14:50	GCAL ID	21606081114
Receive Date	06/08/2016 09:50	Matrix	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 22:08	LBH	588457

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-10B

Collect Date	06/07/2016 14:50	GCAL ID	21606081114
Receive Date	06/08/2016 09:50	Matrix	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 22:08	LBH	588457

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	49.2	ug/L	98	78 - 130
1868-53-7	Dibromofluoromethane	50	52.2	ug/L	104	77 - 127
2037-26-5	Toluene d8	50	52.5	ug/L	105	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.2	ug/L	96	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 17:15	BMR	588499

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.435U	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	35.9	ug/L	89	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 14:10	588039	EPA 8011	1	06/11/2016 05:34	MEG	588305

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-10B

Collect Date	06/07/2016 14:50	**GCAL ID**	21606081114
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/08/2016 16:18	SMR	588047

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.164**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 11:09	DJH	588406

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**8.3**	**1.1**	**5.0**	**mg/L**

MW-11A

Collect Date	06/07/2016 15:22	**GCAL ID**	21606081115
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 22:30	LBH	588457

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	**diisopropyl Ether (DIPE)**	**0.440J**	**0.236**	**5.00**	**ug/L**
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**1.23J**	**0.077**	**5.00**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	**Benzene**	**4.08J**	**0.111**	**5.00**	**ug/L**
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-11A

Collect Date	06/07/2016 15:22	**GCAL ID**	21606081115
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 22:30	LBH	588457

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	51	ug/L	102	78 - 130
1868-53-7	Dibromofluoromethane	50	51.7	ug/L	103	77 - 127
2037-26-5	Toluene d8	50	53.4	ug/L	107	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.8	ug/L	98	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 17:23	BMR	588499

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**24.4**	**0.435**	**2.00**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	32.7	ug/L	81	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 14:10	588039	EPA 8011	1	06/11/2016 05:51	MEG	588305

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	**1,2-Dibromoethane**	**0.042P**	**0.00750**	**0.020**	**ug/L**

Sample Results

MW-11A

Collect Date	06/07/2016 15:22	**GCAL ID**	21606081115
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/08/2016 16:19	SMR	588047

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.258**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 11:10	DJH	588406

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**5.2**	**1.1**	**5.0**	**mg/L**

MW-11B

Collect Date	06/07/2016 15:05	**GCAL ID**	21606081116
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 22:51	LBH	588457

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**0.864J**	**0.077**	**5.00**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-11B

Collect Date	06/07/2016 15:05	**GCAL ID**	21606081116
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 22:51	LBH	588457

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	49.3	ug/L	99	78 - 130
1868-53-7	Dibromofluoromethane	50	52.3	ug/L	105	77 - 127
2037-26-5	Toluene d8	50	53.4	ug/L	107	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.7	ug/L	97	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 17:39	BMR	588499

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**0.458J**	**0.435**	**2.00**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	32.6	ug/L	80	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 14:10	588039	EPA 8011	1	06/11/2016 06:08	MEG	588305

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	**1,2-Dibromoethane**	**0.014JP**	**0.00750**	**0.020**	**ug/L**

Sample Results

MW-11B

Collect Date	06/07/2016 15:05	**GCAL ID**	21606081116
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/08/2016 16:20	SMR	588047

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.456**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 11:11	DJH	588406

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**4.2J**	**1.1**	**5.0**	**mg/L**

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Collect Date	06/07/2016 06:08	**GCAL ID**	21606081117
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 23:13	LBH	588457

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

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Collect Date	06/07/2016 06:08	**GCAL ID**	21606081117
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 23:13	LBH	588457

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	49.7	ug/L	99	78 - 130
1868-53-7	Dibromofluoromethane	50	52	ug/L	104	77 - 127
2037-26-5	Toluene d8	50	52.6	ug/L	105	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.2	ug/L	96	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 14:10	588039	EPA 8011	1	06/11/2016 06:25	MEG	588305

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

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Collect Date	06/07/2016 00:01	**GCAL ID**	21606081118
Receive Date	06/08/2016 09:50	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 23:35	LBH	588457

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L

Sample Results

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Collect Date 06/07/2016 00:01 **GCAL ID** 21606081118
Receive Date 06/08/2016 09:50 **Matrix** Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 23:35	LBH	588457

CAS#	Parameter	Result	DL	LOQ	Units
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	50.3	ug/L	101	78 - 130
1868-53-7	Dibromofluoromethane	50	53.4	ug/L	107	77 - 127
2037-26-5	Toluene d8	50	54.2	ug/L	108	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.7	ug/L	97	71 - 127

GC/MS Volatiles QC Summary

Analytical Batch 588457	Client ID	MB588457		LCS588457				LCSD588457				
	GCAL ID	1581219		1581220				1581221				
	Sample Type	MB		LCS				LCSD				
	Prep Date	NA		NA				NA				
	Analysis Date	06/13/2016 18:22		06/13/2016 16:55				06/13/2016 17:17				
	Matrix	Water		Water				Water				
EPA 8260B		Units Result	ug/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
t-amyl methyl ether (TAME)	994-05-8	0.240U	0.240	50.0	46.3	93	70 - 130	50.0	47.8	96	3	50
t-Butanol (TBA)	75-65-0	15.0U	15.0	50.0	47.2	94	60 - 140	50.0	50.7	101	7	50
diisopropyl Ether (DIPE)	108-20-3	0.236U	0.236	50.0	52.9	106	70 - 130	50.0	54.2	108	2	50
tert-Butyl methyl ether (MTBE)	1634-04-4	0.077U	0.077	50.0	52.7	105	71 - 125	50.0	55.4	111	5	50
Ethyl tert-butyl ether (ETBE)	637-92-3	0.234U	0.234	50.0	53.9	108	70 - 130	50.0	55.4	111	3	50
Ethyl tert-butanol (ETBA)	624-95-3	37.6U	37.6	2550	2640	104	70 - 130	2550	2810	110	6	50
Ethanol	64-17-5	125U	125	25200	28000	111	70 - 130	25200	29500	117	5	50
tert-amyl alcohol (TAA)	75-85-4	1.01U	1.01	200	226	113	70 - 130	200	252	126	11	50
tert-butyl formate (TBF)	762-75-4	0.487U	0.487	50.0	51.4	103	70 - 130	50.0	49.7	99	3	50
Benzene	71-43-2	0.111U	0.111	50.0	50.2	100	70 - 129	50.0	50.9	102	1	50
Toluene	108-88-3	0.122U	0.122	50.0	50.4	101	72 - 120	50.0	50.6	101	0	50
Ethylbenzene	100-41-4	0.109U	0.109	50.0	52.5	105	74 - 126	50.0	52.2	104	1	50
Xylene (total)	1330-20-7	0.179U	0.179	150	151	101	74 - 127	150	149	99	1	50
Naphthalene	91-20-3	0.176U	0.176	50.0	46.2	92	57 - 138	50.0	51.1	102	10	50
1,2-Dichloroethane	107-06-2	0.116U	0.116	50.0	47.5	95	71 - 129	50.0	48.6	97	2	50
Surrogate												
4-Bromofluorobenzene	460-00-4	50.8	102	50	51.5	103	78 - 130	50	51.5	103	NA	NA
Dibromofluoromethane	1868-53-7	53	106	50	48.9	98	77 - 127	50	48.8	98	NA	NA
Toluene d8	2037-26-5	53.4	107	50	50.6	101	76 - 134	50	51.5	103	NA	NA
1,2-Dichloroethane-d4	17060-07-0	49.3	99	50	48.7	97	71 - 127	50	49.5	99	NA	NA

Analytical Batch 588483	Client ID	MB588483		LCS588483				LCSD588483				
	GCAL ID	1581314		1581315				1581316				
	Sample Type	MB		LCS				LCSD				
	Prep Date	NA		NA				NA				
	Analysis Date	06/14/2016 10:08		06/14/2016 08:29				06/14/2016 08:54				
	Matrix	Water		Water				Water				
EPA 8260B		Units Result	ug/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
t-amyl methyl ether (TAME)	994-05-8	0.240U	0.240	50.0	41.4	83	70 - 130	50.0	43.4	87	5	50
t-Butanol (TBA)	75-65-0	15.0U	15.0	50.0	41.9	84	60 - 140	50.0	47.9	96	13	50
diisopropyl Ether (DIPE)	108-20-3	0.236U	0.236	50.0	49.1	98	70 - 130	50.0	50.3	101	2	50
tert-Butyl methyl ether (MTBE)	1634-04-4	0.077U	0.077	50.0	48.4	97	71 - 125	50.0	51.2	102	6	50
Ethyl tert-butyl ether (ETBE)	637-92-3	0.234U	0.234	50.0	48.8	98	70 - 130	50.0	50.0	100	2	50
Ethyl tert-butanol (ETBA)	624-95-3	37.6U	37.6	2550	2150	84	70 - 130	2550	2330	91	8	50
Ethanol	64-17-5	125U	125	25200	20900	83	70 - 130	25200	21300	85	2	50
tert-amyl alcohol (TAA)	75-85-4	1.01U	1.01	200	173	87	70 - 130	200	190	95	9	50
tert-butyl formate (TBF)	762-75-4	0.487U	0.487	50.0	46.0	92	70 - 130	50.0	45.0	90	2	50
Benzene	71-43-2	0.111U	0.111	50.0	50.2	100	70 - 129	50.0	50.3	101	0	50
Toluene	108-88-3	0.122U	0.122	50.0	50.4	101	72 - 120	50.0	50.2	100	0	50
Ethylbenzene	100-41-4	0.109U	0.109	50.0	52.1	104	74 - 126	50.0	51.4	103	1	50
Xylene (total)	1330-20-7	0.179U	0.179	150	151	101	74 - 127	150	148	99	2	50
Naphthalene	91-20-3	0.176U	0.176	50.0	41.1	82	57 - 138	50.0	45.5	91	10	50
1,2-Dichloroethane	107-06-2	0.116U	0.116	50.0	46.9	94	71 - 129	50.0	47.6	95	1	50
Surrogate												
4-Bromofluorobenzene	460-00-4	49.7	99	50	51.2	102	78 - 130	50	50.2	100	NA	NA
Dibromofluoromethane	1868-53-7	53.6	107	50	48.4	97	77 - 127	50	48.8	98	NA	NA
Toluene d8	2037-26-5	53.7	107	50	48.3	97	76 - 134	50	50.5	101	NA	NA
1,2-Dichloroethane-d4	17060-07-0	48.6	97	50	49.5	99	71 - 127	50	49.2	98	NA	NA

GC Volatiles QC Summary

Analytical Batch 588499	Client ID	MB588499		LCS588499 1581375 LCS NA 06/14/2016 11:21 Water				LCSD588499 1581376 LCSD NA 06/14/2016 11:32 Water				
	GCAL ID	1581374										
	Sample Type	MB										
	Prep Date	NA										
	Analysis Date	06/14/2016 11:04										
	Matrix	Water										
EPA RSK-175		Units Result	ug/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
Methane	74-82-8	0.435U	0.435	17.5	15.9	91	39 - 120	17.5	15.5	89	3	27
Surrogate												
Propene	115-07-1	41.3	102	40.5	30.3	75	40 - 143	40.5	28.8	71	NA	NA

GC Semi-Volatiles QC Summary

Analytical Batch	Client ID	MB588039		LCS588039				LCSD588039				
588305	GCAL ID	1579230		1579231				1579232				
Prep Batch	Sample Type	MB		LCS				LCSD				
588039	Prep Date	06/09/2016 14:10		06/09/2016 14:10				06/09/2016 14:10				
Prep Method	Analysis Date	06/11/2016 00:48		06/11/2016 01:05				06/11/2016 01:21				
EPA 8011	Matrix	Water		Water				Water				
EPA 8011		Units Result	ug/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
1,2-Dibromoethane	106-93-4	0.00750U	0.00750	0.277	0.329	119	60 - 140	0.281	0.331	118	1	40

General Chemistry QC Summary

Analytical Batch	Client ID	MB588406	LCS588406
588406	GCAL ID	1580960	1580961
	Sample Type	MB	LCS
	Prep Date	NA	NA
	Analysis Date	06/13/2016 10:52	06/13/2016 10:51
	Matrix	Water	Water

SM 4500-SO4 E-2011		Units	mg/L	Spike			Control
		Result	DL	Added	Result	%R	Limits%R
Sulfate	14808-79-8	1.1J	1.1	20.0	21.7	108	90 - 110

Analytical Batch	Client ID	MW-1	1579203DUP	1579203MS
588406	GCAL ID	21606081101	1580962	1580963
	Sample Type	SAMPLE	DUP	MS
	Prep Date	NA	NA	NA
	Analysis Date	06/13/2016 10:53	06/13/2016 10:54	06/13/2016 10:54
	Matrix	Water	Water	Water

SM 4500-SO4 E-2011		Units	mg/L				Spike			
		Result	DL	Result	RPD	RPD Limit	Added	Result	%R	Control Limits%R
Sulfate	14808-79-8	1.1	1.1	0.99	11	25	20.0	20.0	95	90 - 110

Analytical Batch	Client ID	MB588047	LCS588047
588047	GCAL ID	1579265	1579266
	Sample Type	MB	LCS
	Prep Date	NA	NA
	Analysis Date	06/08/2016 15:54	06/08/2016 15:53
	Matrix	Water	Water

EPA 353.2 Rev. 2 Nitrate		Units	mg/L-N	Spike			Control
		Result	DL	Added	Result	%R	Limits%R
Nitrate	14797-55-8	0.008U	0.008	0.500	0.485	97	89.5 - 110.5

Analytical Batch	Client ID	MW-1	1579203MS	1579203MSD
588047	GCAL ID	21606081101	1579267	1579268
	Sample Type	SAMPLE	MS	MSD
	Prep Date	NA	NA	NA
	Analysis Date	06/08/2016 15:57	06/08/2016 15:58	06/08/2016 15:59
	Matrix	Water	Water	Water

EPA 353.2 Rev. 2 Nitrate		Units	mg/L-N	Spike			Control	Spike				RPD
		Result	DL	Added	Result	%R	Limits%R	Added	Result	%R	RPD	Limit
Nitrate	14797-55-8	0.007	0.008	0.500	0.476	94	89.5 - 110.5	0.500	0.477	94	0	25

Analytical Batch	Client ID	MB588272	LCS588272
588272	GCAL ID	1580395	1580396
	Sample Type	MB	LCS
	Prep Date	NA	NA
	Analysis Date	06/10/2016 16:56	06/10/2016 16:54
	Matrix	Water	Water

EPA 353.2 Rev. 2 Nitrate		Units	mg/L-N	Spike			Control
		Result	DL	Added	Result	%R	Limits%R
Nitrate	14797-55-8	0.008U	0.008	0.500	0.491	98	89.5 - 110.5

Analytical Batch	Client ID	MW-17B	1580225MS	1580225MSD
588272	GCAL ID	21606102901	1580399	1580400
	Sample Type	SAMPLE	MS	MSD
	Prep Date	NA	NA	NA
	Analysis Date	06/10/2016 16:59	06/10/2016 17:01	06/10/2016 17:02
	Matrix	Water	Water	Water

EPA 353.2 Rev. 2 Nitrate		Units	mg/L-N	Spike			Control	Spike				RPD
		Result	DL	Added	Result	%R	Limits%R	Added	Result	%R	RPD	Limit
Nitrate	14797-55-8	0.126	0.008	0.500	0.622	99	89.5 - 110.5	0.500	0.606	96	3	25

Confirmation Summary

Report No:	216060811	Analysis Method:	EPA 8011
Instrument ID (1):	GCS17A	Column ID (1):	RTX-35ms-30M
Instrument ID (2):	GCS17B	Column ID (2):	RTI-XLB-30M

GCAL ID	*SAMPLE ID*	*CAS*	*ANALYTE*	*C1*	*RESULT1*	*C2*	*RESULT2*	*RPD*	
21606081102	MW-2	106-93-4	1,2-Dibromoethane		0.040	*	0.057	35	
21606081103	MW-3	106-93-4	1,2-Dibromoethane	*	0.052		0.094	58	**P**
21606081105	MW-5	106-93-4	1,2-Dibromoethane	*	0.016J		0.043	92	**P**
21606081106	MW-6A	106-93-4	1,2-Dibromoethane		0.035	*	0.00750U	129	
21606081115	MW-11A	106-93-4	1,2-Dibromoethane	*	0.042		0.068	47	**P**
21606081116	MW-11B	106-93-4	1,2-Dibromoethane	*	0.014J		0.031	76	**P**

*** - Result reported from this column.**
P - RPD greater than 40%.

LAB USE ONLY

Access Analytical - Chain of Custody Re

Client ID: 4565 - Access Analytical

SDG: 216060811

PM: SAK

Sales Order # ______ PO # ______ Access Quote # ______

7478 Carlisle Street
Irmo, SC 29063
Phone. (803) 781-4243
Fax. 781-4303
www.axs-inc.com
79922.2

Company Name:	Enviro-Test Services
Report To:	Michael Faris
Address:	P.O. Box 2237
City:	Irmo
State:	SC
Zip:	29063
Phone:	803-413-4936
Fax:	
Email:	terryteate@aol.com
Project ID:	Broad River Amoco
Sampled By:	Terry Teate

Preservative: (*see codes)
Container Type: (*see codes)

↓ REQUESTED LAB ANALYSIS: ↓

Sample ID/Description	Date Collected	Time Collected	Type: (grab or composite)	Matrix (see codes)	Program Area (see codes)	TOTAL # of containers	BTEX, N, MTBE, 1-2DCA	8-SC, Oxygenates	EDB-8011	Methane	Nitrate	Sulfate				NOTES / COMMENTS
MW-1	6-7-16	620	G	GW	SHW	9	X	X	X	X	X	X			1	Case Report
MW-2	"	655	"	"	"	"	"	"	"	"	"	"			2	Verification Period 1
MW-3	"	738	"	"	"	"	"	"	"	"	"	"			3	DHEC Permit #11946
MW-4	"	805	"	"	"	"	"	"	"	"	"	"			4	
MW-5	"	850	"	"	"	"	"	"	"	"	"	"			5	
MW-6A	"	933	"	"	"	"	"	"	"	"	"	"			6	
MW-6B	"	1007	"	"	"	"	"	"	"	"	"	"			7	
MW-7A	"	1104	"	"	"	"	"	"	"	"	"	"			8	
MW-8A	"	1140	"	"	"	"	"	"	"	"	"	"			9	
MW-8B	"	1208	"	"	"	"	"	"	"	"	"	"			10	

*Preservative Codes (place corresponding # in block above analysis field)
0 = None, 1 = HCL, 2 = HNO_3, 3 = H_2SO_4, 4 = NaOH, 5 = $Na_2S_2O_3$,
6 = Method 5035 set w/ $NaHSO_4$ & CH_3OH, 7 = NaOH/ZnOAC, 8 = H_3PO_4

*Matrix Codes (place corresponding code in matrix column).
GW = ground water, WW = waste water, DW = drinking water, S = soil
SL = sludge, A = air, IW = industrial waste, WO = waste oil, OT = other (specify in comments section)

*Program Area Codes: CWA = Clean Water Act (for wastewaters), SDWA = Safe Drinking Water Act (for drinking waters), SHW = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

*Container Type: G = Glass P = Plastic

Turnaround Time:	Project Location	Relinquished By:	Received By:	Date (mm-dd-yy)	Time (24HR)	Samples Rec'd on Ice	Sample Temp. Upon Receipt (°C)	
✓ Standard	✓ SC	Terry L. Teate	AMartin	6-7-16	1650	__ Y __ N	____ (°C)	____ (N/A)
__ RUSH*	__ NC	AMartin	Fedex	6-7-16	1700	__ Y __ N	____ (°C)	____ (N/A)
*Date Required: ____ (For rush work, results emailed/faxed by end of business day on date required)	__ Other	Fedex	JBecnei	6-8-16	0950	__ Y __ N	____ (°C)	____ (N/A)
	(specify) ____					__ Y __ N	____ (°C)	____ (N/A)

Pg ____ of ____ 5035 2505 3969

See Reverse for Terms and Conditions

3.5°C 6 2 ... 2.9°C 6 1 Cfm

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Yellow Copy - Access File Copy
Pink Copy - Client Copy

LAB USE ONLY

Access Analytical - Chain of Custody R

Sales Order # _____ **PO #** _____ **Access Quote #** _____

Client ID: 4565 - Access Analytical

SDG: 216060811 **PM:** SAK

Company Name: Enviro-Test Services
Report To: Michael Faris
Address: P.O. Box 2237
City: Irmo State: SC Zip: 29063
Phone: 803-413-4936 Fax:
Email: tervytaate eAol.com
Project ID: Broad River Amoco
Sampled By:

Preservative: (*see codes)
Container Type: (*see codes)

REQUESTED LAB ANALYSIS: BTEX, MTBE, 12 OCA, 8-SC, Oxygenates, EDB - 8011, Methane, Nitrate, Sulfate

7478 Carlisle Street
Irmo, SC 29063
Phone: (803) 781-4243
Fax: 781-4303
www.axs-inc.com

*Preservative Codes (place corresponding # in block above analysis req): 0 = None, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Na2S2O3, 6 = Method 5035 set w/ NaHSO4 & CH3OH, 7 = NaOH/ZnOAc, 8 = H3PO4

*Matrix Codes (place corresponding code in matrix column): GW = ground water, WW = waste water, DW = drinking water, S = soil, SL = sludge, A = air, IW = industrial waste, WO = waste oil, OT = other (specify in comments section)

*Program Area Codes: CWA = Clean Water Act (for treatment plants), SDWA = Safe Drinking Water Act (for drinking waters), RHW = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

*Container Type: G = Glass, P = Plastic

Sample ID/Description	Date Collected:	Time Collected:	Type: (grab or composite)	Matrix: (see codes)	Program Area (see codes)	TOTAL # of containers									
MW-9A	6-7-16	1302	G	GW	SW	9	X	X	X	X	X	X			11
MW-9B	"	1348	"	"	"	"	"	"	"	"	"	"			12
MW-10A	"	1417	"	"	"	"	"	"	"	"	"	"			13
MW-10B	"	1450	"	"	"	"	"	"	"	"	"	"			14
MW-11A	"	1522	"	"	"	"	"	"	"	"	"	"			15
MW-11B	"	1505	"	"	"	"	"	"	"	"	"	"			16
Field Blank	"	608	"	"	"	"	"	"	"	"	"	"			17
Trip Blank	"		"	"	"	"	"	"	"	"	"	"			18

NOTES / COMMENTS
(if sample is a composite please use space below to note start/finish times & dates)

11 Case Report
12 Verification Period - 1
13 UST Permit #11946
14
15
16
17
18

Turnaround Time:
- ✓ Standard
- ___ RUSH*
- *Date Required: _____
(For rush work, results emailed/faxed by end of business day on date required)

Project Location:
- ✓ SC
- ___ NC
- ___ Other (specify) _____

Relinquished By:	Received By:	Date (mm-dd-yy)	Time (24HR)	Samples Rec'd on Ice	Sample Temp. Upon Receipt (°C):	
Terry Taate	A Martin	6-7-16	1650	___Y ___N	___(°C)	___(N/A)
A Martin	Fedex	6-7-16	1710	___Y ___N	___(°C)	___(N/A)
Fed Ex	JBeard	6-8-16	09:50	___Y ___N	___(°C)	___(N/A)
				___Y ___N	___(°C)	___(N/A)

Pg ___ of ___ 5035 7505 3469

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3.5° 60 cm 3.8° C026 51 cfm

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Yellow Copy - Access File Copy
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Checklist

GCAL

SAMPLE RECEIVING CHECKLIST

SAMPLE DELIVERY GROUP 216060811	
Client PM SAK 4565 - Access Analytical	**Transport Method** FEDEX
Profile Number 79922	**Received By** Lofton, Katie E.
Line Item(s) 2 - Water BTEX//Naph/MTBE/ EDBby8260/Pb/PAH/EDB	**Receive Date(s)** 06/08/16

CHECKLIST	YES	NO	NA
Samples received with proper thermal and chemical preservation?	☑	☐	☐
Radioactivity is <1600 cmp? If no, record cmp value in notes section.	☑	☐	☐
Custody seals present and intact?	☑	☐	☐
COC relinquished and complete (including sample IDs, collect dates/times, and sampler name)?	☑	☐	☐
Short holds or RUSH samples received?	☑	☐	☐
All containers received in good condition and within hold time?	☑	☐	☐
All sample labels and containers received match the chain of custody?	☑	☐	☐
Preservation checked at receipt? Exceptions: VOC, Coliform, TOC, Oil and Grease, DOC	☐	☐	☑
Preservative added to any containers?	☐	☑	☐
VOC water containers received with headspace < 6mm?	☑	☐	☐
Received filtered sample volume for dissolved analysis?	☐	☐	☑
Trip blank present in all coolers containing VOC waters?	☑	☐	☐
Samples collected in containers provided by GCAL?	☐	☑	☐

COOLERS		DISCREPANCIES	LAB PRESERVATIONS
Airbill **Thermometer ID: E26**	**Temp(°C)**	None	None
5035 7505 3969	3.5 3.8		

NOTES

Revision 1.5

Page 1 of 1

ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT
Envrio-Test Services

Irmo, SC 29063

ATTENTION
Michael Farris

PROJECT ID
Broad River Amoco

LABORATORY REPORT NUMBER
216061029

DATE
06/20/2016

Primary Data Review By

Curtis Ekstrand, Director of Data Del
Authorized Signature

Secondary Data Review By

Ashley B. Amick
Project Manager, Access Analytical, Inc.
aamick@accessanalyticalinc.com

PLEASE NOTE:

- **Unless otherwise noted, all analysis on this report performed at Gulf Coast Analytical Labs (GCAL), 7979 Innovation Park Dr., Baton Rouge, LA 70820.**
- **GCAL is SCDHEC certified laboratory # 73006, NCDENR certified lab # 618, GA certified lab # LA-01955, NELAP certified laboratory # 01955**
- Local support services for this project are provided by Access Analytical, Inc.. Access Analytical is a representative of GCAL serving clients in the SC/NC/GA areas. All questions regarding this report should be directed to your local Access Analytical representative at 803.781.4243 or toll free at 888.315.4243.

GCAL
ANALYTICAL LABORATORIES LLC

NELAP CERTIFICATE NUMBER: 01955
DOD ELAP CERTIFICATE NUMBER: L14-243

ANALYTICAL RESULTS

PERFORMED BY

GCAL, LLC
7979 Innovation Park Dr.
Baton Rouge, LA 70820

Report Date 06/20/2016

GCAL Report 216061029

Project Broad River Amoco

Deliver To	***Additional Recipients***
Michael Farris Envrio-Test Services Irmo, SC 29063	NONE

PJLA Testing DoD ELAP

ISO 17025

Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

Common Abbreviations that may be Utilized in this Report

ND	Indicates the result was Not Detected at the specified reporting limit
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DL	Diluted analysis – when appended to Client Sample ID
LOD	Limit of Detection
LOQ	Limit of Quantitation
RE	Re-analysis
CF	HPLC or GC Confirmation
00:01	Reported as a time equivalent to 12:00 AM

Reporting Flags that may be Utilized in this Report

J or I	Indicates the result is between the MDL and LOQ
J	DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria
U	Indicates the compound was analyzed for but not detected
B or V	Indicates the analyte was detected in the associated Method Blank
Q	Indicates a non-compliant QC Result (See Q Flag Application Report)
*	Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
E	The result is estimated because it exceeded the instrument calibration range
E	Metals - % diference for the serial dilution is > 10%
P	RPD between primary and confirmation result is greater than 40

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.

Curtis Ekker, Mgr of Data Del

Authorized Signature
GCAL Report 216061029

Certifications

Certification	Certification Number
DOD ELAP	L14-243
Alabama	01955
Arkansas	12-060-0
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
USDA Soil Permit	P330-10-00117

Case Narrative

Client: Access Analytical **Report:** 216061029

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

VOLATILES MASS SPECTROMETRY

In the EPA 8260B analysis, sample 21606102901 (MW-17B) had to be diluted to bracket the concentration of target compounds within the calibration range of the instrument. The dilution is reflected in elevated detection limits.

In the EPA 8260B analysis for analytical batch 588693, the LCS and/or LCSD recoveries are above the upper control limit for Ethanol. This compound was not detected in the associated samples.

VOLATILES GAS CHROMATOGRAPHY

In the EPA RSK-175 analysis, samples 21606102901 (MW-17B), 21606102904 (MW-19A) and 21606102906 (MW-20A) had to be diluted to bracket the concentration of target analyte(s) within the calibration range of the instrument. The recovery for the surrogate is reported as diluted out for sample 21606102901 (MW-17B), 21606102904 (MW-19A) and 21606102906 (MW-20A).

CONVENTIONALS

In the SM 4500-SO4 E-2011 analysis, sample 21606102912 (MW-D3) had to be diluted in order to bracket the concentration within the calibration range of the instrument.

In the EPA 353.2 Rev. 2 Nitrate analysis, samples 21606102902 (MW-18A) and 21606102906 (MW-20A) had to be diluted in order to bracket the Nitrate + Nitrite and/or Nitrite concentrations within the calibration range of the instrument. The Nitrate is based on the difference between the Nitrate + Nitrite and the Nitrite. The dilution is reflected in the elevated reporting limit.

In the EPA 353.2 Rev. 2 Nitrate analysis for analytical batch 588272, the MS and/or MSD recovery is outside control limits for Nitrate. The LCS recovery is acceptable. This indicates the analysis is in control and the sample is affected by a matrix interference.

In the SM 4500-SO4 E-2011 analysis, Sulfate was detected in the method blank for analytical batches 588415 and 588447. The concentration was insignificant compared to the concentration detected in the sample.

Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21606102901	MW-17B	Water	06/09/2016 06:40	06/10/2016 10:06
21606102902	MW-18A	Water	06/09/2016 08:05	06/10/2016 10:06
21606102903	MW-18B	Water	06/09/2016 08:48	06/10/2016 10:06
21606102904	MW-19A	Water	06/09/2016 12:40	06/10/2016 10:06
21606102905	MW-19B	Water	06/09/2016 13:23	06/10/2016 10:06
21606102906	MW-20A	Water	06/09/2016 09:35	06/10/2016 10:06
21606102907	MW-20B	Water	06/09/2016 10:07	06/10/2016 10:06
21606102908	MW-21A	Water	06/09/2016 14:34	06/10/2016 10:06
21606102909	MW-21B	Water	06/09/2016 15:18	06/10/2016 10:06
21606102910	MW-22B	Water	06/09/2016 10:51	06/10/2016 10:06
21606102911	MW-D2	Water	06/09/2016 07:22	06/10/2016 10:06
21606102912	MW-D3	Water	06/09/2016 11:34	06/10/2016 10:06
21606102913	DUPLICATE-2	Water	06/09/2016 13:28	06/10/2016 10:06
21606102914	DUPLICATE-3	Water	06/09/2016 15:20	06/10/2016 10:06
21606102915	FIELD BLANK	Water	06/09/2016 06:30	06/10/2016 10:06
21606102916	TRIP BLANK	Water	06/09/2016 00:01	06/10/2016 10:06

Summary of Compounds Detected

MW-17B

Collect Date 06/09/2016 06:40 **GCAL ID** 21606102901
Receive Date 06/10/2016 10:06 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
75-65-0	t-Butanol (TBA)	1430	375	500	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	357	1.93	125	ug/L
75-85-4	tert-amyl alcohol (TAA)	514	25.3	500	ug/L
71-43-2	Benzene	27.5J	2.78	125	ug/L

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	591	21.8	100	ug/L

EPA 8011

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.021P	0.00750	0.020	ug/L

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.126	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.4J	1.1	5.0	mg/L

Summary of Compounds Detected

MW-18A

Collect Date 06/09/2016 08:05 **GCAL ID** 21606102902
Receive Date 06/10/2016 10:06 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	1.15J	0.077	5.00	ug/L

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	5.43	0.435	2.00	ug/L

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	3.1J	1.1	5.0	mg/L

MW-18B

Collect Date 06/09/2016 08:48 **GCAL ID** 21606102903
Receive Date 06/10/2016 10:06 **Matrix** Water

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	3.58	0.435	2.00	ug/L

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.7J	1.1	5.0	mg/L

MW-19A

Collect Date 06/09/2016 12:40 **GCAL ID** 21606102904
Receive Date 06/10/2016 10:06 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
71-43-2	Benzene	2.08J	0.111	5.00	ug/L

Summary of Compounds Detected

MW-19A

Collect Date 06/09/2016 12:40 **GCAL ID** 21606102904
Receive Date 06/10/2016 10:06 **Matrix** Water

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	2190	21.8	100	ug/L

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.6J	1.1	5.0	mg/L

MW-19B

Collect Date 06/09/2016 13:23 **GCAL ID** 21606102905
Receive Date 06/10/2016 10:06 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	1.41J	0.077	5.00	ug/L

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.966J	0.435	2.00	ug/L

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.7J	1.1	5.0	mg/L

MW-20A

Collect Date 06/09/2016 09:35 **GCAL ID** 21606102906
Receive Date 06/10/2016 10:06 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	0.810J	0.077	5.00	ug/L

Summary of Compounds Detected

MW-20A

Collect Date 06/09/2016 09:35 **GCAL ID** 21606102906
Receive Date 06/10/2016 10:06 **Matrix** Water

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	223	4.35	20.0	ug/L

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.107	0.082	0.100	mg/L-N

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.2J	1.1	5.0	mg/L

MW-20B

Collect Date 06/09/2016 10:07 **GCAL ID** 21606102907
Receive Date 06/10/2016 10:06 **Matrix** Water

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	47.5	0.435	2.00	ug/L

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	16.8	1.1	5.0	mg/L

MW-21A

Collect Date 06/09/2016 14:34 **GCAL ID** 21606102908
Receive Date 06/10/2016 10:06 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	20.8	0.077	5.00	ug/L

Summary of Compounds Detected

MW-21B

Collect Date 06/09/2016 15:18 **GCAL ID** 21606102909
Receive Date 06/10/2016 10:06 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	20.4	0.077	5.00	ug/L

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.016	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.6J	1.1	5.0	mg/L

MW-22B

Collect Date 06/09/2016 10:51 **GCAL ID** 21606102910
Receive Date 06/10/2016 10:06 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	3.60J	0.077	5.00	ug/L

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.790J	0.435	2.00	ug/L

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.025	0.008	0.010	mg/L-N

Summary of Compounds Detected

MW-22B

Collect Date 06/09/2016 10:51 **GCAL ID** 21606102910
Receive Date 06/10/2016 10:06 **Matrix** Water

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	3.0J	1.1	5.0	mg/L

MW-D2

Collect Date 06/09/2016 07:22 **GCAL ID** 21606102911
Receive Date 06/10/2016 10:06 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
108-88-3	Toluene	0.611J	0.122	5.00	ug/L
1330-20-7	Xylene (total)	4.05J	0.179	15.0	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	5.92	0.077	5.00	ug/L

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.627	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	18.5	1.1	5.0	mg/L

MW-D3

Collect Date 06/09/2016 11:34 **GCAL ID** 21606102912
Receive Date 06/10/2016 10:06 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
1330-20-7	Xylene (total)	1.59J	0.179	15.0	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	1.04J	0.077	5.00	ug/L

Summary of Compounds Detected

MW-D3

Collect Date 06/09/2016 11:34 **GCAL ID** 21606102912
Receive Date 06/10/2016 10:06 **Matrix** Water

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.359	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	62.1	2.3	10.0	mg/L

DUPLICATE-2

Collect Date 06/09/2016 13:28 **GCAL ID** 21606102913
Receive Date 06/10/2016 10:06 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	1.44J	0.077	5.00	ug/L
1330-20-7	Xylene (total)	1.42J	0.179	15.0	ug/L

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.790J	0.435	2.00	ug/L

EPA 8011

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.013JP	0.00750	0.020	ug/L

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	2.3J	1.1	5.0	mg/L

Summary of Compounds Detected

DUPLICATE-3	**Collect Date**	06/09/2016 15:20	**GCAL ID**	21606102914
	Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	20.8	0.077	5.00	ug/L

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.3J	1.1	5.0	mg/L

Sample Results

MW-17B

Collect Date	06/09/2016 06:40	**GCAL ID**	21606102901
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	25	06/16/2016 22:41	CJR	588693

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	6.00U	6.00	125	ug/L
75-65-0	**t-Butanol (TBA)**	**1430**	**375**	**500**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	5.90U	5.90	125	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**357**	**1.93**	**125**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	5.85U	5.85	125	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	940U	940	2500	ug/L
64-17-5	Ethanol	3120U	3120	25000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**514**	**25.3**	**500**	**ug/L**
762-75-4	tert-butyl formate (TBF)	12.2U	12.2	1250	ug/L
71-43-2	**Benzene**	**27.5J**	**2.78**	**125**	**ug/L**
108-88-3	Toluene	3.05U	3.05	125	ug/L
100-41-4	Ethylbenzene	2.73U	2.73	125	ug/L
1330-20-7	Xylene (total)	4.47U	4.47	375	ug/L
91-20-3	Naphthalene	4.40U	4.40	125	ug/L
107-06-2	1,2-Dichloroethane	2.90U	2.90	125	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	1250	1260	ug/L	101	78 - 130
1868-53-7	Dibromofluoromethane	1250	1330	ug/L	106	77 - 127
2037-26-5	Toluene d8	1250	1330	ug/L	106	76 - 134
17060-07-0	1,2-Dichloroethane-d4	1250	1230	ug/L	98	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	50	06/16/2016 15:51	JAR	588670

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**591**	**21.8**	**100**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	Diluted Out	ug/L	0*	40 - 143

Sample Results

MW-17B

Collect Date	06/09/2016 06:40	**GCAL ID**	21606102901
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/11/2016 10:15	588288	EPA 8011	1	06/12/2016 20:36	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	**1,2-Dibromoethane**	**0.021P**	**0.00750**	**0.020**	**ug/L**

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/10/2016 16:59	DMT	588272

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.126**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 13:33	DJH	588415

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**1.4J**	**1.1**	**5.0**	**mg/L**

MW-18A

Collect Date	06/09/2016 08:05	**GCAL ID**	21606102902
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 19:00	CJR	588693

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**1.15J**	**0.077**	**5.00**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L

Sample Results

MW-18A

Collect Date	06/09/2016 08:05	**GCAL ID**	21606102902
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 19:00	CJR	588693

CAS#	Parameter	Result	DL	LOQ	Units
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	49.3	ug/L	99	78 - 130
1868-53-7	Dibromofluoromethane	50	53.5	ug/L	107	77 - 127
2037-26-5	Toluene d8	50	52.5	ug/L	105	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50.5	ug/L	101	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 16:01	JAR	588670

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**5.43**	**0.435**	**2.00**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	20.4	ug/L	50	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/11/2016 10:15	588288	EPA 8011	1	06/12/2016 20:53	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-18A

Collect Date	06/09/2016 08:05	**GCAL ID**	21606102902
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	10	06/10/2016 17:03	DMT	588272

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.082U	0.082	0.100	mg/L-N

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 13:34	DJH	588415

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**3.1J**	**1.1**	**5.0**	**mg/L**

MW-18B

Collect Date	06/09/2016 08:48	**GCAL ID**	21606102903
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 19:22	CJR	588693

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L

Sample Results

MW-18B

Collect Date	06/09/2016 08:48	**GCAL ID**	21606102903
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 19:22	CJR	588693

CAS#	Parameter	Result	DL	LOQ	Units
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	51.6	ug/L	103	78 - 130
1868-53-7	Dibromofluoromethane	50	55	ug/L	110	77 - 127
2037-26-5	Toluene d8	50	53.8	ug/L	108	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50.6	ug/L	101	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 16:16	JAR	588670

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**3.58**	**0.435**	**2.00**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	19.5	ug/L	48	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/11/2016 10:15	588288	EPA 8011	1	06/12/2016 21:11	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-18B

Collect Date	06/09/2016 08:48	**GCAL ID**	21606102903
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/10/2016 17:04	DMT	588272

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.008U	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 13:37	DJH	588415

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**1.7J**	**1.1**	**5.0**	**mg/L**

MW-19A

Collect Date	06/09/2016 12:40	**GCAL ID**	21606102904
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 19:44	CJR	588693

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	**Benzene**	**2.08J**	**0.111**	**5.00**	**ug/L**
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-19A

Collect Date	06/09/2016 12:40	**GCAL ID**	21606102904
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 19:44	CJR	588693

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	51.8	ug/L	104	78 - 130
1868-53-7	Dibromofluoromethane	50	52.7	ug/L	105	77 - 127
2037-26-5	Toluene d8	50	52.9	ug/L	106	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50.6	ug/L	101	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	50	06/16/2016 16:28	JAR	588670

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**2190**	**21.8**	**100**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	Diluted Out	ug/L	**0***	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/11/2016 10:15	588288	EPA 8011	1	06/12/2016 21:28	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-19A

Collect Date	06/09/2016 12:40	**GCAL ID**	21606102904
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/10/2016 17:08	DMT	588272

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.008U	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 13:38	DJH	588415

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**1.6J**	**1.1**	**5.0**	**mg/L**

MW-19B

Collect Date	06/09/2016 13:23	**GCAL ID**	21606102905
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 20:06	CJR	588693

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**1.41J**	**0.077**	**5.00**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-19B

Collect Date	06/09/2016 13:23	**GCAL ID**	21606102905
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 20:06	CJR	588693

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	52	ug/L	104	78 - 130
1868-53-7	Dibromofluoromethane	50	54.3	ug/L	109	77 - 127
2037-26-5	Toluene d8	50	52.7	ug/L	105	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50.9	ug/L	102	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 16:33	JAR	588670

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**0.966J**	**0.435**	**2.00**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	21.2	ug/L	52	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/11/2016 10:15	588288	EPA 8011	1	06/12/2016 21:45	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-19B

Collect Date	06/09/2016 13:23	**GCAL ID**	21606102905
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/10/2016 17:12	DMT	588272

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.008U	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 13:39	DJH	588415

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**1.7J**	**1.1**	**5.0**	**mg/L**

MW-20A

Collect Date	06/09/2016 09:35	**GCAL ID**	21606102906
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 20:28	CJR	588693

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**0.810J**	**0.077**	**5.00**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-20A

Collect Date	06/09/2016 09:35	**GCAL ID**	21606102906
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 20:28	CJR	588693

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	49.5	ug/L	99	78 - 130
1868-53-7	Dibromofluoromethane	50	54.2	ug/L	108	77 - 127
2037-26-5	Toluene d8	50	52.3	ug/L	105	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	49.9	ug/L	100	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	10	06/16/2016 16:55	JAR	588670

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**223**	**4.35**	**20.0**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	Diluted Out	ug/L	**0***	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/11/2016 10:15	588288	EPA 8011	1	06/12/2016 22:02	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-20A

Collect Date	06/09/2016 09:35	**GCAL ID**	21606102906
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	10	06/10/2016 17:13	DMT	588272

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.107**	**0.082**	**0.100**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 13:40	DJH	588415

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**1.2J**	**1.1**	**5.0**	**mg/L**

MW-20B

Collect Date	06/09/2016 10:07	**GCAL ID**	21606102907
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 20:50	CJR	588693

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-20B

Collect Date	06/09/2016 10:07	**GCAL ID**	21606102907
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 20:50	CJR	588693

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	49.7	ug/L	99	78 - 130
1868-53-7	Dibromofluoromethane	50	55.5	ug/L	111	77 - 127
2037-26-5	Toluene d8	50	52.4	ug/L	105	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	51.9	ug/L	104	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 17:01	JAR	588670

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**47.5**	**0.435**	**2.00**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	18.9	ug/L	47	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/11/2016 10:15	588288	EPA 8011	1	06/12/2016 22:19	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-20B

Collect Date	06/09/2016 10:07	**GCAL ID**	21606102907
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/10/2016 17:14	DMT	588272

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.008U	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 14:53	DJH	588447

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**16.8**	**1.1**	**5.0**	**mg/L**

MW-21A

Collect Date	06/09/2016 14:34	**GCAL ID**	21606102908
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 21:12	CJR	588693

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**20.8**	**0.077**	**5.00**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-21A

Collect Date	06/09/2016 14:34	**GCAL ID**	21606102908
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 21:12	CJR	588693

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	49.4	ug/L	99	78 - 130
1868-53-7	Dibromofluoromethane	50	55.6	ug/L	111	77 - 127
2037-26-5	Toluene d8	50	52	ug/L	104	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50.8	ug/L	102	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 17:06	JAR	588670

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.435U	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	20.5	ug/L	51	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/11/2016 10:15	588288	EPA 8011	1	06/12/2016 22:36	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-21A

Collect Date	06/09/2016 14:34	**GCAL ID**	21606102908
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/10/2016 17:15	DMT	588272

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.008U	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 14:54	DJH	588447

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.1U	1.1	5.0	mg/L

MW-21B

Collect Date	06/09/2016 15:18	**GCAL ID**	21606102909
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 21:34	CJR	588693

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**20.4**	**0.077**	**5.00**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-21B

Collect Date	06/09/2016 15:18	**GCAL ID**	21606102909
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 21:34	CJR	588693

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	49.8	ug/L	100	78 - 130
1868-53-7	Dibromofluoromethane	50	54.8	ug/L	110	77 - 127
2037-26-5	Toluene d8	50	52.6	ug/L	105	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50.8	ug/L	102	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 17:23	JAR	588670

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.435U	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	23.6	ug/L	58	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/11/2016 10:15	588288	EPA 8011	1	06/12/2016 22:53	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-21B

Collect Date	06/09/2016 15:18	**GCAL ID**	21606102909
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/10/2016 17:17	DMT	588272

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.016**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 14:59	DJH	588447

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**1.6J**	**1.1**	**5.0**	**mg/L**

MW-22B

Collect Date	06/09/2016 10:51	**GCAL ID**	21606102910
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 21:56	CJR	588693

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**3.60J**	**0.077**	**5.00**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-22B

Collect Date	06/09/2016 10:51	**GCAL ID**	21606102910
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 21:56	CJR	588693

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	50.1	ug/L	100	78 - 130
1868-53-7	Dibromofluoromethane	50	54.6	ug/L	109	77 - 127
2037-26-5	Toluene d8	50	53.9	ug/L	108	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50.8	ug/L	102	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 17:34	JAR	588670

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**0.790J**	**0.435**	**2.00**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	28.2	ug/L	70	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/11/2016 10:15	588288	EPA 8011	1	06/12/2016 23:10	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-22B

Collect Date	06/09/2016 10:51	**GCAL ID**	21606102910
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/10/2016 17:18	DMT	588272

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.025**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 15:00	DJH	588447

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**3.0J**	**1.1**	**5.0**	**mg/L**

MW-D2

Collect Date	06/09/2016 07:22	**GCAL ID**	21606102911
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/17/2016 13:45	CJR	588760

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L
108-88-3	**Toluene**	**0.611J**	**0.122**	**5.00**	**ug/L**
1330-20-7	**Xylene (total)**	**4.05J**	**0.179**	**15.0**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**5.92**	**0.077**	**5.00**	**ug/L**
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L

Sample Results

MW-D2

Collect Date	06/09/2016 07:22	**GCAL ID**	21606102911
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/17/2016 13:45	CJR	588760

CAS#	Parameter	Result	DL	LOQ	Units
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	51.4	ug/L	103	78 - 130
1868-53-7	Dibromofluoromethane	50	52.3	ug/L	105	77 - 127
2037-26-5	Toluene d8	50	53.5	ug/L	107	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.7	ug/L	97	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 17:41	JAR	588670

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.435U	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	29.4	ug/L	73	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/11/2016 10:15	588288	EPA 8011	1	06/13/2016 00:01	MEG	588414

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-D2

Collect Date	06/09/2016 07:22	**GCAL ID**	21606102911
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/10/2016 17:19	DMT	588272

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.627**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 15:01	DJH	588447

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**18.5**	**1.1**	**5.0**	**mg/L**

MW-D3

Collect Date	06/09/2016 11:34	**GCAL ID**	21606102912
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/17/2016 14:07	CJR	588760

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
1330-20-7	**Xylene (total)**	**1.59J**	**0.179**	**15.0**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**1.04J**	**0.077**	**5.00**	**ug/L**
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L

Sample Results

MW-D3	**Collect Date**	06/09/2016 11:34	**GCAL ID**	21606102912
	Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/17/2016 14:07	CJR	588760

CAS#	Parameter	Result	DL	LOQ	Units
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	51.1	ug/L	102	78 - 130
1868-53-7	Dibromofluoromethane	50	53.1	ug/L	106	77 - 127
2037-26-5	Toluene d8	50	53	ug/L	106	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	49.4	ug/L	99	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 17:46	JAR	588670

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.435U	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	28.7	ug/L	71	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/11/2016 10:15	588288	EPA 8011	1	06/13/2016 00:01	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-D3

Collect Date	06/09/2016 11:34	**GCAL ID**	21606102912
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/10/2016 17:20	DMT	588272

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.359**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	2	06/13/2016 15:02	DJH	588447

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**62.1**	**2.3**	**10.0**	**mg/L**

DUPLICATE-2

Collect Date	06/09/2016 13:28	**GCAL ID**	21606102913
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/17/2016 14:29	CJR	588760

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**1.44J**	**0.077**	**5.00**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	**Xylene (total)**	**1.42J**	**0.179**	**15.0**	**ug/L**
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

DUPLICATE-2

Collect Date 06/09/2016 13:28
Receive Date 06/10/2016 10:06
GCAL ID 21606102913
Matrix Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/17/2016 14:29	CJR	588760

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	51.5	ug/L	103	78 - 130
1868-53-7	Dibromofluoromethane	50	54.1	ug/L	108	77 - 127
2037-26-5	Toluene d8	50	53.6	ug/L	107	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50	ug/L	100	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 17:54	JAR	588670

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.790J	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	27.7	ug/L	68	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/11/2016 10:15	588288	EPA 8011	1	06/13/2016 00:18	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.013JP	0.00750	0.020	ug/L

Sample Results

DUPLICATE-2

Collect Date	06/09/2016 13:28	**GCAL ID**	21606102913
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/10/2016 17:22	DMT	588272

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.008U	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 15:11	DJH	588447

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**2.3J**	**1.1**	**5.0**	**mg/L**

DUPLICATE-3

Collect Date	06/09/2016 15:20	**GCAL ID**	21606102914
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/17/2016 14:51	CJR	588760

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**20.8**	**0.077**	**5.00**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

DUPLICATE-3

Collect Date	06/09/2016 15:20	**GCAL ID**	21606102914
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/17/2016 14:51	CJR	588760

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	51.5	ug/L	103	78 - 130
1868-53-7	Dibromofluoromethane	50	53.5	ug/L	107	77 - 127
2037-26-5	Toluene d8	50	53.5	ug/L	107	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	49.2	ug/L	98	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/16/2016 17:56	JAR	588670

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.435U	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	30.1	ug/L	74	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/11/2016 10:15	588288	EPA 8011	1	06/13/2016 00:34	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

DUPLICATE-3

Collect Date	06/09/2016 15:20	**GCAL ID**	21606102914
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/10/2016 17:23	DMT	588272

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.008U	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 15:12	DJH	588447

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**1.3J**	**1.1**	**5.0**	**mg/L**

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Collect Date	06/09/2016 06:30	**GCAL ID**	21606102915
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/17/2016 15:13	CJR	588760

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

FIELD BLANK

Collect Date	06/09/2016 06:30	**GCAL ID**	21606102915
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/17/2016 15:13	CJR	588760

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	50.4	ug/L	101	78 - 130
1868-53-7	Dibromofluoromethane	50	53.9	ug/L	108	77 - 127
2037-26-5	Toluene d8	50	52.5	ug/L	105	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50.2	ug/L	100	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/11/2016 10:15	588288	EPA 8011	1	06/13/2016 00:51	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

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Collect Date	06/09/2016 00:01	**GCAL ID**	21606102916
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/17/2016 15:35	CJR	588760

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L

Sample Results

TRIP BLANK

Collect Date	06/09/2016 00:01	**GCAL ID**	21606102916
Receive Date	06/10/2016 10:06	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/17/2016 15:35	CJR	588760

CAS#	Parameter	Result	DL	LOQ	Units
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	51.7	ug/L	103	78 - 130
1868-53-7	Dibromofluoromethane	50	54.6	ug/L	109	77 - 127
2037-26-5	Toluene d8	50	54	ug/L	108	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	49.8	ug/L	100	71 - 127

GC/MS Volatiles QC Summary

Analytical Batch 588693	Client ID	MB588693		LCS588693				LCSD588693				
	GCAL ID	1582503		1582504				1582507				
	Sample Type	MB		LCS				LCSD				
	Prep Date	NA		NA				NA				
	Analysis Date	06/16/2016 14:13		06/16/2016 12:45				06/16/2016 13:07				
	Matrix	Water		Water				Water				
EPA 8260B		Units Result	ug/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
t-amyl methyl ether (TAME)	994-05-8	0.240U	0.240	50.0	41.4	83	70 - 130	50.0	42.1	84	2	50
t-Butanol (TBA)	75-65-0	15.0U	15.0	50.0	47.3	95	60 - 140	50.0	55.5	111	16	50
diisopropyl Ether (DIPE)	108-20-3	0.236U	0.236	50.0	48.6	97	70 - 130	50.0	50.0	100	3	50
tert-Butyl methyl ether (MTBE)	1634-04-4	0.077U	0.077	50.0	50.0	100	71 - 125	50.0	52.6	105	5	50
Ethyl tert-butyl ether (ETBE)	637-92-3	0.234U	0.234	50.0	47.7	95	70 - 130	50.0	49.6	99	4	50
Ethyl tert-butanol (ETBA)	624-95-3	37.6U	37.6	2550	2810	110	70 - 130	2550	3240	127	14	50
Ethanol	64-17-5	125U	125	25200	29500	117	70 - 130	25200	35300	**140***	18	50
tert-amyl alcohol (TAA)	75-85-4	1.01U	1.01	200	221	111	70 - 130	200	259	130	16	50
tert-butyl formate (TBF)	762-75-4	0.487U	0.487	50.0	47.0	94	70 - 130	50.0	46.8	94	0	50
Benzene	71-43-2	0.111U	0.111	50.0	49.9	100	70 - 129	50.0	50.1	100	0	50
Toluene	108-88-3	0.122U	0.122	50.0	50.8	102	72 - 120	50.0	49.9	100	2	50
Ethylbenzene	100-41-4	0.109U	0.109	50.0	53.3	107	74 - 126	50.0	52.2	104	2	50
Xylene (total)	1330-20-7	0.179U	0.179	150	152	101	74 - 127	150	150	100	1	50
Naphthalene	91-20-3	0.176U	0.176	50.0	47.0	94	57 - 138	50.0	51.3	103	9	50
1,2-Dichloroethane	107-06-2	0.116U	0.116	50.0	49.0	98	71 - 129	50.0	49.8	100	2	50
Surrogate												
4-Bromofluorobenzene	460-00-4	49.9	100	50	51.5	103	78 - 130	50	51.3	103	NA	NA
Dibromofluoromethane	1868-53-7	53.4	107	50	49.1	98	77 - 127	50	48.9	98	NA	NA
Toluene d8	2037-26-5	53.4	107	50	49.3	99	76 - 134	50	49.3	99	NA	NA
1,2-Dichloroethane-d4	17060-07-0	49.6	99	50	49.5	99	71 - 127	50	50.7	101	NA	NA

Analytical Batch 588760	Client ID	MB588760		LCS588760				LCSD588760				
	GCAL ID	1582836		1582837				1582838				
	Sample Type	MB		LCS				LCSD				
	Prep Date	NA		NA				NA				
	Analysis Date	06/17/2016 12:36		06/17/2016 11:07				06/17/2016 11:28				
	Matrix	Water		Water				Water				
EPA 8260B		Units Result	ug/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
t-amyl methyl ether (TAME)	994-05-8	0.240U	0.240	50.0	41.9	84	70 - 130	50.0	42.9	86	2	50
t-Butanol (TBA)	75-65-0	15.0U	15.0	50.0	46.4	93	60 - 140	50.0	47.4	95	2	50
diisopropyl Ether (DIPE)	108-20-3	0.236U	0.236	50.0	50.5	101	70 - 130	50.0	51.2	102	1	50
tert-Butyl methyl ether (MTBE)	1634-04-4	0.077U	0.077	50.0	49.6	99	71 - 125	50.0	51.0	102	3	50
Ethyl tert-butyl ether (ETBE)	637-92-3	0.234U	0.234	50.0	49.8	100	70 - 130	50.0	50.5	101	1	50
Ethyl tert-butanol (ETBA)	624-95-3	37.6U	37.6	2550	2090	82	70 - 130	2550	2240	88	7	50
Ethanol	64-17-5	125U	125	25200	20900	83	70 - 130	25200	22800	90	9	50
tert-amyl alcohol (TAA)	75-85-4	1.01U	1.01	200	172	86	70 - 130	200	193	97	12	50
tert-butyl formate (TBF)	762-75-4	0.487U	0.487	50.0	43.4	87	70 - 130	50.0	43.6	87	1	50
Benzene	71-43-2	0.111U	0.111	50.0	48.9	98	70 - 129	50.0	49.2	98	1	50
Toluene	108-88-3	0.122U	0.122	50.0	49.4	99	72 - 120	50.0	48.3	97	2	50
Ethylbenzene	100-41-4	0.109U	0.109	50.0	52.0	104	74 - 126	50.0	51.2	102	2	50
Xylene (total)	1330-20-7	0.179U	0.179	150	148	99	74 - 127	150	146	97	1	50
Naphthalene	91-20-3	0.176U	0.176	50.0	45.7	91	57 - 138	50.0	47.2	94	3	50
1,2-Dichloroethane	107-06-2	0.116U	0.116	50.0	46.5	93	71 - 129	50.0	46.8	94	1	50
Surrogate												
4-Bromofluorobenzene	460-00-4	49	98	50	50.9	102	78 - 130	50	51.3	103	NA	NA
Dibromofluoromethane	1868-53-7	53.4	107	50	49.5	99	77 - 127	50	48.7	97	NA	NA
Toluene d8	2037-26-5	53.3	107	50	50.1	100	76 - 134	50	50.1	100	NA	NA
1,2-Dichloroethane-d4	17060-07-0	49.4	99	50	49.8	100	71 - 127	50	50.5	101	NA	NA

GC Volatiles QC Summary

Analytical Batch 588670	Client ID	MB588670		LCS588670				LCSD588670				
	GCAL ID	1582356		1582357				1582358				
	Sample Type	MB		LCS				LCSD				
	Prep Date	NA		NA				NA				
	Analysis Date	06/16/2016 13:53		06/16/2016 14:01				06/16/2016 14:07				
	Matrix	Water		Water				Water				
EPA RSK-175		Units Result	ug/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
Methane	74-82-8	0.435U	0.435	17.5	18.3	105	39 - 120	17.5	17.3	99	6	27
Surrogate												
Propene	115-07-1	21.7	54	40.5	22.2	55	40 - 143	40.5	20.5	51	NA	NA

GC Semi-Volatiles QC Summary

Analytical Batch	Client ID	MB588288		LCS588288				LCSD588288				
588373	GCAL ID	1580440		1580441				1580442				
Prep Batch	Sample Type	MB		LCS				LCSD				
588288	Prep Date	06/11/2016 10:15		06/11/2016 10:15				06/11/2016 10:15				
Prep Method	Analysis Date	06/12/2016 19:45		06/12/2016 20:02				06/12/2016 20:19				
EPA 8011	Matrix	Water		Water				Water				
EPA 8011		Units Result	ug/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
1,2-Dibromoethane	106-93-4	0.00750U	0.00750	0.266	0.163	61	60 - 140	0.266	0.176	66	8	40

General Chemistry QC Summary

Analytical Batch		Client ID	MB588415		LCS588415			
588415		GCAL ID	1581046		1581047			
		Sample Type	MB		LCS			
		Prep Date	NA		NA			
		Analysis Date	06/13/2016 13:12		06/13/2016 13:12			
		Matrix	Water		Water			
SM 4500-SO4 E-2011			Units Result	mg/L DL	Spike Added	Result	%R	Control Limits%R
Sulfate	14808-79-8		2.4J	1.1	20.0	18.3	91	90 - 110

Analytical Batch		Client ID	MW-13A		1579914DUP			1579914MS			
588415		GCAL ID	21606096108		1581048			1581049			
		Sample Type	SAMPLE		DUP			MS			
		Prep Date	NA		NA			NA			
		Analysis Date	06/13/2016 13:16		06/13/2016 13:17			06/13/2016 13:18			
		Matrix	Water		Water			Water			
SM 4500-SO4 E-2011			Units Result	mg/L DL	Result	RPD	RPD Limit	Spike Added	Result	%R	Control Limits%R
Sulfate	14808-79-8		4.8	1.1	5.0	4	25	20.0	25.0	101	90 - 110

Analytical Batch		Client ID	MB588447		LCS588447			
588447		GCAL ID	1581199		1581200			
		Sample Type	MB		LCS			
		Prep Date	NA		NA			
		Analysis Date	06/13/2016 14:53		06/13/2016 14:52			
		Matrix	Water		Water			
SM 4500-SO4 E-2011			Units Result	mg/L DL	Spike Added	Result	%R	Control Limits%R
Sulfate	14808-79-8		1.2J	1.1	20.0	18.5	92	90 - 110

Analytical Batch		Client ID	MW-21A		1580232DUP			1580232MS			
588447		GCAL ID	21606102908		1581201			1581202			
		Sample Type	SAMPLE		DUP			MS			
		Prep Date	NA		NA			NA			
		Analysis Date	06/13/2016 14:54		06/13/2016 14:55			06/13/2016 14:58			
		Matrix	Water		Water			Water			
SM 4500-SO4 E-2011			Units Result	mg/L DL	Result	RPD	RPD Limit	Spike Added	Result	%R	Control Limits%R
Sulfate	14808-79-8		1.1	1.1	1.1	0	25	20.0	19.7	93	90 - 110

Analytical Batch		Client ID	MB588272		LCS588272			
588272		GCAL ID	1580395		1580396			
		Sample Type	MB		LCS			
		Prep Date	NA		NA			
		Analysis Date	06/10/2016 16:56		06/10/2016 16:54			
		Matrix	Water		Water			
EPA 353.2 Rev. 2 Nitrate			Units Result	mg/L-N DL	Spike Added	Result	%R	Control Limits%R
Nitrate	14797-55-8		0.008U	0.008	0.500	0.491	98	89.5 - 110.5

Analytical Batch		Client ID	MW-17B		1580225MS				1580225MSD				
588272		GCAL ID	21606102901		1580399				1580400				
		Sample Type	SAMPLE		MS				MSD				
		Prep Date	NA		NA				NA				
		Analysis Date	06/10/2016 16:59		06/10/2016 17:01				06/10/2016 17:02				
		Matrix	Water		Water				Water				
EPA 353.2 Rev. 2 Nitrate			Units Result	mg/L-N DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
Nitrate	14797-55-8		0.126	0.008	0.500	0.622	99	89.5 - 110.5	0.500	0.606	96	3	25

General Chemistry QC Summary

Analytical Batch 588272		Client ID	MW-18B		1580227MS				1580227MSD				
		GCAL ID	21606102903		1580401				1580402				
		Sample Type	SAMPLE		MS				MSD				
		Prep Date	NA		NA				NA				
		Analysis Date	06/10/2016 17:04		06/10/2016 17:05				06/10/2016 17:07				
		Matrix	Water		Water				Water				
EPA 353.2 Rev. 2 Nitrate		Units	mg/L-N		Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
		Result	DL										
Nitrate	14797-55-8	0.000	0.008		0.500	0.443	**89***	89.5 - 110.5	0.500	0.432	**86***	3	25

Confirmation Summary

Report No:	216061029	Analysis Method:	EPA 8011
Instrument ID (1):	GCS17A	Column ID (1):	RTX-35ms-30M
Instrument ID (2):	GCS17B	Column ID (2):	RTI-XLB-30M

GCAL ID	*SAMPLE ID*	*CAS*	*ANALYTE*	*C1*	*RESULT1*	*C2*	*RESULT2*	*RPD*
21606102901	MW-17B	106-93-4	1,2-Dibromoethane	*	0.021		0.053	86 **P**
21606102911	MW-D2	106-93-4	1,2-Dibromoethane		0.00937J	*	0.00750U	22
21606102913	DUPLICATE-2	106-93-4	1,2-Dibromoethane	*	0.013J		0.058	127 **P**

*** - Result reported from this column.**
P - RPD greater than 40%.

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Access Analytical - Chain of Custody Re

Client ID: 4565 - Access Analytical
SDG: 216061029
PM: SAK

Sales Order # PO # Access Quote #

Company Name: Enviro-TesT Services
Report To: Michael Faris
Address: P.O. Box 2237
City: Irmo State: SC Zip: 29063
Phone: 803-413-4936 Fax:
Email: TerryTeate e Aol.com
Project ID: Broad River Amoco
Sampled By:

Preservative (*see codes)
Container Type (*see codes)
↓ REQUESTED LAB ANALYSIS ↓

7478 Carlisle Street
Irmo, SC 29063
Phone: (803) 781-4243
Fax: 781-4303
www.axs-inc.com

*Preservative Codes (place corresponding # in block above analysis field): 0 = None, 1 = HCL, 2 = HNO_3, 3 = H_2SO_4, 4 = NaOH, 5 = $Na_2S_2O_3$, 6 = Method 5035 set w/ $NaHSO_4$ & CH_3OH, 7 = NaOH/ZnOAC, 8 = H_3PO_4

*Matrix Codes (place corresponding code in matrix column): GW = ground water, WW = waste water, DW = drinking water, S = soil, SL = sludge, A = air, IW = industrial waste, WO = waste oil, OT = other (specify in comments section)

*Program Area Codes: CWA = Clean Water Act (for wastewaters), SDWA = Safe Drinking Water Act (for drinking waters), SHW = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

*Container Type: G = Glass, P = Plastic

Sample ID/Description	Date Collected	Time Collected	Type	Matrix	Program Area	TOTAL # of containers	BTEX, N, Mtbe, 1-2DCA	8 SC-Oxygenate	EDB-8011	Methane	Sulfate	Nitrate	NOTES / COMMENTS	
MW-17B	6-9-16	0640	G	GW	SHW	9	X	X	X	X	X	X	Case ReporT	1
MW-18A	〃	805	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	Verification Period-1	2
MW-18B	〃	848	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	DHEC, UST-11946	3
MW-19A	〃	1240	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃		4
MW-19B	〃	1323	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃		5
MW-20A	〃	935	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃		6
MW-20-~~A~~B *SAK [illegible]	〃	1007	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃		7
MW-21-~~B~~A	〃	1434	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃		8
MW-21-B	〃	1518	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃		9
MW-22-B	〃	1051	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃		10

Turnaround Time: ✓ Standard ___ RUSH*
*Date Required: ________
(For rush work, results emailed/faxed by end of business day on date required)

Project Location: ✓ SC ___ NC ___ Other (specify) ______

Relinquished By	Received By	Date (mm-dd-yy)	Time (24HR)	Samples Rec'd on Ice	Sample Temp. Upon Receipt (°C)	
Terry L. Teate	amart[illegible]	6-9-16	1700	__Y __N	__(°C)	__(N/A)
amart[illegible]	Fedex	6916	1715	__Y __N	__(°C)	__(N/A)
Fedex	[illegible]	6-10-16	1006	X Y __N	5.4 E26 (°C)	33 cpm (N/A)
5035 7505 4649				__Y __N	__(°C)	__(N/A)

See Reverse for Terms and Conditions *Changes made per Angela [illegible] SAK [illegible]
Original Copy - Returned w/Report
Yellow Copy - Access File Copy
Pink Copy - Client Copy

Pg 1 of 2

LAB USE ONLY

Access Analytical - Chain of Custody Re

Client ID: 4565 - Access Analytical
SDG: 216061029
PM: SAK

Sales Order # _____ PO # _____ Access Quote # _____

Company Name: Enviro-Test Services
Report To: Michael Faris
Address: P.O. Box 2237
City: Irmo State: SC Zip: 29063
Phone: 803-413-4936 Fax:
Email: Terryteate@AOL.com
Project ID: Broad River Amoco
Sampled By: Terry Teate

Preservative (*see codes):
Container Type (*see codes):

Sample ID/Description	Date Collected	Time Collected	Type: (grab or composite)	Matrix (see codes)	Program Area (see codes)	TOTAL # of containers	BTEX, MTBE, 12-DCA	8-SC, Oxygenates	EDB-8011	Methane	Sulfate	Nitrate
MW-D-2	6/9/16	722	G	GW	SW	9	X	X	X	X	X	X
MW-D-3		1134				9						
Duplicate-2		1328				9						
Duplicate-3		1520				9						
Field Blank		630				7						
Trip Blank		—				1						

7478 Carlisle Street, Irmo, SC 29063 Phone: (803) 781-4243 Fax: 781-4303
www.aas-inc.com

*Preservative Codes (place corresponding # in block above analysis field): 0 = None, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Na2S2O3, 6 = Method 5035 set w/ NaHSO4 & CH3OH, 7 = NaOH/ZnOAC, 8 = H3PO4

*Matrix Codes (place corresponding code in matrix column): GW = ground water, WW = waste water, DW = drinking water, S = soil, SL = sludge, A = air, IW = industrial waste, WO = waste oil, OT = other (specify in comments section)

*Program Area Codes: CWA = Clean Water Act (for wastewaters), SDWA = Safe Drinking Water Act (for drinking waters), SHW = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

*Container Type: G = Glass, P = Plastic

NOTES / COMMENTS

Case Report
Verification Period - 1
DHEC, UST # 11946

Turnaround Time:
✓ Standard
___ RUSH*
*Date Required: _____
(For rush work, results emailed/faxed by end of business day on date required)

Project Location:
✓ SC
___ NC
___ Other
(specify) _____

Relinquished By:	Received By:	Date (mm-dd-yy)	Time (24HR)	Samples Rec'd on Ice	Sample Temp. Upon Receipt (°C)	
Terry L. Teate	A Martin	6-9-16	1700	___Y___N	___(°C)	___(N/A)
A Martin	Fedex	6-9-16	1715	___Y___N	___(°C)	___(N/A)
Fedex 5035 7505 4019	[illegible]	6-10-16	1006	✓Y___N	5.4 E26 (°C)	33 (N/A)
				___Y___N	___(°C)	___(N/A)

Pg 2 of 2

See Reverse for Terms and Conditions

Original Copy - Returned w/Report
Yellow Copy - Access File Copy
Pink Copy - Client Copy

GCAL

SAMPLE RECEIVING CHECKLIST

SAMPLE DELIVERY GROUP 216061029	
Client PM SAK 4565 - Access Analytical	**Transport Method** FEDEX
Profile Number 79922	***Received By*** McCune, Dodie N.
Line Item(s) 2 - Water BTEX//Naph/MTBE/ EDBby8260/Pb/PAH/EDB	**Receive Date(s)** 06/10/16

CHECKLIST	YES	NO	NA
Samples received with proper thermal and chemical preservation?	☑	☐	☐
Radioactivity is <1600 cmp? If no, record cmp value in notes section.	☑	☐	☐
Custody seals present and intact?	☑	☐	☐
COC relinquished and complete (including sample IDs, collect dates/times, and sampler name)?	☑	☐	☐
Short holds or RUSH samples received?	☑	☐	☐
All containers received in good condition and within hold time?	☑	☐	☐
All sample labels and containers received match the chain of custody?	☑	☐	☐
Preservation checked at receipt? Exceptions: VOC, Coliform, TOC, Oil and Grease, DOC	☐	☐	☑
Preservative added to any containers?	☐	☑	☐
VOC water containers received with headspace < 6mm?	☑	☐	☐
Received filtered sample volume for dissolved analysis?	☐	☐	☑
Trip blank present in all coolers containing VOC waters?	☑	☐	☐
Samples collected in containers provided by GCAL?	☑	☐	☐

COOLERS

Airbill	Thermometer ID: E26	Temp(°C)
503575054049		5 4

DISCREPANCIES

None

LAB PRESERVATIONS

None

NOTES

Revision 1 5

Page 1 of 1

ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT
Envrio-Test Services

Irmo, SC 29063

ATTENTION
Michael Farris

PROJECT ID
Broad River AMOCO

LABORATORY REPORT NUMBER
216060961

DATE
06/21/2016

Primary Data Review By

Curtis Ekker/Mgr of Data Del

Authorized Signature

Secondary Data Review By

Ashley B. Amick
Project Manager, Access Analytical, Inc.
aamick@accessanalyticalinc.com

PLEASE NOTE:

- **Unless otherwise noted, all analysis on this report performed at Gulf Coast Analytical Labs (GCAL), 7979 Innovation Park Dr., Baton Rouge, LA 70820.**
- **GCAL is SCDHEC certified laboratory # 73006, NCDENR certified lab # 618, GA certified lab # LA-01955, NELAP certified laboratory # 01955**
- Local support services for this project are provided by Access Analytical, Inc.. Access Analytical is a representative of GCAL serving clients in the SC/NC/GA areas. All questions regarding this report should be directed to your local Access Analytical representative at 803.781.4243 or toll free at 888.315.4243.

GCAL
ANALYTICAL LABORATORIES, LLC

NELAP CERTIFICATE NUMBER: 01955
DOD ELAP CERTIFICATE NUMBER: L14-243

ANALYTICAL RESULTS

PERFORMED BY

GCAL, LLC
7979 Innovation Park Dr.
Baton Rouge, LA 70820

Report Date 06/21/2016

GCAL Report 216060961

Project Broad River AMOCO

Deliver To	***Additional Recipients***
Michael Farris Envrio-Test Services Irmo, SC 29063	NONE

PJLA Testing DoD ELAP

ISO 17025

Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

Common Abbreviations that may be Utilized in this Report

ND	Indicates the result was Not Detected at the specified reporting limit
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DL	Diluted analysis – when appended to Client Sample ID
LOD	Limit of Detection
LOQ	Limit of Quantitation
RE	Re-analysis
CF	HPLC or GC Confirmation
00:01	Reported as a time equivalent to 12:00 AM

Reporting Flags that may be Utilized in this Report

J or I	Indicates the result is between the MDL and LOQ
J	DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria
U	Indicates the compound was analyzed for but not detected
B or V	Indicates the analyte was detected in the associated Method Blank
Q	Indicates a non-compliant QC Result (See Q Flag Application Report)
*	Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
E	The result is estimated because it exceeded the instrument calibration range
E	Metals - % diference for the serial dilution is > 10%
P	RPD between primary and confirmation result is greater than 40

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.

Curtis Ekker/Mgr of Data Del

Authorized Signature
GCAL Report 216060961

Certifications

Certification	Certification Number
DOD ELAP	L14-243
Alabama	01955
Arkansas	12-060-0
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
USDA Soil Permit	P330-10-00117

Case Narrative

Client: Access Analytical **Report:** 216060961

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

VOLATILES MASS SPECTROMETRY

In the EPA 8260B analysis, samples 21606096101 (RW-1), 21606096102 (RW-2), 21606096104 (RW-4), 21606096115 (DUPLICATE 1), 21606096103 (RW-3) and 21606096105 (RW-5) had to be diluted to bracket the concentration of target compounds within the calibration range of the instrument. The dilution is reflected in elevated detection limits.

In the EPA 8260B analysis for analytical batch 588693, the LCS and/or LCSD recoveries are above the upper control limit for Ethanol. This compound was not detected in the associated samples.

VOLATILES GAS CHROMATOGRAPHY

In the EPA RSK-175 analysis, samples 21606096102 (RW-2), 21606096103 (RW-3), 21606096104 (RW-4), 21606096105 (RW-5) and 21606096115 (DUPLICATE 1) had to be diluted to bracket the concentration of target analyte(s) within the calibration range of the instrument. The recovery for the surrogate is reported as diluted out for sample 21606096102 (RW-2), 21606096103 (RW-3), 21606096104 (RW-4), 21606096105 (RW-5) and 21606096115 (DUPLICATE 1).

CONVENTIONALS

In the EPA 353.2 Rev. 2 Nitrate analysis, samples 21606096111 (MW-14B), 21606096112 (MW-15A) and 21606096113 (MW-15B) had to be diluted in order to bracket the Nitrate + Nitrite and/or Nitrite concentrations within the calibration range of the instrument. The Nitrate is based on the difference between the Nitrate + Nitrite and the Nitrite. The dilution is reflected in the elevated reporting limit.

In the SM 4500-SO4 E-2011 analysis, Sulfate was detected in the method blank for analytical batches 588406 and 588415. The concentration was insignificant compared to the concentration detected in the sample.

Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21606096101	RW-1	Water	06/08/2016 05:54	06/09/2016 10:10
21606096102	RW-2	Water	06/08/2016 06:40	06/09/2016 10:10
21606096103	RW-3	Water	06/08/2016 07:25	06/09/2016 10:10
21606096104	RW-4	Water	06/08/2016 07:58	06/09/2016 10:10
21606096105	RW-5	Water	06/08/2016 08:38	06/09/2016 10:10
21606096106	MW-12A	Water	06/08/2016 09:50	06/09/2016 10:10
21606096107	MW-12B	Water	06/08/2016 10:28	06/09/2016 10:10
21606096108	MW-13A	Water	06/08/2016 11:07	06/09/2016 10:10
21606096109	MW-13B	Water	06/08/2016 12:04	06/09/2016 10:10
21606096110	MW-14A	Water	06/08/2016 13:10	06/09/2016 10:10
21606096111	MW-14B	Water	06/08/2016 13:56	06/09/2016 10:10
21606096112	MW-15A	Water	06/08/2016 14:45	06/09/2016 10:10
21606096113	MW-15B	Water	06/08/2016 15:27	06/09/2016 10:10
21606096114	MW-D1	Water	06/08/2016 16:12	06/09/2016 10:10
21606096115	DUPLICATE 1	Water	06/08/2016 08:00	06/09/2016 10:10
21606096116	FIELD BLANK	Water	06/08/2016 05:42	06/09/2016 10:10
21606096117	TRIP BLANK	Water	06/08/2016 00:01	06/09/2016 10:10

Summary of Compounds Detected

RW-1

Collect Date 06/08/2016 05:54 **GCAL ID** 21606096101
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
71-43-2	Benzene	121	1.11	50.0	ug/L
108-88-3	Toluene	1420	1.22	50.0	ug/L
100-41-4	Ethylbenzene	665	1.09	50.0	ug/L
1330-20-7	Xylene (total)	4000	1.79	150	ug/L
91-20-3	Naphthalene	324	1.76	50.0	ug/L

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	21.1	0.435	2.00	ug/L

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.047	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	4.4J	1.1	5.0	mg/L

RW-2

Collect Date 06/08/2016 06:40 **GCAL ID** 21606096102
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
71-43-2	Benzene	5340	11.1	500	ug/L
100-41-4	Ethylbenzene	1270	10.9	500	ug/L
91-20-3	Naphthalene	1150	17.6	500	ug/L
108-88-3	Toluene	11800	12.2	500	ug/L
1330-20-7	Xylene (total)	9000	17.9	1500	ug/L
75-65-0	t-Butanol (TBA)	11700	1500	2000	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	16800	7.70	500	ug/L

Summary of Compounds Detected

RW-2

Collect Date 06/08/2016 06:40 **GCAL ID** 21606096102
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA 8260B (Continued)

CAS#	Parameter	Result	DL	LOQ	Units
75-85-4	tert-amyl alcohol (TAA)	13700	101	2000	ug/L

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	745	21.8	100	ug/L

EPA 8011

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.120P	0.00750	0.020	ug/L

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.070	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	2.1J	1.1	5.0	mg/L

RW-3

Collect Date 06/08/2016 07:25 **GCAL ID** 21606096103
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	138J	24.0	500	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	1910	7.70	500	ug/L
75-85-4	tert-amyl alcohol (TAA)	8330	101	2000	ug/L
71-43-2	Benzene	2920	11.1	500	ug/L
108-88-3	Toluene	5970	12.2	500	ug/L
100-41-4	Ethylbenzene	814	10.9	500	ug/L

Summary of Compounds Detected

RW-3

Collect Date 06/08/2016 07:25 **GCAL ID** 21606096103
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA 8260B (Continued)

CAS#	Parameter	Result	DL	LOQ	Units
1330-20-7	Xylene (total)	5430	17.9	1500	ug/L

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	1010	21.8	100	ug/L

EPA 8011

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.091P	0.00750	0.020	ug/L

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	2.6J	1.1	5.0	mg/L

RW-4

Collect Date 06/08/2016 07:58 **GCAL ID** 21606096104
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	354J	48.0	1000	ug/L
75-65-0	t-Butanol (TBA)	9310	3000	4000	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	30700	15.4	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	17100	203	4000	ug/L
71-43-2	Benzene	6560	22.2	1000	ug/L
108-88-3	Toluene	7610	24.4	1000	ug/L
100-41-4	Ethylbenzene	1250	21.8	1000	ug/L
1330-20-7	Xylene (total)	7350	35.8	3000	ug/L
91-20-3	Naphthalene	2110	35.2	1000	ug/L

Summary of Compounds Detected

RW-4

Collect Date 06/08/2016 07:58 **GCAL ID** 21606096104
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	2730	43.5	200	ug/L

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.6J	1.1	5.0	mg/L

RW-5

Collect Date 06/08/2016 08:38 **GCAL ID** 21606096105
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	20.5J	2.40	50.0	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	225	0.770	50.0	ug/L
75-85-4	tert-amyl alcohol (TAA)	546	10.1	200	ug/L
71-43-2	Benzene	388	1.11	50.0	ug/L
108-88-3	Toluene	1040	1.22	50.0	ug/L
100-41-4	Ethylbenzene	196	1.09	50.0	ug/L
1330-20-7	Xylene (total)	3160	1.79	150	ug/L
91-20-3	Naphthalene	227	1.76	50.0	ug/L

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	214	21.8	100	ug/L

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	5.9	1.1	5.0	mg/L

Summary of Compounds Detected

MW-12A

Collect Date 06/08/2016 09:50 **GCAL ID** 21606096106
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA 8011

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.022	0.00750	0.020	ug/L

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.027	0.008	0.010	mg/L-N

MW-12B

Collect Date 06/08/2016 10:28 **GCAL ID** 21606096107
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA 8011

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.049	0.00750	0.020	ug/L

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.094	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.5J	1.1	5.0	mg/L

MW-13A

Collect Date 06/08/2016 11:07 **GCAL ID** 21606096108
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.034	0.008	0.010	mg/L-N

Summary of Compounds Detected

MW-13A

Collect Date 06/08/2016 11:07 **GCAL ID** 21606096108
Receive Date 06/09/2016 10:10 **Matrix** Water

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	4.8J	1.1	5.0	mg/L

MW-13B

Collect Date 06/08/2016 12:04 **GCAL ID** 21606096109
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.738	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.5J	1.1	5.0	mg/L

MW-14A

Collect Date 06/08/2016 13:10 **GCAL ID** 21606096110
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA 8011

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.014JP	0.00750	0.020	ug/L

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	2.1J	1.1	5.0	mg/L

Summary of Compounds Detected

MW-14B

Collect Date 06/08/2016 13:56 **GCAL ID** 21606096111
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	4.52	0.041	0.050	mg/L-N

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.2J	1.1	5.0	mg/L

MW-15A

Collect Date 06/08/2016 14:45 **GCAL ID** 21606096112
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.687J	0.435	2.00	ug/L

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	3.54	0.082	0.100	mg/L-N

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.7J	1.1	5.0	mg/L

MW-15B

Collect Date 06/08/2016 15:27 **GCAL ID** 21606096113
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA 353.2 Rev. 2 Nitrate

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	6.93	0.082	0.100	mg/L-N

Summary of Compounds Detected

MW-15B

Collect Date 06/08/2016 15:27 **GCAL ID** 21606096113
Receive Date 06/09/2016 10:10 **Matrix** Water

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.3J	1.1	5.0	mg/L

MW-D1

Collect Date 06/08/2016 16:12 **GCAL ID** 21606096114
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
108-20-3	diisopropyl Ether (DIPE)	0.992J	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	116	0.077	5.00	ug/L

EPA 8011

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.031P	0.00750	0.020	ug/L

SM 4500-SO4 E-2011

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	2.6J	1.1	5.0	mg/L

DUPLICATE 1

Collect Date 06/08/2016 08:00 **GCAL ID** 21606096115
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA 8260B

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	72.6J	12.0	250	ug/L
75-65-0	t-Butanol (TBA)	1220	750	1000	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	5330	3.85	250	ug/L
75-85-4	tert-amyl alcohol (TAA)	2180	50.7	1000	ug/L
71-43-2	Benzene	1170	5.55	250	ug/L
108-88-3	Toluene	1490	6.09	250	ug/L
100-41-4	Ethylbenzene	283	5.45	250	ug/L
1330-20-7	Xylene (total)	1510	8.94	750	ug/L

Summary of Compounds Detected

DUPLICATE 1	**Collect Date**	06/08/2016 08:00	**GCAL ID**	21606096115
	Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA RSK-175

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	1070	21.8	100	ug/L

Sample Results

RW-1	**Collect Date**	06/08/2016 05:54	**GCAL ID**	21606096101
	Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	10	06/16/2016 14:35	LBH	588693

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	2.40U	2.40	50.0	ug/L
75-65-0	t-Butanol (TBA)	150U	150	200	ug/L
108-20-3	diisopropyl Ether (DIPE)	2.36U	2.36	50.0	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.770U	0.770	50.0	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	2.34U	2.34	50.0	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	376U	376	1000	ug/L
64-17-5	Ethanol	1250U	1250	10000	ug/L
75-85-4	tert-amyl alcohol (TAA)	10.1U	10.1	200	ug/L
762-75-4	tert-butyl formate (TBF)	4.87U	4.87	500	ug/L
71-43-2	**Benzene**	**121**	**1.11**	**50.0**	**ug/L**
108-88-3	**Toluene**	**1420**	**1.22**	**50.0**	**ug/L**
100-41-4	**Ethylbenzene**	**665**	**1.09**	**50.0**	**ug/L**
1330-20-7	**Xylene (total)**	**4000**	**1.79**	**150**	**ug/L**
91-20-3	**Naphthalene**	**324**	**1.76**	**50.0**	**ug/L**
107-06-2	1,2-Dichloroethane	1.16U	1.16	50.0	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	500	542	ug/L	108	78 - 130
1868-53-7	Dibromofluoromethane	500	512	ug/L	102	77 - 127
2037-26-5	Toluene d8	500	549	ug/L	110	76 - 134
17060-07-0	1,2-Dichloroethane-d4	500	486	ug/L	97	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 15:40	JAR	588617

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**21.1**	**0.435**	**2.00**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	34.2	ug/L	84	40 - 143

Sample Results

RW-1

Collect Date	06/08/2016 05:54	**GCAL ID**	21606096101
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 21:00	588181	EPA 8011	1	06/12/2016 14:09	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/09/2016 18:55	SMR	588200

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.047**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 11:13	DJH	588406

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**4.4J**	**1.1**	**5.0**	**mg/L**

RW-2

Collect Date	06/08/2016 06:40	**GCAL ID**	21606096102
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	100	06/16/2016 16:16	LBH	588693

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	11.6U	11.6	500	ug/L
71-43-2	**Benzene**	**5340**	**11.1**	**500**	**ug/L**
64-17-5	Ethanol	12500U	12500	100000	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	3760U	3760	10000	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	23.4U	23.4	500	ug/L
100-41-4	**Ethylbenzene**	**1270**	**10.9**	**500**	**ug/L**
91-20-3	**Naphthalene**	**1150**	**17.6**	**500**	**ug/L**
108-88-3	**Toluene**	**11800**	**12.2**	**500**	**ug/L**
1330-20-7	**Xylene (total)**	**9000**	**17.9**	**1500**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	23.6U	23.6	500	ug/L
75-65-0	**t-Butanol (TBA)**	**11700**	**1500**	**2000**	**ug/L**

Sample Results

RW-2

Collect Date	06/08/2016 06:40	**GCAL ID**	21606096102
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	100	06/16/2016 16:16	LBH	588693

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	24.0U	24.0	500	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**16800**	**7.70**	**500**	**ug/L**
75-85-4	**tert-amyl alcohol (TAA)**	**13700**	**101**	**2000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	48.7U	48.7	5000	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	5000	5190	ug/L	104	78 - 130
1868-53-7	Dibromofluoromethane	5000	5080	ug/L	102	77 - 127
2037-26-5	Toluene d8	5000	5420	ug/L	108	76 - 134
17060-07-0	1,2-Dichloroethane-d4	5000	4780	ug/L	96	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	50	06/15/2016 15:53	JAR	588617

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**745**	**21.8**	**100**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	Diluted Out	ug/L	0*	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 21:00	588181	EPA 8011	1	06/12/2016 14:27	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	**1,2-Dibromoethane**	**0.120P**	**0.00750**	**0.020**	**ug/L**

Sample Results

RW-2

Collect Date	06/08/2016 06:40	**GCAL ID**	21606096102
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/09/2016 18:56	SMR	588200

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.070**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 11:14	DJH	588406

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**2.1J**	**1.1**	**5.0**	**mg/L**

RW-3

Collect Date	06/08/2016 07:25	**GCAL ID**	21606096103
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	100	06/17/2016 12:58	CJR	588760

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	**t-amyl methyl ether (TAME)**	**138J**	**24.0**	**500**	**ug/L**
75-65-0	t-Butanol (TBA)	1500U	1500	2000	ug/L
108-20-3	diisopropyl Ether (DIPE)	23.6U	23.6	500	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**1910**	**7.70**	**500**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	23.4U	23.4	500	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	3760U	3760	10000	ug/L
64-17-5	Ethanol	12500U	12500	100000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**8330**	**101**	**2000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	48.7U	48.7	5000	ug/L
71-43-2	**Benzene**	**2920**	**11.1**	**500**	**ug/L**
108-88-3	**Toluene**	**5970**	**12.2**	**500**	**ug/L**
100-41-4	**Ethylbenzene**	**814**	**10.9**	**500**	**ug/L**
1330-20-7	**Xylene (total)**	**5430**	**17.9**	**1500**	**ug/L**
91-20-3	Naphthalene	17.6U	17.6	500	ug/L

Sample Results

RW-3	**Collect Date**	06/08/2016 07:25	**GCAL ID**	21606096103
	Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	100	06/17/2016 12:58	CJR	588760

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	11.6U	11.6	500	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	5000	5400	ug/L	108	78 - 130
1868-53-7	Dibromofluoromethane	5000	5000	ug/L	100	77 - 127
2037-26-5	Toluene d8	5000	5390	ug/L	108	76 - 134
17060-07-0	1,2-Dichloroethane-d4	5000	4710	ug/L	94	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	50	06/15/2016 16:04	JAR	588617

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**1010**	**21.8**	**100**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	Diluted Out	ug/L	**0***	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 21:00	588181	EPA 8011	1	06/12/2016 14:45	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	**1,2-Dibromoethane**	**0.091P**	**0.00750**	**0.020**	**ug/L**

Sample Results

RW-3

Collect Date	06/08/2016 07:25	**GCAL ID**	21606096103
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/09/2016 18:57	SMR	588200

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.008U	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 11:15	DJH	588406

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**2.6J**	**1.1**	**5.0**	**mg/L**

RW-4

Collect Date	06/08/2016 07:58	**GCAL ID**	21606096104
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	200	06/16/2016 17:25	LBH	588693

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	**t-amyl methyl ether (TAME)**	**354J**	**48.0**	**1000**	**ug/L**
75-65-0	**t-Butanol (TBA)**	**9310**	**3000**	**4000**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	47.2U	47.2	1000	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**30700**	**15.4**	**1000**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	46.8U	46.8	1000	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	7520U	7520	20000	ug/L
64-17-5	Ethanol	25000U	25000	200000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**17100**	**203**	**4000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	97.4U	97.4	10000	ug/L
71-43-2	**Benzene**	**6560**	**22.2**	**1000**	**ug/L**
108-88-3	**Toluene**	**7610**	**24.4**	**1000**	**ug/L**
100-41-4	**Ethylbenzene**	**1250**	**21.8**	**1000**	**ug/L**
1330-20-7	**Xylene (total)**	**7350**	**35.8**	**3000**	**ug/L**
91-20-3	**Naphthalene**	**2110**	**35.2**	**1000**	**ug/L**

Sample Results

RW-4

Collect Date	06/08/2016 07:58	**GCAL ID**	21606096104
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	200	06/16/2016 17:25	LBH	588693

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	23.2U	23.2	1000	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	10000	10500	ug/L	105	78 - 130
1868-53-7	Dibromofluoromethane	10000	10100	ug/L	101	77 - 127
2037-26-5	Toluene d8	10000	10900	ug/L	109	76 - 134
17060-07-0	1,2-Dichloroethane-d4	10000	9720	ug/L	97	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	100	06/15/2016 16:37	JAR	588617

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**2730**	**43.5**	**200**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	Diluted Out	ug/L	0*	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 21:00	588181	EPA 8011	1	06/12/2016 15:03	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

RW-4

Collect Date	06/08/2016 07:58	**GCAL ID**	21606096104
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/09/2016 18:58	SMR	588200

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.008U	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 11:16	DJH	588406

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**1.6J**	**1.1**	**5.0**	**mg/L**

RW-5

Collect Date	06/08/2016 08:38	**GCAL ID**	21606096105
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	10	06/17/2016 13:23	CJR	588760

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	**t-amyl methyl ether (TAME)**	**20.5J**	**2.40**	**50.0**	**ug/L**
75-65-0	t-Butanol (TBA)	150U	150	200	ug/L
108-20-3	diisopropyl Ether (DIPE)	2.36U	2.36	50.0	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**225**	**0.770**	**50.0**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	2.34U	2.34	50.0	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	376U	376	1000	ug/L
64-17-5	Ethanol	1250U	1250	10000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**546**	**10.1**	**200**	**ug/L**
762-75-4	tert-butyl formate (TBF)	4.87U	4.87	500	ug/L
71-43-2	**Benzene**	**388**	**1.11**	**50.0**	**ug/L**
108-88-3	**Toluene**	**1040**	**1.22**	**50.0**	**ug/L**
100-41-4	**Ethylbenzene**	**196**	**1.09**	**50.0**	**ug/L**
1330-20-7	**Xylene (total)**	**3160**	**1.79**	**150**	**ug/L**
91-20-3	**Naphthalene**	**227**	**1.76**	**50.0**	**ug/L**

Sample Results

RW-5	**Collect Date**	06/08/2016 08:38	**GCAL ID**	21606096105
	Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	10	06/17/2016 13:23	CJR	588760

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	1.16U	1.16	50.0	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	500	533	ug/L	107	78 - 130
1868-53-7	Dibromofluoromethane	500	498	ug/L	100	77 - 127
2037-26-5	Toluene d8	500	545	ug/L	109	76 - 134
17060-07-0	1,2-Dichloroethane-d4	500	469	ug/L	94	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	50	06/15/2016 16:42	JAR	588617

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**214**	**21.8**	**100**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	Diluted Out	ug/L	**0***	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 21:00	588181	EPA 8011	1	06/12/2016 15:22	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

RW-5

Collect Date	06/08/2016 08:38	**GCAL ID**	21606096105
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/09/2016 19:00	SMR	588200

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.008U	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 13:13	DJH	588415

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**5.9**	**1.1**	**5.0**	**mg/L**

MW-12A

Collect Date	06/08/2016 09:50	**GCAL ID**	21606096106
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 16:43	LBH	588627

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-12A	**Collect Date**	06/08/2016 09:50	**GCAL ID**	21606096106
	Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 16:43	LBH	588627

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	46.1	ug/L	92	78 - 130
1868-53-7	Dibromofluoromethane	50	53.3	ug/L	107	77 - 127
2037-26-5	Toluene d8	50	50	ug/L	100	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	51	ug/L	102	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 16:51	JAR	588617

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.435U	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	28.4	ug/L	70	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 21:00	588181	EPA 8011	1	06/12/2016 15:57	MEG	588414

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	**1,2-Dibromoethane**	**0.022**	**0.00750**	**0.020**	**ug/L**

Sample Results

MW-12A

Collect Date	06/08/2016 09:50	**GCAL ID**	21606096106
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/09/2016 19:01	SMR	588200

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.027**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 13:14	DJH	588415

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.1U	1.1	5.0	mg/L

MW-12B

Collect Date	06/08/2016 10:28	**GCAL ID**	21606096107
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 17:05	LBH	588627

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-12B	**Collect Date**	06/08/2016 10:28	**GCAL ID**	21606096107
	Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 17:05	LBH	588627

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	46.1	ug/L	92	78 - 130
1868-53-7	Dibromofluoromethane	50	54.2	ug/L	108	77 - 127
2037-26-5	Toluene d8	50	50.3	ug/L	101	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50.8	ug/L	102	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 17:01	JAR	588617

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.435U	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	31.2	ug/L	77	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 21:00	588181	EPA 8011	1	06/12/2016 15:57	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	**1,2-Dibromoethane**	**0.049**	**0.00750**	**0.020**	**ug/L**

Sample Results

MW-12B

Collect Date	06/08/2016 10:28	**GCAL ID**	21606096107
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/09/2016 19:02	SMR	588200

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.094**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 13:15	DJH	588415

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**1.5J**	**1.1**	**5.0**	**mg/L**

MW-13A

Collect Date	06/08/2016 11:07	**GCAL ID**	21606096108
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 17:27	JCK	588627

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-13A	**Collect Date**	06/08/2016 11:07	**GCAL ID**	21606096108
	Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 17:27	JCK	588627

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	45.9	ug/L	92	78 - 130
1868-53-7	Dibromofluoromethane	50	53.5	ug/L	107	77 - 127
2037-26-5	Toluene d8	50	50.2	ug/L	100	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	51.1	ug/L	102	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 17:19	JAR	588617

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.435U	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	32	ug/L	79	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 21:00	588181	EPA 8011	1	06/12/2016 16:15	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-13A

Collect Date	06/08/2016 11:07	**GCAL ID**	21606096108
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/09/2016 19:08	SMR	588200

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.034**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 13:16	DJH	588415

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**4.8J**	**1.1**	**5.0**	**mg/L**

MW-13B

Collect Date	06/08/2016 12:04	**GCAL ID**	21606096109
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 17:49	JCK	588627

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-13B	**Collect Date**	06/08/2016 12:04	**GCAL ID**	21606096109
	Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 17:49	JCK	588627

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	44.4	ug/L	89	78 - 130
1868-53-7	Dibromofluoromethane	50	53.7	ug/L	107	77 - 127
2037-26-5	Toluene d8	50	50.1	ug/L	100	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	51.2	ug/L	102	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 17:37	JAR	588617

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.435U	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	34.6	ug/L	85	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 21:00	588181	EPA 8011	1	06/12/2016 16:50	MEG	588414

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-13B

Collect Date	06/08/2016 12:04	**GCAL ID**	21606096109
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/09/2016 19:09	SMR	588200

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**0.738**	**0.008**	**0.010**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 13:19	DJH	588415

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**1.5J**	**1.1**	**5.0**	**mg/L**

MW-14A

Collect Date	06/08/2016 13:10	**GCAL ID**	21606096110
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 18:11	JCK	588627

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-14A	**Collect Date**	06/08/2016 13:10	**GCAL ID**	21606096110
	Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 18:11	JCK	588627

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	45.2	ug/L	90	78 - 130
1868-53-7	Dibromofluoromethane	50	54.8	ug/L	110	77 - 127
2037-26-5	Toluene d8	50	51	ug/L	102	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50.3	ug/L	101	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 17:42	JAR	588617

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.435U	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	32.9	ug/L	81	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 21:00	588181	EPA 8011	1	06/12/2016 17:25	MEG	588414

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	**1,2-Dibromoethane**	**0.014JP**	**0.00750**	**0.020**	**ug/L**

Sample Results

MW-14A

Collect Date	06/08/2016 13:10	**GCAL ID**	21606096110
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/09/2016 19:11	SMR	588200

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.008U	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 13:19	DJH	588415

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**2.1J**	**1.1**	**5.0**	**mg/L**

MW-14B

Collect Date	06/08/2016 13:56	**GCAL ID**	21606096111
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 18:34	JCK	588627

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-14B	**Collect Date**	06/08/2016 13:56	**GCAL ID**	21606096111
	Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 18:34	JCK	588627

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	46	ug/L	92	78 - 130
1868-53-7	Dibromofluoromethane	50	53.1	ug/L	106	77 - 127
2037-26-5	Toluene d8	50	51.5	ug/L	103	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50.7	ug/L	101	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 17:48	JAR	588617

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.435U	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	30.6	ug/L	76	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 21:00	588181	EPA 8011	1	06/12/2016 17:43	MEG	588414

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-14B

Collect Date	06/08/2016 13:56	**GCAL ID**	21606096111
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	5	06/09/2016 19:24	SMR	588200

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**4.52**	**0.041**	**0.050**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 13:25	DJH	588415

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**1.2J**	**1.1**	**5.0**	**mg/L**

MW-15A

Collect Date	06/08/2016 14:45	**GCAL ID**	21606096112
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 18:56	JCK	588627

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-15A	**Collect Date**	06/08/2016 14:45	**GCAL ID**	21606096112
	Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 18:56	JCK	588627

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	47	ug/L	94	78 - 130
1868-53-7	Dibromofluoromethane	50	52.5	ug/L	105	77 - 127
2037-26-5	Toluene d8	50	51.1	ug/L	102	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50.5	ug/L	101	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 17:53	JAR	588617

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**0.687J**	**0.435**	**2.00**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	27.8	ug/L	69	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 21:00	588181	EPA 8011	1	06/12/2016 18:00	MEG	588414

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-15A

Collect Date 06/08/2016 14:45 **GCAL ID** 21606096112
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	10	06/09/2016 19:37	SMR	588200

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**3.54**	**0.082**	**0.100**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 13:26	DJH	588415

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**1.7J**	**1.1**	**5.0**	**mg/L**

MW-15B

Collect Date 06/08/2016 15:27 **GCAL ID** 21606096113
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 19:18	JCK	588627

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-15B

Collect Date 06/08/2016 15:27 **GCAL ID** 21606096113
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 19:18	JCK	588627

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	45.6	ug/L	91	78 - 130
1868-53-7	Dibromofluoromethane	50	53.4	ug/L	107	77 - 127
2037-26-5	Toluene d8	50	50.6	ug/L	101	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	51.1	ug/L	102	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 17:59	JAR	588617

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.435U	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	29.5	ug/L	73	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 21:00	588181	EPA 8011	1	06/12/2016 18:00	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

MW-15B

Collect Date	06/08/2016 15:27	**GCAL ID**	21606096113
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	10	06/09/2016 19:38	SMR	588200

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	**Nitrate**	**6.93**	**0.082**	**0.100**	**mg/L-N**

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 13:27	DJH	588415

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**1.3J**	**1.1**	**5.0**	**mg/L**

MW-D1

Collect Date	06/08/2016 16:12	**GCAL ID**	21606096114
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 19:40	JCK	588627

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	**diisopropyl Ether (DIPE)**	**0.992J**	**0.236**	**5.00**	**ug/L**
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**116**	**0.077**	**5.00**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

MW-D1

Collect Date	06/08/2016 16:12	**GCAL ID**	21606096114
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 19:40	JCK	588627

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	45.6	ug/L	91	78 - 130
1868-53-7	Dibromofluoromethane	50	54.5	ug/L	109	77 - 127
2037-26-5	Toluene d8	50	50.7	ug/L	101	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	51.6	ug/L	103	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 18:10	JAR	588617

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	Methane	0.435U	0.435	2.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	34.9	ug/L	86	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 21:00	588181	EPA 8011	1	06/12/2016 18:18	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	**1,2-Dibromoethane**	**0.031P**	**0.00750**	**0.020**	**ug/L**

Sample Results

MW-D1

Collect Date	06/08/2016 16:12	**GCAL ID**	21606096114
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/09/2016 19:16	SMR	588200

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.008U	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 13:28	DJH	588415

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	**Sulfate**	**2.6J**	**1.1**	**5.0**	**mg/L**

DUPLICATE 1

Collect Date	06/08/2016 08:00	**GCAL ID**	21606096115
Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	50	06/16/2016 22:18	CJR	588693

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	**t-amyl methyl ether (TAME)**	**72.6J**	**12.0**	**250**	**ug/L**
75-65-0	**t-Butanol (TBA)**	**1220**	**750**	**1000**	**ug/L**
108-20-3	diisopropyl Ether (DIPE)	11.8U	11.8	250	ug/L
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**5330**	**3.85**	**250**	**ug/L**
637-92-3	Ethyl tert-butyl ether (ETBE)	11.7U	11.7	250	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	1880U	1880	5000	ug/L
64-17-5	Ethanol	6250U	6250	50000	ug/L
75-85-4	**tert-amyl alcohol (TAA)**	**2180**	**50.7**	**1000**	**ug/L**
762-75-4	tert-butyl formate (TBF)	24.3U	24.3	2500	ug/L
71-43-2	**Benzene**	**1170**	**5.55**	**250**	**ug/L**
108-88-3	**Toluene**	**1490**	**6.09**	**250**	**ug/L**
100-41-4	**Ethylbenzene**	**283**	**5.45**	**250**	**ug/L**
1330-20-7	**Xylene (total)**	**1510**	**8.94**	**750**	**ug/L**
91-20-3	Naphthalene	8.80U	8.80	250	ug/L

Sample Results

DUPLICATE 1

Collect Date: 06/08/2016 08:00
Receive Date: 06/09/2016 10:10
GCAL ID: 21606096115
Matrix: Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	50	06/16/2016 22:18	CJR	588693

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	5.81U	5.81	250	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	2500	2700	ug/L	108	78 - 130
1868-53-7	Dibromofluoromethane	2500	2580	ug/L	103	77 - 127
2037-26-5	Toluene d8	2500	2730	ug/L	109	76 - 134
17060-07-0	1,2-Dichloroethane-d4	2500	2480	ug/L	99	71 - 127

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	50	06/15/2016 18:28	JAR	588617

CAS#	Parameter	Result	DL	LOQ	Units
74-82-8	**Methane**	**1070**	**21.8**	**100**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	Diluted Out	ug/L	0*	40 - 143

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 21:00	588181	EPA 8011	1	06/12/2016 18:35	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

Sample Results

DUPLICATE 1

Collect Date 06/08/2016 08:00 **GCAL ID** 21606096115
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA 353.2 Rev. 2 Nitrate

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/09/2016 19:17	SMR	588200

CAS#	Parameter	Result	DL	LOQ	Units
14797-55-8	Nitrate	0.008U	0.008	0.010	mg/L-N

SM 4500-SO4 E-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/13/2016 13:29	DJH	588415

CAS#	Parameter	Result	DL	LOQ	Units
14808-79-8	Sulfate	1.1U	1.1	5.0	mg/L

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Collect Date 06/08/2016 05:42 **GCAL ID** 21606096116
Receive Date 06/09/2016 10:10 **Matrix** Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 16:21	LBH	588627

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L

Sample Results

FIELD BLANK

Collect Date 06/08/2016 05:42
Receive Date 06/09/2016 10:10
GCAL ID 21606096116
Matrix Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/15/2016 16:21	LBH	588627

CAS#	Parameter	Result	DL	LOQ	Units
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	47.3	ug/L	95	78 - 130
1868-53-7	Dibromofluoromethane	50	53.5	ug/L	107	77 - 127
2037-26-5	Toluene d8	50	51.2	ug/L	102	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	51.1	ug/L	102	71 - 127

EPA 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
06/09/2016 21:00	588181	EPA 8011	1	06/12/2016 18:53	MEG	588373

CAS#	Parameter	Result	DL	LOQ	Units
106-93-4	1,2-Dibromoethane	0.00750U	0.00750	0.020	ug/L

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Collect Date 06/08/2016 00:01
Receive Date 06/09/2016 10:10
GCAL ID 21606096117
Matrix Water

EPA 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 15:17	LBH	588483

CAS#	Parameter	Result	DL	LOQ	Units
994-05-8	t-amyl methyl ether (TAME)	0.240U	0.240	5.00	ug/L
75-65-0	t-Butanol (TBA)	15.0U	15.0	20.0	ug/L
108-20-3	diisopropyl Ether (DIPE)	0.236U	0.236	5.00	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	0.077U	0.077	5.00	ug/L
637-92-3	Ethyl tert-butyl ether (ETBE)	0.234U	0.234	5.00	ug/L
624-95-3	Ethyl tert-butanol (ETBA)	37.6U	37.6	100	ug/L
64-17-5	Ethanol	125U	125	1000	ug/L
75-85-4	tert-amyl alcohol (TAA)	1.01U	1.01	20.0	ug/L

Sample Results

TRIP BLANK	**Collect Date**	06/08/2016 00:01	**GCAL ID**	21606096117
	Receive Date	06/09/2016 10:10	**Matrix**	Water

EPA 8260B (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	06/14/2016 15:17	LBH	588483

CAS#	Parameter	Result	DL	LOQ	Units
762-75-4	tert-butyl formate (TBF)	0.487U	0.487	50.0	ug/L
71-43-2	Benzene	0.111U	0.111	5.00	ug/L
108-88-3	Toluene	0.122U	0.122	5.00	ug/L
100-41-4	Ethylbenzene	0.109U	0.109	5.00	ug/L
1330-20-7	Xylene (total)	0.179U	0.179	15.0	ug/L
91-20-3	Naphthalene	0.176U	0.176	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.116U	0.116	5.00	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	50.2	ug/L	100	78 - 130
1868-53-7	Dibromofluoromethane	50	53.5	ug/L	107	77 - 127
2037-26-5	Toluene d8	50	52.2	ug/L	104	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50.1	ug/L	100	71 - 127

GC/MS Volatiles QC Summary

Analytical Batch 588483	Client ID	MB588483		LCS588483				LCSD588483				
	GCAL ID	1581314		1581315				1581316				
	Sample Type	MB		LCS				LCSD				
	Prep Date	NA		NA				NA				
	Analysis Date	06/14/2016 10:08		06/14/2016 08:29				06/14/2016 08:54				
	Matrix	Water		Water				Water				
EPA 8260B		Units Result	ug/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
t-amyl methyl ether (TAME)	994-05-8	0.240U	0.240	50.0	41.4	83	70 - 130	50.0	43.4	87	5	50
t-Butanol (TBA)	75-65-0	15.0U	15.0	50.0	41.9	84	60 - 140	50.0	47.9	96	13	50
diisopropyl Ether (DIPE)	108-20-3	0.236U	0.236	50.0	49.1	98	70 - 130	50.0	50.3	101	2	50
tert-Butyl methyl ether (MTBE)	1634-04-4	0.077U	0.077	50.0	48.4	97	71 - 125	50.0	51.2	102	6	50
Ethyl tert-butyl ether (ETBE)	637-92-3	0.234U	0.234	50.0	48.8	98	70 - 130	50.0	50.0	100	2	50
Ethyl tert-butanol (ETBA)	624-95-3	37.6U	37.6	2550	2150	84	70 - 130	2550	2330	91	8	50
Ethanol	64-17-5	125U	125	25200	20900	83	70 - 130	25200	21300	85	2	50
tert-amyl alcohol (TAA)	75-85-4	1.01U	1.01	200	173	87	70 - 130	200	190	95	9	50
tert-butyl formate (TBF)	762-75-4	0.487U	0.487	50.0	46.0	92	70 - 130	50.0	45.0	90	2	50
Benzene	71-43-2	0.111U	0.111	50.0	50.2	100	70 - 129	50.0	50.3	101	0	50
Toluene	108-88-3	0.122U	0.122	50.0	50.4	101	72 - 120	50.0	50.2	100	0	50
Ethylbenzene	100-41-4	0.109U	0.109	50.0	52.1	104	74 - 126	50.0	51.4	103	1	50
Xylene (total)	1330-20-7	0.179U	0.179	150	151	101	74 - 127	150	148	99	2	50
Naphthalene	91-20-3	0.176U	0.176	50.0	41.1	82	57 - 138	50.0	45.5	91	10	50
1,2-Dichloroethane	107-06-2	0.116U	0.116	50.0	46.9	94	71 - 129	50.0	47.6	95	1	50
Surrogate												
4-Bromofluorobenzene	460-00-4	49.7	99	50	51.2	102	78 - 130	50	50.2	100	NA	NA
Dibromofluoromethane	1868-53-7	53.6	107	50	48.4	97	77 - 127	50	48.8	98	NA	NA
Toluene d8	2037-26-5	53.7	107	50	48.3	97	76 - 134	50	50.5	101	NA	NA
1,2-Dichloroethane-d4	17060-07-0	48.6	97	50	49.5	99	71 - 127	50	49.2	98	NA	NA

Analytical Batch 588627	Client ID	MB588627		LCS588627				LCSD588627				
	GCAL ID	1582156		1582157				1582158				
	Sample Type	MB		LCS				LCSD				
	Prep Date	NA		NA				NA				
	Analysis Date	06/15/2016 15:01		06/15/2016 12:49				06/15/2016 13:41				
	Matrix	Water		Water				Water				
EPA 8260B		Units Result	ug/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
t-amyl methyl ether (TAME)	994-05-8	0.240U	0.240	50.0	44.4	89	70 - 130	50.0	45.7	91	3	50
t-Butanol (TBA)	75-65-0	15.0U	15.0	50.0	50.0	100	60 - 140	50.0	48.6	97	3	50
diisopropyl Ether (DIPE)	108-20-3	0.236U	0.236	50.0	53.5	107	70 - 130	50.0	54.5	109	2	50
tert-Butyl methyl ether (MTBE)	1634-04-4	0.077U	0.077	50.0	54.0	108	71 - 125	50.0	54.8	110	1	50
Ethyl tert-butyl ether (ETBE)	637-92-3	0.234U	0.234	50.0	52.6	105	70 - 130	50.0	53.7	107	2	50
Ethyl tert-butanol (ETBA)	624-95-3	37.6U	37.6	2550	2460	96	70 - 130	2550	2480	97	1	50
Ethanol	64-17-5	125U	125	25200	28500	113	70 - 130	25200	32600	129	13	50
tert-amyl alcohol (TAA)	75-85-4	1.01U	1.01	200	229	115	70 - 130	200	237	119	3	50
tert-butyl formate (TBF)	762-75-4	0.487U	0.487	50.0	47.2	94	70 - 130	50.0	49.8	100	5	50
Benzene	71-43-2	0.111U	0.111	50.0	50.0	100	70 - 129	50.0	52.0	104	4	50
Toluene	108-88-3	0.122U	0.122	50.0	45.6	91	72 - 120	50.0	47.7	95	5	50
Ethylbenzene	100-41-4	0.109U	0.109	50.0	48.3	97	74 - 126	50.0	50.9	102	5	50
Xylene (total)	1330-20-7	0.179U	0.179	150	137	91	74 - 127	150	147	98	7	50
Naphthalene	91-20-3	0.176U	0.176	50.0	47.0	94	57 - 138	50.0	46.4	93	1	50
1,2-Dichloroethane	107-06-2	0.116U	0.116	50.0	47.9	96	71 - 129	50.0	49.5	99	3	50
Surrogate												
4-Bromofluorobenzene	460-00-4	46.1	92	50	46.5	93	78 - 130	50	47.4	95	NA	NA
Dibromofluoromethane	1868-53-7	53.3	107	50	48.3	97	77 - 127	50	49.6	99	NA	NA
Toluene d8	2037-26-5	50.5	101	50	47.2	94	76 - 134	50	47.9	96	NA	NA
1,2-Dichloroethane-d4	17060-07-0	50.3	101	50	51.1	102	71 - 127	50	52.2	104	NA	NA

GC/MS Volatiles QC Summary

Analytical Batch 588693	Client ID	MB588693		LCS588693				LCSD588693				
	GCAL ID	1582503		1582504				1582507				
	Sample Type	MB		LCS				LCSD				
	Prep Date	NA		NA				NA				
	Analysis Date	06/16/2016 14:13		06/16/2016 12:45				06/16/2016 13:07				
	Matrix	Water		Water				Water				
EPA 8260B		Units Result	ug/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
t-amyl methyl ether (TAME)	994-05-8	0.240U	0.240	50.0	41.4	83	70 - 130	50.0	42.1	84	2	50
t-Butanol (TBA)	75-65-0	15.0U	15.0	50.0	47.3	95	60 - 140	50.0	55.5	111	16	50
diisopropyl Ether (DIPE)	108-20-3	0.236U	0.236	50.0	48.6	97	70 - 130	50.0	50.0	100	3	50
tert-Butyl methyl ether (MTBE)	1634-04-4	0.077U	0.077	50.0	50.0	100	71 - 125	50.0	52.6	105	5	50
Ethyl tert-butyl ether (ETBE)	637-92-3	0.234U	0.234	50.0	47.7	95	70 - 130	50.0	49.6	99	4	50
Ethyl tert-butanol (ETBA)	624-95-3	37.6U	37.6	2550	2810	110	70 - 130	2550	3240	127	14	50
Ethanol	64-17-5	125U	125	25200	29500	117	70 - 130	25200	35300	**140***	18	50
tert-amyl alcohol (TAA)	75-85-4	1.01U	1.01	200	221	111	70 - 130	200	259	130	16	50
tert-butyl formate (TBF)	762-75-4	0.487U	0.487	50.0	47.0	94	70 - 130	50.0	46.8	94	0	50
Benzene	71-43-2	0.111U	0.111	50.0	49.9	100	70 - 129	50.0	50.1	100	0	50
Toluene	108-88-3	0.122U	0.122	50.0	50.8	102	72 - 120	50.0	49.9	100	2	50
Ethylbenzene	100-41-4	0.109U	0.109	50.0	53.3	107	74 - 126	50.0	52.2	104	2	50
Xylene (total)	1330-20-7	0.179U	0.179	150	152	101	74 - 127	150	150	100	1	50
Naphthalene	91-20-3	0.176U	0.176	50.0	47.0	94	57 - 138	50.0	51.3	103	9	50
1,2-Dichloroethane	107-06-2	0.116U	0.116	50.0	49.0	98	71 - 129	50.0	49.8	100	2	50
Surrogate												
4-Bromofluorobenzene	460-00-4	49.9	100	50	51.5	103	78 - 130	50	51.3	103	NA	NA
Dibromofluoromethane	1868-53-7	53.4	107	50	49.1	98	77 - 127	50	48.9	98	NA	NA
Toluene d8	2037-26-5	53.4	107	50	49.3	99	76 - 134	50	49.3	99	NA	NA
1,2-Dichloroethane-d4	17060-07-0	49.6	99	50	49.5	99	71 - 127	50	50.7	101	NA	NA

Analytical Batch 588760	Client ID	MB588760		LCS588760				LCSD588760				
	GCAL ID	1582836		1582837				1582838				
	Sample Type	MB		LCS				LCSD				
	Prep Date	NA		NA				NA				
	Analysis Date	06/17/2016 12:36		06/17/2016 11:07				06/17/2016 11:28				
	Matrix	Water		Water				Water				
EPA 8260B		Units Result	ug/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
t-amyl methyl ether (TAME)	994-05-8	0.240U	0.240	50.0	41.9	84	70 - 130	50.0	42.9	86	2	50
t-Butanol (TBA)	75-65-0	15.0U	15.0	50.0	46.4	93	60 - 140	50.0	47.4	95	2	50
diisopropyl Ether (DIPE)	108-20-3	0.236U	0.236	50.0	50.5	101	70 - 130	50.0	51.2	102	1	50
tert-Butyl methyl ether (MTBE)	1634-04-4	0.077U	0.077	50.0	49.6	99	71 - 125	50.0	51.0	102	3	50
Ethyl tert-butyl ether (ETBE)	637-92-3	0.234U	0.234	50.0	49.8	100	70 - 130	50.0	50.5	101	1	50
Ethyl tert-butanol (ETBA)	624-95-3	37.6U	37.6	2550	2090	82	70 - 130	2550	2240	88	7	50
Ethanol	64-17-5	125U	125	25200	20900	83	70 - 130	25200	22800	90	9	50
tert-amyl alcohol (TAA)	75-85-4	1.01U	1.01	200	172	86	70 - 130	200	193	97	12	50
tert-butyl formate (TBF)	762-75-4	0.487U	0.487	50.0	43.4	87	70 - 130	50.0	43.6	87	1	50
Benzene	71-43-2	0.111U	0.111	50.0	48.9	98	70 - 129	50.0	49.2	98	1	50
Toluene	108-88-3	0.122U	0.122	50.0	49.4	99	72 - 120	50.0	48.3	97	2	50
Ethylbenzene	100-41-4	0.109U	0.109	50.0	52.0	104	74 - 126	50.0	51.2	102	2	50
Xylene (total)	1330-20-7	0.179U	0.179	150	148	99	74 - 127	150	146	97	1	50
Naphthalene	91-20-3	0.176U	0.176	50.0	45.7	91	57 - 138	50.0	47.2	94	3	50
1,2-Dichloroethane	107-06-2	0.116U	0.116	50.0	46.5	93	71 - 129	50.0	46.8	94	1	50
Surrogate												
4-Bromofluorobenzene	460-00-4	49	98	50	50.9	102	78 - 130	50	51.3	103	NA	NA
Dibromofluoromethane	1868-53-7	53.4	107	50	49.5	99	77 - 127	50	48.7	97	NA	NA
Toluene d8	2037-26-5	53.3	107	50	50.1	100	76 - 134	50	50.1	100	NA	NA
1,2-Dichloroethane-d4	17060-07-0	49.4	99	50	49.8	100	71 - 127	50	50.5	101	NA	NA

GC Volatiles QC Summary

Analytical Batch 588617	Client ID	MB588617		LCS588617				LCSD588617				
	GCAL ID	1582076		1582077				1582078				
	Sample Type	MB		LCS				LCSD				
	Prep Date	NA		NA				NA				
	Analysis Date	06/15/2016 14:10		06/15/2016 14:19				06/15/2016 14:28				
	Matrix	Water		Water				Water				
EPA RSK-175		Units Result	ug/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
Methane	74-82-8	0.435U	0.435	17.5	16.2	93	39 - 120	17.5	16.1	92	1	27
Surrogate												
Propene	115-07-1	31.8	79	40.5	27.6	68	40 - 143	40.5	27.3	67	NA	NA

GC Semi-Volatiles QC Summary

Analytical Batch	Client ID	MB588181		LCS588181				LCSD588181				
588373	GCAL ID	1579952		1579953				1579954				
Prep Batch	Sample Type	MB		LCS				LCSD				
588181	Prep Date	06/09/2016 21:00		06/09/2016 21:00				06/09/2016 21:00				
Prep Method	Analysis Date	06/12/2016 10:17		06/12/2016 10:35				06/12/2016 10:52				
EPA 8011	Matrix	Water		Water				Water				
EPA 8011		Units Result	ug/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
1,2-Dibromoethane	106-93-4	0.00750U	0.00750	0.268	0.190	71	60 - 140	0.273	0.170	62	11	40

General Chemistry QC Summary

Analytical Batch 588406	Client ID	MB588406		LCS588406			
	GCAL ID	1580960		1580961			
	Sample Type	MB		LCS			
	Prep Date	NA		NA			
	Analysis Date	06/13/2016 10:52		06/13/2016 10:51			
	Matrix	Water		Water			
SM 4500-SO4 E-2011		Units Result	mg/L DL	Spike Added	Result	%R	Control Limits%R
Sulfate	14808-79-8	1.1J	1.1	20.0	21.7	108	90 - 110

Analytical Batch 588406	Client ID	MW-1		1579203DUP			1579203MS			
	GCAL ID	21606081101		1580962			1580963			
	Sample Type	SAMPLE		DUP			MS			
	Prep Date	NA		NA			NA			
	Analysis Date	06/13/2016 10:53		06/13/2016 10:54			06/13/2016 10:54			
	Matrix	Water		Water			Water			
SM 4500-SO4 E-2011		Units Result	mg/L DL	Result	RPD	RPD Limit	Spike Added	Result	%R	Control Limits%R
Sulfate	14808-79-8	1.1	1.1	0.99	11	25	20.0	20.0	95	90 - 110

Analytical Batch 588415	Client ID	MB588415		LCS588415			
	GCAL ID	1581046		1581047			
	Sample Type	MB		LCS			
	Prep Date	NA		NA			
	Analysis Date	06/13/2016 13:12		06/13/2016 13:12			
	Matrix	Water		Water			
SM 4500-SO4 E-2011		Units Result	mg/L DL	Spike Added	Result	%R	Control Limits%R
Sulfate	14808-79-8	2.4J	1.1	20.0	18.3	91	90 - 110

Analytical Batch 588415	Client ID	MW-13A		1579914DUP			1579914MS			
	GCAL ID	21606096108		1581048			1581049			
	Sample Type	SAMPLE		DUP			MS			
	Prep Date	NA		NA			NA			
	Analysis Date	06/13/2016 13:16		06/13/2016 13:17			06/13/2016 13:18			
	Matrix	Water		Water			Water			
SM 4500-SO4 E-2011		Units Result	mg/L DL	Result	RPD	RPD Limit	Spike Added	Result	%R	Control Limits%R
Sulfate	14808-79-8	4.8	1.1	5.0	4	25	20.0	25.0	101	90 - 110

Analytical Batch 588200	Client ID	MB588200		LCS588200			
	GCAL ID	1579994		1579995			
	Sample Type	MB		LCS			
	Prep Date	NA		NA			
	Analysis Date	06/09/2016 18:52		06/09/2016 18:51			
	Matrix	Water		Water			
EPA 353.2 Rev. 2 Nitrate		Units Result	mg/L-N DL	Spike Added	Result	%R	Control Limits%R
Nitrate	14797-55-8	0.008U	0.008	0.500	0.463	92	89.5 - 110.5

Analytical Batch 588200	Client ID	Organic Free Water		1579385MS				1579385MSD				
	GCAL ID	21606083401		1579998				1579999				
	Sample Type	SAMPLE		MS				MSD				
	Prep Date	NA		NA				NA				
	Analysis Date	06/09/2016 19:18		06/09/2016 19:36				06/09/2016 19:23				
	Matrix	Water		Water				Water				
EPA 353.2 Rev. 2 Nitrate		Units Result	mg/L-N DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
Nitrate	14797-55-8	0.024	0.008	0.500	0.505	96	89.5 - 110.5	0.500	0.499	95	1	25

General Chemistry QC Summary

Analytical Batch 588200	Client ID	MW-12B	1579913MS	1579913MSD
	GCAL ID	21606096107	1579996	1579997
	Sample Type	SAMPLE	MS	MSD
	Prep Date	NA	NA	NA
	Analysis Date	06/09/2016 19:02	06/09/2016 19:03	06/09/2016 19:04
	Matrix	Water	Water	Water

EPA 353.2 Rev. 2 Nitrate		Units	mg/L-N	Spike			Control	Spike				
		Result	DL	Added	Result	%R	Limits%R	Added	Result	%R	RPD	RPD Limit
Nitrate	14797-55-8	0.094	0.008	0.500	0.560	93	89.5 - 110.5	0.500	0.552	92	1	25

Confirmation Summary

Report No:	216060961	Analysis Method:	EPA 8011
Instrument ID (1):	GCS17A	Column ID (1):	RTX-35ms-30M
Instrument ID (2):	GCS17B	Column ID (2):	RTI-XLB-30M

GCAL ID	*SAMPLE ID*	*CAS*	*ANALYTE*	*C1*	*RESULT1*	*C2*	*RESULT2*	*RPD*
21606096102	RW-2	106-93-4	1,2-Dibromoethane	*	0.120		1.00	157 **P**
21606096103	RW-3	106-93-4	1,2-Dibromoethane	*	0.091		0.204	77 **P**
21606096106	MW-12A	106-93-4	1,2-Dibromoethane		0.017J	*	0.022	26
21606096107	MW-12B	106-93-4	1,2-Dibromoethane	*	0.049		0.040	20
21606096109	MW-13B	106-93-4	1,2-Dibromoethane		0.021	*	0.00750U	95
21606096110	MW-14A	106-93-4	1,2-Dibromoethane		0.025	*	0.014J	56 **P**
21606096111	MW-14B	106-93-4	1,2-Dibromoethane		0.019J	*	0.00750U	87
21606096112	MW-15A	106-93-4	1,2-Dibromoethane		0.022	*	0.00750U	98
21606096114	MW-D1	106-93-4	1,2-Dibromoethane	*	0.031		0.129	123 **P**

*** - Result reported from this column.**
P - RPD greater than 40%.

LAB USE ONLY

Sales Order # _____ PO # _____ Access Quote # _____

Client ID: 4565 - Access Analytical
SDG: 216060961
PM: SAK

Company Name: Enviro-Test Services
Report To: Michael Faris
Address: P.O. Box 22317
City: Irmo State: SC Zip: 29063
Phone: 803-413-4936 Fax:
Email: Terryteate@Aol.com
Project ID: Broad River AMOCO
Sampled By: Terry Teate

Preservative: (*see codes)
Container Type: (*see codes)

↓ REQUESTED LAB ANALYSIS: ↓

Sample ID/Description	Date Collected	Time Collected	Type: (grab or composite)	Matrix: (see codes)	Program Area (see codes)	TOTAL # of containers	BTEX, N, MTBE, 1,2DA	8-SC, Oxygenates	EDB - 8011	Methane	Sulfate	Nitrate
RW-1	6/8/16	554	G	GW	SW	9	X	X	X	X	X	X
RW-2		640				9						
RW-3		725				9						
RW-4		758				9						
RW-5		838				9						
MW-12A		950				8						
MW 12B		1028				9						
MW 13A		1107				9						
MW 13B		1204				9						
MW 14A		1310				9	↓	↓	↓	↓	↓	↓

7478 Carlisle Street, Irmo, SC 29063 Phone: (803) 781-4243 Fax: 781-4303
79922.2 www.axs-inc.com

*Preservative Codes (place corresponding # in block above analysis field): 0 = None, 1 = HCl, 2 = HNO_3, 3 = H_2SO_4, 4 = NaOH, 5 = $Na_2S_2O_3$, 6 = Method 5035 set w/ $NaHSO_4$ & CH3OH, 7 = NaOH/ZnOAC, 8 = H_3PO_4

*Matrix Codes (place corresponding code in matrix column): GW = ground water, WW = waste water, DW = drinking water, S = soil, SL = sludge, A = air, IW = industrial waste, WO = waste oil, OT = other (specify in comments section)

*Program Area Codes: CWA = Clean Water Act (for wastewater), SDWA = Safe Drinking Water Act (for drinking waters), SHW = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

*Container Type: G = Glass, P = Plastic

NOTES / COMMENTS
(If sample is a composite please use, specify below to start/finish times & dates)

Case Report - 1
Verification Period # 1 - 2
DHEC UST # 11946 - 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

Turnaround Time:
✓ Standard
___ RUSH*
*Date Required: _____
(For rush work, results emailed/faxed by end of business day on date required)

Project Location:
✓ SC
___ NC
___ Other
(specify) _____

Relinquished By:	Received By:	Date (mm-dd-yy)	Time (24HR)	Samples Rec'd on Ice	Sample Temp. Upon Receipt (°C):	
Terry Teate	Amart	6-8-16	1645	___Y ___N	___(°C)	___(N/A)
[illegible]	[illegible]	6-8-16	1720	___Y ___N	___(°C)	___(N/A)
Fedex	[illegible]	6-9-16	1010	X Y ___N	1.7 EX (°C)	69 cpm (N/A)
5035 7505 3991				___Y ___N	___(°C)	___(N/A)

Pg ___ of ___ 0.5, 1.6, 1.7°C E26 38, 53, 69 cpm

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Yellow Copy - Access File Copy
Pink Copy - Client Copy

LAB USE ONLY

Sales Order #: _____ PO #: _____ Access Quote #: _____

Client ID: 4565 - Access Analytical
SDG: 216060961
PM: SAK

Company Name: Enviro-Test Services
Report To: Michael Faris
Address: P.O. Box 2237
City: Irmo State: SC Zip: 29063
Phone: 803-413-4936 Fax:
Email: Terry Tea Teeadi.com
Project ID: Broad River Amoco
Sampled By: Terry Teate

Preservative: (*see codes)
Container Type: (*see codes)

REQUESTED LAB ANALYSIS: *

Sample ID/Description	Date Collected:	Time Collected:	Type: (grab or composite)	Matrix (see codes)	Program Area (see codes)	TOTAL # of containers	BTEX, N, MTBE, 1,2DCA	8-SC, OXYgenates	EDB - 8011	Methane	Sulfate	Nitrate
MW-14B	6-8-16	1356	G	GW	SDWA	9	~	~	~	~	~	~
MW-15A	~	1445	~	~	~	~	~	~	~	~	~	~
MW-15B	~	1527	~	~	~	~	~	~	~	~	~	~
MW-D1	~	1612	~	~	~	~	~	~	~	~	~	~
Duplicate 1	~	800	~	~	~	~	~	~	~	~	~	~
Field Blank	~	542	~	~	~	~	~	~	~	~	~	~
Trip Blank						1	~	~	~			

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www.axs-inc.com

*Preservative Codes (place corresponding # in Block above analysis field): 0 = None, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Na2S2O3, 6 = Method 5035 vial w/ NaHSO4 & CH3OH, 7 = NaOH/ZnOAC, 8 = H3PO4

*Matrix Codes (place corresponding code in matrix column): GW = ground water, WW = waste water, DW = drinking water, S = soil, SL = sludge, A = air, IW = industrial waste, WO = waste oil, OT = other (specify in comments section)

*Program Area Codes: CWA = Clean Water Act (for wastewaters), SDWA = Safe Drinking Water Act (for drinking waters), SHW = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

*Container Type: G = Glass, P = Plastic

NOTES / COMMENTS
(If sample is a composite please use space below to note start/finish times & dates)

Case Report
Verification Period # 1
DHEC UST # 11946

Turnaround Time:
✓ Standard
___ RUSH*
*Date Required: _____
(For rush work, results emailed/faxed by end of business day on date required)

Project Location:
✓ SC
___ NC
___ Other
(specify) _____

Relinquished By:	Received By:	Date (mm-dd-yy):	Time (24HR):	Samples Rec'd on Ice	Sample Temp. Upon Receipt (°C):	
Terry L Teate	A Martin	6-8-16	1645	___Y ___N	___(°C)	___(N/A)
A Martin	Fedex	6-8-16	1700	___Y ___N	___(°C)	___(N/A)
Fedex	[illegible]	6-9-16	1010	X Y ___N	___(°C)	___(N/A)
5035 7505 3991				___Y ___N	___(°C)	___(N/A)

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Pg ___ of ___ 0.8, 1.6, 1.7°C 06 38, 53, 69 qm

Checklist

GCAL ANALYTICAL LABORATORIES, LLC

SAMPLE RECEIVING CHECKLIST

~2160609615~

SAMPLE DELIVERY GROUP 216060961	
Client PM SAK 4565 - Access Analytical	Transport Method FEDEX
Profile Number 79922	Received By Lofton, Katie E.
Line Item(s) 2 - Water BTEX//Naph/MTBE/ EDBby8260/Pb/PAH/EDB	Receive Date(s) 06/09/16

CHECKLIST	YES	NO	NA
Samples received with proper thermal and chemical preservation?	☑	☐	☐
Radioactivity is <1600 cmp? If no, record cmp value in notes section.	☑	☐	☐
Custody seals present and intact?	☑	☐	☐
COC relinquished and complete (including sample IDs, collect dates/times, and sampler name)?	☑	☐	☐
Short holds or RUSH samples received?	☑	☐	☐
All containers received in good condition and within hold time?	☑	☐	☐
All sample labels and containers received match the chain of custody?	☑	☐	☐
Preservation checked at receipt? Exceptions: VOC, Coliform, TOC, Oil and Grease, DOC	☐	☐	☑
Preservative added to any containers?	☐	☑	☐
VOC water containers received with headspace < 6mm?	☑	☐	☐
Received filtered sample volume for dissolved analysis?	☐	☐	☑
Trip blank present in all coolers containing VOC waters?	☑	☐	☐
Samples collected in containers provided by GCAL?	☐	☑	☐

COOLERS	
Airbill Thermometer ID: E26	Temp(°C)
5035 7505 3991	0.8
	1.6
	1.7

DISCREPANCIES	LAB PRESERVATIONS
None	None

NOTES	

Revision 1.5

Page 1 of 1

APPENDIX C
NOT INCLUDED

APPENDIX D
NOT INCLUDED

APPENDIX E
NOT INCLUDED

APPENDIX F
NOT INCLUDED

APPENDIX G
DISPOSAL MANIFEST(S)

C 218825

Crandall

Please print or type
(Form designed for use on elite (12 - pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . . | Manifest Document No. 29326 | 2. Page 1 of 1

GENERATOR

3. Generator's Name and Mailing Address
Enviro-Test Services
1621 Lake Murray Blvd
Columbia, SC 29212

4. Generator's Phone (803) 413-4936

5. Transporter 1 Company Name
Enviro-Test Services

6. US EPA ID Number . . . . . .

A. Transporter's Phone (803) 732-5770

7. Transporter 2 Company Name

8. US EPA ID Number . . . . . .

B. Transporter's Phone

9. Designated Facility Name and Site Address
Crandall Corporation
100 Rich Lex Dr
Lexington, SC 29072

10. US EPA ID Number
SCD981864499

C. Facility's Phone (803) 791-4800

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt./Vol.
a. Non Hazardous Waste, Petroleum Contact Water 21.25"	01	TT	150	G
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Purge Water from Sample event at Broad River AMOCO DHEC Site 11946

Infotrac 800-535-5053 Registrant Crandall Corp
Srv Call ID: GLB0229326

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name: X Terry L. Teate | Signature: X Terry L. Teate | Month 06 | Day 17 | Year 16

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: X Terry L. Teate | Signature: X Terry L. Teate | Month 06 | Day 17 | Year 16

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Month . | Day . | Year .

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in item 19.

Printed/Typed Name: Phil Stokes | Signature | Month 06 | Day 17 | Year 16

GENERATOR COPY

12-BLC-M5

APPENDIX H
NOT INCLUDED

APPENDIX I
NOT INCLUDED

APPENDIX J
NOT INCLUDED

APPENDIX K
SCDHEC CONTRACTOR CHECKLIST

Contractor Checklist

For each report submitted to the UST Management Division, the contractor will be required to verify that all data elements for the required scope of work have been provided. For items not required for the scope of work, the N/A box should be checked. For items required and not completed or provided, the No box should be checked and a thorough description of the reason must be provided.

Item #	Item	Yes	No	N/A
1	Is Facility Name, Permit #, and address provided?	☒	☐	☐
2	Is UST Owner/Operator name, address, & phone number provided?	☒	☐	☐
3	Is name, address, & phone number of current property owner provided?	☒	☐	☐
4	Is the DHEC Certified UST Site Rehabilitation Contractor's Name, Address, telephone number, and certification number provided?	☒	☐	☐
5	Is the name, address, telephone number, and certification number of the well driller that installed borings/monitoring wells provided?	☐	☐	☒
6	Is the name, address, telephone number, and certification number of the certified laboratory(ies) performing analytical analyses provided?	☒	☐	☐
7	Has the facility history been summarized?	☒	☐	☐
8	Has the regional geology and hydrogeology been described?	☒	☐	☐
9	Are the receptor survey results provided as required?	☐	☐	☒
10	Has current use of the site and adjacent land been described?	☒	☐	☐
11	Has the site-specific geology and hydrogeology been described?	☒	☐	☐
12	Has the primary soil type been described?	☒	☐	☐
13	Have field screening results been described?	☐	☐	☒
14	Has a description of the soil sample collection and preservation been detailed?	☐	☐	☒
15	Has the field screening methodology and procedure been detailed?	☐	☐	☒
16	Has the monitoring well installation and development dates been provided?	☐	☐	☒
17	Has the method of well development been detailed?	☐	☐	☒
18	Has justification been provided for the locations of the monitoring wells?	☐	☐	☒
19	Have the monitoring wells been labeled in accordance with the UST QAPP guidelines?	☐	☐	☒
20	Has the groundwater sampling methodology been detailed?	☒	☐	☐
21	Have the groundwater sampling dates and groundwater measurements been provided?	☒	☐	☐
22	Has the purging methodology been detailed?	☒	☐	☐
23	Has the volume of water purged from each well been provided along with measurements to verify that purging is complete?	☒	☐	☐
24	If free-product is present, has the thickness been provided?	☒	☐	☐
25	Does the report include a brief discussion of the assessment done and the results?	☒	☐	☐
26	Does the report include a brief discussion of the aquifer evaluation and results?	☐	☐	☒
27	Does the report include a brief discussion of the fate & transport models used?	☐	☐	☒

Item #	Item	Yes	No	N/A
28	Are the site-conceptual model tables included? (Tier 1 Risk Evaluation)	☐	☐	☒
29	Have the exposure pathways been analyzed? (Tier 2 Risk Evaluation)	☐	☐	☒
30	Have the SSTLs for each compound and pathway been calculated? (Tier 2 Risk Evaluation)	☐	☐	☒
31	Have recommendations for further action been provided and explained?	☒	☐	☐
32	Has the soil analytical data for the site been provided in tabular format? (Table 1)	☐	☐	☒
33	Has the potentiometric data for the site been provided in tabular format? (Table 2)	☒	☐	☐
34	Has the current and historical laboratory data been provided in tabular format?	☒	☐	☐
35	Have the aquifer characteristics been provided and summarized on the appropriate form?	☐	☐	☒
36	Have the Site conceptual model tables been included? (Tier 1 Risk Evaluation)	☐	☐	☒
37	Has the topographic map been provided with all required elements? (Figure 1)	☒	☐	☐
38	Has the site base map been provided with all required elements? (Figure 2)	☒	☐	☐
39	Have the CoC site maps been provided? (Figure 3 & Figure 4)	☒	☐	☐
40	Has the site potentiometric map been provided? (Figure 5)	☒	☐	☐
41	Have the geologic cross-sections been provided? (Figure 6)	☐	☐	☒
42	Have maps showing the predicted migration of the CoCs through time been provided? (Tier 2 Risk Evaluation)	☐	☐	☒
43	Has the site survey been provided and include all necessary elements? (Appendix A)	☐	☐	☒
44	Have the sampling logs, chain of custody forms, and the analytical data package been included with all required elements? (Appendix B)	☒	☐	☐
45	Is the laboratory performing the analyses properly certified?	☒	☐	☐
46	Has the tax map been included with all necessary elements? (Appendix C)	☐	☐	☒
47	Have the soil boring/field screening logs been provided? (Appendix D)	☐	☐	☒
48	Have the well completion logs and SCDHEC Form 1903 been provided? (Appendix E)	☐	☐	☒
49	Have the aquifer evaluation forms, data, graphs, equations, etc. been provided? (Appendix F)	☐	☐	☒
50	Have the disposal manifests been provided? (Appendix G)	☒	☐	☐
51	Has a copy of the local zoning regulations been provided? (Appendix H)	☐	☐	☒
52	Has all fate and transport modeling been provided? (Appendix I)	☐	☐	☒
53	Have copies of all access agreements obtained by the contractor been provided? (Appendix J)	☐	☐	☒
54	Has a copy of this form been attached to the final report and are explanations for any missing or incomplete data been provided?	☒	☐	☐

Explanation for missing and incomplete information?

Broad River Amoco- UST#11946

Kuhn, Kimberly M.

Mon 8/8/2016 11:44 AM

Sent Items

To: terryteate@aol.com <terryteate@aol.com>;

Good Afternoon Terry,

The next sampling and gauging event should be conducted on or after August 20, 2016, and the CASE report is due on or before September 20, 2016. I missed spoke and since it is a FPP only bid I just need to be there when you are gauging the site for verification purposes. Have a great day!

Sincerely,

Kimberly Kuhn
Hydrogeologist
Corrective Action, UST Management Division
S.C. Dept. of Health & Environmental Control
Office: (803) 898-0634
Fax: (803) 898-0673
Connect: www.scdhec.gov Facebook Twitter

dhec
Healthy People Healthy Communities

MR FREDERICK N CECCHINI
4335 BROAD RIVER RD
COLUMBIA SC 29210-4009

AUG 12 2016

Re: **CASE Report Review**
Broad River Amoco, 4335 Broad River Rd., Columbia, SC
UST Permit #11946; CA# 46916
Release Reported January 4, 2011
Corrective Action System Evaluation (CASE) Report received June 24, 2016
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced report and noted the findings.

The next quarterly CASE report, documenting corrective action activities during the second quarter of verification period is **due on or before September 20, 2016**.

On all correspondence regarding this site, please reference UST Permit #11946. If you have questions concerning this correspondence, feel free to contact me by telephone at (803) 898-0634, by fax at (803) 898-0673 or by email kuhnkm@dhec.sc.gov.

Sincerely,

Kimberly M. Kuhn, Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Enviro-Test Services, Inc., P.O. Box 2237, Irmo, SC 29063 (w/enc)
Technical File (w/enc)

2nd verification period w/ Terry Teate

D H E C

Underground Storage Tank Management Division
Field Data Information Sheet – Monitoring Well Gauging

UST Leb Tech SEP 14 2016 PROGRAM

Site Information

Date: 9/14/2016	Site ID #: 11946	Site Name: Broad River Amoco
County: Richland	Project Manager: KIM Kuhn	Field Personnel: Ryan Arial / KIM Kuhn

Well Gauging Information

Well ID:	Total Well Depth (ft.)	Screened Interval (ft.)	Depth to Free Product (ft.)	Depth to Ground water (ft.)	Free Product Thickness (ft.)	Confirmed with Bailer?	Photos Taken ?	Well Pad OK?	Bolts in Well Cover?	Water in Well Vault?
MW-1				19.70	N/A					
MW-2				17.31	N/A					
MW-4				10.70	N/A					
MW-5				14.81	N/A					
RW-1				17.00	N/A					
RW-2				17.04	N/A					
RW-3				17.48	N/A					
RW-4				16.00	N/A					
RW-5				16.61	N/A					

Notes: During this gauging event NO FP was detected

Signature: [signature]

-UST Field Data Information Sheet – Monitoring Well Gauging

-Purpose of the form is to record information gathered during a monitoring well gauging event
-DHEC UST Project Managers and Field Staff
-Item-by-item instructions for completing the form:
    Fill in all Site Information boxes
    Record Well Gauging Information for all necessary wells
    Record any applicable notes
    Sign the form
-Form is scanned and saved electronically; Record Group Number 169, Retention Schedule 10304

dhec
Healthy People Healthy Communities

SEP 2 1 2016

UST 67 pel DOCKETING

MR FREDERICK CECCHINI
429 PRESS LINDLER ROAD
COLUMBIA SC 29212-8322

Re: Verification report review
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit #11946; CA #46916
Release reported January 4, 2011
First quarter verification report received June 24, 2016
Richland County

Dear Mr. Teate:

The Underground Storage Tank (UST) Management Division has reviewed the referenced report for the second quarter verification period. Based upon the report, no measurable free-phase product (FPP) is present in any well or gauging point within the area of concern established by the referenced contract. Further, personnel from the Division mobilized to the site on September 14, 2016 to conduct gauging. The gauging results confirm the results of the report. Accordingly, Enviro-Test Services, Inc. has achieved and maintained 100% FPP reduction for two consecutive quarters at the Broad River Amoco site.

Enviro-Test Services, Inc. may proceed with site restoration as outlined in Item 3.5 B 13 of the referenced contract. All monitoring wells and recovery wells will be retained for monitored natural attenuation (MNA). Enviro-Test Services, Inc. must provide written notification to the Division at least two weeks prior to completion of the site restoration so a final site inspection can be scheduled.

On all correspondence regarding this site, please reference UST Permit #11946. If you have any questions regarding this correspondence, feel free to contact me by telephone (803) 898-0634, by fax at (803) 898-0673, or by e-mail at kuhnkm@dhec.sc.gov.

Sincerely,

Kimberly M. Kuhn, Hydrogeologist
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

cc: Mr. Terry Teate, Enviro-Test Services, Inc., P.O. Box 2237, Irmo, SC 29063
Technical file

ENVIRO-TEST SERVICES

RECEIVED
OCT 24 2016
SC Department of
Health and Environmental
Control

October 21, 2016

Kimberly Kuhn, Hydrogeologist
Underground Storage Tank Section
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

UST DIVISION
UST 68 DOCKETING
UST OCT 24 2016 DIVISION

Re: Corrective Action System Evaluation Report – 3rd Quarter 2016
Broad River Amoco
4335 Broad River Rd., Columbia
Richland County, South Carolina
UST Permit #11946; CA #46916

Dear Ms. Kuhn;

Enviro-Test Services, Inc. (ETS) has completed the Corrective Action System Evaluation (CASE) and comprehensive groundwater sampling event in order to document the completion of corrective action activities at the Broad River Amoco site located in Columbia, South Carolina. The pertinent information regarding this assessment, including conclusions, is presented on the following pages and in the attached Figures, Tables, and Appendices.

Based on the analytical data collected during this evaluation, it is apparent that the free-phase petroleum product previously observed on the property is no longer present in any of the monitoring wells or recovery wells designated as Site Specific Target Level (SSTL) wells. Therefore, according to the requirements of this corrective action contract, ETS has achieved 100% reduction in the total free product thickness in the SSTL wells.

If you should have any questions regarding the results of this assessment, or should you need additional information, please do not hesitate to contact our office.

Sincerely,
Enviro-Test Services, Inc.
Contractor Certification #1

MICHAEL L. FARIS REGISTERED No. 2379 SOUTH CAROLINA PROFESSIONAL GEOLOGIST

Michael L. Faris, P.G. (#2
Hydrogeologist

Terry L. Teate
President, Sr. Project Manager

cc: Fredrick Cecchini

Background

The subject site is located in northwest Richland County in Columbia, South Carolina and is situated on the southwest side of Broad River Road, a five-lane local thoroughfare. The site is comprised of approximately 0.85 acres and is currently owned and operated as a petroleum retail facility, convenience store and restaurant (Broad River BP).

A 1939 aerial photograph from the Richland County Geographic Information System (GIS) shows that the subject property was utilized for agriculture and was partially wooded. Broad River Road appears as a two-lane road. Information available through the Richland County Assessor's Office indicates the property was owned by B.O. Derrick in 1955 and a 1959 aerial photograph indicates that the property had apparently been developed as a petroleum retail facility. Subsequently, the property was acquired by Associated Oils of South Carolina, Inc. in February 1988, and the previous UST system (B.O. Derrick) was properly closed, as reported to the SCDHEC in 1989. Reportedly, the closure included proper abandonment by removal of one 2,000-gallon UST and one 3,000-gallon UST. Additionally, the property redevelopment activities of 1988 and 1989 reportedly included the demolition of pre-existing structures and construction of the existing store building, dispenser islands and UST system. Subsequently, the property was acquired by Mr. Frederick N. Cecchini in June 1997, and Mr. Cecchini remains the current owner.

UST #	Product	Date Installed	Currently in use (Yes or No)	If not in use, Date Removed
1	Gasoline (2,000 gallon)	(?)	No	1989
2	Gasoline (3,000 gallon)	(?)	No	1989
3	Diesel (3,000 gallon)	1989	Yes	-
4	Gasoline Unleaded (3,000 gallon)	1989	Yes	-
5	Gasoline Plus (3,000 gallon)	1989	Yes	-
6	Gasoline Plus (8,000 gallon)	1989	Yes	-
7	Gasoline Super (8,000 gallon)	1989	Yes	-
8	Kerosene (1,000 gallon)	1989	Yes	-

Reportedly, no soil samples were collected for analysis at the time of proper abandonment of the previous UST system as reported to SCDHEC in 1989. In December 2010, a Phase II Subsurface Investigation was performed by Partner Engineering and Science, Inc. of El Segundo, California. The Phase II investigation included the installation of four soil borings and a Temporary Monitoring Well Permit (Approval No. 4053) was obtained from the SCDHEC for the purpose of groundwater sample collection. Reportedly, the soil borings extended to terminal depths of 26 feet below land surface (BLS) utilizing direct push penetration technology with continuous soil sample collection.

Drilling refusal was encountered in all four soil borings before groundwater was encountered; therefore, no groundwater samples were collected for laboratory analysis. Eight soil samples (two from each soil boring) were submitted for laboratory analysis for Volatile Organic Compounds (VOC) and Polynuclear Aromatic Hydrocarbons (PAH). The laboratory analytical results indicated the detection of various VOC and PAH chemical compounds at concentrations deemed reportable to the SCDHEC.

An Initial Groundwater Assessment (IGWA) was completed by Enviro-Test Services, Inc. during January, 2011 and an IGWA report was submitted on February 4, 2011. On January 20, 2011, the soil boring for monitoring well MW-1 was installed. The soil sample from the 10 to 15 feet sampling interval yielded the highest PID reading of 1,782 ppm and accordingly was submitted for laboratory analysis for BTEX, MTBE, naphthalene, PAH and lead. Moderately elevated concentrations of toluene, ethylbenzene, xylenes and naphthalene were detected in the soil sample. Saturated sediments were encountered at the depth interval of 35 to 40 feet below grade level (BGL). As such, monitoring well MW-1 was installed to a depth of 40 feet BGL and was screened from 40 to 20 feet BGL. On January 21, 2011, a groundwater sample was collected from monitoring well MW-1 and laboratory analysis for BTEX, naphthalene, MTBE, PAH and lead was performed. The depth to groundwater in monitoring well MW-1 was measured from the top-of-casing to be 20.92 feet. The groundwater sample yielded COC concentrations as follows: benzene (929 ug/l), toluene (10,300 ug/l), ethylbenzene (684 ug/l), MTBE (243 ug/l) and naphthalene (922 ug/l). Following review of the IGWA report, the SCDHEC requested a Tier I Assessment in correspondence dated February 7, 2011.

Field activities for the Tier I Assessment were commenced on February 24 and 25, 2011 with the completion of soil borings SB-1 through SB-9. Laboratory analysis of soil samples for BTEX, MTBE and PAH yielded elevated concentrations of benzene and naphthalene above RBSL in soil borings SB-1 (10 ft), SB-2 (5 ft), SB-3 (8 ft) and 5 (6 ft) which were installed proximal to the existing UST basin (SB-1 and SB-2) and product pipeline/dispenser islands (SB-3 and SB-5). Monitoring wells MW-2, MW-3 and MW-4 were completed on February 25, 2011 and were subsequently sampled on March 5, 2011. Laboratory analysis of the groundwater samples yielded concentrations of benzene as follows: MW-1 (1,760 ug/l), MW-2 (1,650 ug/l), MW-3 (9.93 ug/l) and MW-4 (1,830 ug/l). Additionally, concentrations of MTBE were also detected in wells MW-2 (3,420 ug/l) and MW-4 (3,100 ug/l). Naphthalene by EPA method 8260 was detected in wells MW-1 (4,070J ug/l), MW-2 (462J ug/l) and MW-4 (598 ug/l). Also, elevated concentrations of toluene were detected in wells MW-1 (16,400 ug/l) and MW-2 (3,230 ug/l) and ethylbenzene in wells MW-1 (1,270 ug/l) and MW-4 (1,270 ug/l). A Tier I Assessment Report was submitted to SCDHEC on April 8, 2011.

Subsequent to review of the Tier I Assessment Report, the Technical Project Manager and Section Manager, as applicable, expressed concern regarding the depth of the screened interval of each monitoring well in relation to the measured groundwater levels due to the fact that none of the monitoring wells were bracketing the water table of the site surficial aquifer.

Enviro-Test Services, Inc. stated that during soil boring and monitoring well installations no saturated sediments were encountered until the 35 to 40-ft depth interval of drilling at each well location; therefore, the monitoring wells were installed at depths somewhat deeper than preferable. Also, during drilling activities for installation of monitoring well MW-4, where elevated COC's were later detected in the March 5, 2011 groundwater sample, no petroleum hydrocarbon odors or elevated PID readings were noted to be present in apparent vadose soils; however, upon encountering saturated soils at approximately 35 feet, strong odors and elevated PID readings were readily apparent. Consequently, the Technical Project Manager decided that an additional monitoring well (MW-5) should be installed at a shallower, bracketing depth to determine the availability of groundwater for sample collection in what appeared to be unsaturated, vadose soils. Accordingly, on May 27, 2011 monitoring well MW-5 was installed to a depth of 20 feet, with a 10-ft screen at a location adjacent to the north corner of the existing convenience store building. The infiltration of groundwater was noted to be exceedingly slow; as such, groundwater was allowed to seep into the well casing for several days. On June 3, 2011, the depth to groundwater was measured at 13.80 feet and free product (gasoline) of a degraded appearance was measured at 13.68 feet (a free product thickness of 0.12 feet). Again, on June 20, 2011, depth to the groundwater was measured at 14.05 feet and free product at 13.75 feet (a free product thickness of 0.30 feet). These findings were submitted to the DHEC Project Manager on June 20, 2011.

Based on the results of the Tier I Assessment, a Tier II was requested. The Tier II was completed in 2013, with a report dated May 28, 2013, and the horizontal and vertical extent of the contaminant plume was delineated. This site is currently in the corrective action section of the UST Program in order to remove the free-phase product associated with the release contaminant plume.

The subject property is bounded by Broad River Road to the northeast, then by the South Carolina Law Enforcement Division (SLED). The adjacent property to the southeast is a nail and beauty salon. The adjacent property to the southwest is commercially utilized as a nursery school and day care (Play Pal Day Care). The Play Pal Day Care facility encompasses two properties fronting Dothan Road. The subject property is bounded to the northwest by Dothan Road and a commercially utilized property beyond (MDC Associates, an apparent mechanical engineering firm). The commercial usage of the subject property and adjacent properties is expected to remain the same in the future.

Site Geography

In general, the site is located on the west side of a topographically ridge extending southeast to northwest. Broad River Road lies at or near the crest of the apparent topographic ridge. Storm water runoff on the east side of the ridge ultimately flows into the Broad River located approximately 2 miles east of the site. On the west side of the ridge, storm water runoff flows toward Stoop Creek located approximately 1,650 feet to the southwest (near the southwest dead end of Dothan Road). From this point, Stoop Creek flows southward approximately 2.6 miles before emptying into the Saluda River.

In the general vicinity, numerous surface water features are evident on the USGS topographic map including several unnamed creeks (apparently spring fed) and several small to medium-sized surface water impoundments. In relative close proximity to the site, three surface water features are apparent on the west side of the topographic ridge and three on the east side of the topographic ridge. These surface water features are visibly apparent of Figure 1, a topographic site location map. On the west side of the topographic ridge, located approximately 1,430 feet to the northwest is a small pond with an estimated surface elevation of 265 feet MSL, approximately 1,680 feet to the southwest is the aforementioned Stoop Creek (estimated surface elevation of 233 feet MSL) and approximately 2,370 feet to the south-southeast is an apparent spring-fed creek (estimated surface elevation of 252 feet MSL at depicted point of emergence). On the east side of the topographic ridge, located approximately 1,240 feet to the northeast is an apparent spring-fed creek (estimated surface elevation of 248 feet MSL at the depicted point of emergence), approximately 1,820 feet to the east-northeast is an apparent spring-fed creek (estimated surface elevation of 230 feet MSL at the depicted point of emergence) and approximately 2,480 feet to the southeast is an apparent incised, spring-fed creek (estimated surface elevation of 235 feet MSL at the depicted point of emergence). Estimated surface elevations were obtained via the Richland County GIS utilizing a topographic option depicting contour intervals of two feet. For purposes of estimation, the depicted contours are deemed to be reasonably reliable.

According to the USGS Topographic Quadrangle Map of *Columbia North, South Carolina*, dated 1972 and revised in 1990, the elevation of the site is approximately 275 feet above mean sea level (MSL). The topography surrounding the site is relatively flat toward the north and east, but slopes downward toward the west/southwest. The topography in the general vicinity of the site slopes downward toward the west/southwest. A Topographic Site Location Map is included as Figure 1. A Site Base Map is included as Figure 2.

Regional Geology and Hydrogeology

The Broad River Amoco (BP) lies within the Lower Piedmont Physiographic Provence in close proximity and northwest of the contact zone, the "fall line", with the Upper Coastal Plain Physiographic Provence. The dominant rock types of the general area are related to the Carolina Slate Belt and specifically the Precambrian to Early Cambrian, Persimmon Fork Formation which is comprised primarily of green-gray to blue-gray, moderately metamorphosed, felsic volcanic (metavolcanic) tuffs and to a lesser extent mafic metavolcanic tuffs. These rocks occur as very weathered to moderately weathered outcrops in the site study area and are most often visible at areas of excavation related to road and building construction.

In the general vicinity, the uppermost aquifer generally occurs under unconfined conditions and receives water from precipitation, which infiltrates the unsaturated surface soils and migrates downward to the saturated zone. Underlying the uppermost aquifer is the fractured bedrock aquifer in which groundwater occurs in fractures, joints and faults. The fractured bedrock aquifer is often an important water resource for rural residences and commercial and light industrial properties at areas where municipal water supply is unavailable or unfeasible. Well yields are typically 1 to 350 gpm in the crystalline and metamorphic rocks with the larger yields located in areas of intensely fractured metamorphic rocks.

Site Geology and Hydrogeology

Based on the data collected during the Tier I and Tier II Assessments, it is apparent that groundwater can be found in several stratified layers or zones at the site. The most shallow water encountered at the site was generally found between 15' - 20' below ground level. This shallow water was very slow to accumulate in the boreholes. Typically it took at least several days to over a week for the water levels to come to equilibrium. It is likely that this most shallow water is present in small volume in the sandy clayey silt due to localized recharge, perching, and soil capillarity. The soils become more clayey (a silty clay) and mostly dry beginning at approximately 25' bgl. The second layer or zone of water encountered in the subsurface was typically found at an approximate depth of 35'-40'. The water in this second water-bearing zone was under significant hydraulic pressure and immediately entered the boreholes and rose upward many feet in the boreholes/wells.

The two layers of water are clearly connected as contamination has been identified at both depths during this Tier II investigation. There appears to be an aquitard comprised of mostly dry silty clay (with a small % of sand) between the two above-described zones of water across the area of study. Because the contaminants have been identified at both depths in and near the source area, there clearly is transmissivity between the two layers. Therefore, the silty clay is not considered a true aquiclude, but is acting at least as a partially confining unit.

Summary of Findings

Gauging

On September 18, 19, and 20, 2016, ETS personnel conducted a comprehensive groundwater sampling event at the site. Each monitoring and recovery well associated with the release was located and gauged for static fluid levels. Prior to the initiation of any gauging, purging or sampling activities, clean plastic sheeting was placed on the ground surface around each well in order to provide a clean work area. Each well was opened and gauged with a decontaminated electronic water level indicator to the nearest 0.01-foot. Fluid levels and total depths of the monitoring wells were recorded on field data sheets in indelible ink. MW-13A and MW-15A were found to be dry during this assessment.

Groundwater flow direction(s) of the water table / perched aquifer and second water bearing zone were determined to be generally toward the northwest, north, east, and south in a radial pattern from the source area outward. The current potentiometric data are summarized in Table 2. A Generalized Potentiometric Surface Map, displaying groundwater elevations at each sampled well and groundwater flow directions for the water table aquifer is included as Figure 5A. Potentiometric maps of the second water bearing zone and deep zone are included as Figures 5B and 5C, respectively.

Purging

The wells were purged with a low flow peristaltic pump with disposable tubing. Prior to purging, the well volumes were calculated using the diameter of the well, the static water level and the total depth of the well. The flow rate of the peristaltic pump remained low in order to minimize agitation of the water column.

Temperature, pH, specific conductivity, dissolved oxygen, and turbidity were measured and recorded throughout the purging process and purging continued until these parameters stabilized, typically in three to five well volumes. Stabilization occurs when pH measurements remain constant within 0.1 Standard Unit (SU), or reproducible to within 0.1 (SU), specific conductance varies no more that 5 percent, the temperature is constant for at least three consecutive readings and the turbidity has stabilized. Wells purged to dryness were considered sufficiently purged.

Samples were collected immediately after the purging process was complete. Prior to commencement of purging, the purging meters were calibrated according to manufacturer's specifications. Also, the meters' calibration was checked mid-way through and after the purging activities. The calibration checks indicated that the meters remained calibrated within the acceptable ranges of the meters' standards throughout the purging activities. The purging data were recorded on field data sheets in indelible ink. The Purge Meter Calibration Data Sheets and Monitoring Well Purging Data Sheets are included in Appendix B.

Groundwater Sampling

Groundwater samples were collected from monitoring wells MW-1 through MW-5, MW-6A, MW-6B, MW-7A, MW-8A, MW-8B, MW-9A, MW-9B, MW-10A, MW-10B, MW-11A, MW-11B, MW-12A, MW-12B, MW-13B, MW-14A, MW-14B, MW-15B, MW-17B, MW-18A, MW-18B, MW-19A, MW-19B, MW-20A, MW-20B, MW-21A, MW-21B, MW-22B, DMW-1, DMW-2, and DMW-3, as well as recovery wells RW-1, RW-2, RW-3, RW-4, RW-5. Each sample was placed into pre-labeled, laboratory-prepared sample containers utilizing a low flow peristaltic pump with disposable tubing via the straw method.

Purging parameters were again measured and recorded immediately after sample collection at each well. In order to further ensure sample integrity, samples were immediately placed on ice in an insulated cooler upon collection and entered into chain of custody. A field blank was collected at the completion of each day of sampling activities. A laboratory-prepared trip blank was included with each insulated sample cooler to ensure cross-contamination did not occur between the collected groundwater samples. Duplicate samples were collected from monitoring wells MW-10B (Duplicate 1) and MW-18B (Duplicate 2).

The groundwater samples were submitted to Access Analytical, Inc. and analyzed by Gulf Coast Analytical Laboratories, Inc. (GCAL) a South Carolina certified laboratory (certification #73006), for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, methyl tertiary-butyl ether (MTBE) and 1,2-dichloroethane (1,2-DCA) by EPA method 8260B, as well as for EDB by EPA method 8011.

Groundwater samples were also analyzed for the following eight oxygenates: di-isopropyl ether (DIPE), ethanol, ethyl tert-butyl alcohol (ETBA), ethyl tert-butyl either (ETBE), tert-amyl alcohol (TAA), tert-amyl methyl either (TAME), tert-butyl alcohol (TBA) and tert-butyl formate (TBF). The samples were also analyzed for nitrate, sulfate, ferrous iron, and methane.

The laboratory analytical results from this assessment (current) are tabulated in Table 3. Results from previous groundwater sampling events are tabulated with the data from this assessment (current and historical) in Table 4. CoC detected at concentrations above the RBSLs established by SCDHEC are indicated in bold type. The complete laboratory analytical results, including chain-of-custody documentation, are included as Appendix B. A Groundwater CoC Site Map, indicating the September 2016 CoC concentrations in the groundwater at each monitoring well, is included as Figure 4.

Disposal

A total of 205 gallons of contaminated purge water and decontamination fluids were collected during this assessment. A disposal manifest for the contaminated purge water and decontamination fluids generated during this assessment are included in Appendix G.

Contractor Checklist

The SCDHEC QAPP Contractor Checklist is included in Appendix K.

SSTL Reduction Calculation

The Free-Phase Product Reduction Calculation worksheet is included as Table 5.

Conclusions

Based on the data collected during this assessment, it was confirmed that the free-phase petroleum product previously observed on the property was no longer detected. Elevated concentrations of several dissolved-phase Chemicals of Concern remain present.

Therefore, according to the requirements of this corrective action contract, ETS has achieved 100% reduction in the total free product thickness in the SSTL wells.

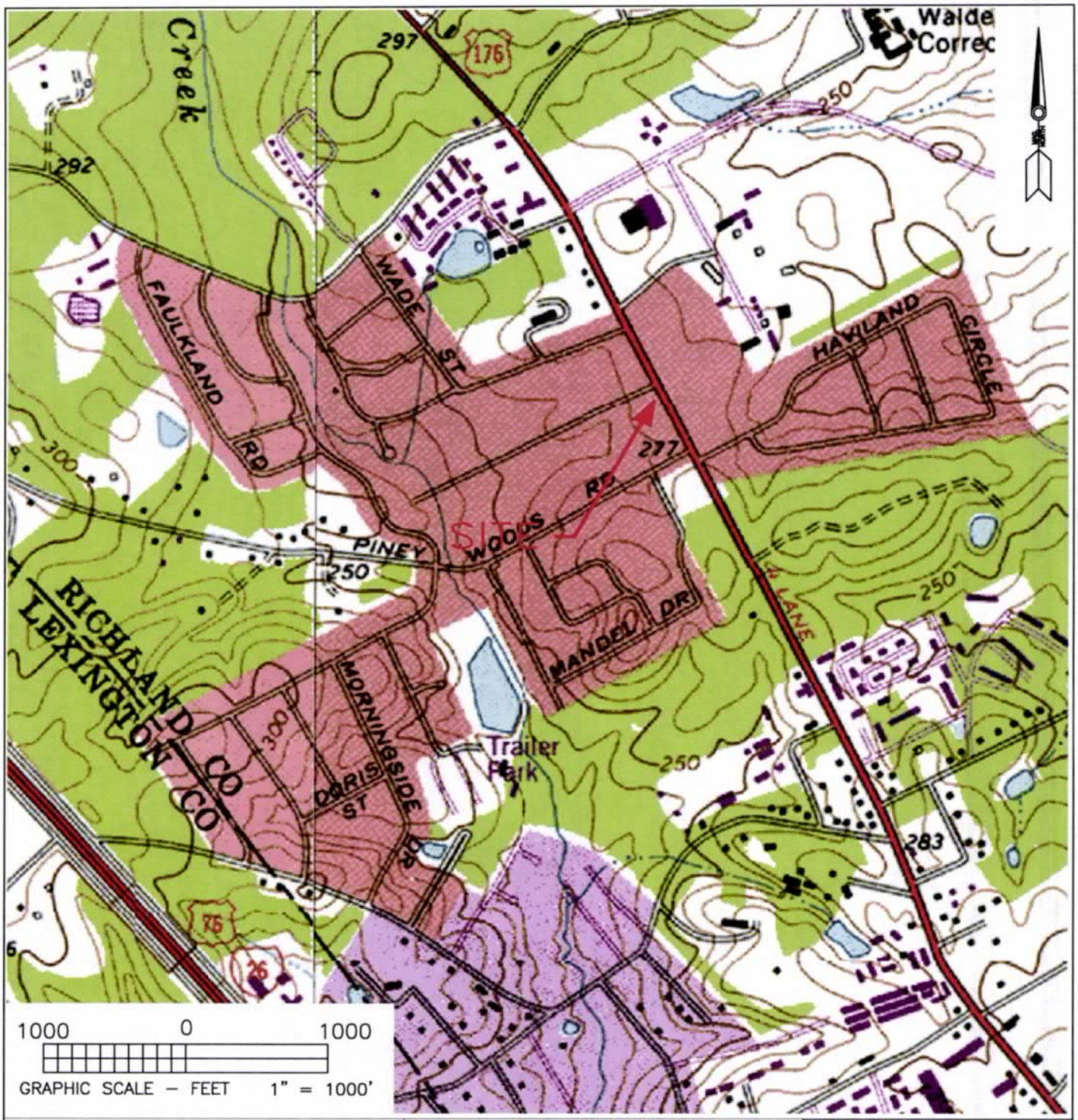
References

Maybin and Nystrom, 1997, revised by Willoughby, Howard and Nystrom, 2005. Generalized Geologic Map of South Carolina; South Carolina Department of Natural Resources Geological Survey.

USGS Open-File Report 2005-1323, Preliminary integrated geologic map databases for the United States: Alabama, Florida, Georgia, Mississippi, North Carolina, and South Carolina, http://pubs.usgs.gov/of/2005/1323/

FIGURES

Figure 1 – Site Location Map (Topographic)
Figure 2 – Site Base Map
Figure 3 – Not Included
Figure 4 – Groundwater CoC Map
Figure 5A – Potentiometric Map (Shallow)
Figure 5B – Potentiometric Map (Intermediate)
Figure 5C – Potentiometric Map (Deep)



PROJECT:
CORRECTIVE ACTION SYSTEM EVAL.
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
SITE LOCATION MAP

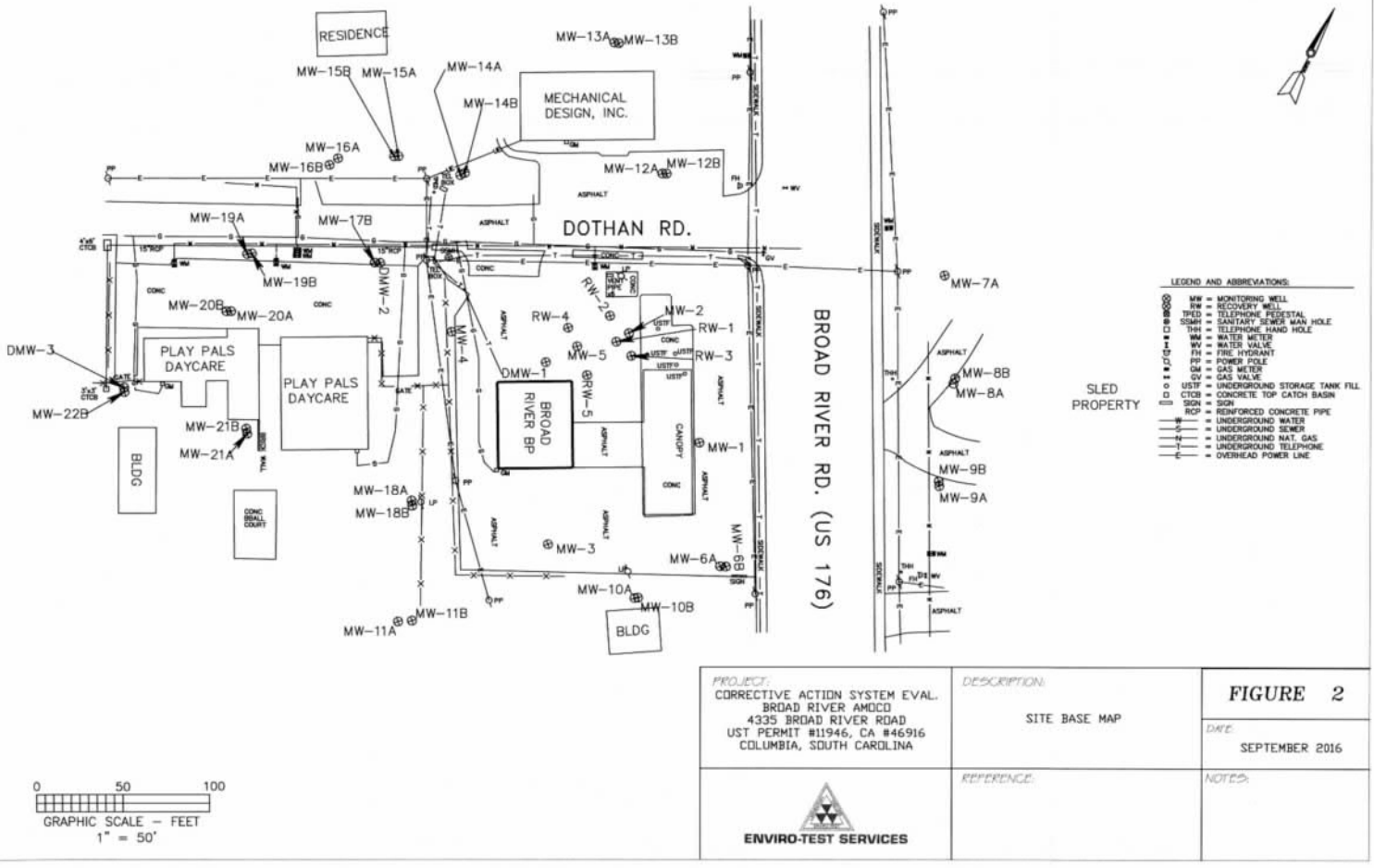
FIGURE 1

DATE:
SEPTEMBER 2016

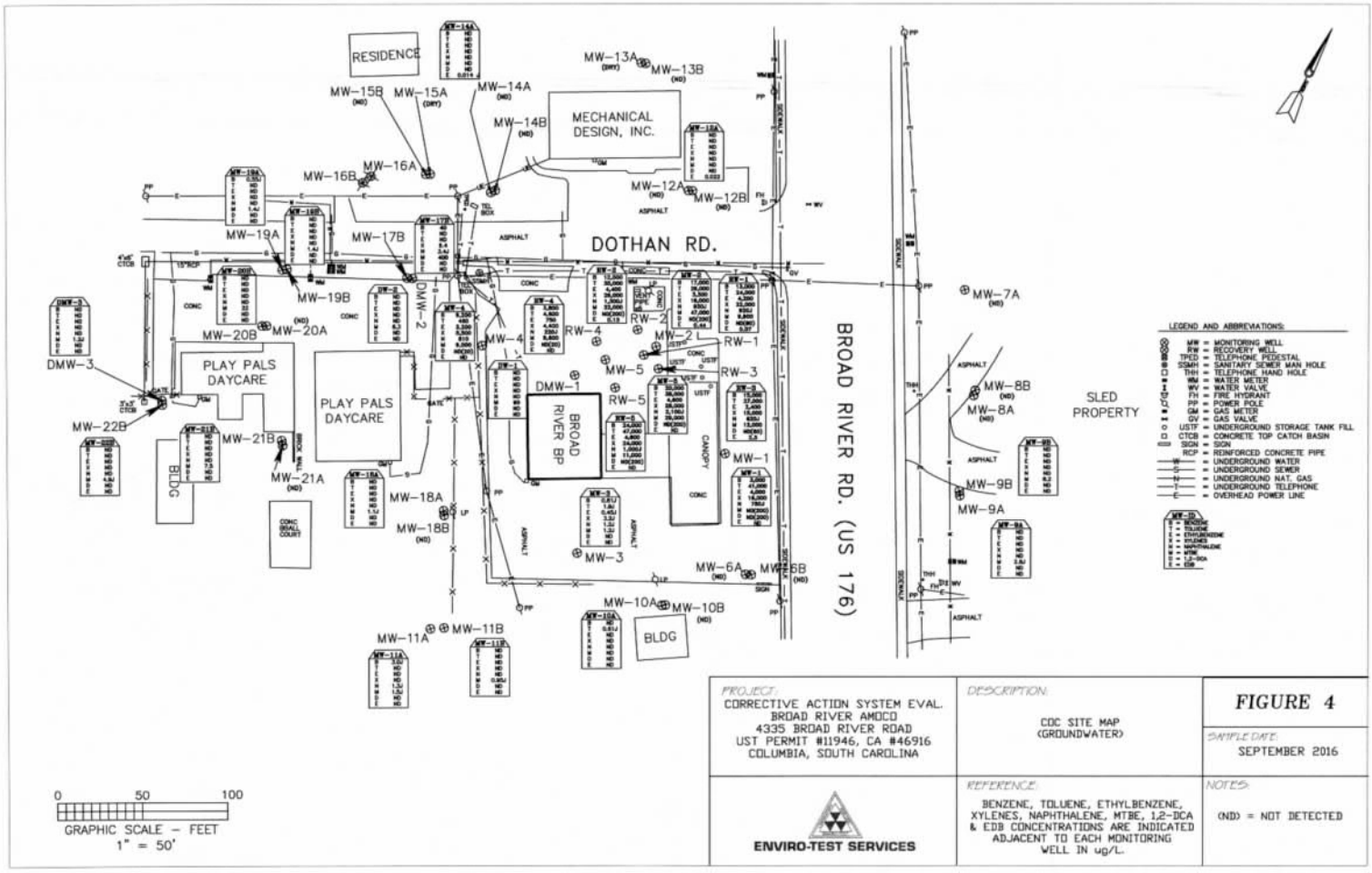
ENVIRO-TEST SERVICES

REFERENCE:
U.S.G.S. TOPOGRAPHIC MAP
(7.5 MINUTE SERIES)
COLUMBIA NORTH - 1972, REV. 1990
SOUTH CAROLINA QUADRANGLE

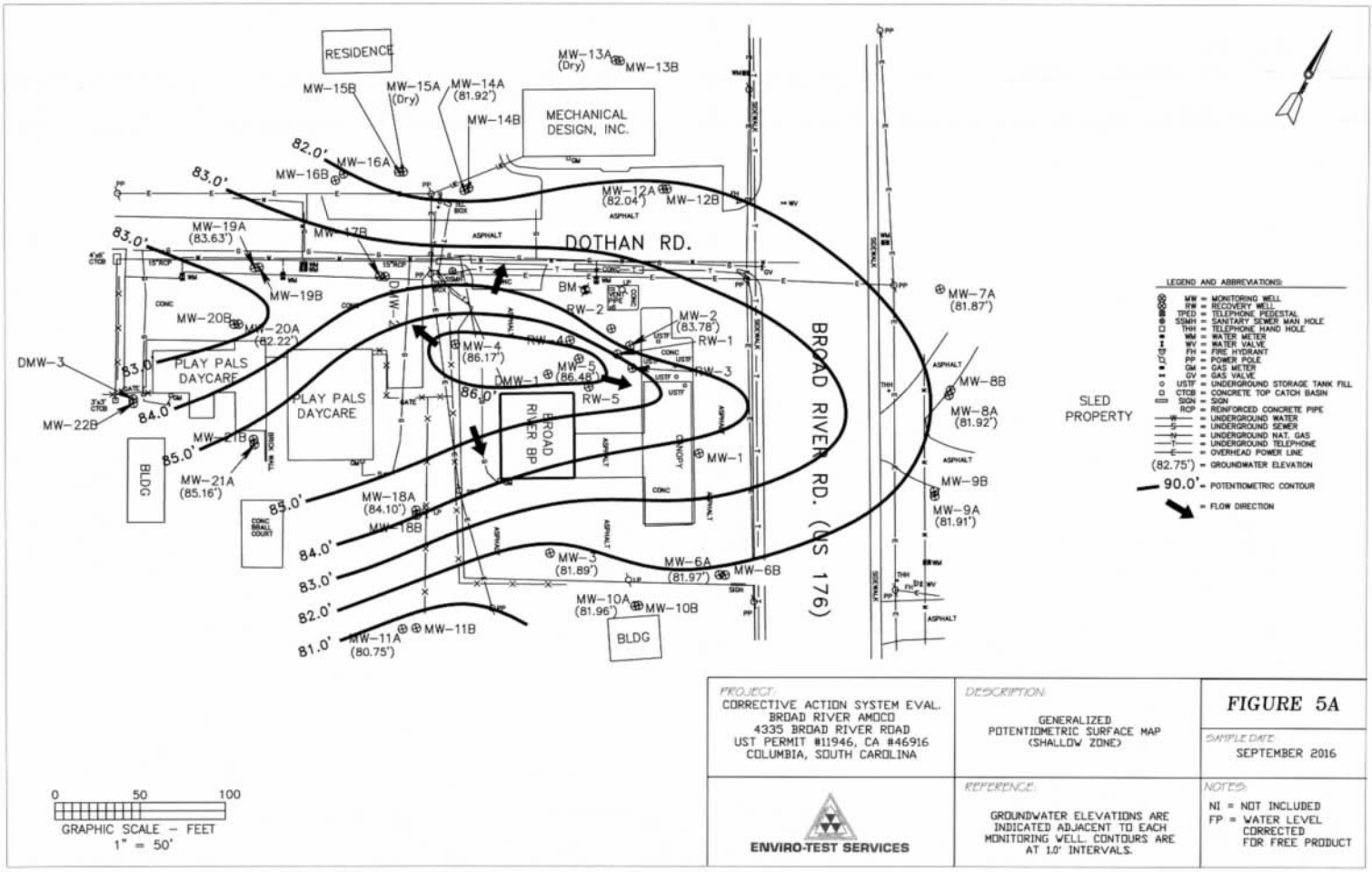
LEGEND:



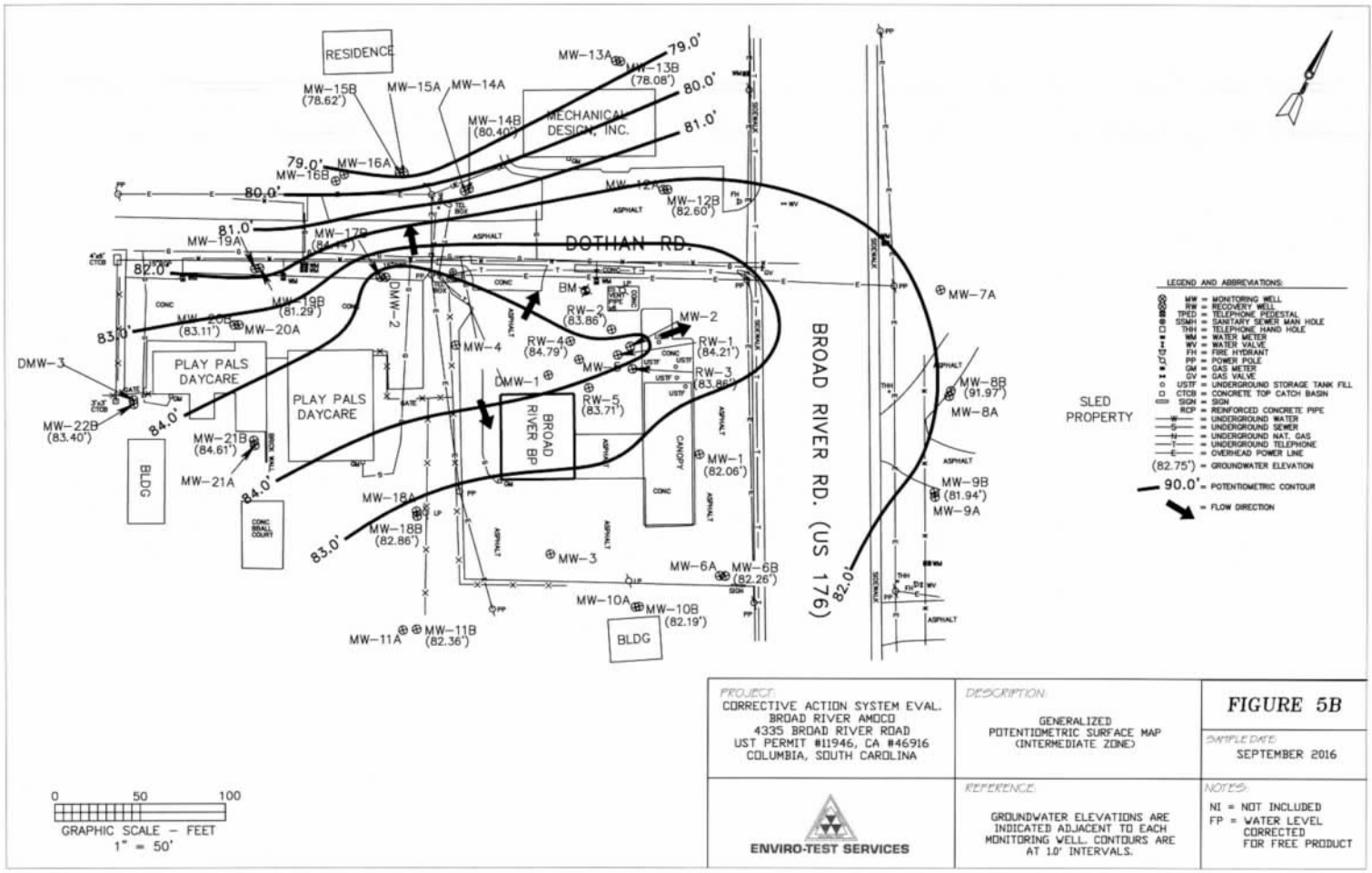
PROJECT:	DESCRIPTION:	FIGURE 2
CORRECTIVE ACTION SYSTEM EVAL. BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	SITE BASE MAP	DATE: SEPTEMBER 2016
ENVIRO-TEST SERVICES	REFERENCE:	NOTES:



PROJECT: CORRECTIVE ACTION SYSTEM EVAL. BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: COC SITE MAP (GROUNDWATER)	**FIGURE 4**
		SAMPLE DATE: SEPTEMBER 2016
ENVIRO-TEST SERVICES	REFERENCE: BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, NAPHTHALENE, MTBE, 1,2-DCA & EDB CONCENTRATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL IN ug/L.	NOTES: (ND) = NOT DETECTED



PROJECT: CORRECTIVE ACTION SYSTEM EVAL. BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #46916 COLUMBIA, SOUTH CAROLINA	DESCRIPTION: GENERALIZED POTENTIOMETRIC SURFACE MAP (SHALLOW ZONE)	**FIGURE 5A**
		SAMPLE DATE: SEPTEMBER 2016
ENVIRO-TEST SERVICES	REFERENCE: GROUNDWATER ELEVATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL. CONTOURS ARE AT 1.0' INTERVALS.	NOTES: NI = NOT INCLUDED FP = WATER LEVEL CORRECTED FOR FREE PRODUCT



PROJECT:
CORRECTIVE ACTION SYSTEM EVAL.
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
GENERALIZED
POTENTIOMETRIC SURFACE MAP
(INTERMEDIATE ZONE)

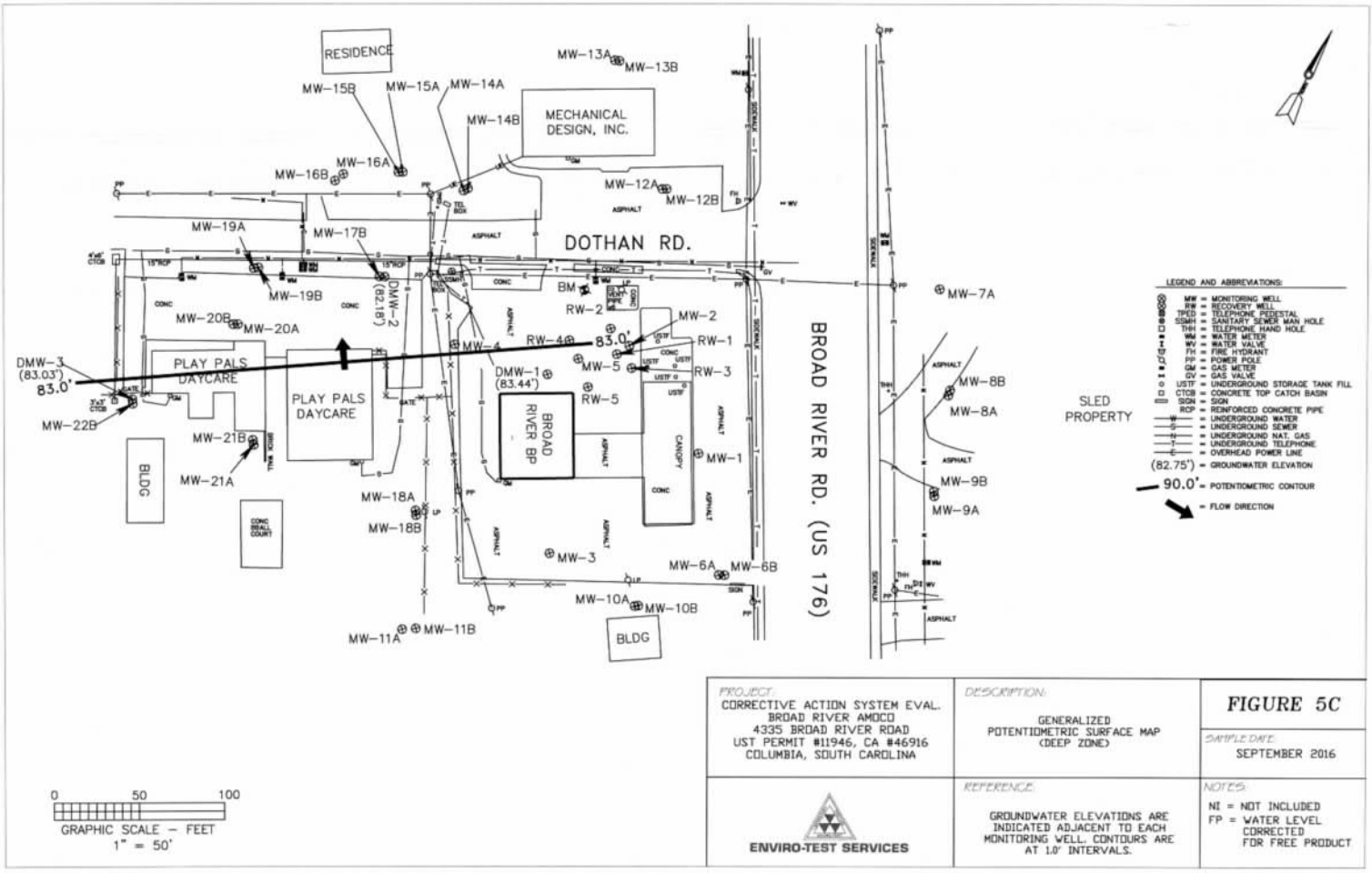
FIGURE 5B

SAMPLE DATE:
SEPTEMBER 2016

ENVIRO-TEST SERVICES

REFERENCE:
GROUNDWATER ELEVATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL. CONTOURS ARE AT 1.0' INTERVALS.

NOTES:
NI = NOT INCLUDED
FP = WATER LEVEL CORRECTED FOR FREE PRODUCT



PROJECT:
CORRECTIVE ACTION SYSTEM EVAL.
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:
GENERALIZED
POTENTIOMETRIC SURFACE MAP
(DEEP ZONE)

FIGURE 5C

SAMPLE DATE:
SEPTEMBER 2016

ENVIRO-TEST SERVICES

REFERENCE:
GROUNDWATER ELEVATIONS ARE INDICATED ADJACENT TO EACH MONITORING WELL. CONTOURS ARE AT 1.0' INTERVALS.

NOTES:
NI = NOT INCLUDED
FP = WATER LEVEL CORRECTED FOR FREE PRODUCT

TABLES

Table 1 – Not Included
Table 2 – Potentiometric Data
Table 3 – Groundwater Analytical Data (Current)
Table 4 – Groundwater Analytical Data
(Current & Historical)
Table 5 – Free-Phase Product Reduction Calculation

APPENDICES

A. Not Included
B. Purging Data Sheets & Laboratory Analytical Data
C. Not Included
D. Not Included
E. Not Included
F. Not Included
G. Disposal Manifest(s)
H. Not Included
I. Not Included
J. Not Included
K. SCDHEC Contractor Checklist

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-1	1/21/2011	40.0	20.0 - 40.0	101.84	20.92	N/A	N/A	N/A	80.92
	3/5/2011	40.0	20.0 - 40.0	101.84	14.45	N/A	N/A	N/A	87.39
	3/5/2013	40.0	20.0 - 40.0	101.84	18.62	N/A	N/A	N/A	83.22
	3/6/2014	40.0	20.0 - 40.0	101.84	15.90	N/A	N/A	N/A	85.94
	8/5/2015	40.0	20.0 - 40.0	101.84	18.84	N/A	N/A	N/A	83.00
	6/7/2016	40.0	20.0 - 40.0	101.84	13.61	N/A	N/A	N/A	88.23
	9/18/2016	40.0	20.0 - 40.0	101.84	19.78	N/A	N/A	N/A	82.06
MW-2	3/5/2011	28.0	18.0 - 28.0	101.13	13.50	N/A	N/A	N/A	87.63
	3/6/2013	28.0	18.0 - 28.0	101.13	17.66	16.32	1.34	16.70	84.43
	3/5/2014	28.0	18.0 - 28.0	101.13	11.57	10.15	1.42	10.53	90.60
	8/5/2015	28.0	18.0 - 28.0	101.13	16.44	N/A	N/A	N/A	84.69
	6/7/2016	28.0	18.0 - 28.0	101.13	12.10	N/A	N/A	N/A	89.03
	9/18/2016	28.0	18.0 - 28.0	101.13	17.35	N/A	N/A	N/A	83.78
MW-3	3/5/2011	31.0	21.0 - 31.0	101.09	13.72	N/A	N/A	N/A	87.37
	3/6/2013	31.0	21.0 - 31.0	101.09	17.94	N/A	N/A	N/A	83.15
	3/7/2014	31.0	21.0 - 31.0	101.09	11.57	N/A	N/A	N/A	89.52
	8/5/2015	31.0	21.0 - 31.0	101.09	N/A	N/A	N/A	N/A	N/A
	6/7/2016	31.0	21.0 - 31.0	101.09	13.23	N/A	N/A	N/A	87.86
	9/18/2016	31.0	21.0 - 31.0	101.09	19.20	N/A	N/A	N/A	81.89
MW-4	3/5/2011	25.0	15.0 - 25.0	97.02	9.15	N/A	N/A	N/A	87.87
	3/6/2013	25.0	15.0 - 25.0	97.02	12.41	10.10	2.31	10.75	86.27
	3/5/2014	25.0	15.0 - 25.0	97.02	9.74	7.50	2.24	8.10	88.92
	8/5/2015	25.0	15.0 - 25.0	97.02	N/A	N/A	N/A	N/A	N/A
	6/7/2016	25.0	15.0 - 25.0	97.02	8.08	N/A	N/A	N/A	88.94
	9/18/2016	25.0	15.0 - 25.0	97.02	10.85	N/A	N/A	N/A	86.17

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-5	6/20/2011	20.0	10.0 - 20.0	101.34	14.05	13.75	0.30	13.83	87.51
	3/6/2013	20.0	10.0 - 20.0	101.34	19.63	16.80	2.83	17.59	83.75
	3/5/2014	20.0	10.0 - 20.0	101.34	15.75	8.12	7.63	10.18	91.16
	8/5/2015	20.0	10.0 - 20.0	101.34	14.04	N/A	N/A	N/A	87.30
	6/7/2016	20.0	10.0 - 20.0	101.34	10.24	N/A	N/A	N/A	91.10
	9/18/2016	20.0	10.0 - 20.0	101.34	14.86	N/A	N/A	N/A	86.48
MW-6A	3/6/2013	25.5	15.5 - 25.5	101.84	18.00	N/A	N/A	N/A	83.84
	3/5/2014	25.5	15.5 - 25.5	101.84	15.15	N/A	N/A	N/A	86.69
	8/5/2015	25.5	15.5 - 25.5	101.84	N/A	N/A	N/A	N/A	N/A
	6/7/2016	25.5	15.5 - 25.5	101.84	13.40	N/A	N/A	N/A	88.44
	9/18/2016	25.5	15.5 - 25.5	101.84	19.87	N/A	N/A	N/A	81.97
MW-6B	3/6/2013	38.5	28.5 - 38.5	101.91	18.05	N/A	N/A	N/A	83.86
	3/5/2014	38.5	28.5 - 38.5	101.91	13.30	N/A	N/A	N/A	88.61
	8/5/2015	38.5	28.5 - 38.5	101.91	N/A	N/A	N/A	N/A	N/A
	6/7/2016	38.5	28.5 - 38.5	101.91	13.94	N/A	N/A	N/A	87.97
	9/18/2016	38.5	28.5 - 38.5	101.91	19.65	N/A	N/A	N/A	82.26
MW-7A	3/6/2013	24.0	14.0 - 24.0	100.04	16.60	N/A	N/A	N/A	83.44
	3/5/2014	24.0	14.0 - 24.0	100.04	11.00	N/A	N/A	N/A	89.04
	8/5/2015	24.0	14.0 - 24.0	100.04	N/A	N/A	N/A	N/A	N/A
	6/7/2016	24.0	14.0 - 24.0	100.04	12.29	N/A	N/A	N/A	87.75
	9/19/2016	24.0	14.0 - 24.0	100.04	18.17	N/A	N/A	N/A	81.87
MW-8A	3/6/2013	23.0	13.0 - 23.0	100.45	16.84	N/A	N/A	N/A	83.61
	3/5/2014	23.0	13.0 - 23.0	100.45	12.04	N/A	N/A	N/A	88.41
	8/5/2015	23.0	13.0 - 23.0	100.45	N/A	N/A	N/A	N/A	N/A
	6/7/2016	23.0	13.0 - 23.0	100.45	12.44	N/A	N/A	N/A	88.01
	9/19/2016	23.0	13.0 - 23.0	100.45	18.53	N/A	N/A	N/A	81.92

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-8B	3/6/2013	37.5	27.5 - 37.5	100.37	16.60	N/A	N/A	N/A	83.77
	3/5/2014	37.5	27.5 - 37.5	100.37	10.45	N/A	N/A	N/A	89.92
	8/5/2015	37.5	27.5 - 37.5	100.37	N/A	N/A	N/A	N/A	N/A
	6/7/2016	37.5	27.5 - 37.5	100.37	12.32	N/A	N/A	N/A	88.05
	9/19/2016	37.5	27.5 - 37.5	100.37	18.40	N/A	N/A	N/A	81.97
MW-9A	3/6/2013	23.0	13.0 - 23.0	101.36	18.61	N/A	N/A	N/A	82.75
	3/6/2014	23.0	13.0 - 23.0	101.36	11.50	N/A	N/A	N/A	89.86
	8/5/2015	23.0	13.0 - 23.0	101.36	N/A	N/A	N/A	N/A	N/A
	6/7/2016	23.0	13.0 - 23.0	101.36	13.41	N/A	N/A	N/A	87.95
	9/19/2016	23.0	13.0 - 23.0	101.36	19.45	N/A	N/A	N/A	81.91
MW-9B	3/6/2013	31.5	21.5 - 31.5	101.38	17.60	N/A	N/A	N/A	83.78
	3/6/2014	31.5	21.5 - 31.5	101.38	11.65	N/A	N/A	N/A	89.73
	8/5/2015	31.5	21.5 - 31.5	101.38	N/A	N/A	N/A	N/A	N/A
	6/7/2016	31.5	21.5 - 31.5	101.38	13.35	N/A	N/A	N/A	88.03
	9/19/2016	31.5	21.5 - 31.5	101.38	19.44	N/A	N/A	N/A	81.94
MW-10A	3/6/2013	17.5	7.5 - 17.5	97.20	11.05	N/A	N/A	N/A	86.15
	3/6/2014	17.5	7.5 - 17.5	97.20	2.80	N/A	N/A	N/A	94.40
	8/5/2015	17.5	7.5 - 17.5	97.20	N/A	N/A	N/A	N/A	N/A
	6/7/2016	17.5	7.5 - 17.5	97.20	7.12	N/A	N/A	N/A	90.08
	9/19/2016	17.5	7.5 - 17.5	97.20	15.24	N/A	N/A	N/A	81.96
MW-10B	3/6/2013	39.0	29.0 - 39.0	97.34	13.87	N/A	N/A	N/A	83.47
	3/6/2014	39.0	29.0 - 39.0	97.34	7.54	N/A	N/A	N/A	89.80
	8/5/2015	39.0	29.0 - 39.0	97.34	N/A	N/A	N/A	N/A	N/A
	6/7/2016	39.0	29.0 - 39.0	97.34	8.92	N/A	N/A	N/A	88.42
	9/19/2016	39.0	29.0 - 39.0	97.34	15.15	N/A	N/A	N/A	82.19

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-11A	3/6/2013	20.0	10.0 - 20.0	89.93	10.52	N/A	N/A	N/A	79.41
	3/6/2014	20.0	10.0 - 20.0	89.93	9.50	N/A	N/A	N/A	80.43
	8/5/2015	20.0	10.0 - 20.0	89.93	N/A	N/A	N/A	N/A	N/A
	6/7/2016	20.0	10.0 - 20.0	89.93	3.30	N/A	N/A	N/A	86.63
	9/18/2016	20.0	10.0 - 20.0	89.93	9.18	N/A	N/A	N/A	80.75
MW-11B	3/6/2013	35.0	29.0 - 39.0	90.26	10.30	N/A	N/A	N/A	79.96
	3/6/2014	35.0	29.0 - 39.0	90.26	9.47	N/A	N/A	N/A	80.79
	8/5/2015	35.0	29.0 - 39.0	90.26	N/A	N/A	N/A	N/A	N/A
	6/7/2016	35.0	29.0 - 39.0	90.26	1.47	N/A	N/A	N/A	88.79
	9/19/2016	35.0	29.0 - 39.0	90.26	7.90	N/A	N/A	N/A	82.36
MW-12A	3/6/2013	20.0	10.0 - 20.0	99.26	13.95	N/A	N/A	N/A	85.31
	3/6/2014	20.0	10.0 - 20.0	99.26	16.20	N/A	N/A	N/A	83.06
	8/5/2015	20.0	10.0 - 20.0	99.26	N/A	N/A	N/A	N/A	N/A
	6/8/2016	20.0	10.0 - 20.0	99.26	15.43	N/A	N/A	N/A	83.83
	9/19/2016	20.0	10.0 - 20.0	99.26	17.22	N/A	N/A	N/A	82.04
MW-12B	3/6/2013	36.5	26.5 - 36.5	99.35	16.72	N/A	N/A	N/A	82.63
	3/6/2014	36.5	26.5 - 36.5	99.35	11.87	N/A	N/A	N/A	87.48
	8/5/2015	36.5	26.5 - 36.5	99.35	N/A	N/A	N/A	N/A	N/A
	6/8/2016	36.5	26.5 - 36.5	99.35	12.00	N/A	N/A	N/A	87.35
	9/19/2016	36.5	26.5 - 36.5	99.35	16.75	N/A	N/A	N/A	82.60
MW-13A	3/25/2013	22.0	12.0 - 22.0	98.70	19.80	N/A	N/A	N/A	78.90
	3/5/2014	22.0	12.0 - 22.0	98.70	N/A	N/A	N/A	N/A	N/A
	8/5/2015	22.0	12.0 - 22.0	98.70	N/A	N/A	N/A	N/A	N/A
	6/8/2016	22.0	12.0 - 22.0	98.70	12.33	N/A	N/A	N/A	86.37
	9/19/2016	22.0	12.0 - 22.0	98.70	dry	N/A	N/A	N/A	dry

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
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Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-13B	3/6/2013	33.5	23.5 - 33.5	98.69	19.88	N/A	N/A	N/A	78.81
	3/6/2014	33.5	23.5 - 33.5	98.69	16.12	N/A	N/A	N/A	82.57
	8/5/2015	33.5	23.5 - 33.5	98.69	N/A	N/A	N/A	N/A	N/A
	6/8/2016	33.5	23.5 - 33.5	98.69	15.22	N/A	N/A	N/A	83.47
	9/19/2016	33.5	23.5 - 33.5	98.69	20.61	N/A	N/A	N/A	78.08
MW-14A	3/6/2013	20.0	10.0 - 20.0	97.49	14.52	N/A	N/A	N/A	82.97
	3/6/2014	20.0	10.0 - 20.0	97.49	11.10	N/A	N/A	N/A	86.39
	8/5/2015	20.0	10.0 - 20.0	97.49	N/A	N/A	N/A	N/A	N/A
	6/8/2016	20.0	10.0 - 20.0	97.49	3.78	N/A	N/A	N/A	93.71
	9/20/2016	20.0	10.0 - 20.0	97.49	15.57	N/A	N/A	N/A	81.92
MW-14B	3/6/2013	38.5	28.5 - 38.5	97.45	17.27	N/A	N/A	N/A	80.18
	3/6/2014	38.5	28.5 - 38.5	97.45	12.45	N/A	N/A	N/A	85.00
	8/5/2015	38.5	28.5 - 38.5	97.45	N/A	N/A	N/A	N/A	N/A
	6/8/2016	38.5	28.5 - 38.5	97.45	12.10	N/A	N/A	N/A	85.35
	9/20/2016	38.5	28.5 - 38.5	97.45	17.05	N/A	N/A	N/A	80.40
MW-15A	3/25/2013	17.0	7.0 - 17.0	96.87	16.01	N/A	N/A	N/A	80.86
	3/6/2014	17.0	7.0 - 17.0	96.87	15.58	N/A	N/A	N/A	81.29
	8/5/2015	17.0	7.0 - 17.0	96.87	N/A	N/A	N/A	N/A	N/A
	6/8/2016	17.0	7.0 - 17.0	96.87	12.60	N/A	N/A	N/A	84.27
	9/20/2016	17.0	7.0 - 17.0	96.87	dry	N/A	N/A	N/A	dry
MW-15B	3/6/2013	40.0	30.0 - 40.0	96.82	17.60	N/A	N/A	N/A	79.22
	3/6/2014	40.0	30.0 - 40.0	96.82	14.10	N/A	N/A	N/A	82.72
	8/5/2015	40.0	30.0 - 40.0	96.82	N/A	N/A	N/A	N/A	N/A
	6/8/2016	40.0	30.0 - 40.0	96.82	12.33	N/A	N/A	N/A	84.49
	9/20/2016	40.0	30.0 - 40.0	96.82	18.20	N/A	N/A	N/A	78.62

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-16A	3/25/2013	18.0	8.0 - 18.0	95.95	16.21	N/A	N/A	N/A	79.74
	3/5/2014	18.0	8.0 - 18.0	95.95	N/A	N/A	N/A	N/A	N/A
	8/5/2015	18.0	8.0 - 18.0	95.95	N/A	N/A	N/A	N/A	N/A
	6/8/2016	18.0	8.0 - 18.0	95.95	N/A	N/A	N/A	N/A	N/A
	9/18/2016	18.0	8.0 - 18.0	95.95	N/A	N/A	N/A	N/A	N/A
MW-16B	3/6/2013	37.0	27.0 - 37.0	95.68	16.75	N/A	N/A	N/A	78.93
	3/5/2014	37.0	27.0 - 37.0	95.68	N/A	N/A	N/A	N/A	N/A
	8/5/2015	37.0	27.0 - 37.0	95.68	N/A	N/A	N/A	N/A	N/A
	6/8/2016	37.0	27.0 - 37.0	95.68	N/A	N/A	N/A	N/A	N/A
	9/18/2016	37.0	27.0 - 37.0	95.68	N/A	N/A	N/A	N/A	N/A
MW-17B	3/6/2013	39.5	29.5 - 39.5	92.69	9.05	N/A	N/A	N/A	83.64
	3/5/2014	39.5	29.5 - 39.5	92.69	6.04	N/A	N/A	N/A	86.65
	8/5/2015	39.5	29.5 - 39.5	92.69	N/A	N/A	N/A	N/A	N/A
	6/9/2016	39.5	29.5 - 39.5	92.69	5.70	N/A	N/A	N/A	86.99
	9/20/2016	39.5	29.5 - 39.5	92.69	8.25	N/A	N/A	N/A	84.44
MW-18A	3/6/2013	13.0	3.0 - 13.0	88.20	0.85	N/A	N/A	N/A	87.35
	3/5/2014	13.0	3.0 - 13.0	88.20	0.82	N/A	N/A	N/A	87.38
	8/5/2015	13.0	3.0 - 13.0	88.20	N/A	N/A	N/A	N/A	N/A
	6/9/2016	13.0	3.0 - 13.0	88.20	2.10	N/A	N/A	N/A	86.10
	9/20/2016	13.0	3.0 - 13.0	88.20	4.10	N/A	N/A	N/A	84.10
MW-18B	3/6/2013	35.0	25.0 - 35.0	88.30	1.05	N/A	N/A	N/A	87.25
	3/5/2014	35.0	25.0 - 35.0	88.30	0.78	N/A	N/A	N/A	87.52
	8/5/2015	35.0	25.0 - 35.0	88.30	N/A	N/A	N/A	N/A	N/A
	6/9/2016	35.0	25.0 - 35.0	88.30	0.57	N/A	N/A	N/A	87.73
	9/20/2016	35.0	25.0 - 35.0	88.30	5.44	N/A	N/A	N/A	82.86

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-19A	3/6/2013	15.0	5.0 - 15.0	91.63	7.95	N/A	N/A	N/A	83.68
	3/5/2014	15.0	5.0 - 15.0	91.63	6.02	N/A	N/A	N/A	85.61
	8/5/2015	15.0	5.0 - 15.0	91.63	N/A	N/A	N/A	N/A	N/A
	6/9/2016	15.0	5.0 - 15.0	91.63	6.13	N/A	N/A	N/A	85.50
	9/20/2016	15.0	5.0 - 15.0	91.63	8.00	N/A	N/A	N/A	83.63
MW-19B	3/6/2013	34.0	24.0 - 34.0	91.69	8.35	N/A	N/A	N/A	83.34
	3/5/2014	34.0	24.0 - 34.0	91.69	7.58	N/A	N/A	N/A	84.11
	8/5/2015	34.0	24.0 - 34.0	91.69	N/A	N/A	N/A	N/A	N/A
	6/9/2016	34.0	24.0 - 34.0	91.69	6.00	N/A	N/A	N/A	85.69
	9/20/2016	34.0	24.0 - 34.0	91.69	10.40	N/A	N/A	N/A	81.29
MW-20A	3/6/2013	15.0	5.0 - 15.0	88.67	5.05	N/A	N/A	N/A	83.62
	3/5/2014	15.0	5.0 - 15.0	88.67	4.97	N/A	N/A	N/A	83.70
	8/5/2015	15.0	5.0 - 15.0	88.67	N/A	N/A	N/A	N/A	N/A
	6/9/2016	15.0	5.0 - 15.0	88.67	5.60	N/A	N/A	N/A	83.07
	9/20/2016	15.0	5.0 - 15.0	88.67	6.45	N/A	N/A	N/A	82.22
MW-20B	3/6/2013	35.0	25.0 - 35.0	88.61	4.11	N/A	N/A	N/A	84.50
	3/5/2014	35.0	25.0 - 35.0	88.61	3.62	N/A	N/A	N/A	84.99
	8/5/2015	35.0	25.0 - 35.0	88.61	N/A	N/A	N/A	N/A	N/A
	6/9/2016	35.0	25.0 - 35.0	88.61	2.82	N/A	N/A	N/A	85.79
	9/20/2016	35.0	25.0 - 35.0	88.61	5.50	N/A	N/A	N/A	83.11

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
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NL - Not Located

Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
MW-21A	3/6/2013	12.0	2.0 - 12.0	87.16	0.85	N/A	N/A	N/A	86.31
	3/5/2014	12.0	2.0 - 12.0	87.16	0.65	N/A	N/A	N/A	86.51
	8/5/2015	12.0	2.0 - 12.0	87.16	N/A	N/A	N/A	N/A	N/A
	6/9/2016	12.0	2.0 - 12.0	87.16	1.25	N/A	N/A	N/A	85.91
	9/20/2016	12.0	2.0 - 12.0	87.16	2.00	N/A	N/A	N/A	85.16
MW-21B	3/6/2013	35.0	25.0 - 35.0	87.23	1.35	N/A	N/A	N/A	85.88
	3/5/2014	35.0	25.0 - 35.0	87.23	0.85	N/A	N/A	N/A	86.38
	8/5/2015	35.0	25.0 - 35.0	87.23	N/A	N/A	N/A	N/A	N/A
	6/9/2016	35.0	25.0 - 35.0	87.23	2.20	N/A	N/A	N/A	85.03
	9/20/2016	35.0	25.0 - 35.0	87.23	2.62	N/A	N/A	N/A	84.61
MW-22B	3/6/2013	35.0	25.0 - 35.0	87.40	2.10	N/A	N/A	N/A	85.30
	3/5/2014	35.0	25.0 - 35.0	87.40	1.45	N/A	N/A	N/A	85.95
	8/5/2015	35.0	25.0 - 35.0	87.40	N/A	N/A	N/A	N/A	N/A
	6/9/2016	35.0	25.0 - 35.0	87.40	2.22	N/A	N/A	N/A	85.18
	9/20/2016	35.0	25.0 - 35.0	87.40	4.00	N/A	N/A	N/A	83.40

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
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Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
RW-1	3/6/2013	40.0	20.0 - 40.0	101.21	17.26	17.11	0.15	17.15	84.06
	3/5/2014	40.0	20.0 - 40.0	101.21	15.78	9.10	6.68	10.90	90.31
	8/5/2015	40.0	20.0 - 40.0	101.21	16.30	N/A	N/A	N/A	84.91
	6/8/2016	40.0	20.0 - 40.0	101.21	10.80	N/A	N/A	N/A	90.41
	9/18/2016	40.0	20.0 - 40.0	101.21	17.00	N/A	N/A	N/A	84.21
RW-2	3/6/2013	40.0	20.0 - 40.0	100.96	16.96	N/A	N/A	N/A	84.00
	3/5/2014	40.0	20.0 - 40.0	100.96	10.65	N/A	N/A	N/A	90.31
	8/5/2015	40.0	20.0 - 40.0	100.96	16.58	N/A	N/A	N/A	84.38
	6/8/2016	40.0	20.0 - 40.0	100.96	12.25	N/A	N/A	N/A	88.71
	9/18/2016	40.0	20.0 - 40.0	100.96	17.10	N/A	N/A	N/A	83.86
RW-3	3/6/2013	41.0	21.0 - 41.0	101.44	17.41	17.36	0.05	17.37	84.07
	3/5/2014	41.0	21.0 - 41.0	101.44	10.58	10.52	0.06	10.54	90.90
	8/5/2015	41.0	21.0 - 41.0	101.44	17.00	N/A	N/A	N/A	84.44
	6/8/2016	41.0	21.0 - 41.0	101.44	12.20	N/A	N/A	N/A	89.24
	9/18/2016	41.0	21.0 - 41.0	101.44	17.58	N/A	N/A	N/A	83.86
RW-4	3/6/2013	40.5	20.5 - 40.5	100.83	16.73	N/A	N/A	N/A	84.10
	3/7/2014	40.5	20.5 - 40.5	100.83	10.50	N/A	N/A	N/A	90.33
	8/5/2015	40.5	20.5 - 40.5	100.83	16.70	N/A	N/A	N/A	84.13
	6/8/2016	40.5	20.5 - 40.5	100.83	11.40	N/A	N/A	N/A	89.43
	9/18/2016	40.5	20.5 - 40.5	100.83	16.04	N/A	N/A	N/A	84.79
RW-5	3/6/2013	38.5	18.5 - 38.5	101.62	17.64	17.58	0.06	17.6	84.02
	3/5/2014	38.5	18.5 - 38.5	101.62	10.88	10.58	0.30	10.66	90.96
	8/5/2015	38.5	18.5 - 38.5	101.62	15.04	N/A	N/A	N/A	86.58
	6/8/2016	38.5	18.5 - 38.5	101.62	11.08	N/A	N/A	N/A	90.54
	9/18/2016	38.5	18.5 - 38.5	101.62	17.91	N/A	N/A	N/A	83.71

Note:
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Table 2 – Potentiometric Data
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Top of Casing Elevation* (feet)	Static Water Level (feet bgs)	Static Product Level (feet bgs)	Product Thickenss (feet)	Corrected Water Level* (feet)	GW Elevation (feet)
DMW-1	3/6/2013	65.0	60.0 - 65.0	101.16	18.21	N/A	N/A	N/A	82.95
	3/7/2014	65.0	60.0 - 65.0	101.16	14.07	N/A	N/A	N/A	87.09
	8/5/2015	65.0	60.0 - 65.0	101.16	N/A	N/A	N/A	N/A	N/A
	6/8/2016	65.0	60.0 - 65.0	101.16	12.60	N/A	N/A	N/A	88.56
	9/18/2016	65.0	60.0 - 65.0	101.16	17.72	N/A	N/A	N/A	83.44
DMW-2	3/6/2013	65.0	60.0 - 65.0	92.63	9.40	N/A	N/A	N/A	83.23
	3/7/2014	65.0	60.0 - 65.0	92.63	5.94	N/A	N/A	N/A	86.69
	8/5/2015	65.0	60.0 - 65.0	92.63	N/A	N/A	N/A	N/A	N/A
	6/9/2016	65.0	60.0 - 65.0	92.63	6.37	N/A	N/A	N/A	86.26
	9/20/2016	65.0	60.0 - 65.0	92.63	10.45	N/A	N/A	N/A	82.18
DMW-3	3/6/2013	65.0	60.0 - 65.0	87.41	2.10	N/A	N/A	N/A	85.31
	3/5/2014	65.0	60.0 - 65.0	87.41	1.40	N/A	N/A	N/A	86.01
	8/5/2015	65.0	60.0 - 65.0	87.41	N/A	N/A	N/A	N/A	N/A
	6/9/2016	65.0	60.0 - 65.0	87.41	2.10	N/A	N/A	N/A	85.31
	9/20/2016	65.0	60.0 - 65.0	87.41	4.38	N/A	N/A	N/A	83.03

Note: * Corrected WL = Static WL - (Product Thickness x Product Gravity)
N/A - Not Applicable
NM - Not Measured NL - Not Located

Table 3 – Current Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
September 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**
MW-1	9/18/2016	**3,000**	**41,000**	**4,000**	**16,000**	**780 J**	**ND(200)**	**ND(200)**	ND(0.0048)
MW-2	9/18/2016	**17,000**	**29,000**	**3,300**	**19,000**	**930 J**	**47,000**	**ND(200)**	**0.44**
MW-3	9/18/2016	0.61 J	1.9 J	0.45 J	3.2 J	1.2 J	1.2 J	ND(0.40)	ND(0.0049)
MW-4	9/18/2016	**9,200**	460	**3,200**	8,500	**810**	**9,000**	**ND(20)**	ND(0.0048)
MW-5	9/18/2016	**20,000**	**38,000**	**4,600**	**28,000**	**2,100 J**	**29,000**	**ND(200)**	ND(0.0049)
MW-6A	9/18/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0049)
MW-6B	9/18/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0051)
MW-7A	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0051)
MW-8A	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0049)
MW-8B	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0049)
MW-9A	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	2.8 J	ND(0.40)	ND(0.0051)
MW-9B	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	6.2	ND(0.40)	ND(0.0050)
MW-10A	9/19/2016	ND(0.40)	0.61 J	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0051)
MW-10B	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0051)
MW-11A	9/18/2016	3.0 J	ND(0.40)	ND(0.40)	ND(0.40)	1.3 J	1.5 J	ND(0.40)	ND(0.0048)
MW-11B	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	0.95 J	ND(0.40)	ND(0.0050)
MW-12A	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0051)
MW-12B	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0053)
MW-13A	9/19/2016	Dry							
MW-13B	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0049)
MW-14A	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0048)
MW-14B	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0052)
MW-15A	9/20/2016	Dry							
MW-15B	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0053)
MW-16A	9/20/2016	Abandoned							
MW-16B	9/20/2016	Abandoned							
MW-17B	9/20/2016	**40**	ND(0.40)	ND(0.40)	6.4	3.4 J	**400**	ND(0.40)	ND(0.0050)

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
September 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**
MW-18A	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	1.1 J	ND(0.40)	ND(0.0051)
MW-18B	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0052)
MW-19A	9/20/2016	0.55 J	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	1.4 J	ND(0.40)	ND(0.0050)
MW-19B	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	1.4 J	ND(0.40)	ND(0.0051)
MW-20A	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0051)
MW-20B	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	22	ND(0.40)	ND(0.0052)
MW-21A	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0050)
MW-21B	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	7.5	ND(0.40)	ND(0.0052)
MW-22B	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	4.9 J	ND(0.40)	ND(0.0049)
RW-1	9/18/2016	**13,000**	**24,000**	**4,200**	**22,000**	**920 J**	**9,900**	**ND(80)**	**0.07**
RW-2	9/18/2016	**12,000**	**35,000**	**4,400**	**26,000**	**1,300 J**	**22,000**	**ND(200)**	**0.13**
RW-3	9/18/2016	**15,000**	**27,000**	**2,400**	**15,000**	**620 J**	**12,000**	**ND(80)**	**2.3**
RW-4	9/18/2016	**3,800**	**4,600**	**750**	4,400	**220 J**	**8,600**	**ND(20)**	ND(0.0051)
RW-5	9/18/2016	**24,000**	**47,000**	**4,600**	**24,000**	**1,000 J**	**11,000**	**ND(200)**	ND(0.0050)
DMW-1	9/18/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	**90**	ND(0.40)	ND(0.0049)
DMW-2	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	6.3	ND(0.40)	ND(0.0050)
DMW-3	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	1.2 J	ND(0.40)	ND(0.0050)
Duplicate 1 (MW-10B)	9/18/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0048)
Duplicate 2 (MW-18B)	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0050)
Field Blank 1	9/18/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0049)
Field Blank 2	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0048)
Field Blank 3	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0054)
Trip Blank 1	9/18/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	NA
Trip Blank 2	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	NA
Trip Blank 3	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current Groundwater Analytical Data
--8 Oxygenates--
Broad River Amoco; UST Permit #11946
September 2016

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	---	**150**	**10,000**	**N/A**	**47**	**240**	**128**	**1,400**	**N/A**
MW-1	9/18/2016	**ND(200)**	**ND(20000)**	ND(4000)	**ND(200)**	**ND(4000)**	**ND(200)**	**ND(4000)**	ND(1000)
MW-2	9/18/2016	**ND(200)**	**ND(20000)**	ND(4000)	**ND(200)**	**57,000**	**450 J**	**25,000**	ND(1000)
MW-3	9/18/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	**47**	ND(0.40)	ND(8.0)	ND(2.0)
MW-4	9/18/2016	ND(20)	ND(2000)	ND(400)	ND(20)	**2,500**	**240 J**	**2,400**	ND(100)
MW-5	9/18/2016	**ND(200)**	**ND(20000)**	ND(4000)	**ND(200)**	**21,000**	**710 J**	**4,600 J**	ND(1000)
MW-6A	9/18/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-6B	9/18/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-7A	9/19/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-8A	9/19/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-8B	9/19/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-9A	9/19/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-9B	9/19/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-10A	9/19/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-10B	9/19/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-11A	9/18/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-11B	9/19/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-12A	9/19/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-12B	9/19/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-13A	9/19/2016	Dry							
MW-13B	9/19/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-14A	9/20/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-14B	9/20/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	20	ND(0.40)	ND(8.0)	ND(2.0)
MW-15A	9/20/2016	Dry							
MW-15B	9/20/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-16A	9/20/2016	Abandoned							
MW-16B	9/20/2016	Abandoned							
MW-17B	9/20/2016	7.0	ND(40)	ND(8.0)	2.0	**500**	0.75J	**2,300**	ND(2.0)

Note: All units expressed in µg/L (PPB) N/A - Not Analyzed
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current Groundwater Analytical Data
--8 Oxygenates--
Broad River Amoco; UST Permit #11946
September 2016

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	---	**150**	**10,000**	**N/A**	**47**	**240**	**128**	**1,400**	**N/A**
MW-18A	9/20/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-18B	9/20/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-19A	9/20/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-19B	9/20/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-20A	9/20/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-20B	9/20/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-21A	9/20/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-21B	9/20/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
MW-22B	9/20/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
RW-1	9/18/2016	ND(80)	ND(8000)	ND(1600)	**ND(80)**	**65,000**	**220 J**	**6,600**	ND(400)
RW-2	9/18/2016	**ND(200)**	**ND(20000)**	ND(4000)	**ND(200)**	**5300 J**	**ND(200)**	**8,900 J**	ND(1000)
RW-3	9/18/2016	ND(80)	ND(8000)	ND(1600)	**ND(80)**	**44,000**	**300 J**	**6,900**	ND(400)
RW-4	9/18/2016	ND(20)	ND(2000)	ND(400)	ND(20)	**5,800**	**110 J**	**4,500**	ND(100)
RW-5	9/18/2016	**ND(200)**	**ND(20000)**	ND(4000)	**ND(200)**	**26,000**	**430 J**	**ND(4000)**	ND(1000)
DMW-1	9/18/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
DMW-2	9/20/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
DMW-3	9/20/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
Duplicate 1 (MW-10B)	9/18/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
Duplicate 2 (MW-18B)	9/19/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(15.0)	ND(0.487)
Field Blank 1	9/18/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
Field Blank 2	9/19/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
Field Blank 3	9/20/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
Trip Blank 1	9/18/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
Trip Blank 2	9/19/2016	ND(0.40)	ND(40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(0.40)	ND(8.0)	ND(2.0)
Trip Blank 3	9/20/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)

Note: All units expressed in µg/L (PPB) N/A - Not Analyzed
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 3 – Current Groundwater Analytical Data
--Nitrate, Sulfate, Ferrous Iron, Methane, Dissolved Oxygen--
Broad River Amoco; UST Permit #11946
September 2016

Monitor Well ID	Date Sampled	Nitrate	Sulfate	Ferrous Iron	Methane*	Dissolved Oxygen
MW-1	9/18/2016	ND(0.005)	0.650 J	1.2	1,600	1.38
MW-2	9/18/2016	ND(0.005)	1.6	0.6	2,900	0.96
MW-3	9/18/2016	ND(0.005)	5.8	2.8	410	0.88
MW-4	9/18/2016	0.10	ND(0.20)	2.4	8,800	6.68
MW-5	9/18/2016	0.078	0.630 J	3.4	1,800	0.71
MW-6A	9/18/2016	2.3	0.510 J	4.8	ND(2.3)	0.88
MW-6B	9/18/2016	5.6	0.460 J	0.4	ND(2.3)	2.10
MW-7A	9/19/2016	0.062	0.730 J	0.4	ND(2.3)	3.10
MW-8A	9/19/2016	0.120	0.760 J	0.0	ND(2.3)	1.94
MW-8B	9/19/2016	0.450	1.1	0.0	ND(2.3)	3.64
MW-9A	9/19/2016	0.630	0.700 J	0.6	ND(2.3)	1.67
MW-9B	9/19/2016	0.190	1.6	0.4	36	1.91
MW-10A	9/19/2016	0.071 J	3.5	1.2	450	2.45
MW-10B	9/19/2016	0.270	10	0.6	ND(2.3)	2.50
MW-11A	9/18/2016	0.250	6.6	0.8	64	1.30
MW-11B	9/19/2016	0.520	4.1	0.2	ND(2.3)	1.51
MW-12A	9/19/2016	0.053	0.220 J	0.8	ND(2.3)	2.21
MW-12B	9/19/2016	0.140	0.470 J	0.0	ND(2.3)	2.31
MW-13A	9/19/2016	Dry				
MW-13B	9/19/2016	0.940	0.600 J	0.2	ND(2.3)	3.50
MW-14A	9/20/2016	0.15	2.2	0.6	ND(2.3)	1.29
MW-14B	9/20/2016	4.9	ND(0.20)	0.2	ND(2.3)	1.20
MW-15A	9/20/2016	Dry				
MW-15B	9/20/2016	5.7	ND(0.20)	0.0	ND(2.3)	2.29
MW-16A	9/20/2016	Abandoned				
MW-16B	9/20/2016	Abandoned				
MW-17B	9/20/2016	0.024	0.33 J	0.4	490	1.42

Note: All units* expressed in mg/L (PPM) *Methane is expressed in ug/L (PPB)
ND( ) - Not Detected Above Method Detection Limit (limit in mg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit
MCL = Maximum Contaminant Level

Table 3 – Current Groundwater Analytical Data
--Nitrate, Sulfate, Ferrous Iron, Methane, Dissolved Oxygen--
Broad River Amoco; UST Permit #11946
September 2016

Monitor Well ID	Date Sampled	Nitrate	Sulfate	Ferrous Iron	Methane	Dissolved Oxygen
MW-18A	9/20/2016	0.84	39	1.8	6.8 J	1.15
MW-18B	9/20/2016	0.16	0.60 J	0.2	ND(2.3)	1.19
MW-19A	9/20/2016	0.99	3.2	0.2	410	1.69
MW-19B	9/20/2016	0.0089 J	0.80 J	0.4	71	0.94
MW-20A	9/20/2016	0.38	16.0	1.2	4.3 J	0.89
MW-20B	9/20/2016	0.076	0.43 J	0.6	ND(2.3)	1.18
MW-21A	9/20/2016	0.87	13	1.6	19	1.59
MW-21B	9/20/2016	0.15	0.46 J	0.0	ND(2.3)	2.17
MW-22B	9/20/2016	0.071	3.0	0.2	10	1.60
RW-1	9/18/2016	0.074	1.2	2.0	3,100	0.73
RW-2	9/18/2016	ND(5)	2.1	0.6	1,200	0.72
RW-3	9/18/2016	ND(5)	1.8	1.2	2,000	0.99
RW-4	9/18/2016	0.082	ND(0.20)	0.2	550	0.66
RW-5	9/18/2016	0.077	0.660 J	3.6	1,400	0.79
DMW-1	9/18/2016	0.053	2.3	0.2	ND(2.3)	1.30
DMW-2	9/20/2016	0.840	17	0.2	ND(2.3)	2.90
DMW-3	9/20/2016	0.460	78	0.6	3.7 J	2.97
Duplicate 1 (MW-10B)	9/18/2016	0.230	10	0.6	ND(2.3)	2.50
Duplicate 2 (MW-18B)	9/19/2016	0.11	0.34 J	0.2	ND(2.3)	1.19

Note: All units expressed in mg/L (PPM) *Methane is expressed in ug/L (PPB)
ND( ) - Not Detected Above Method Detection Limit (limit in mg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit
MCL = Maximum Contaminant Level

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15** (Action Level)
MW-1	3/5/2011	**1,760**	**18,400**	**1,270**	5,140	**4,070J**	**<83.9**	**<121**	<0.0032	**18**
	3/8/2013	**2,480**	**12,800**	**1,550**	5,650	**623**	**70.8 J**	ND(**11.6**)	ND (0.0039)	14 J
	3/6/2014	**3,080**	**35,100**	**3,130**	**13,300**	**754J**	ND(38.5)	ND(**58.1**)	ND(0.0063)	NA
	8/5/2015	**2,360J**	**34,300**	**3,310**	**14,400**	**2,660**	ND(38.5)	ND(**58.1**)	ND(0.00750)	NA
	1/17/2016	**1,650**	**25,500**	**1,660**	8,510	ND(**44.0**)	ND(19.3)	ND(**29.0**)	ND(0.00750)	NA
	6/7/2016	**2,230J**	**33,600**	**3,370**	**13,400**	**ND(88.0)**	ND(38.5)	**ND(58.1)**	ND(0.00750)	NA
	9/18/2016	**3,000**	**41,000**	**4,000**	**16,000**	**780 J**	**ND(200)**	**ND(200)**	ND(0.0048)	NA
MW-2	3/5/2011	**1,650**	**3,230**	422	2,190	**462J**	**3,420**	<12.1	**1.42**	<15
	3/6/2013	**1.34' Free Product**								
	3/5/2014	**1.42' Free Product**								
	8/5/2015	**14,100**	**23,300**	**2,930J**	**15,500**	**5,050**	**47,000**	ND(**116**)	ND(0.00750)	NA
	1/17/2016	**11,700**	**19,400**	**2,210**	**14,600**	ND(**44.0**)	**34,400**	ND(**29.0**)	**0.134**	NA
	6/7/2016	**4,220**	**6,650**	**944**	5,820	**1,130**	**14,300**	**ND(11.6)**	**0.057**	NA
	9/18/2016	**17,000**	**29,000**	**3,300**	**19,000**	**930 J**	**47,000**	**ND(200)**	**0.44**	NA
MW-3	3/5/2011	<15	10.4	9.52	30.6	4.74J	7.91	<0.121	<0.0032	<15
	3/8/2013	0.417 J	1.05	0.408 J	1.72 J	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/7/2014	2.04J	20.9J	2.81J	17.3J	7.44J	ND(0.770)	ND(1.16)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	1.17J	5.04	1.03J	7.62J	ND(0.176)	0.999J	ND(0.116)	ND(0.00750)	NA
	6/7/2016	ND(0.111)	1.25J	ND(0.109)	2.80J	ND(0.176)	ND(0.077)	ND(0.116)	**0.052**	NA
	9/18/2016	0.61 J	1.9 J	0.45 J	3.2 J	1.2 J	1.2 J	ND(0.40)	ND(0.0049)	NA
MW-4	3/5/2011	**1,830**	198	**1,270**	3,160	**598**	**3,100**	**<12.1**	<0.0032	<15
	3/6/2013	**2.31' Free Product**								
	3/5/2014	**2.24' Free Product**								
	8/5/2015	**5,720**	309J	**2,390**	7,180	**934**	**4,060**	ND(**11.6**)	ND(0.00750)	NA
	1/17/2016	**5,530**	131J	**1,610**	4,880	**468**	**6,670**	ND(**5.81**)	ND(0.00750)	NA
	6/7/2016	**863**	24.3J	453	1,360	**296**	**1,020**	ND(1.16)	ND(0.00750)	NA
	9/18/2016	**9,200**	460	**3,200**	8,500	**810**	**9,000**	**ND(20)**	ND(0.0048)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
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Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15** (Action Level)
MW-5	6/20/2011	**0.30' Free Product**								
	3/6/2013	**2.83' Free Product**								
	3/5/2014	**7.63' Free Product**								
	8/5/2015	**18,700**	**36,000**	**3,540**	**20,100**	**2,950**	**25,700**	ND(**58.1**)	ND(0.00750)	NA
	1/17/2016	**12,600**	**29,700**	**3,120**	**20,800**	ND(**44.0**)	**17,200**	ND(**29.0**)	ND(0.00750)	NA
	6/7/2016	**17,100**	**30,000**	**3,410**	**21,600**	**2,890**	**28,100**	**ND(29.0)**	0.016J	NA
	9/18/2016	**20,000**	**38,000**	**4,600**	**28,000**	**2,100 J**	**29,000**	**ND(200)**	ND(0.0049)	NA
MW-6A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	13 J
	3/5/2014	ND(0.111)	0.469J	ND(0.109)	1.63J	2.43J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/7/2016	0.872J	7.07	2.44J	20.4	15.8	ND(0.077)	ND(0.116)	ND(0.00750)	NA
	9/18/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0049)	NA
MW-6B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	**19**
	3/5/2014	0.372J	2.96J	2.15J	13.9J	13.1	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/7/2016	ND(0.111)	2.45J	0.812J	7.11J	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
	9/18/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0051)	NA
MW-7A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	1.06J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0051)	NA
MW-8A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	6.8 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0049)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
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Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	N/A	5	1,000	700	10,000	25	40	5 (MCL)	0.05	15 (Action Level)
MW-8B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0049)	NA
MW-9A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.62	0.642 J	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.21J	0.667J	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.24J	ND(0.116)	ND(0.00750)	NA
	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	2.8 J	ND(0.40)	ND(0.0051)	NA
MW-9B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.79	0.675 J	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.51J	0.668J	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	4.73J	ND(0.116)	ND(0.00750)	NA
	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	6.2	ND(0.40)	ND(0.0050)	NA
MW-10A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
	9/19/2016	ND(0.40)	0.61 J	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0051)	NA
MW-10B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0051)	NA

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ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
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Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-11A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.00	ND (0.116)	ND (0.0039)	11 J
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.67J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/7/2016	4.08J	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.23J	ND(0.116)	0.042	NA
	9/18/2016	3.0 J	ND(0.40)	ND(0.40)	ND(0.40)	1.3 J	1.5 J	ND(0.40)	ND(0.0048)	NA
MW-11B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.12	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	0.940J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/7/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	0.864J	ND(0.116)	0.014J	NA
	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	0.95 J	ND(0.40)	ND(0.0050)	NA
MW-12A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.486J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	0.022	NA
	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0051)	NA
MW-12B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.359J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	0.049	NA
	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0053)	NA
MW-13A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	7.8 J
	3/5/2014	Insufficient Water								NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
	9/19/2016	Dry								NA

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Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-13B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.322J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
	9/19/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0049)	NA
MW-14A	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.329J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	0.014J	NA
	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0048)	NA
MW-14B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.277J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0052)	NA
MW-15A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	5.3 J
	3/6/2014	ND(0.111)	ND(0.122)	0.166J	0.893J	0.454J	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
	9/20/2016	Dry								NA
MW-15B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/6/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0053)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15** (Action Level)
MW-16A	3/25/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	**35**
	3/5/2014	Abandoned								
	8/5/2015	Abandoned								
	1/17/2016	Abandoned								
	6/8/2016	Abandoned								
	9/20/2016	Abandoned								
MW-16B	3/7/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	Abandoned								
	8/5/2015	Abandoned								
	1/17/2016	Abandoned								
	6/8/2016	Abandoned								
	9/20/2016	Abandoned								
MW-17B	3/6/2013	**6.58**	2.47	1.1 J	3.87 J	ND (0.352	**244**	ND (0.232)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(1.11)	3.27J	ND(1.09)	9.61J	12.8J	**420**	ND(1.16)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	0.021	NA
	9/20/2016	**40**	ND(0.40)	ND(0.40)	6.4	3.4 J	**400**	ND(0.40)	ND(0.0050)	NA
MW-18A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.42	ND (0.116)	ND (0.0039)	**590**
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.363J	2.82J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.15J	ND(0.116)	ND(0.00750)	NA
	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	1.1 J	ND(0.40)	ND(0.0051)	NA
MW-18B	3/6/2013	ND (0.111)	0.459 J	ND (0.109)	2.03 J	ND (0.176)	0.841 J	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.225J	0.416J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0052)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15 (Action Level)**
MW-19A	3/6/2013	0.566 J	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	1.97J	1.87J	0.941J	6.10J	3.67J	0.644J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/9/2016	2.08J	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
	9/20/2016	0.55 J	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	1.4 J	ND(0.40)	ND(0.0050)	NA
MW-19B	3/6/2013	0.253 J	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	0.329J	0.349J	0.123J	1.07J	1.33J	1.11J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.41J	ND(0.116)	ND(0.00750)	NA
	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	1.4 J	ND(0.40)	ND(0.0051)	NA
MW-20A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.15	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	0.991J	0.505J	2.92J	3.50J	0.526J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	0.810J	ND(0.116)	ND(0.00750)	NA
	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0051)	NA
MW-20B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	2.25	ND (0.116)	ND (0.0039)	8.77 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	0.492J	18.1	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.00750)	NA
	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	22	ND(0.40)	ND(0.0052)	NA
MW-21A	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	ND (0.078)	ND (0.116)	ND (0.0039)	12 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	ND(0.077)	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	20.8	ND(0.116)	ND(0.00750)	NA
	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.0050)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15** (Action Level)
MW-21B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.34	ND (0.116)	ND (0.0039)	6.8 J
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	5.75	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	20.4	ND(0.116)	ND(0.00750)	NA
	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	7.5	ND(0.40)	ND(0.0052)	NA
MW-22B	3/6/2013	ND (0.111)	ND (0.122)	ND (0.109)	ND (0.179)	ND (0.176)	1.83	ND (0.116)	ND (0.0039)	ND (3.8)
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	2.64J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	3.60J	ND(0.116)	ND(0.00750)	NA
	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	4.9 J	ND(0.40)	ND(0.0049)	NA
RW-1	3/6/2013	**0.15' Free Product**								
	3/5/2014	**6.68' Free Product**								
	8/5/2015	**4,060**	**21,500**	**2,770**	**24,100**	**1,670**	**2,080**	ND(**23.2**)	ND(0.00750)	NA
	1/17/2016	**1,100**	**2,650**	88.4J	8,050	**394**	**282**	ND(2.90)	ND(0.00750)	NA
	6/8/2016	**121**	**1,420**	665	4,000	**324**	ND(0.770)	ND(1.16)	ND(0.00750)	NA
	9/18/2016	**13,000**	**24,000**	**4,200**	**22,000**	**920 J**	**9,900**	**ND(80)**	**0.07**	NA
RW-2	3/8/2013	**9,420**	**12,800**	**2,030**	**11,000**	**565 J**	**9,100**	**224 J**	**1.65**	ND (3.8)
	3/5/2014	**11,000**	**18,500**	**1,580**	9,850	**299J**	**26,900**	**58.1J**	ND(0.0063)	NA
	8/5/2015	**199**	409	20.6J	1,920	**116**	**90.1**	ND(1.16)	ND(0.00750)	NA
	1/17/2016	**1,220**	**4,330**	276	4,880	**313**	**1,510**	ND(5.81)	ND(0.00750)	NA
	6/8/2016	**5,340**	**11,800**	**1,270**	9,000	**1,150**	**16,800**	ND(11.6)	**0.120**	NA
	9/18/2016	**12,000**	**35,000**	**4,400**	**26,000**	**1,300 J**	**22,000**	**ND(200)**	**0.13**	NA
RW-3	3/6/2013	**0.05' Free Product**								
	3/5/2014	**0.06' Free Product**								
	8/5/2015	**4,710**	**7,870**	**908**	7,760	**642**	**6,460**	ND(**11.6**)	ND(0.00750)	NA
	1/17/2016	**12,800**	**25,500**	**2,860**	**19,200**	ND(**44.0**)	**9,600**	ND(**29.0**)	**0.539**	NA
	6/8/2016	**2,920**	**5,970**	**814**	5,430	ND(17.6U)	**1,910**	**ND(11.6)**	**0.091**	NA
	9/18/2016	**15,000**	**27,000**	**2,400**	**15,000**	**620 J**	**12,000**	**ND(80)**	**2.3**	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	EDB	Total Lead
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5 (MCL)**	**0.05**	**15** (Action Level)
RW-4	3/8/2013	**3,390**	**1,730**	**977**	4,900	**210 J**	**4,460**	**ND (5.81)**	ND (0.0039)	12 J
	3/7/2014	**2,960**	**4,070**	378J	3,500	**186J**	**9,160**	**ND(11.6)**	ND(0.0063)	NA
	8/5/2015	**4,680**	**5,720**	**1,050**	6,190	**1,100**	**20,200**	ND(**23.2**)	ND(0.00750)	NA
	1/17/2016	**5,290**	**6,900**	**1,110**	6,590	ND(**35.2**)	**18,200**	ND(**23.2**)	ND(0.00750)	NA
	6/8/2016	**6,560**	**7,610**	**1,250**	7,350	**2,110**	**30,700**	**ND(23.2)**	ND(0.00750)	NA
	9/18/2016	**3,800**	**4,600**	**750**	4,400	**220 J**	**8,600**	**ND(20)**	ND(0.0051)	NA
RW-5	3/6/2013	**0.06' Free Product**								
	3/5/2014	**0.30' Free Product**								
	8/5/2015	**20,000**	**33,200**	**3,060**	**18,100**	**2,780**	**10,600**	ND(**58.1**)	ND(0.00750)	NA
	1/17/2016	**7,990**	**22,000**	**2,270**	**18,800**	ND(**35.2**)	**3,060**	ND(**23.2**)	ND(0.00750)	NA
	6/8/2016	**388**	**1,040**	196	3,160	**227**	**225**	ND(1.16)	ND(0.00750)	NA
	9/18/2016	**24,000**	**47,000**	**4,600**	**24,000**	**1,000 J**	**11,000**	**ND(200)**	ND(0.0050)	NA
DMW-1	3/8/2013	**507**	ND (1.22)	ND (1.09	ND (0.179)	ND (1.76)	**131**	**14.2 J**	ND (0.0039)	ND (3.8)
	3/7/2014	ND(0.111)	0.827J	ND(0.109)	1.17J	ND(0.176)	**159**	2.60J	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/8/2016	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	**116**	ND(0.116)	0.031	NA
	9/18/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	**90**	ND(0.40)	ND(0.0049)	NA
DMW-2	3/6/2013	4.12	0.548 J	ND (0.109)	0.805 J	ND (0.176)	**153**	ND (0.116)	ND (0.0039)	ND (3.8)
	3/7/2014	0.669J	3.63J	1.90J	10.7J	13.2	**89.2**	ND(0.232)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/9/2016	ND(0.111)	0.611J	ND(0.109)	4.05J	ND(0.176)	5.92	ND(0.116)	ND(0.00750)	NA
	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	6.3	ND(0.40)	ND(0.0050)	NA
DMW-3	3/6/2013	0.281 J	0.497 J	ND (0.109)	ND (0.179	ND (0.176)	1.76	ND (0.116)	ND (0.0039)	**120**
	3/5/2014	ND(0.111)	ND(0.122)	ND(0.109)	ND(0.179)	ND(0.176)	1.33J	ND(0.116)	ND(0.0063)	NA
	8/5/2015	Not Sampled								
	1/17/2016	Not Sampled								
	6/9/2016	ND(0.111)	ND(0.122)	ND(0.109)	1.59J	ND(0.176)	1.04J	ND(0.116)	ND(0.00750)	NA
	9/20/2016	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	1.2 J	ND(0.40)	ND(0.0050)	NA

Note: All units expressed in µg/L (PPB) MCL = Maximum Contaminant Level
ND( ) - Not Detected Above Practical Quantitation Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
--8 Oxygenates--
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	---	**150**	**10,000**	**N/A**	**47**	**240**	**128**	**1,400**	**N/A**
MW-1	3/5/2011	NA	NA	NA	NA	NA	NA	NA	NA
	3/8/2013	ND (23.6)	**ND (12,500)**	ND (3,760)	ND (23.4)	**6,340**	ND (24)	ND (29)	ND (48.7)
	3/6/2014	ND(118)	**ND(62,500)**	ND(18,800)	**ND(117)**	**ND(4,270)**	ND(120)	ND(145)	ND(243)
	8/5/2015	ND(118)	**ND(62,500)**	ND(18,800)	**ND(117)**	**ND(507)**	ND(120)	ND(145)	ND(243)
	1/17/2016	ND(59.0)	**ND(31,200)**	ND(9,400)	**ND(58.5)**	**3,170J**	ND(60.0)	ND(72.5)	ND(122)
	6/7/2016	ND(118)	**ND(62,500)**	ND(18,800)	**ND(117)**	**4,130J**	ND(120)	**ND(7,500)**	ND(243)
MW-2	3/5/2011	NA	NA	NA	NA	NA	NA	NA	NA
	3/6/2013	**1.34' Free Product**							
	3/5/2014	**1.42' Free Product**							
	8/5/2015	**ND(236)**	**ND(125,000)**	ND(37,600)	**ND(234)**	**48,800**	**3,740J**	**21,700**	ND(487)
	1/17/2016	ND(59.0)	**ND(31,200)**	ND(9,400)	**ND(58.5)**	**34,900**	**444J**	**14,700**	ND(122)
	6/7/2016	ND(23.6)	**ND(12,500)**	ND(3,760)	ND(23.4)	**23,200**	ND(24)	**6,170**	ND(48.7)
MW-3	3/5/2011	NA	NA	NA	NA	NA	NA	NA	NA
	3/8/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	31	ND (0.24)	ND (0.29)	ND (0.487)
	3/7/2014	ND(2.36)	ND(1,250)	ND(376)	ND(2.34)	ND(10.1)	ND(2.40)	ND(2.90)	ND(4.87)
	8/5/2015	Not Sampled							
	1/17/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	46.8	ND(0.240)	6.08J	ND(0.487)
	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	42	ND(0.240)	ND(15.0)	ND(0.487)
MW-4	3/5/2011	NA	NA	NA	NA	NA	NA	NA	NA
	3/6/2013	**2.31' Free Product**							
	3/5/2014	**2.24' Free Product**							
	8/5/2015	ND(23.6)	**ND(12,500)**	ND(3,760)	ND(23.4)	**2,410**	**441J**	**2,180**	ND(48.7)
	1/17/2016	ND(11.8)	ND(6,250)	ND(1,880)	ND(11.7)	**1,360**	**176J**	**1,600**	ND(24.3)
	6/7/2016	ND(2.36)	ND(1,250)	ND(376)	ND(2.34)	**373**	30.4J	265	ND(4.87)
MW-5	6/20/2011	NA	NA	NA	NA	NA	NA	NA	NA
	3/6/2013	**2.83' Free Product**							
	3/5/2014	**7.63' Free Product**							
	8/5/2015	ND(118)	**ND(62,500)**	ND(18,800)	**ND(117)**	**17,500**	**2,220J**	**3,740J**	ND(243)
	1/17/2016	ND(59.0)	**ND(31,200)**	ND(9,400)	**ND(58.5)**	**6,030**	**473J**	ND(72.5)	ND(122)
	6/7/2016	ND(59.0)	**ND(31,200)**	ND(9,400)	**ND(58.5)**	**12,300**	**797J**	**ND(3,750)**	ND(122)

Note: All units expressed in µg/L (PPB)
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
--8 Oxygenates--
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	---	150	10,000	N/A	47	240	128	1,400	N/A
MW-6A	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(15.0)	ND(0.487)
MW-6B	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(15.0)	ND(0.487)
MW-7A	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-8A	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-8B	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-9A	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)

Note: All units expressed in µg/L (PPB)
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
--8 Oxygenates--
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	---	**150**	**10,000**	**N/A**	**47**	**240**	**128**	**1,400**	**N/A**
MW-9B	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-10A	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-10B	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-11A	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	2.92J	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/7/2016	0.440J	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(15.0)	ND(0.487)
MW-11B	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/7/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(15.0)	ND(0.487)
MW-12A	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/8/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)

Note: All units expressed in µg/L (PPB)
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
--8 Oxygenates--
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	---	150	10,000	N/A	47	240	128	1,400	N/A
MW-12B	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/8/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-13A	3/25/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/5/2014	Insufficient Water							
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/8/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-13B	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/8/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-14A	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/8/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-14B	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/8/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-15A	3/25/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/8/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)

Note: All units expressed in µg/L (PPB)
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
--8 Oxygenates--
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	---	150	10,000	N/A	47	240	128	1,400	N/A
MW-15B	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/6/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/8/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-16A	3/25/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/5/2014	Abandoned							
	8/5/2015	Abandoned							
	1/17/2016	Abandoned							
	6/8/2016	Abandoned							
MW-16B	3/7/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/5/2014	Abandoned							
	8/5/2015	Abandoned							
	1/17/2016	Abandoned							
	6/8/2016	Abandoned							
MW-17B	3/6/2013	2.6 J	ND (250)	ND (75.2)	ND (0.468)	244	ND (0.48)	400	ND (0.974)
	3/5/2014	4.68J	ND(1,250)	ND(376)	ND(2.34)	422	ND(2.40)	1,120	ND(4.87)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/8/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-18A	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-18B	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)

Note: All units expressed in µg/L (PPB)
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
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Table 4 – Current & Historical Groundwater Analytical Data
--8 Oxygenates--
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	---	**150**	**10,000**	**N/A**	**47**	**240**	**128**	**1,400**	**N/A**
MW-19A	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	5.8 J	ND (0.487)
	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	7.86J	ND(0.240)	15.2	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-19B	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	6.04J	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-20A	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-20B	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-21A	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
MW-21B	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)

Note: All units expressed in µg/L (PPB)
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
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Table 4 – Current & Historical Groundwater Analytical Data
--8 Oxygenates--
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	**---**	**150**	**10,000**	**N/A**	**47**	**240**	**128**	**1,400**	**N/A**
MW-22B	3/6/2013	ND (0.236)	ND (125)	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
RW-1	3/6/2013	**0.15' Free Product**							
	3/5/2014	**6.68' Free Product**							
	8/5/2015	ND(47.2)	**ND(25,000)**	ND(7,520)	ND(46.8)	**13,100**	ND(48.0)	**1,420J**	ND(97.4)
	1/17/2016	ND(5.90)	ND(3,120)	ND(940)	ND(5.85)	**487J**	22.7J	ND(7.25)	ND(12.2)
	6/8/2016	ND(2.36)	ND(1,250)	ND(376)	ND(2.34)	ND(10.1)	ND(2.40)	ND(150)	ND(4.87)
RW-2	3/8/2013	72.7 J	**ND (25,000)**	ND (7520)	ND (46.8)	**32,100**	ND (48)	**5,970**	ND (97.4)
	3/5/2014	ND(59.0)	**ND(31,200)**	ND(9,400)	**ND(58.5)**	**16,900**	110J	**13,900**	ND(122)
	8/5/2015	ND(2.36)	ND(1,250)	ND(376)	ND(2.34)	220	ND(2.40)	71.8J	ND(4.87)
	1/17/2016	ND(11.8)	ND(6,250)	ND(1,880)	ND(11.7)	**429J**	ND(12.0)	549	ND(24.3)
	6/8/2016	ND(23.6)	**ND(12,500)**	ND(3,760)	ND(23.4)	**13,700**	ND(24)	**11,700**	ND(48.7)
RW-3	3/6/2013	**0.05' Free Product**							
	3/5/2014	**0.06' Free Product**							
	8/5/2015	ND(23.6)	**ND(12,500)**	ND(3,760)	ND(23.4)	**21,000**	**464J**	**3,330**	ND(48.7)
	1/17/2016	ND(59.0)	**ND(31,200)**	ND(9,400)	ND(58.5)	**34,200**	**320J**	**4,680**	ND(122)
	6/8/2016	ND(23.6)	**ND(12,500)**	ND(3,760)	ND(23.4)	**8,330**	**138J**	**ND(1,500)**	ND(48.7)
RW-4	3/8/2013	ND (11.8)	ND (6,250)	ND (1880)	ND (11.7)	**5,690**	ND (12)	**2,180**	ND (24.3)
	3/7/2014	ND(23.6)	**ND(12,500)**	ND(3,760)	ND(23.4)	**5550**	53.3J	**2,930**	ND(48.7)
	8/5/2015	ND(47.2)	**ND(25,000)**	ND(7,520)	ND(46.8)	**11,900**	**743J**	**9,020**	ND(97.4)
	1/17/2016	ND(47.2)	**ND(25,000)**	ND(7,520)	ND(46.8)	**9,470**	117J	**6,730**	ND(97.4)
	6/8/2016	ND(47.2)	**ND(25,000)**	ND(7,520)	ND(46.8)	**11,900**	**743J**	**9,020**	ND(97.4)
RW-5	3/6/2013	**0.06' Free Product**							
	3/5/2014	**0.30' Free Product**							
	8/5/2015	ND(118)	**ND(62,500)**	ND(18,800)	**ND(117)**	**19,500**	**2,150J**	ND(145)	ND(243)
	1/17/2016	ND(47.2)	**ND(25,000)**	ND(7,520)	ND(46.8)	**2,520J**	**189J**	ND(58.0)	ND(97.4)
	6/8/2016	ND(2.36)	ND(1,250)	ND(376)	ND(2.34)	**546**	20.5J	ND(150)	ND(4.87)

Note: All units expressed in µg/L (PPB)
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
--8 Oxygenates--
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	---	**150**	**10,000**	**N/A**	**47**	**240**	**128**	**1,400**	**N/A**
DMW-1	3/8/2013	ND (2.36)	ND (1250)	ND (376)	ND (2.34)	**2,550**	ND (2.4)	75.5 J	ND (4.87)
	3/7/2014	3.59J	ND(125)	ND(37.6)	ND(0.234)	**2,300**	ND(0.240)	125	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/8/2016	0.992J	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
DMW-2	3/6/2013	1.49 J	ND (125)	ND (37.6)	ND (0.234)	141	ND (0.24)	230	ND (0.487)
	3/7/2014	0.867J	ND(250)	ND(75.2)	ND(0.468)	120	ND(0.480)	340	ND(0.974)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
DMW-3	3/6/2013	ND (0.236)	239 J	ND (37.6)	ND (0.234)	ND (1.01)	ND (0.24)	ND (0.29)	ND (0.487)
	3/5/2014	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)
	8/5/2015	Not Sampled							
	1/17/2016	Not Sampled							
	6/9/2016	ND(0.236)	ND(125)	ND(37.6)	ND(0.234)	ND(1.01)	ND(0.240)	ND(0.290)	ND(0.487)

Note: All units expressed in µg/L (PPB)
ND( ) - Not Detected Above Method Detection Limit (limit in µg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit

Table 4 – Current & Historical Groundwater Analytical Data
--Nitrate, Sulfate, Ferrous Iron, Methane, Dissolved Oxygen--
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date Sampled	Nitrate	Sulfate	Ferrous Iron	Methane*	Dissolved Oxygen
MW-1	6/7/2016	ND (0.008)	ND (1.1)	0.3	1,680	1.44
	9/18/2016	ND(0.005)	0.650 J	1.2	1,600	1.38
MW-2	6/7/2016	ND (0.008)	4.4J	1.2	2,130	1.10
	9/18/2016	ND(0.005)	1.6	0.6	2,900	0.96
MW-3	6/7/2016	0.113	4.8J	0.2	ND (0.435)	1.63
	9/18/2016	ND(0.005)	5.8	2.8	410	0.88
MW-4	6/7/2016	0.144	ND (1.1)	1.8	2410	1.31
	9/18/2016	0.10	ND(0.20)	2.4	8,800	6.68
MW-5	6/7/2016	ND (0.008)	ND (1.1)	1.8	4640	1.37
	9/18/2016	0.078	0.630 J	3.4	1,800	0.71
MW-6A	6/7/2016	0.274	1.9J	0.4	0.675J	2.10
	9/18/2016	2.3	0.510 J	4.8	ND(2.3)	0.88
MW-6B	6/7/2016	4.70	1.2J	0.2	ND (0.435)	3.07
	9/18/2016	5.6	0.460 J	0.4	ND(2.3)	2.10
MW-7A	6/7/2016	0.048	ND (1.1)	0.6	ND (0.435)	3.55
	9/19/2016	0.062	0.730 J	0.4	ND(2.3)	3.10
MW-8A	6/7/2016	0.026	1.2J	0.4	ND (0.435)	2.14
	9/19/2016	0.120	0.760 J	0.0	ND(2.3)	1.94
MW-8B	6/7/2016	0.355	1.6J	0.8	ND (0.435)	3.87
	9/19/2016	0.450	1.1	0.0	ND(2.3)	3.64
MW-9A	6/7/2016	0.086	ND (1.1)	3.4	375	1.39
	9/19/2016	0.630	0.700 J	0.6	ND(2.3)	1.67
MW-9B	6/7/2016	0.126	2.9J	2.2	ND (0.435)	2.15
	9/19/2016	0.190	1.6	0.4	36	1.91
MW-10A	6/7/2016	1.53	2.8J	1.2	ND (0.435)	2.94
	9/19/2016	0.071 J	3.5	1.2	450	2.45
MW-10B	6/7/2016	0.164	8.3	0.8	ND (0.435)	2.99
	9/19/2016	0.270	10	0.6	ND(2.3)	2.50

Note: All units* expressed in mg/L (PPM) *Methane is expressed in ug/L (PPB)
ND( ) - Not Detected Above Method Detection Limit (limit in mg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit
MCL = Maximum Contaminant Level

Table 4 – Current & Historical Groundwater Analytical Data
--Nitrate, Sulfate, Ferrous Iron, Methane, Dissolved Oxygen--
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date Sampled	Nitrate	Sulfate	Ferrous Iron	Methane	Dissolved Oxygen
MW-11A	6/7/2016	0.258	5.2	0.4	24.4	1.10
	9/18/2016	0.250	6.6	0.8	64	1.30
MW-11B	6/7/2016	0.456	4.2J	0.2	0.458J	1.13
	9/19/2016	0.520	4.1	0.2	ND(2.3)	1.51
MW-12A	6/8/2016	0.027	ND (1.1)	0.8	ND (0.435)	1.32
	9/19/2016	0.053	0.220 J	0.8	ND(2.3)	2.21
MW-12B	6/8/2016	0.094	1.5J	0.0	ND (0.435)	3.48
	9/19/2016	0.140	0.470 J	0.0	ND(2.3)	2.31
MW-13A	6/8/2016	0.034	4.8J	0.6	ND (0.435)	2.90
	9/19/2016	Dry				
MW-13B	6/8/2016	0.738	1.5J	0.4	ND (0.435)	4.21
	9/19/2016	0.940	0.600 J	0.2	ND(2.3)	3.50
MW-14A	6/8/2016	ND (0.008)	2.1J	0.0	ND (0.435)	0.81
	9/20/2016	0.15	2.2	0.6	ND(2.3)	1.29
MW-14B	6/8/2016	4.52	1.2J	0.2	ND (0.435)	2.59
	9/20/2016	4.9	ND(0.20)	0.2	ND(2.3)	1.20
MW-15A	6/8/2016	3.54	1.7J	0.8	0.687J	2.17
	9/20/2016	Dry				
MW-15B	6/8/2016	6.93	1.3J	0.0	ND (0.435)	3.09
	9/20/2016	5.7	ND(0.20)	0.0	ND(2.3)	2.29
MW-16A	6/8/2016	Abandoned				
	9/20/2016	Abandoned				
MW-16B	6/8/2016	Abandoned				
	9/20/2016	Abandoned				
MW-17B	6/9/2016	0.126	1.4J	0.0	591	1.24
	9/20/2016	0.024	0.33 J	0.4	490	1.42

Note: All units* expressed in mg/L (PPM) *Methane is expressed in ug/L (PPB)
ND( ) - Not Detected Above Method Detection Limit (limit in mg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit
MCL = Maximum Contaminant Level

Table 4 – Current & Historical Groundwater Analytical Data
--Nitrate, Sulfate, Ferrous Iron, Methane, Dissolved Oxygen--
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date Sampled	Nitrate	Sulfate	Ferrous Iron	Methane	Dissolved Oxygen
MW-18A	6/9/2016	0.082	3.1J	1.8	5.43	1.5
	9/20/2016	0.84	39	1.8	6.8 J	1.15
MW-18B	6/9/2016	ND (0.008)	1.7J	2.4	3.58	1.18
	9/20/2016	0.16	0.60 J	0.2	ND(2.3)	1.19
MW-19A	6/9/2016	ND (0.008)	1.6J	0.0	2,190	1
	9/20/2016	0.99	3.2	0.2	410	1.69
MW-19B	6/9/2016	ND (0.008)	1.7J	2.4	0.966	2.12
	9/20/2016	0.0089 J	0.80 J	0.4	71	0.94
MW-20A	6/9/2016	0.107	1.2J	0.8	223	0.8
	9/20/2016	0.38	16.0	1.2	4.3 J	0.89
MW-20B	6/9/2016	ND (0.008)	16.8	0.2	47.5	1.51
	9/20/2016	0.076	0.43 J	0.6	ND(2.3)	1.18
MW-21A	6/9/2016	0.016	1.6J	0.6	ND (0.435)	1.11
	9/20/2016	0.87	13	1.6	19	1.59
MW-21B	6/9/2016	ND (0.008)	ND (1.1)	0.6	ND (0.435)	1.09
	9/20/2016	0.15	0.46 J	0.0	ND(2.3)	2.17
MW-22B	6/9/2016	0.025	3.0J	0.2	0.79	1.97
	9/20/2016	0.071	3.0	0.2	10	1.60

Note: All units* expressed in mg/L (PPM) *Methane is expressed in ug/L (PPB)
ND( ) - Not Detected Above Method Detection Limit (limit in mg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit
MCL = Maximum Contaminant Level

Table 4 – Current & Historical Groundwater Analytical Data
--Nitrate, Sulfate, Ferrous Iron, Methane, Dissolved Oxygen--
Broad River Amoco; UST Permit #11946
Historical and September 2016

Monitor Well ID	Date Sampled	Nitrate	Sulfate	Ferrous Iron	Methane	Dissolved Oxygen
RW-1	6/8/2016	0.047	4.4J	0.2	21.1	2.14
	9/18/2016	0.074	1.2	2.0	3,100	0.73
RW-2	6/8/2016	0.070	2.1J	0.6	745	1.94
	9/18/2016	ND(5)	2.1	0.6	1,200	0.72
RW-3	6/8/2016	ND (0.008)	2.6J	0.6	1,010	1.12
	9/18/2016	ND(5)	1.8	1.2	2,000	0.99
RW-4	6/8/2016	ND (0.008)	1.6J	0.4	2,730	1.28
	9/18/2016	0.082	ND(0.20)	0.2	550	0.66
RW-5	6/8/2016	ND (0.008)	5.9J	2.2	214	1.16
	9/18/2016	0.077	0.660 J	3.6	1,400	0.79
DMW-1	6/8/2016	ND (0.008)	2.6J	0.0	ND (0.435)	2.18
	9/18/2016	0.053	2.3	0.2	ND(2.3)	1.30
DMW-2	6/9/2016	0.627	18.5	0.2	ND (0.435)	3.71
	9/20/2016	0.840	17	0.2	ND(2.3)	2.90
DMW-3	6/9/2016	0.359	62.1	0.0	ND (0.435)	2.58
	9/20/2016	0.460	78	0.6	3.7 J	2.97

Note: All units expressed in mg/L (PPM) *Methane is expressed in ug/L (PPB)
ND( ) - Not Detected Above Method Detection Limit (limit in mg/l)
NA - Not Analyzed J - Estimated result < PQL and > Method Detection Limit
MCL = Maximum Contaminant Level

Broad River Amoco; UST Permit #11946

Table 5 - Free-Phase Product Reduction Calculation

September 2016

Well		Product Thickness (feet)	Product Thickness >SSTL Thickness (feet)
MW-1	Initial Thickness	0.00	
	SSTL Thickness	0.01	
	Initial > SSTL	0.00	0.00
	Subsequent (9/18/16)	0.00	
	Subsequent >SSTL	0.00	0.00
MW-2	Initial Thickness	1.43	
	SSTL Thickness	0.01	
	Initial > SSTL	1.42	1.42
	Subsequent (9/18/16)	0.00	
	Subsequent >SSTL	-0.01	0.00
MW-4	Initial Thickness	2.25	
	SSTL Thickness	0.01	
	Initial > SSTL	2.24	2.24
	Subsequent (9/18/16)	0.00	
	Subsequent >SSTL	0.00	0.00
MW-5	Initial Thickness	6.26	
	SSTL Thickness	0.01	
	Initial > SSTL	6.25	6.25
	Subsequent (9/18/16)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-1	Initial Thickness	5.30	
	SSTL Thickness	0.01	
	Initial > SSTL	5.29	5.29
	Subsequent (9/18/16)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-2	Initial Thickness	0.00	
	SSTL Thickness	0.01	
	Initial > SSTL	0.00	0.00
	Subsequent (9/18/16)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-3	Initial Thickness	0.01	
	SSTL Thickness	0.01	
	Initial > SSTL	0.00	0.00
	Subsequent (9/18/16)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-4	Initial Thickness	0.00	
	SSTL Thickness	0.01	
	Initial > SSTL	0.00	0.00
	Subsequent (9/18/16)	0.00	
	Subsequent >SSTL	0.00	0.00
RW-5	Initial Thickness	0.03	
	SSTL Thickness	0.01	
	Initial > SSTL	0.02	0.02
	Subsequent (9/18/16)	0.00	
	Subsequent >SSTL	0.00	0.00
Total	Initial > SSTL		15.28
	Subsequent >SSTL		0.00

Free-Phase Product Thickness Reduction = 100%

APPENDIX A
NOT INCLUDED

APPENDIX B
PURGING DATA SHEETS &
LABORATORY ANALYTICAL DATA

ENVIRO-TEST SERVICES

Purge Meter Calibration Data Sheet

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot Sunny Clear 92°

pH / Specific Conductivity Meter

Model & Serial #: (check one)
- ✓ Hanna HI9824 – S/N 886328
- ____ Hanna HI9824 – S/N 871936

Dissolved Oxygen Meter

Model & Serial #: (check one)
- ____ YSI 58 Dissolved Oxygen – S/N 510
- ✓ YSI 550A Dissolved Oxy. – S/N 06A280

Turbidity Meter

Model & Serial #: (check one)
- ✓ Micro-TPW 2000 – S/N 201401347

Initial Calibration

pH Calibration:	4 / 7 / 10.0	Spec. Cond. Calibration:	1000	Turbidity Calibration:	0.2 / 10.0 / 1003	Date: 9-18-2016
pH Standard:	4.01 / 7.00 / 10.01	Spec. Cond. Standard:	1000 uS/cm	Turbidity Standard:	0.02 / 10.0 / 1000	Time: 755

Midday Calibration Check

pH Calibration:	4.0 / 7.1 / 10.0	Spec. Cond. Calibration:	1000	Turbidity Calibration:	0.03 / 10.0 / 997	Date: 9-18-2016
pH Standard:	4.01 / 7.00 / 10.01	Spec. Cond. Standard:	1000 uS/cm	Turbidity Standard:	0.02 / 10.0 / 1000	Time: 1315

End-of-Day Calibration Check

pH Calibration:	4.0 / 7.0 / 10.0	Spec. Cond. Calibration:	997	Turbidity Calibration:	0.02 / 10.0 / 1001	Date: 9-18-2016
pH Standard:	4.01 / 7.00 / 10.01	Spec. Cond. Standard:	1000	Turbidity Standard:	0.02 / 10.0 / 1000	Time: 1635

ENVIRO-TEST SERVICES

Purge Meter Calibration Data Sheet

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cola, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot clear Sunny 90°

pH / Specific Conductivity Meter

Model & Serial #: (check one)
- ✓ Hanna HI9824 – S/N 886328
- ____ Hanna HI9824 – S/N 871936

Dissolved Oxygen Meter

Model & Serial #: (check one)
- ____ YSI 58 Dissolved Oxygen – S/N 510
- ✓ YSI 550A Dissolved Oxy. – S/N 06A280

Turbidity Meter

Model & Serial #: (check one)
- ✓ Micro-TPW 2000 – S/N 201401347

Initial Calibration

pH Calibration:	4.1 / 7.0 / 10	Spec. Cond. Calibration:	1000	Turbidity Calibration:	0.02 / 10.0 / 1000
pH Standard:	4.01 / 7.00 / 10.01	Spec. Cond. Standard:		Turbidity Standard:	0.02 / 10.0 / 1000

Date: 9-19-16 Time: 1049

Midday Calibration Check

pH Calibration:	4.0 / 7.2 / 10.2	Spec. Cond. Calibration:	1006	Turbidity Calibration:	0.02 / 11.0 / 1000
pH Standard:	4.01 / 7.00 / 10.01	Spec. Cond. Standard:	1000	Turbidity Standard:	0.02 / 10.0 / 1000

Date: 9-19-16 Time: 1455

End-of-Day Calibration Check

pH Calibration:	4.0 / 7.1 / 10.0	Spec. Cond. Calibration:		Turbidity Calibration:	0.03 / 10.6 / 996
pH Standard:	4.01 / 7.00 / 10.01	Spec. Cond. Standard:	1000	Turbidity Standard:	0.02 / 10.0 / 1000

Date: 9-19-16 Time: 1745

ENVIRO-TEST SERVICES

Purge Meter Calibration Data Sheet

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy

pH / Specific Conductivity Meter

Model & Serial #: (check one)
- ✓ Hanna HI9824 – S/N 886328
- ____ Hanna HI9824 – S/N 871936

Dissolved Oxygen Meter

Model & Serial #: (check one)
- ____ YSI 58 Dissolved Oxygen – S/N 510
- ✓ YSI 550A Dissolved Oxy. – S/N 06A280

Turbidity Meter

Model & Serial #: (check one)
- ✓ Micro-TPW 2000 – S/N 201401347

Initial Calibration

pH Calibration:	4.0 / 7.2 / 10.0	Spec. Cond. Calibration:		Turbidity Calibration:	0.02 / 10.2 / 997 /	Date: 9-20-16
pH Standard:	4.01 / 7.00 / 10.01	Spec. Cond. Standard:	1000 uS-cm	Turbidity Standard:	0.02 / 10.0 / 1000 /	Time: 805

Midday Calibration Check

pH Calibration:	4.0 / 7.0 / 9.9	Spec. Cond. Calibration:		Turbidity Calibration:	0.02 / 10.0 / 1000 /	Date: 9-20-16
pH Standard:	4.01 / 7.00 / 10.01	Spec. Cond. Standard:	1000	Turbidity Standard:	0.02 / 10.0 / 1000 /	Time: 1205

End-of-Day Calibration Check

pH Calibration:	4.1 / 6.9 / 10.0	Spec. Cond. Calibration:		Turbidity Calibration:	0.02 / 10.0 / 1001 /	Date: 9-20-16
pH Standard:	4.01 / 7.00 / 10.01	Spec. Cond. Standard:	1000 uS-cm	Turbidity Standard:	0.02 / 10.0 / 1000 /	Time: 1730

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-18-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot; Clear Muggy 92°

Well Data

Well Number: MW-1 Diameter (in): 2" Well Volume (gal): 3.2

Total Depth: 40' Static Water Level: 19.78 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)									
Time (military)		1.0	1.0	.5					.2
pH (standard units)	7.7	7.3	7.3	7.3					7.3
Specific Cond. (µS/cm)	65	44	62	79					60
Water Temp (°C)	26.6	25.4	25.2	25.3					25.2
Turbidity (mild, moderate, strong)	9.27	30.44	27.80	26.11					26.84
Dissolved Oxygen	1.73	1.41	1.46	1.31					1.38

Sample Collection Time: 843

Remarks: Fe = 1.2

ENVIRO-TEST SERVICES

Monitoring Well Purging Data Sheet

Date: 9-18-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-2 Diameter (in): 2" Well Volume (gal): 1.7

Total Depth: 28 Static Water Level: 17.35 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)									
Time (military)		1.0	,5	,5					,2
pH (standard units)	7.7	7.6	7.6	7.8					7.8
Specific Cond. (µS/cm)	86	58	109	122					109
Water Temp (°C)	27.6	27.8	27.2	26.4					26.3
Turbidity (mild, moderate, strong)	8.91	16.20	12.32	11.97					11.40
Dissolved Oxygen	1.68	0.96	1.02	0.98					0.96

Sample Collection Time: 915

Remarks: Fe = 0.6

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-18-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-3 Diameter (in): 2" Well Volume (gal): 1.9

Total Depth: 31' Static Water Level: 19.20 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1.5	1.0	1.0					.5
Time (military)									
pH (standard units)	7.9	7.9	7.8	7.8					7.8
Specific Cond. (µS/cm)	222	238	233	240					249
Water Temp (°C)	26.2	25.3	26.0	25.6					25.5
Turbidity (mild, moderate, strong)	304.1	379.4	192.7	187.4					179.3
Dissolved Oxygen	1.37	1.12	0.90	0.84					0.88

Sample Collection Time: 955

Remarks: Fe = 2.8

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-18-2016

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-4 Diameter (in): 2" Well Volume (gal): 2.3

Total Depth: 25' Static Water Level: 10.85 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)									
Time (military)		1.5	1.5	.5					.2
pH (standard units)	8.3	8.1	7.9	7.9					7.9
Specific Cond. (µS/cm)	73	143	396	287					305
Water Temp (°C)	28.0	27.2	26.8	26.2					26.3
Turbidity (mild, moderate, strong)	169.2	401.7	388.2	379.8					371.4
Dissolved Oxygen	1.23	0.91	0.72	0.64					6.68

Sample Collection Time: 1020

Remarks: Fe = 2.4

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-18-2016

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-5 Diameter (in): 2" Well Volume (gal): _____

Total Depth: 20' Static Water Level: 14.86 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)									
Time (military)		2.0	1.5	.5					.5
pH (standard units)	7.6	7.1	7.0	7.0					7.0
Specific Cond. (µS/cm)	72	63	111	127					131
Water Temp (°C)	28.8	27.7	28.1	27.6					27.2
Turbidity (mild, moderate, strong)	10.11	52.31	71.22	69.84					65.04
Dissolved Oxygen	0.92	0.77	0.72	0.72					0.71

Sample Collection Time: 1058

Remarks: Fe = 3.4

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-18-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW 6-A Diameter (in): 2" Well Volume (gal): .9

Total Depth: 25.5 Static Water Level: 19.87 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		.5	1.5	2.0					.5
Time (military)									
pH (standard units)	6.9	6.3	6.5	6.5					6.5
Specific Cond. (µS/cm)	28	63	64	78					87
Water Temp (°C)	27.1	26.5	25.2	25.5					25.7
Turbidity (mild, moderate, strong)	87.5	1100	1100	1089					1074
Dissolved Oxygen	1.21	1.10	0.98	0.91					0.88

Sample Collection Time: 1130

Remarks: Fe = 4.8

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-18-~~15~~16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-6B Diameter (in): 2" Well Volume (gal): 3.0

Total Depth: 38.5' Static Water Level: 19.65 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1.0	1.0	1.0					.2
Time (military)									
pH (standard units)	6.9	6.9	6.8	6.8					6.8
Specific Cond. (µS/cm)	78	72	80	88					79
Water Temp (°C)	27.6	26.0	25.8	25.5					25.4
Turbidity (mild, moderate, strong)	19.04	52.06	8.22	7.89					7.51
Dissolved Oxygen	3.48	3.04	2.94	2.21					2.10

Sample Collection Time: 1205

Remarks: Fe = 0.4

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-19-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-7A Diameter (in): 2" Well Volume (gal): 0.9

Total Depth: 24' Static Water Level: 18.17 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1.0	1.0	.5					.5
Time (military)									
pH (standard units)	7.6	7.3	6.7	6.7					6.8
Specific Cond. (µS/cm)	18	10	21	16					16
Water Temp (°C)	25.1	24.8	23.8	23.5					23.7
Turbidity (mild, moderate, strong)	67.3	1100	1012	992					984
Dissolved Oxygen	3.19	3.16	3.18	3.12					3.10

Sample Collection Time: 1145

Remarks: Fe = 0.4

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-19-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear, Muggy 92°

Well Data

Well Number: MW-8A Diameter (in): 2" Well Volume (gal): 0.6

Total Depth: 23 Static Water Level: 18.53 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1.0	1.0	.5					.2
Time (military)									
pH (standard units)	6.4	6.3	6.4	6.4					6.4
Specific Cond. (µS/cm)	41	32	28	22					27
Water Temp (°C)	25.2	24.0	24.1	23.8					24.0
Turbidity (mild, moderate, strong)	729	1100	1100	1092					1077
Dissolved Oxygen	2.34	2.28	2.22	2.00					1.94

Sample Collection Time: 1305

Remarks: Fe = 0.0

ENVIRO-TEST SERVICES

Monitoring Well Purging Data Sheet

Date: 9-19-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry TeaTe (full names) Weather: Hot; Clear Muggy 92°

Well Data

Well Number: MW-8B Diameter (in): 2" Well Volume (gal): 4.6

Total Depth: 37' Static Water Level: 18.40 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2	1.5	.5					.5
Time (military)									
pH (standard units)	6.3	6.3	6.3	6.3					6.3
Specific Cond. (µS/cm)	37	26	29	40					62
Water Temp (°C)	24.5	24.3	23.9	23.5					23.7
Turbidity (mild, moderate, strong)	7.90	12.4	2.78	2.65					2.55
Dissolved Oxygen	4.53	4.11	3.98	3.29					3.64

Sample Collection Time: 1242

Remarks: Fe = 0.0

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-19-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-9A Diameter (in): 2" Well Volume (gal): 0.5

Total Depth: 23' Static Water Level: 19.45 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		.5	.5	.5					.2
Time (military)									
pH (standard units)	6.4	6.5	6.5	6.5					6.5
Specific Cond. (µS/cm)	62	48	50	55					51
Water Temp (°C)	25.6	25.3	25.0	25.1					24.9
Turbidity (mild, moderate, strong)	29.7	221	402	391					389
Dissolved Oxygen	1.87	1.90	1.71	1.69					1.67

Sample Collection Time: 1305

Remarks: Fe = 0.6

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-19-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-9B Diameter (in): 2" Well Volume (gal): 1.9

Total Depth: 31.5' Static Water Level: 19.44 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1	1	.5					.5
Time (military)									
pH (standard units)	6.6	6.6	6.7	6.7					6.6
Specific Cond. (µS/cm)	49	55	51	33					30
Water Temp (°C)	25.9	25.4	24.8	24.4					24.3
Turbidity (mild, moderate, strong)	101	197	67.3	64.9					61.8
Dissolved Oxygen	2.17	2.13	2.04	1.88					1.91

Sample Collection Time: 1335

Remarks: Fe = 0.4

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-19-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear, Muggy 92°

Well Data

Well Number: MW-10A Diameter (in): 2" Well Volume (gal): 0.3

Total Depth: 17.5 Static Water Level: 15.24 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		.5	.5	.5					.2
Time (military)									
pH (standard units)	7.7	7.5	7.5	7.5					7.4
Specific Cond. (µS/cm)	205	194	216	273					291
Water Temp (°C)	25.9	25.8	25.9	25.1					25.3
Turbidity (mild, moderate, strong)	859	1100	1100	1089					1080
Dissolved Oxygen	2.92	2.74	2.64	2.37					2.45

Sample Collection Time: 1357

Remarks: Fe = 1.2

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-19-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear, Muggy 92°

Well Data

Well Number: MW-10B Diameter (in): 2" Well Volume (gal): 3.8

Total Depth: 39' Static Water Level: 15.15 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1.5	1.0	1.0					.5
Time (military)									
pH (standard units)	7.9	7.8	7.5	7.5					7.6
Specific Cond. (µS/cm)	69	76	86	102					98
Water Temp (°C)	25.0	24.4	22.9	23.8					23.2
Turbidity (mild, moderate, strong)	81.7	45.2	20.8	19.1					17.7
Dissolved Oxygen	2.56	2.71	2.88	2.67					2.50

Sample Collection Time: 1427

Remarks: Duplcate #1 Fe=0.6

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: M19-18-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-11A Diameter (in): 2" Well Volume (gal): 1.7

Total Depth: 20' Static Water Level: 9.18 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1.0	1.0	.5					.2
Time (military)									
pH (standard units)	7.9	7.8	7.8	7.8					7.8
Specific Cond. (µS/cm)	142	82	144	140					128
Water Temp (°C)	24.4	23.0	22.8	22.4					22.5
Turbidity (mild, moderate, strong)	10.5	192	73.7	69.5					67.8
Dissolved Oxygen	2.11	1.49	1.50	1.34					1.30

Sample Collection Time: 1505

Remarks: Fe = 0.8

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-19-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear, Muggy 92°

Well Data

Well Number: MW-11B Diameter (in): 2" Well Volume (gal): 4.4

Total Depth: 35' Static Water Level: 7.90 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		3.0	2.0	1.0					1.0
Time (military)									
pH (standard units)	7.4	7.6	7.7	7.7					7.7
Specific Cond. (µS/cm)	125	118	129	120					118
Water Temp (°C)	22.9	22.4	22.2	22.3					22.0
Turbidity (mild, moderate, strong)	11.0	21.5	9.28	10.8					9.22
Dissolved Oxygen	1.84	1.64	1.58	1.56					1.51

Sample Collection Time: 1538

Remarks: Fe = 0.2

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-19-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot; Clear Muggy 92°

Well Data

Well Number: MW-12A Diameter (in): 2" Well Volume (gal): 0.45

Total Depth: 20' Static Water Level: 17.22 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		0.5	0.5	0.2					0.2
Time (military)									
pH (standard units)	7.7	7.4	7.3	7.4					7.4
Specific Cond. (µS/cm)	44	63	81	67					78
Water Temp (°C)	26.7	25.5	24.6	24.5					24.5
Turbidity (mild, moderate, strong)	122	1100	921	919					910
Dissolved Oxygen	2.87	2.32	2.29	2.22					2.21

Sample Collection Time: 1618

Remarks: Fe = 0.8

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-19-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot; Clear Muggy 92°

Well Data

Well Number: MW-12B Diameter (in): 2" Well Volume (gal): 3.2

Total Depth: 36.5 Static Water Level: 16.75 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2.0	1.0	1.5					.5
Time (military)									
pH (standard units)	7.6	7.6	7.5	7.5					7.5
Specific Cond. (µS/cm)	52	54	64	70					78
Water Temp (°C)	25.5	25.3	24.3	24.1					24.3
Turbidity (mild, moderate, strong)	2.07	15.9	4.38	4.31					4.09
Dissolved Oxygen	2.8	2.75	2.55	2.49					2.31

Sample Collection Time: 1651

Remarks: Fe = 0.0

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-18-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-13A Diameter (in): 2" Well Volume (gal): _____

Total Depth: 22' Static Water Level: Dry Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)									
Time (military)									
pH (standard units)									
Specific Cond. (µS/cm)									
Water Temp (°C)									
Turbidity (mild, moderate, strong)									
Dissolved Oxygen									

Sample Collection Time: _____

Remarks: _____

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-19-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-13B Diameter (in): 2" Well Volume (gal): 2.1

Total Depth: 33.5' Static Water Level: 20.61 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1.5	1.5	1.0					.2
Time (military)									
pH (standard units)	8.0	7.6	7.3	7.3					7.3
Specific Cond. (µS/cm)	135	187	159	192					164
Water Temp (°C)	22.9	22.7	22.1	22.2					22.2
Turbidity (mild, moderate, strong)	22.9	27.6	16.7	15.8					14.2
Dissolved Oxygen	3.86	3.85	3.60	3.47					3.50

Sample Collection Time: 1733

Remarks: Fe = 0.2

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-20-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-14A Diameter (in): 2" Well Volume (gal): 0.7

Total Depth: 20' Static Water Level: 15.57 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1.0	1.0	1.0					1.0
Time (military)									
pH (standard units)	8.2	7.9	7.8	7.8					7.7
Specific Cond. (µS/cm)	111	121	101	108					97
Water Temp (°C)	22.9	22.9	22.5	22.1					22.4
Turbidity (mild, moderate, strong)	221	177	97.8	91.4					94.1
Dissolved Oxygen	1.88	1.71	1.31	1.40					1.29

Sample Collection Time: 853

Remarks: Fe = 0.6

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-20-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, clear Muggy 92°

Well Data

Well Number: MW-14B Diameter (in): 2" Well Volume (gal): 3.4

Total Depth: 38.5' Static Water Level: 17.05 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2.0	1.5	1.0					.2
Time (military)									
pH (standard units)	7.8	7.9	7.9	7.9					7.9
Specific Cond. (µS/cm)	156	73	97	112					118
Water Temp (°C)	21.5	20.9	21.9	21.8					21.8
Turbidity (mild, moderate, strong)	18.80	6.65	5.83	4.94					4.90
Dissolved Oxygen	1.52	1.41	1.37	1.29					1.20

Sample Collection Time: 917

Remarks: Fe = 0.2

ENVIRO-TEST SERVICES

Monitoring Well Purging Data Sheet

Date: 9-20-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-15A Diameter (in): 2" Well Volume (gal): _____

Total Depth: 17' Static Water Level: Dry Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)									
Time (military)									
pH (standard units)									
Specific Cond. (µS/cm)									
Water Temp (°C)									
Turbidity (mild, moderate, strong)									
Dissolved Oxygen									

Sample Collection Time: _____

Remarks: Dry

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-20-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-15B Diameter (in): 2" Well Volume (gal): 3.5

Total Depth: 40' Static Water Level: 18.20 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2.0	1.0	1.0					.5
Time (military)									
pH (standard units)	8.0	7.9	7.9	7.9					7.9
Specific Cond. (µS/cm)	108	68	81	88					79
Water Temp (°C)	21.1	20.9	20.8	20.7					20.8
Turbidity (mild, moderate, strong)	35.2	14.76	4.67	4.71					3.89
Dissolved Oxygen	2.70	2.37	2.39	2.35					2.29

Sample Collection Time: 950

Remarks: Fe = 0.0

ENVIRO-TEST SERVICES

Monitoring Well Purging Data Sheet

Date: 9-20-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-17B Diameter (in): 2" Well Volume (gal): 5.0

Total Depth: 39.5 Static Water Level: 8.25 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		3.0	2.0	2.0					.5
Time (military)									
pH (standard units)	7.9	7.8	7.8	7.8					7.8
Specific Cond. (µS/cm)	121	106	208	188					152
Water Temp (°C)	29.5	29.2	28.7	28.4					28.5
Turbidity (mild, moderate, strong)	2.26	3.03	3.17	3.28					3.15
Dissolved Oxygen	1.95	1.88	1.52	1.40					1.42

Sample Collection Time: 1018

Remarks: Fe - 0.4

ENVIRO-TEST SERVICES

Monitoring Well Purging Data Sheet

Date: 9-20-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-18A Diameter (in): 2" Well Volume (gal): 1.4

Total Depth: 13' Static Water Level: 4.10 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1.0	1.0	1.0					.2
Time (military)									
pH (standard units)	7.8	7.8	7.8	7.8					7.8
Specific Cond. (µS/cm)	210	270	291	287					277
Water Temp (°C)	27.6	26.5	25.9	25.5					25.9
Turbidity (mild, moderate, strong)	2.55	531	842	793					588
Dissolved Oxygen	1.33	1.13	1.06	1.10					1.15

Sample Collection Time: 1618

Remarks: Fe = 1.8

ENVIRO-TEST SERVICES

Monitoring Well Purging Data Sheet

Date: 9-20-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-18B Diameter (in): 2" Well Volume (gal): 4.8

Total Depth: 35' Static Water Level: 5.44 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2.5	2.0	1.0					.5
Time (military)									
pH (standard units)	8.0	8.1	8.0	8.0					8.1
Specific Cond. (µS/cm)	31	152	94	67					70
Water Temp (°C)	28.7	25.5	24.4	25.0					24.9
Turbidity (mild, moderate, strong)	6.05	41.87	63.1	62.4					60.2
Dissolved Oxygen	1.51	1.43	1.45	1.29					1.19

Sample Collection Time:

Remarks: Duplicate #2 Fe = 0.2

ENVIRO-TEST SERVICES

Monitoring Well Purging Data Sheet

Date: 9-20-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-19A Diameter (in): 2" Well Volume (gal): 1.1

Total Depth: 15' Static Water Level: 8.00 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1.0	1.0	1.0					.2
Time (military)									
pH (standard units)	7.3	7.0	6.9	6.9					6.9
Specific Cond. (µS/cm)	76	72	66	64					60
Water Temp (°C)	29.7	29.8	29.3	29.1					29.1
Turbidity (mild, moderate, strong)	1.33	46.8	32.2	30.01					31.4
Dissolved Oxygen	1.90	1.74	1.77	1.64					1.69

Sample Collection Time: 1127

Remarks: Fe = 0.2

ENVIRO-TEST SERVICES

Monitoring Well Purging Data Sheet

Date: 9-20-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-19B Diameter (in): 2" Well Volume (gal): 3.8

Total Depth: 34' Static Water Level: 10.40 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2.0	1.0	1.5					1.0
Time (military)									
pH (standard units)	7.8	7.9	7.9	7.9					7.9
Specific Cond. (µS/cm)	168	276	187	126					144
Water Temp (°C)	29.9	27.3	28.8	27.3					26.8
Turbidity (mild, moderate, strong)	8.65	21.9	13.1	12.7					12.5
Dissolved Oxygen	1.21	1.08	1.15	1.09					0.94

Sample Collection Time: 1158

Remarks: Fe = 0.4

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-20-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-20A Diameter (in): 2" Well Volume (gal): 1.3

Total Depth: 15' Static Water Level: 6.45 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1.0	1.0	1.5					.5
Time (military)									
pH (standard units)	7.4	7.2	7.1	7.1					7.1
Specific Cond. (µS/cm)	92	83	85	81					79
Water Temp (°C)	30.5	29.3	29.7	29.6					29.7
Turbidity (mild, moderate, strong)	202	549	219	211					208
Dissolved Oxygen	1.22	0.89	0.95	0.92					0.89

Sample Collection Time: 1237

Remarks: Fe = 1.2

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-20-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-20B Diameter (in): 2" Well Volume (gal): 4.8

Total Depth: 35 Static Water Level: 5.50 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2.5	1.5	1.0					1.0
Time (military)									
pH (standard units)	7.7	7.8	7.8	7.7					7.7
Specific Cond. (µS/cm)	88	74	60	67					48
Water Temp (°C)	30.6	29.2	26.9	26.5					26.5
Turbidity (mild, moderate, strong)	88.1	40.3	29.1	29.4					30.3
Dissolved Oxygen	1.40	1.38	1.35	1.22					1.18

Sample Collection Time: 1308

Remarks: Fe = 0.6

ENVIRO-TEST SERVICES

Monitoring Well Purging Data Sheet

Date: 9-20-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-21A Diameter (in): 2" Well Volume (gal): 1.63

Total Depth: 12' Static Water Level: 2.00 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		1.0	1.0	1.5					.2
Time (military)									
pH (standard units)	8.0	7.9	7.9	7.9					7.9
Specific Cond. (µS/cm)	204	79	137	118					122
Water Temp (°C)	28.7	27.4	27.1	27.3					27.0
Turbidity (mild, moderate, strong)	95.2	310	184.7	179.4					170.4
Dissolved Oxygen	2.03	1.83	1.74	1.55					1.59

Sample Collection Time: 1452

Remarks: Fe = 1.6

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-20-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-21B Diameter (in): 2" Well Volume (gal): 5.2

Total Depth: 35' Static Water Level: 2.62 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2.0	1.0	1.0					.5
Time (military)									
pH (standard units)	7.8	7.7	7.7	7.7					7.7
Specific Cond. (µS/cm)	88	47	81	99					113
Water Temp (°C)	28.1	27.9	25.8	24.7					24.8
Turbidity (mild, moderate, strong)	13.2	11.8	11.4	11.1					10.9
Dissolved Oxygen	3.01	2.19	2.11	2.07					2.17

Sample Collection Time: 1534

Remarks: Fe = 0.0

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-20-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot; clear Muggy 92°

Well Data

Well Number: MW-22B Diameter (in): 2" Well Volume (gal): 5.0

Total Depth: 35' Static Water Level: 4.00 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		3.0	3.0	1.0					1
Time (military)									
pH (standard units)	8.1	8.0	8.0	8.0					
Specific Cond. (µS/cm)	157	179	110	131					118
Water Temp (°C)	27.0	25.2	23.8	23.8					23.5
Turbidity (mild, moderate, strong)	3.24	4.88	7.37	7.41					7.48
Dissolved Oxygen	1.91	1.69	1.72	1.64					1.60

Sample Collection Time: 1341

Remarks: Fe = 0.2

ENVIRO-TEST SERVICES

Monitoring Well Purging Data Sheet

Date: 9-18-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: RW-1 Diameter (in): 4" Well Volume (gal): 15.0

Total Depth: 40' Static Water Level: 17.00 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		3.0	2.0	2.0					.5
Time (military)									
pH (standard units)	8.0	7.9	7.7	7.7					7.7
Specific Cond. (µS/cm)	49	112	118	149					171
Water Temp (°C)	28.5	27.9	27.4	27.2					27.5
Turbidity (mild, moderate, strong)	32.04	18.22	13.01	12.92					12.22
Dissolved Oxygen	1.23	0.74	0.80	0.62					0.73

Sample Collection Time: 13.25

Remarks: Fe = 2.0

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-18-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot; Clear Muggy 92°

Well Data

Well Number: RW-2 Diameter (in): 4" Well Volume (gal): 14.9

Total Depth: 40' Static Water Level: 17.10 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		3.0	2.5	2.0					.5
Time (military)									
pH (standard units)	8.1	7.7	7.2	7.2					7.2
Specific Cond. (µS/cm)	59	26	62	79					101
Water Temp (°C)	27.8	27.2	27.0	26.4					26.7
Turbidity (mild, moderate, strong)	3.21	7.04	5.71	5.09					4.98
Dissolved Oxygen	1.02	0.88	0.81	0.66					0.72

Sample Collection Time: 1405

Remarks: Fe = 0.6

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-18-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, clear Muggy 92°

Well Data

Well Number: RW-3 Diameter (in): 4" Well Volume (gal): 15.2

Total Depth: 41' Static Water Level: 17.58 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		4.0	1.5	2.0					5
Time (military)									
pH (standard units)	7.6	7.5	7.3	7.3					7.3
Specific Cond. (µS/cm)	62	73	66	62					67
Water Temp (°C)	27.4	27.1	26.1	26.5					26.4
Turbidity (mild, moderate, strong)	119.34	182.3	92.8	87.6					85.7
Dissolved Oxygen	1.08	1.05	0.96	0.99					0.99

Sample Collection Time: 1448

Remarks: Fe = 1.2 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-18-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: RW-4 Diameter (in): 4" Well Volume (gal): 15.6

Total Depth: 40.5' Static Water Level: 16.04 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		3.0	2.5	2.0					1.0
Time (military)									
pH (standard units)	7.6	7.7	7.5	7.5					7.6
Specific Cond. (µS/cm)	37	57	61	56					67
Water Temp (°C)	28.4	28.2	28.0	27.7					27.9
Turbidity (mild, moderate, strong)	168.6	151.7	139.7	130.4					126.4
Dissolved Oxygen	0.98	1.03	0.79	0.68					0.66

Sample Collection Time: 1520

Remarks: Fe = 0.2 mg/L

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-18-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: RW-5 Diameter (in): 4" Well Volume (gal): 13.4

Total Depth: 38.5 Static Water Level: 17.91 Static Product Level: _____

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2.5	2.5	2					.5
Time (military)									
pH (standard units)	7.5	7.5	7.5						7.5
Specific Cond. (µS/cm)	179	159	105	97					111
Water Temp (°C)	27.8	25.9	26.1	26.0					25.8
Turbidity (mild, moderate, strong)	129.4	188.7	152.0	149.8					146.3
Dissolved Oxygen	1.64	1.12	0.88	0.72					0.79

Sample Collection Time: 1608

Remarks: Fe = 3.6

ENVIRO-TEST SERVICES

Monitoring Well Purging Data Sheet

Date: 9-18-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, clear Muggy 92°

Well Data

Well Number: MW-D1 Diameter (in): 2" Well Volume (gal): 7.7

Total Depth: 65' Static Water Level: 17.72 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		2.0	4.0	1.5					.2
Time (military)									
pH (standard units)	8.2	8.1	8.1	8.1					8.1
Specific Cond. (µS/cm)	560	571	502	293					2.74
Water Temp (°C)	26.6	25.8	25.7	25.2					25.4
Turbidity (mild, moderate, strong)	151.2	9.31	7.80	7.23					7.19
Dissolved Oxygen	1.86	1.44	1.33	1.27					1.30

Sample Collection Time:

Remarks: Fe = 0.2

ENVIRO-TEST SERVICES

Monitoring Well
Purging Data Sheet

Date: 9-20-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-D-2 Diameter (in): 2" Well Volume (gal): 8.8

Total Depth: 65' Static Water Level: 10.45 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		5.0	2.0	2.0					.5
Time (military)									
pH (standard units)	8.1	8.3	8.3	8.3					8.3
Specific Cond. (µS/cm)	269	190	188	192					170
Water Temp (°C)	29.6	28.6	27.4	26.8					26.6
Turbidity (mild, moderate, strong)	0.55	14.6	2.88	2.51					2.42
Dissolved Oxygen	3.93	3.22	3.02	2.98					2.90

Sample Collection Time: 1055

Remarks: Fe = 0.2

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ENVIRO-TEST SERVICES

Monitoring Well Purging Data Sheet

Date: 9-20-16

Site Data

Facility Name: Broad River Amoco Facility Location: 4335 Broad River Rd. Cda, SC

UST Permit # 11946 Field Personnel: Terry Teate (full names) Weather: Hot, Clear Muggy 92°

Well Data

Well Number: MW-D3 Diameter (in): 2" Well Volume (gal): 9.8

Total Depth: 65' Static Water Level: 4.38 Static Product Level:

1" well: 1 well volume = (TD - SWL) x 0.047
2" well: 1 well volume = (TD - SWL) x 0.163
4" well: 1 well volume = (TD - SWL) x 0.653
(TD = Total Depth SWL = Static Water Level)

Purging Data

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	6th vol.	7th vol.	Post Sampling
Volume Purged (gal)		4.0	3.0	3.0					.5
Time (military)									
pH (standard units)	8.1	8.1	8.1	8.1					8.1
Specific Cond. (µS/cm)	296	331	244	221					209
Water Temp (°C)	26.6	24.9	24.2	24.5					24.4
Turbidity (mild, moderate, strong)	9.68	8.17	8.09	8.30					8.22
Dissolved Oxygen	4.19	3.33	3.36	3.08					2.97

Sample Collection Time: 1419

Remarks: Fe = 0.6

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

Enviro-Test Services Inc.
PO Box 2237
Irmo, SC 29063
Attention: Terry Teate

Project Name: **Broad River Amoco**

Project Number: **DHEC # 11946**

Lot Number: **RI19005**

Date Completed: **09/29/2016**

Lucas Odom
Project Manager

LABORATORY ACCREDITATION BUREAU ACCREDITED ISO/IEC 17025

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The following non-paginated documents are considered part of this report: Chain of Custody Record and Sample Receipt Checklist.

Case Narrative
Enviro-Test Services Inc.
Lot Number: RI19005

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

EDB by Microextraction

Sample -002, -009, and -010 have been qualified with a "P" as the relative percent difference between the two GC columns exceeds method criteria for EDB. Per SCDHEC, the lesser of the two values has been reported.

Sample Summary
Enviro-Test Services Inc.
Lot Number: RI19005

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-1	Aqueous	09/18/2016 0843	09/19/2016
002	MW-2	Aqueous	09/18/2016 0915	09/19/2016
003	MW-3	Aqueous	09/18/2016 0955	09/19/2016
004	MW-4	Aqueous	09/18/2016 1020	09/19/2016
005	MW-5	Aqueous	09/18/2016 1058	09/19/2016
006	MW-6A	Aqueous	09/18/2016 1130	09/19/2016
007	MW-6B	Aqueous	09/18/2016 1205	09/19/2016
008	MW-D1	Aqueous	09/18/2016 1237	09/19/2016
009	RW-1	Aqueous	09/18/2016 1325	09/19/2016
010	RW-2	Aqueous	09/18/2016 1405	09/19/2016
011	RW-3	Aqueous	09/18/2016 1448	09/19/2016
012	RW-4	Aqueous	09/18/2016 1520	09/19/2016
013	RW-5	Aqueous	09/18/2016 1608	09/19/2016
014	FIELD BLANK	Aqueous	09/18/2016 0830	09/19/2016
015	TRIP BLANK	Aqueous	09/18/2016 0818	09/19/2016

(15 samples)

Executive Summary
Enviro-Test Services Inc.
Lot Number: RI19005

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-1	Aqueous	Sulfate	9056A	0.65	J	mg/L	7
001	MW-1	Aqueous	Benzene	8260B	3000		ug/L	7
001	MW-1	Aqueous	Ethylbenzene	8260B	4000		ug/L	7
001	MW-1	Aqueous	Naphthalene	8260B	780	J	ug/L	7
001	MW-1	Aqueous	Toluene	8260B	41000		ug/L	7
001	MW-1	Aqueous	Xylenes (total)	8260B	16000		ug/L	7
001	MW-1	Aqueous	Methane	RSK - 175	1600		ug/L	8
002	MW-2	Aqueous	Sulfate	9056A	1.6		mg/L	9
002	MW-2	Aqueous	tert-Amyl alcohol (TAA)	8260B	57000		ug/L	9
002	MW-2	Aqueous	tert-Amyl methyl ether	8260B	450	J	ug/L	9
002	MW-2	Aqueous	Benzene	8260B	17000		ug/L	9
002	MW-2	Aqueous	Ethylbenzene	8260B	3300		ug/L	9
002	MW-2	Aqueous	Methyl tertiary butyl ether	8260B	47000		ug/L	9
002	MW-2	Aqueous	Naphthalene	8260B	930	J	ug/L	9
002	MW-2	Aqueous	tert-butyl alcohol (TBA)	8260B	25000		ug/L	9
002	MW-2	Aqueous	Toluene	8260B	29000		ug/L	9
002	MW-2	Aqueous	Xylenes (total)	8260B	19000		ug/L	9
002	MW-2	Aqueous	1,2-Dibromoethane (EDB)	8011	0.44	P	ug/L	9
002	MW-2	Aqueous	Methane	RSK - 175	2900		ug/L	10
003	MW-3	Aqueous	Sulfate	9056A	5.8		mg/L	11
003	MW-3	Aqueous	tert-Amyl alcohol (TAA)	8260B	47		ug/L	11
003	MW-3	Aqueous	Benzene	8260B	0.61	J	ug/L	11
003	MW-3	Aqueous	Ethylbenzene	8260B	0.45	J	ug/L	11
003	MW-3	Aqueous	Methyl tertiary butyl ether	8260B	1.2	J	ug/L	11
003	MW-3	Aqueous	Naphthalene	8260B	1.2	J	ug/L	11
003	MW-3	Aqueous	Toluene	8260B	1.9	J	ug/L	11
003	MW-3	Aqueous	Xylenes (total)	8260B	3.2	J	ug/L	11
003	MW-3	Aqueous	Methane	RSK - 175	410		ug/L	12
004	MW-4	Aqueous	Nitrate - N	9056A	0.10		mg/L	13
004	MW-4	Aqueous	tert-Amyl alcohol (TAA)	8260B	2500		ug/L	13
004	MW-4	Aqueous	tert-Amyl methyl ether	8260B	240	J	ug/L	13
004	MW-4	Aqueous	Benzene	8260B	9200		ug/L	13
004	MW-4	Aqueous	Ethylbenzene	8260B	3200		ug/L	13
004	MW-4	Aqueous	Methyl tertiary butyl ether	8260B	9000		ug/L	13
004	MW-4	Aqueous	Naphthalene	8260B	810		ug/L	13
004	MW-4	Aqueous	tert-butyl alcohol (TBA)	8260B	2400		ug/L	13
004	MW-4	Aqueous	Toluene	8260B	460		ug/L	13
004	MW-4	Aqueous	Xylenes (total)	8260B	8500		ug/L	13
004	MW-4	Aqueous	Methane	RSK - 175	8800		ug/L	14
005	MW-5	Aqueous	Nitrate - N	9056A	0.078		mg/L	15
005	MW-5	Aqueous	Sulfate	9056A	0.63	J	mg/L	15
005	MW-5	Aqueous	tert-Amyl alcohol (TAA)	8260B	21000		ug/L	15
005	MW-5	Aqueous	tert-Amyl methyl ether	8260B	710	J	ug/L	15
005	MW-5	Aqueous	Benzene	8260B	20000		ug/L	15
005	MW-5	Aqueous	Ethylbenzene	8260B	4600		ug/L	15

Executive Summary (Continued)

Lot Number: RI19005

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
005	MW-5	Aqueous	Methyl tertiary butyl ether	8260B	29000		ug/L	15
005	MW-5	Aqueous	Naphthalene	8260B	2100	J	ug/L	15
005	MW-5	Aqueous	tert-butyl alcohol (TBA)	8260B	4600	J	ug/L	15
005	MW-5	Aqueous	Toluene	8260B	38000		ug/L	15
005	MW-5	Aqueous	Xylenes (total)	8260B	28000		ug/L	15
005	MW-5	Aqueous	Methane	RSK - 175	1800		ug/L	16
006	MW-6A	Aqueous	Nitrate - N	9056A	2.3		mg/L	17
006	MW-6A	Aqueous	Sulfate	9056A	0.51	J	mg/L	17
007	MW-6B	Aqueous	Nitrate - N	9056A	5.6		mg/L	19
007	MW-6B	Aqueous	Sulfate	9056A	0.46	J	mg/L	19
008	MW-D1	Aqueous	Nitrate - N	9056A	0.053		mg/L	21
008	MW-D1	Aqueous	Sulfate	9056A	2.3		mg/L	21
008	MW-D1	Aqueous	Methyl tertiary butyl ether	8260B	90		ug/L	21
009	RW-1	Aqueous	Nitrate - N	9056A	0.074		mg/L	23
009	RW-1	Aqueous	Sulfate	9056A	1.2		mg/L	23
009	RW-1	Aqueous	tert-Amyl alcohol (TAA)	8260B	65000		ug/L	23
009	RW-1	Aqueous	tert-Amyl methyl ether	8260B	220	J	ug/L	23
009	RW-1	Aqueous	Benzene	8260B	13000		ug/L	23
009	RW-1	Aqueous	Ethylbenzene	8260B	4200		ug/L	23
009	RW-1	Aqueous	Methyl tertiary butyl ether	8260B	9900		ug/L	23
009	RW-1	Aqueous	Naphthalene	8260B	920	J	ug/L	23
009	RW-1	Aqueous	tert-butyl alcohol (TBA)	8260B	6600		ug/L	23
009	RW-1	Aqueous	Toluene	8260B	24000		ug/L	23
009	RW-1	Aqueous	Xylenes (total)	8260B	22000		ug/L	23
009	RW-1	Aqueous	1,2-Dibromoethane (EDB)	8011	0.070	P	ug/L	23
009	RW-1	Aqueous	Methane	RSK - 175	3100		ug/L	24
010	RW-2	Aqueous	Sulfate	9056A	2.1		mg/L	25
010	RW-2	Aqueous	tert-Amyl alcohol (TAA)	8260B	5300	J	ug/L	25
010	RW-2	Aqueous	Benzene	8260B	12000		ug/L	25
010	RW-2	Aqueous	Ethylbenzene	8260B	4400		ug/L	25
010	RW-2	Aqueous	Methyl tertiary butyl ether	8260B	22000		ug/L	25
010	RW-2	Aqueous	Naphthalene	8260B	1300	J	ug/L	25
010	RW-2	Aqueous	tert-butyl alcohol (TBA)	8260B	8900	J	ug/L	25
010	RW-2	Aqueous	Toluene	8260B	35000		ug/L	25
010	RW-2	Aqueous	Xylenes (total)	8260B	26000		ug/L	25
010	RW-2	Aqueous	1,2-Dibromoethane (EDB)	8011	0.13	P	ug/L	25
010	RW-2	Aqueous	Methane	RSK - 175	1200		ug/L	26
011	RW-3	Aqueous	Sulfate	9056A	1.8		mg/L	27
011	RW-3	Aqueous	tert-Amyl alcohol (TAA)	8260B	44000		ug/L	27
011	RW-3	Aqueous	tert-Amyl methyl ether	8260B	300	J	ug/L	27
011	RW-3	Aqueous	Benzene	8260B	15000		ug/L	27
011	RW-3	Aqueous	Ethylbenzene	8260B	2400		ug/L	27
011	RW-3	Aqueous	Methyl tertiary butyl ether	8260B	12000		ug/L	27
011	RW-3	Aqueous	Naphthalene	8260B	620	J	ug/L	27
011	RW-3	Aqueous	tert-butyl alcohol (TBA)	8260B	6900		ug/L	27
011	RW-3	Aqueous	Toluene	8260B	27000		ug/L	27
011	RW-3	Aqueous	Xylenes (total)	8260B	15000		ug/L	27
011	RW-3	Aqueous	1,2-Dibromoethane (EDB)	8011	2.3		ug/L	27

Executive Summary (Continued)

Lot Number: RI19005

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
011	RW-3	Aqueous	Methane	RSK - 175	2000		ug/L	28
012	RW-4	Aqueous	Nitrate - N	9056A	0.082		mg/L	29
012	RW-4	Aqueous	tert-Amyl alcohol (TAA)	8260B	5800		ug/L	29
012	RW-4	Aqueous	tert-Amyl methyl ether	8260B	110	J	ug/L	29
012	RW-4	Aqueous	Benzene	8260B	3800		ug/L	29
012	RW-4	Aqueous	Ethylbenzene	8260B	750		ug/L	29
012	RW-4	Aqueous	Methyl tertiary butyl ether	8260B	8600		ug/L	29
012	RW-4	Aqueous	Naphthalene	8260B	220	J	ug/L	29
012	RW-4	Aqueous	tert-butyl alcohol (TBA)	8260B	4500		ug/L	29
012	RW-4	Aqueous	Toluene	8260B	4600		ug/L	29
012	RW-4	Aqueous	Xylenes (total)	8260B	4400		ug/L	29
012	RW-4	Aqueous	Methane	RSK - 175	550		ug/L	30
013	RW-5	Aqueous	Nitrate - N	9056A	0.077		mg/L	31
013	RW-5	Aqueous	Sulfate	9056A	0.66	J	mg/L	31
013	RW-5	Aqueous	tert-Amyl alcohol (TAA)	8260B	26000		ug/L	31
013	RW-5	Aqueous	tert-Amyl methyl ether	8260B	430	J	ug/L	31
013	RW-5	Aqueous	Benzene	8260B	24000		ug/L	31
013	RW-5	Aqueous	Ethylbenzene	8260B	4600		ug/L	31
013	RW-5	Aqueous	Methyl tertiary butyl ether	8260B	11000		ug/L	31
013	RW-5	Aqueous	Naphthalene	8260B	1000	J	ug/L	31
013	RW-5	Aqueous	Toluene	8260B	47000		ug/L	31
013	RW-5	Aqueous	Xylenes (total)	8260B	24000		ug/L	31
013	RW-5	Aqueous	Methane	RSK - 175	1400		ug/L	32

(116 detections)

Client: **Enviro-Test Services Inc.**
Description: **MW-1**
Date Sampled: **09/18/2016 0843**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-001**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/19/2016 1949	SLU		22431
1		(Sulfate) 9056A	1	09/24/2016 0220	SLU		22800

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		9056A	ND		0.020	0.0050	mg/L	1
Sulfate		**9056A**	**0.65**	**J**	**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	500	09/23/2016 1717	ALL		22730

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		10000	4000	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		5000	200	ug/L	1
Benzene	**71-43-2**	**8260B**	**3000**		**2500**	**200**	**ug/L**	**1**
tert-Butyl formate (TBF)	762-75-4	8260B	ND		2500	1000	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		2500	200	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		2500	200	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		10000	4000	ug/L	1
Ethanol	64-17-5	8260B	ND		50000	20000	ug/L	1
Ethylbenzene	**100-41-4**	**8260B**	**4000**		**2500**	**200**	**ug/L**	**1**
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		500	200	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		2500	200	ug/L	1
Naphthalene	**91-20-3**	**8260B**	**780**	**J**	**2500**	**200**	**ug/L**	**1**
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		10000	4000	ug/L	1
Toluene	**108-88-3**	**8260B**	**41000**		**2500**	**200**	**ug/L**	**1**
Xylenes (total)	**1330-20-7**	**8260B**	**16000**		**2500**	**200**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		102	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		110	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/23/2016 1839	MEM	09/22/2016 1146	22615

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.019	0.0048	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-1**
Date Sampled: **09/18/2016 0843**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-001**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		104	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2		RSK - 175	10	09/22/2016 1529	JJG		22691

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	**74-82-8**	**RSK - 175**	**1600**		**100**	**23**	**ug/L**	**2**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-2**
Date Sampled: **09/18/2016 0915**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-002**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/19/2016 2013	SLU		22431
1		(Sulfate) 9056A	1	09/24/2016 0309	SLU		22801

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		9056A	ND		0.020	0.0050	mg/L	1
Sulfate		**9056A**	**1.6**		**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	500	09/23/2016 1743	ALL		22730

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	**75-85-4**	**8260B**	**57000**		**10000**	**4000**	**ug/L**	**1**
tert-Amyl methyl ether (TAME)	**994-05-8**	**8260B**	**450**	**J**	**5000**	**200**	**ug/L**	**1**
Benzene	**71-43-2**	**8260B**	**17000**		**2500**	**200**	**ug/L**	**1**
tert-Butyl formate (TBF)	762-75-4	8260B	ND		2500	1000	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		2500	200	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		2500	200	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		10000	4000	ug/L	1
Ethanol	64-17-5	8260B	ND		50000	20000	ug/L	1
Ethylbenzene	**100-41-4**	**8260B**	**3300**		**2500**	**200**	**ug/L**	**1**
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		500	200	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**47000**		**2500**	**200**	**ug/L**	**1**
Naphthalene	**91-20-3**	**8260B**	**930**	**J**	**2500**	**200**	**ug/L**	**1**
tert-butyl alcohol (TBA)	**75-65-0**	**8260B**	**25000**		**10000**	**4000**	**ug/L**	**1**
Toluene	**108-88-3**	**8260B**	**29000**		**2500**	**200**	**ug/L**	**1**
Xylenes (total)	**1330-20-7**	**8260B**	**19000**		**2500**	**200**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		98	70-130
Bromofluorobenzene		88	70-130
Toluene-d8		104	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/23/2016 1850	MEM	09/22/2016 1146	22615

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	**106-93-4**	**8011**	**0.44**	**P**	**0.019**	**0.0048**	**ug/L**	**1**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-2**
Date Sampled: **09/18/2016 0915**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-002**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		93	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2		RSK - 175	10	09/22/2016 1541	JJG		22691

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	**74-82-8**	**RSK - 175**	**2900**		**100**	**23**	**ug/L**	**2**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-3**
Date Sampled: **09/18/2016 0955**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-003**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/19/2016 2037	SLU		22431
1		(Sulfate) 9056A	1	09/24/2016 0321	SLU		22801

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		9056A	ND		0.020	0.0050	mg/L	1
Sulfate		**9056A**	**5.8**		**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/23/2016 1049	ALL		22730

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	**75-85-4**	**8260B**	**47**		**20**	**8.0**	**ug/L**	**1**
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	**71-43-2**	**8260B**	**0.61**	**J**	**5.0**	**0.40**	**ug/L**	**1**
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	**100-41-4**	**8260B**	**0.45**	**J**	**5.0**	**0.40**	**ug/L**	**1**
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**1.2**	**J**	**5.0**	**0.40**	**ug/L**	**1**
Naphthalene	**91-20-3**	**8260B**	**1.2**	**J**	**5.0**	**0.40**	**ug/L**	**1**
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	**108-88-3**	**8260B**	**1.9**	**J**	**5.0**	**0.40**	**ug/L**	**1**
Xylenes (total)	**1330-20-7**	**8260B**	**3.2**	**J**	**5.0**	**0.40**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		103	70-130
Bromofluorobenzene		86	70-130
Toluene-d8		111	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/23/2016 1900	MEM	09/22/2016 1146	22615

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0049	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-3**
Date Sampled: **09/18/2016 0955**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-003**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		91	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/21/2016 2135	JJG		22561

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	**74-82-8**	**RSK - 175**	**410**		**10**	**2.3**	**ug/L**	**1**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-4**
Date Sampled: **09/18/2016 1020**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-004**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/19/2016 2101	SLU		22431
1		(Sulfate) 9056A	1	09/24/2016 0333	SLU		22801

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.10**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		9056A	ND		1.0	0.20	mg/L	1

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	50	09/23/2016 1534	ALL		22730

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	**75-85-4**	**8260B**	**2500**		**1000**	**400**	**ug/L**	**1**
tert-Amyl methyl ether (TAME)	**994-05-8**	**8260B**	**240**	**J**	**500**	**20**	**ug/L**	**1**
Benzene	**71-43-2**	**8260B**	**9200**		**250**	**20**	**ug/L**	**1**
tert-Butyl formate (TBF)	762-75-4	8260B	ND		250	100	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		250	20	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		250	20	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		1000	400	ug/L	1
Ethanol	64-17-5	8260B	ND		5000	2000	ug/L	1
Ethylbenzene	**100-41-4**	**8260B**	**3200**		**250**	**20**	**ug/L**	**1**
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		50	20	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**9000**		**250**	**20**	**ug/L**	**1**
Naphthalene	**91-20-3**	**8260B**	**810**		**250**	**20**	**ug/L**	**1**
tert-butyl alcohol (TBA)	**75-65-0**	**8260B**	**2400**		**1000**	**400**	**ug/L**	**1**
Toluene	**108-88-3**	**8260B**	**460**		**250**	**20**	**ug/L**	**1**
Xylenes (total)	**1330-20-7**	**8260B**	**8500**		**250**	**20**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		103	70-130
Bromofluorobenzene		91	70-130
Toluene-d8		108	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/23/2016 1911	MEM	09/22/2016 1146	22615

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.019	0.0048	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-4**
Date Sampled: **09/18/2016 1020**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-004**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		120	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2		RSK - 175	20	09/22/2016 1601	JJG		22691

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	**74-82-8**	**RSK - 175**	**8800**		**200**	**46**	**ug/L**	**2**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-5**
Date Sampled: **09/18/2016 1058**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-005**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/19/2016 2125	SLU		22431
1		(Sulfate) 9056A	1	09/24/2016 0345	SLU		22801

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.078**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**0.63**	**J**	**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	500	09/23/2016 1809	ALL		22730

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	**75-85-4**	**8260B**	**21000**		**10000**	**4000**	**ug/L**	**1**
tert-Amyl methyl ether (TAME)	**994-05-8**	**8260B**	**710**	**J**	**5000**	**200**	**ug/L**	**1**
Benzene	**71-43-2**	**8260B**	**20000**		**2500**	**200**	**ug/L**	**1**
tert-Butyl formate (TBF)	762-75-4	8260B	ND		2500	1000	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		2500	200	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		2500	200	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		10000	4000	ug/L	1
Ethanol	64-17-5	8260B	ND		50000	20000	ug/L	1
Ethylbenzene	**100-41-4**	**8260B**	**4600**		**2500**	**200**	**ug/L**	**1**
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		500	200	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**29000**		**2500**	**200**	**ug/L**	**1**
Naphthalene	**91-20-3**	**8260B**	**2100**	**J**	**2500**	**200**	**ug/L**	**1**
tert-butyl alcohol (TBA)	**75-65-0**	**8260B**	**4600**	**J**	**10000**	**4000**	**ug/L**	**1**
Toluene	**108-88-3**	**8260B**	**38000**		**2500**	**200**	**ug/L**	**1**
Xylenes (total)	**1330-20-7**	**8260B**	**28000**		**2500**	**200**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		104	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		109	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/23/2016 1922	MEM	09/22/2016 1146	22615

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0049	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-5**
Date Sampled: **09/18/2016 1058**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-005**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		102	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2		RSK - 175	10	09/22/2016 1612	JJG		22691

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	**74-82-8**	**RSK - 175**	**1800**		**100**	**23**	**ug/L**	**2**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-6A**
Date Sampled: **09/18/2016 1130**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-006**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/19/2016 2149	SLU		22431
1		(Sulfate) 9056A	1	09/24/2016 0357	SLU		22801

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**2.3**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**0.51**	**J**	**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/23/2016 1115	ALL		22730

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		103	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		109	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/23/2016 1933	MEM	09/22/2016 1146	22615

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0049	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-6A**
Date Sampled: **09/18/2016 1130**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-006**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		95	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/21/2016 2215	JJG		22561

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	74-82-8	RSK - 175	ND		10	2.3	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-6B**
Date Sampled: **09/18/2016 1205**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-007**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/19/2016 2213	SLU		22431
1		(Sulfate) 9056A	1	09/24/2016 0409	SLU		22801

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**5.6**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**0.46**	**J**	**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/23/2016 1141	ALL		22730

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		103	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		109	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/23/2016 1943	MEM	09/22/2016 1146	22615

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0051	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-6B**
Date Sampled: **09/18/2016 1205**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-007**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		99	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/21/2016 2224	JJG		22561

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	74-82-8	RSK - 175	ND		10	2.3	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-D1**
Date Sampled: **09/18/2016 1237**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-008**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/19/2016 2237	SLU		22431
1		(Sulfate) 9056A	1	09/24/2016 0421	SLU		22801

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.053**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**2.3**		**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/23/2016 1207	ALL		22730

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**90**		**5.0**	**0.40**	**ug/L**	**1**
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		106	70-130
Bromofluorobenzene		93	70-130
Toluene-d8		107	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/23/2016 1954	MEM	09/22/2016 1146	22615

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0049	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-D1**
Date Sampled: **09/18/2016 1237**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-008**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		87	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/22/2016 1703	JJG		22691

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	74-82-8	RSK - 175	ND		10	2.3	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **RW-1**
Date Sampled: **09/18/2016 1325**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-009**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/19/2016 2301	SLU		22431
1		(Sulfate) 9056A	1	09/24/2016 0433	SLU		22801

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.074**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**1.2**		**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	200	09/23/2016 1625	ALL		22730

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	**75-85-4**	**8260B**	**65000**		**4000**	**1600**	**ug/L**	**1**
tert-Amyl methyl ether (TAME)	**994-05-8**	**8260B**	**220**	**J**	**2000**	**80**	**ug/L**	**1**
Benzene	**71-43-2**	**8260B**	**13000**		**1000**	**80**	**ug/L**	**1**
tert-Butyl formate (TBF)	762-75-4	8260B	ND		1000	400	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1000	80	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		1000	80	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		4000	1600	ug/L	1
Ethanol	64-17-5	8260B	ND		20000	8000	ug/L	1
Ethylbenzene	**100-41-4**	**8260B**	**4200**		**1000**	**80**	**ug/L**	**1**
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		200	80	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**9900**		**1000**	**80**	**ug/L**	**1**
Naphthalene	**91-20-3**	**8260B**	**920**	**J**	**1000**	**80**	**ug/L**	**1**
tert-butyl alcohol (TBA)	**75-65-0**	**8260B**	**6600**		**4000**	**1600**	**ug/L**	**1**
Toluene	**108-88-3**	**8260B**	**24000**		**1000**	**80**	**ug/L**	**1**
Xylenes (total)	**1330-20-7**	**8260B**	**22000**		**1000**	**80**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		102	70-130
Bromofluorobenzene		98	70-130
Toluene-d8		110	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 1128	MEM	09/23/2016 0900	22710

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	**106-93-4**	**8011**	**0.070**	**P**	**0.019**	**0.0048**	**ug/L**	**1**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **RW-1**
Date Sampled: **09/18/2016 1325**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-009**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		123	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2		RSK - 175	10	09/22/2016 1733	JJG		22691

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	**74-82-8**	**RSK - 175**	**3100**		**100**	**23**	**ug/L**	**2**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **RW-2**
Date Sampled: **09/18/2016 1405**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-010**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/20/2016 0014	SLU		22431
1		(Sulfate) 9056A	1	09/24/2016 0445	SLU		22801

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		9056A	ND		0.020	0.0050	mg/L	1
Sulfate		**9056A**	**2.1**		**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	500	09/23/2016 1835	ALL		22730

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	**75-85-4**	**8260B**	**5300**	**J**	**10000**	**4000**	**ug/L**	**1**
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		5000	200	ug/L	1
Benzene	**71-43-2**	**8260B**	**12000**		**2500**	**200**	**ug/L**	**1**
tert-Butyl formate (TBF)	762-75-4	8260B	ND		2500	1000	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		2500	200	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		2500	200	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		10000	4000	ug/L	1
Ethanol	64-17-5	8260B	ND		50000	20000	ug/L	1
Ethylbenzene	**100-41-4**	**8260B**	**4400**		**2500**	**200**	**ug/L**	**1**
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		500	200	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**22000**		**2500**	**200**	**ug/L**	**1**
Naphthalene	**91-20-3**	**8260B**	**1300**	**J**	**2500**	**200**	**ug/L**	**1**
tert-butyl alcohol (TBA)	**75-65-0**	**8260B**	**8900**	**J**	**10000**	**4000**	**ug/L**	**1**
Toluene	**108-88-3**	**8260B**	**35000**		**2500**	**200**	**ug/L**	**1**
Xylenes (total)	**1330-20-7**	**8260B**	**26000**		**2500**	**200**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		100	70-130
Bromofluorobenzene		93	70-130
Toluene-d8		108	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 1200	MEM	09/23/2016 0900	22710

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	**106-93-4**	**8011**	**0.13**	**P**	**0.020**	**0.0050**	**ug/L**	**1**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **RW-2**
Date Sampled: **09/18/2016 1405**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-010**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		113	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2		RSK - 175	5	09/22/2016 1628	JJG		22691

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	**74-82-8**	**RSK - 175**	**1200**		**50**	**11**	**ug/L**	**2**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **RW-3**
Date Sampled: **09/18/2016 1448**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-011**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/20/2016 0038	SLU		22431
1		(Sulfate) 9056A	1	09/24/2016 0545	SLU		22801

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		9056A	ND		0.020	0.0050	mg/L	1
Sulfate		**9056A**	**1.8**		**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	200	09/23/2016 1651	ALL		22730

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	**75-85-4**	**8260B**	**44000**		**4000**	**1600**	**ug/L**	**1**
tert-Amyl methyl ether (TAME)	**994-05-8**	**8260B**	**300**	**J**	**2000**	**80**	**ug/L**	**1**
Benzene	**71-43-2**	**8260B**	**15000**		**1000**	**80**	**ug/L**	**1**
tert-Butyl formate (TBF)	762-75-4	8260B	ND		1000	400	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1000	80	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		1000	80	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		4000	1600	ug/L	1
Ethanol	64-17-5	8260B	ND		20000	8000	ug/L	1
Ethylbenzene	**100-41-4**	**8260B**	**2400**		**1000**	**80**	**ug/L**	**1**
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		200	80	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**12000**		**1000**	**80**	**ug/L**	**1**
Naphthalene	**91-20-3**	**8260B**	**620**	**J**	**1000**	**80**	**ug/L**	**1**
tert-butyl alcohol (TBA)	**75-65-0**	**8260B**	**6900**		**4000**	**1600**	**ug/L**	**1**
Toluene	**108-88-3**	**8260B**	**27000**		**1000**	**80**	**ug/L**	**1**
Xylenes (total)	**1330-20-7**	**8260B**	**15000**		**1000**	**80**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		102	70-130
Bromofluorobenzene		91	70-130
Toluene-d8		110	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	5	09/26/2016 1336	MEM	09/23/2016 0900	22710

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	**106-93-4**	**8011**	**2.3**		**0.10**	**0.025**	**ug/L**	**1**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **RW-3**
Date Sampled: **09/18/2016 1448**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-011**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		83	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2		RSK - 175	5	09/24/2016 1439	JJG		22818

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	**74-82-8**	**RSK - 175**	**2000**		**50**	**11**	**ug/L**	**2**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **RW-4**
Date Sampled: **09/18/2016 1520**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-012**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/20/2016 0102	SLU		22431
1		(Sulfate) 9056A	1	09/26/2016 2338	SLU		22930

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.082**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		9056A	ND		1.0	0.20	mg/L	1

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	50	09/23/2016 1600	ALL		22730
2	5030B	8260B	200	09/26/2016 1753	ALL		22869

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	**75-85-4**	**8260B**	**5800**		**1000**	**400**	**ug/L**	**1**
tert-Amyl methyl ether (TAME)	**994-05-8**	**8260B**	**110**	**J**	**500**	**20**	**ug/L**	**1**
Benzene	**71-43-2**	**8260B**	**3800**		**250**	**20**	**ug/L**	**1**
tert-Butyl formate (TBF)	762-75-4	8260B	ND		250	100	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		250	20	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		250	20	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		1000	400	ug/L	1
Ethanol	64-17-5	8260B	ND		5000	2000	ug/L	1
Ethylbenzene	**100-41-4**	**8260B**	**750**		**250**	**20**	**ug/L**	**1**
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		50	20	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**8600**		**1000**	**80**	**ug/L**	**2**
Naphthalene	**91-20-3**	**8260B**	**220**	**J**	**250**	**20**	**ug/L**	**1**
tert-butyl alcohol (TBA)	**75-65-0**	**8260B**	**4500**		**1000**	**400**	**ug/L**	**1**
Toluene	**108-88-3**	**8260B**	**4600**		**250**	**20**	**ug/L**	**1**
Xylenes (total)	**1330-20-7**	**8260B**	**4400**		**250**	**20**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		109	70-130		106	70-130
Bromofluorobenzene		98	70-130		94	70-130
Toluene-d8		112	70-130		105	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 1221	MEM	09/23/2016 0900	22710

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0051	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **RW-4**
Date Sampled: **09/18/2016 1520**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-012**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		101	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/22/2016 1713	JJG		22691

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	**74-82-8**	**RSK - 175**	**550**		**10**	**2.3**	**ug/L**	**1**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **RW-5**
Date Sampled: **09/18/2016 1608**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-013**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/20/2016 0126	SLU		22431
1		(Sulfate) 9056A	1	09/27/2016 0014	SLU		22930

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.077**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**0.66**	**J**	**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	500	09/23/2016 1900	ALL		22730

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	**75-85-4**	**8260B**	**26000**		**10000**	**4000**	**ug/L**	**1**
tert-Amyl methyl ether (TAME)	**994-05-8**	**8260B**	**430**	**J**	**5000**	**200**	**ug/L**	**1**
Benzene	**71-43-2**	**8260B**	**24000**		**2500**	**200**	**ug/L**	**1**
tert-Butyl formate (TBF)	762-75-4	8260B	ND		2500	1000	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		2500	200	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		2500	200	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		10000	4000	ug/L	1
Ethanol	64-17-5	8260B	ND		50000	20000	ug/L	1
Ethylbenzene	**100-41-4**	**8260B**	**4600**		**2500**	**200**	**ug/L**	**1**
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		500	200	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**11000**		**2500**	**200**	**ug/L**	**1**
Naphthalene	**91-20-3**	**8260B**	**1000**	**J**	**2500**	**200**	**ug/L**	**1**
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		10000	4000	ug/L	1
Toluene	**108-88-3**	**8260B**	**47000**		**2500**	**200**	**ug/L**	**1**
Xylenes (total)	**1330-20-7**	**8260B**	**24000**		**2500**	**200**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		101	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		109	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 1232	MEM	09/23/2016 0900	22710

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0050	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **RW-5**
Date Sampled: **09/18/2016 1608**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-013**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		91	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
3		RSK - 175	10	09/24/2016 1337	JJG		22818

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	**74-82-8**	**RSK - 175**	**1400**		**100**	**23**	**ug/L**	**3**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **FIELD BLANK**
Date Sampled: **09/18/2016 0830**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-014**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/23/2016 1023	ALL		22730

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		105	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		109	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 1243	MEM	09/23/2016 0900	22710

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0049	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		88	57-137

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **TRIP BLANK**
Date Sampled: **09/18/2016 0818**
Date Received: **09/19/2016**

Laboratory ID: **RI19005-015**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/22/2016 1036	ALL		22622

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		82	70-130
Bromofluorobenzene		85	70-130
Toluene-d8		95	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

QC Summary

Inorganic non-metals - MB

Sample ID: RQ22431-001
Batch: 22431
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Nitrate - N	ND		1	0.020	0.0050	mg/L	09/19/2016 1901

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - LCS

Sample ID: RQ22431-002 **Matrix:** Aqueous
Batch: 22431
Analytical Method: 9056A

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Nitrate - N	0.80	0.80		1	99	80-120	09/19/2016 1925

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MS

Sample ID: RI19005-001MS
Batch: 22431
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Nitrate - N	ND	0.80	0.80		1	100	80-120	09/20/2016 0150

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MSD

Sample ID: RI19005-001MD
Batch: 22431
Analytical Method: 9056A

Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Nitrate - N	ND	0.80	0.81		1	101	0.98	80-120	20	09/20/2016 0214

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MS

Sample ID: RI19005-002MS
Batch: 22431
Analytical Method: 9056A

Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Nitrate - N	ND	0.80	0.81		1	101	80-120	09/20/2016 0238

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MSD

Sample ID: RI19005-002MD
Batch: 22431
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Nitrate - N	ND	0.80	0.77		1	96	4.7	80-120	20	09/20/2016 0302

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MB

Sample ID: RQ22800-001
Batch: 22800
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Sulfate	ND		1	1.0	0.20	mg/L	09/23/2016 2031

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - LCS

Sample ID: RQ22800-002 **Matrix:** Aqueous
Batch: 22800
Analytical Method: 9056A

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Sulfate	20	20		1	98	80-120	09/23/2016 2043

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MB

Sample ID: RQ22801-001
Batch: 22801
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Sulfate	ND		1	1.0	0.20	mg/L	09/24/2016 0244

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - LCS

Sample ID: RQ22801-002 **Matrix:** Aqueous

Batch: 22801

Analytical Method: 9056A

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Sulfate	20	19		1	97	80-120	09/24/2016 0256

PQL = Practical quantitation limit

ND = Not detected at or above the MDL

P = The RPD between two GC columns exceeds 40%

J = Estimated result < PQL and ≥ MDL

N = Recovery is out of criteria

+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MS

Sample ID: RI19005-010MS
Batch: 22801
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Sulfate	2.1	20	21		1	96	80-120	09/24/2016 0521

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MSD

Sample ID: RI19005-010MD
Batch: 22801
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Sulfate	2.1	20	22		1	97	1.2	80-120	20	09/24/2016 0533

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MB

Sample ID: RQ22930-001
Batch: 22930
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Sulfate	ND		1	1.0	0.20	mg/L	09/26/2016 2024

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - LCS

Sample ID: RQ22930-002 **Matrix:** Aqueous
Batch: 22930
Analytical Method: 9056A

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Sulfate	20	20		1	100	80-120	09/26/2016 2036

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MS

Sample ID: RI19005-012MS
Batch: 22930
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Sulfate	ND	20	20		1	102	80-120	09/26/2016 2350

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MSD

Sample ID: RI19005-012MD
Batch: 22930
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Sulfate	ND	20	20		1	99	2.2	80-120	20	09/27/2016 0002

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: RQ22622-001
Batch: 22622
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	09/22/2016 1003
tert-Amyl methyl ether (TAME)	ND		1	10	0.40	ug/L	09/22/2016 1003
Benzene	ND		1	5.0	0.40	ug/L	09/22/2016 1003
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	09/22/2016 1003
1,2-Dichloroethane	ND		1	5.0	0.40	ug/L	09/22/2016 1003
Diisopropyl ether (IPE)	ND		1	5.0	0.40	ug/L	09/22/2016 1003
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	09/22/2016 1003
Ethanol	ND		1	100	40	ug/L	09/22/2016 1003
Ethylbenzene	ND		1	5.0	0.40	ug/L	09/22/2016 1003
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	0.40	ug/L	09/22/2016 1003
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.40	ug/L	09/22/2016 1003
Naphthalene	ND		1	5.0	0.40	ug/L	09/22/2016 1003
tert-butyl alcohol (TBA)	ND		1	20	8.0	ug/L	09/22/2016 1003
Toluene	ND		1	5.0	0.40	ug/L	09/22/2016 1003
Xylenes (total)	ND		1	5.0	0.40	ug/L	09/22/2016 1003

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		86	70-130
1,2-Dichloroethane-d4		80	70-130
Toluene-d8		95	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: RQ22622-002
Batch: 22622
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	1100		1	112	70-130	09/22/2016 0907
tert-Amyl methyl ether (TAME)	50	49		1	98	70-130	09/22/2016 0907
Benzene	50	59		1	117	70-130	09/22/2016 0907
tert-Butyl formate (TBF)	250	250		1	100	70-130	09/22/2016 0907
1,2-Dichloroethane	50	44		1	88	70-130	09/22/2016 0907
Diisopropyl ether (IPE)	50	59		1	118	70-130	09/22/2016 0907
3,3-Dimethyl-1-butanol	1000	1200		1	124	70-130	09/22/2016 0907
Ethanol	5000	6500		1	129	60-140	09/22/2016 0907
Ethylbenzene	50	56		1	112	70-130	09/22/2016 0907
Ethyl-tert-butyl ether (ETBE)	50	57		1	113	70-130	09/22/2016 0907
Methyl tertiary butyl ether (MTBE)	50	52		1	104	70-130	09/22/2016 0907
Naphthalene	50	57		1	113	70-130	09/22/2016 0907
tert-butyl alcohol (TBA)	1000	1100		1	114	70-130	09/22/2016 0907
Toluene	50	60		1	119	70-130	09/22/2016 0907
Xylenes (total)	100	110		1	110	70-130	09/22/2016 0907

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		87	70-130
1,2-Dichloroethane-d4		75	70-130
Toluene-d8		97	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: RQ22730-001
Batch: 22730
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	09/23/2016 0944
tert-Amyl methyl ether (TAME)	ND		1	10	0.40	ug/L	09/23/2016 0944
Benzene	ND		1	5.0	0.40	ug/L	09/23/2016 0944
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	09/23/2016 0944
1,2-Dichloroethane	ND		1	5.0	0.40	ug/L	09/23/2016 0944
Diisopropyl ether (IPE)	ND		1	5.0	0.40	ug/L	09/23/2016 0944
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	09/23/2016 0944
Ethanol	ND		1	100	40	ug/L	09/23/2016 0944
Ethylbenzene	ND		1	5.0	0.40	ug/L	09/23/2016 0944
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	0.40	ug/L	09/23/2016 0944
Methyl tertiary butyl ether (MTBE)	ND		1	5 0	0.40	ug/L	09/23/2016 0944
Naphthalene	ND		1	5 0	0.40	ug/L	09/23/2016 0944
tert-butyl alcohol (TBA)	ND		1	20	8.0	ug/L	09/23/2016 0944
Toluene	ND		1	5.0	0.40	ug/L	09/23/2016 0944
Xylenes (total)	ND		1	5.0	0.40	ug/L	09/23/2016 0944

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		90	70-130
1,2-Dichloroethane-d4		104	70-130
Toluene-d8		105	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: RQ22730-002
Batch: 22730
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	1100		1	109	70-130	09/23/2016 0842
tert-Amyl methyl ether (TAME)	50	53		1	106	70-130	09/23/2016 0842
Benzene	50	55		1	110	70-130	09/23/2016 0842
tert-Butyl formate (TBF)	250	280		1	111	70-130	09/23/2016 0842
1,2-Dichloroethane	50	53		1	106	70-130	09/23/2016 0842
Diisopropyl ether (IPE)	50	56		1	112	70-130	09/23/2016 0842
3,3-Dimethyl-1-butanol	1000	1000		1	103	70-130	09/23/2016 0842
Ethanol	5000	5600		1	112	60-140	09/23/2016 0842
Ethylbenzene	50	53		1	106	70-130	09/23/2016 0842
Ethyl-tert-butyl ether (ETBE)	50	56		1	111	70-130	09/23/2016 0842
Methyl tertiary butyl ether (MTBE)	50	56		1	111	70-130	09/23/2016 0842
Naphthalene	50	53		1	105	70-130	09/23/2016 0842
tert-butyl alcohol (TBA)	1000	1100		1	110	70-130	09/23/2016 0842
Toluene	50	53		1	106	70-130	09/23/2016 0842
Xylenes (total)	100	110		1	106	70-130	09/23/2016 0842

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		90	70-130
1,2-Dichloroethane-d4		101	70-130
Toluene-d8		103	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of critena
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MS

Sample ID: RI19005-013MS
Batch: 22730
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	26000	500000	540000		500	104	70-130	09/23/2016 1925
tert-Amyl methyl ether (TAME)	430	25000	27000		500	107	70-130	09/23/2016 1925
Benzene	24000	25000	54000		500	118	70-130	09/23/2016 1925
tert-Butyl formate (TBF)	ND	130000	140000		500	109	70-130	09/23/2016 1925
1,2-Dichloroethane	ND	25000	27000		500	109	70-130	09/23/2016 1925
Diisopropyl ether (IPE)	ND	25000	29000		500	118	70-130	09/23/2016 1925
3,3-Dimethyl-1-butanol	ND	500000	480000		500	97	70-130	09/23/2016 1925
Ethanol	ND	2500000	2100000		500	86	70-130	09/23/2016 1925
Ethylbenzene	4600	25000	33000		500	114	70-130	09/23/2016 1925
Ethyl-tert-butyl ether (ETBE)	ND	25000	29000		500	115	70-130	09/23/2016 1925
Methyl tertiary butyl ether (MTBE)	11000	25000	39000		500	112	70-130	09/23/2016 1925
Naphthalene	1000	25000	28000		500	109	70-130	09/23/2016 1925
tert-butyl alcohol (TBA)	ND	500000	500000		500	101	70-130	09/23/2016 1925
Toluene	47000	25000	75000		500	111	70-130	09/23/2016 1925
Xylenes (total)	24000	50000	82000		500	115	70-130	09/23/2016 1925

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		100	70-130
Bromofluorobenzene		93	70-130
Toluene-d8		106	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MSD

Sample ID: RI19005-013MD
Batch: 22730
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
tert-Amyl alcohol (TAA)	26000	500000	570000		500	110	5.2	70-130	20	09/23/2016 1951
tert-Amyl methyl ether (TAME)	430	25000	30000		500	117	8.2	70-130	20	09/23/2016 1951
Benzene	24000	25000	56000		500	128	4.3	70-130	20	09/23/2016 1951
tert-Butyl formate (TBF)	ND	130000	140000		500	116	5.9	70-130	20	09/23/2016 1951
1,2-Dichloroethane	ND	25000	29000		500	117	7.5	70-130	20	09/23/2016 1951
Diisopropyl ether (IPE)	ND	25000	31000		500	125	5.6	70-130	20	09/23/2016 1951
3,3-Dimethyl-1-butanol	ND	500000	520000		500	104	7.0	70-130	20	09/23/2016 1951
Ethanol	ND	2500000	2400000		500	97	12	70-130	20	09/23/2016 1951
Ethylbenzene	4600	25000	34000		500	118	3.1	70-130	20	09/23/2016 1951
Ethyl-tert-butyl ether (ETBE)	ND	25000	30000		500	122	5.5	70-130	20	09/23/2016 1951
Methyl tertiary butyl ether (MTBE)	11000	25000	41000		500	121	5.1	70-130	20	09/23/2016 1951
Naphthalene	1000	25000	31000		500	120	8.9	70-130	20	09/23/2016 1951
tert-butyl alcohol (TBA)	ND	500000	540000		500	108	6.8	70-130	20	09/23/2016 1951
Toluene	47000	25000	76000		500	118	2.2	70-130	20	09/23/2016 1951
Xylenes (total)	24000	50000	85000		500	120	3.3	70-130	20	09/23/2016 1951

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		101	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		105	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: RQ22869-001
Batch: 22869
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.40	ug/L	09/26/2016 1033

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		93	70-130
1,2-Dichloroethane-d4		109	70-130
Toluene-d8		106	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: RQ22869-002
Batch: 22869
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Methyl tertiary butyl ether (MTBE)	50	53		1	106	70-130	09/26/2016 0929

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		89	70-130
1,2-Dichloroethane-d4		97	70-130
Toluene-d8		98	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

EDB & DBCP by Microextraction - MB

Sample ID: RQ22615-001
Batch: 22615
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 09/22/2016 1146

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
1,2-Dibromoethane (EDB)	ND		1	0.020	0.0050	ug/L	09/23/2016 0847

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		93	57-137

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

EDB & DBCP by Microextraction - LCS

Sample ID: RQ22615-002
Batch: 22615
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 09/22/2016 1146

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	0.25	0.24		1	95	60-140	09/23/2016 0858

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		92	57-137

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

EDB & DBCP by Microextraction - MB

Sample ID: RQ22710-001
Batch: 22710
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 09/23/2016 900

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
1,2-Dibromoethane (EDB)	ND		1	0.020	0.0050	ug/L	09/23/2016 1421

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		94	57-137

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

EDB & DBCP by Microextraction - LCS

Sample ID: RQ22710-002
Batch: 22710
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 09/23/2016 900

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	0.25	0.25		1	98	60-140	09/23/2016 1432

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		95	57-137

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

EDB & DBCP by Microextraction - MS

Sample ID: RI19005-009MS
Batch: 22710
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 09/23/2016 900

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	0.070	0.26	0.36		1	114	60-140	09/26/2016 1138

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		130	57-137

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

EDB & DBCP by Microextraction - MSD

Sample ID: RI19005-009MD
Batch: 22710
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 09/23/2016 900

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
1,2-Dibromoethane (EDB)	0.070	0.25	0.34		1	111	4.5	60-140	20	09/26/2016 1149

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		127	57-137

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - MB

Sample ID: RQ22561-001
Batch: 22561
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Methane	ND		1	10	2.3	ug/L	09/21/2016 1805

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - LCS

Sample ID: RQ22561-002
Batch: 22561
Analytical Method: RSK - 175
Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Methane	150	150		1	96	70-130	09/21/2016 1706

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - LCSD

Sample ID: RQ22561-003
Batch: 22561
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Methane	150	140		1	90	7.1	70-130	30	09/21/2016 1716

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - MB

Sample ID: RQ22691-001
Batch: 22691
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Methane	ND		1	10	2.3	ug/L	09/22/2016 1513

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - LCS

Sample ID: RQ22691-002
Batch: 22691
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Methane	150	120		1	78	70-130	09/22/2016 1445

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - LCSD

Sample ID: RQ22691-003
Batch: 22691
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Methane	150	170	+	1	110	34	70-130	30	09/22/2016 1458

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - MB

Sample ID: RQ22818-001
Batch: 22818
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Methane	ND		1	10	2.3	ug/L	09/24/2016 1233

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - LCS

Sample ID: RQ22818-002
Batch: 22818
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Methane	150	150		1	99	70-130	09/24/2016 1153

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - LCSD

Sample ID: RQ22818-003
Batch: 22818
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Methane	150	170		1	110	10	70-130	30	09/24/2016 1209

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

SHEALY ENVIRONMENTAL SERVICES, INC.

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Chain of Custody Record

Number 64698

413-4936

Client: Enviro-Test Services	Report to Contact: Michael Faris	Telephone No. / E-mail: Mfaris@SC.RR.Com	Quote No.
Address: P.O. Box 2237	Sampler's Signature: Jeny L. Seate	Analyses (Attach list if more space is needed)	Page 1 of 2
City: Irmo State: SC Zip Code: 29063	Printed Name:		
Project Name: Broad River Amoco			RI19005
Project No.: DHEC # 11946	P.O. No.		Remarks / Cooler I.D.

Sample ID / Description (Containers for each sample may be combined on one line)	Date	Time	Matrix	No. of Containers by Preservative Type	BTEX, MTBE	1,2-DCA	8-SC Oxygenates	EDB-8011	Nitrate-	Sulfate	Methane
MW-1	9-18-16	843	G X	1 / 8	Z	Z	Z	Z	Z	N	N
MW-2		915									
MW-3		955									
MW-4		1020									
MW-5		1058									
MW-6A		1130									
MW-6B		1205									
MW-D1		1237									
RW-1		1325									
RW-2		1405									

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☐ Standard ☐ Rush (Specify)

Sample Disposal ☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Jeny L. Seate	9-19-16	1050	1. Received by:		
2. Relinquished by:	Date	Time	2. Received by:	Date	Time
3. Relinquished by:	Date	Time	3. Received by:	Date	Time
4. Relinquished by:	Date	Time	4. Laboratory received by: D Clott	Date: 9-19-16	Time: 1050

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) (Yes) No Ice Pack

Receipt Temp: 3.0 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

SHEALY ENVIRONMENTAL SERVICES, INC.

106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Chain of Custody Record

Number 64699

Client: Enviro-Test Services
Address: P.O. Box 2237
City: Irmo | State: SC | Zip Code: 29063
Project Name: Broad River AMOCO
Project No.: DHEC # 11946
P.O. No.:
Report to Contact: Michael Faris
Sampler's Signature: Jerry L. Teate
Project Name:
Telephone No. / E-mail: mfaris@esc RR.com
Quote No.:
Page ___ of ___

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	# of Containers	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No. of Containers by Preservative Type: Unpres	H2SO4	HNO3	HCl	NaOH	Na2S2O3	BTEX, MTBE	1,2-DCA	8-SC Oxygenates	EDB - 8011	Nitrate	Sulfate	Methane
RW-3	9-18-16	1448	G	X			1			8			Z	Z	Z	Z	Z	Z	Z
RW-4	"	1520	"	"									Z	Z	Z	Z	Z	Z	Z
RW-5	"	1608	"	"									Z	Z	Z	Z	Z	Z	Z
Field Blank	"	830	"	"									Z	Z	Z	Z	X		
Trip Blank	"	818	"	"									Z	Z	Z		X		

RI19005

Remarks / Cooler I.D.:

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☐ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify):

	Relinquished by	Date	Time	Received by	Date	Time
1.	Jerry L. Teate	9-19-16	1050			
2.						
3.						
4.				Laboratory received by: D. Elliott	9-19-16	1050

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle): (Yes) No Ice Pack
Receipt Temp: 3.0 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

SHEALY ENVIRONMENTAL SERVICES, INC.

Sample Receipt Checklist (SRC)

Client: Enviro-Test Svcs Cooler Inspected by/date: SBE 9/19/16 Lot #: R119005

Means of receipt: ☐ SESI ☒ Client ☐ UPS ☐ FedEx ☐ Other

Yes ☐	No ☒		1. Were custody seals present on the cooler?
Yes ☐	No ☐	NA ☒	2. If custody seals were present, were they intact and unbroken?

pH strip ID: _____ Cl strip ID: _____

Cooler ID/Original temperature upon receipt/Derived (corrected) temperature upon receipt:

3.0/3.0 °C ___/___/___ °C ___/___/___ °C ___/___/___ °C

Method: ☐ Temperature Blank ☒ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☒ Wet Ice ☐ Blue Ice ☐ Dry Ice ☐ None

Yes ☐	No ☐	NA ☒	3. If temperature of any cooler exceeded 6.0°C, was Project Manager notified? PM was notified by: phone / email / face-to-face (circle one).
Yes ☐	No ☐	NA ☒	4. Is the commercial courier's packing slip attached to this form?
Yes ☒	No ☐		5. Were proper custody procedures (relinquished/received) followed?
Yes ☒	No ☐		6. Were sample IDs listed on the COC?
Yes ☒	No ☐		7. Were sample IDs listed on all sample containers?
Yes ☒	No ☐		8. Was collection date & time listed on the COC?
Yes ☒	No ☐		9. Was collection date & time listed on all sample containers?
Yes ☒	No ☐		10. Did all container label information (ID, date, time) agree with the COC?
Yes ☒	No ☐		11. Were tests to be performed listed on the COC?
Yes ☒	No ☐		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
Yes ☒	No ☐		13. Was adequate sample volume available?
Yes ☐	No ☒		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
SBE 9/19/16 Yes ☒	No ☒		15. Were any samples containers missing/excess (circle one) samples not listed on COC?
Yes ☐	No ☒	NA ☐	16. Were bubbles present >"pea-size" (¼" or 6mm in diameter) in any VOA vials?
Yes ☐	No ☐	NA ☒	17. Were all metals/O&G/HEM/nutrient samples received at a pH of <2?
Yes ☐	No ☐	NA ☒	18. Were all cyanide and/or sulfide samples received at a pH >12?
Yes ☐	No ☐	NA ☒	19. Were all applicable NH3/TKN/cyanide/phenol (<0.2mg/L) samples free of residual chlorine?
Yes ☐	No ☐	NA ☒	20. Were collection temperatures documented on the COC for NC samples?
Yes ☐	No ☐	NA ☒	21. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc...) correctly transcribed from the COC into the comment section in LIMS?
Yes ☐	No ☒		22. Was the quote number used taken from the container label?

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____ (H_2SO_4, HNO_3, HCl, NaOH) using SR # _____.

Sample(s) _____ were received with bubbles >6 mm in diameter.

Samples(s) _____ were received with TRC >0.2 mg/L (If #21 is No) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: _____.

SC Drinking Water Project Sample(s) pH verified to be ≥ 2 by _____ Date: _____

Sample(s) _____ were not received at a pH of <2 and were adjusted accordingly using SR# _____

Sample labels applied by: SBE Verified by: _____ Date: 9/19/16

Comments: ~~received 3 extra RW1 vials for VOC + no VOC vials for MW-lab extras are labeled w/ RW1 + time~~ SBE 9/19/16 - per client: followed labeling on caps, not bottle labels - all samples present

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

Enviro-Test Services Inc.
PO Box 2237
Irmo, SC 29063
Attention: Terry Teate

Project Name: **Broad River Amoco**

Project Number: **DHEC # 11946**

Lot Number: **RI20011**

Date Completed: **10/05/2016**

Lucas Odom
Project Manager

LABORATORY ACCREDITATION BUREAU ACCREDITED ISO/IEC 17025

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The following non-paginated documents are considered part of this report: Chain of Custody Record and Sample Receipt Checklist.

Case Narrative
Enviro-Test Services Inc.
Lot Number: RI20011

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Nitrate by IC

Sample -006 has been analyzed at a 5X dilution. A "J" value detection was seen at this dilution. The sample was ran again out of the hold time at no dilution and yielded a detection marginally above the PQL. The first run has been reported as it is in hold.

Sulfate by IC

The Method Blank associated with batch 23119 yielded a "J" value detection for Sulfate. No corrective action is required as this is an estimated value recovered below the PQL. All associated samples have been qualified with a "B".

Methane by GC

The Method Blank associated with batch 22831 yielded a "J" value detection for Methane. No corrective action is required as this is an estimated value recovered below the PQL. All associated samples have been qualified with a "B".

Sample Summary
Enviro-Test Services Inc.
Lot Number: RI20011

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-7A	Aqueous	09/19/2016 1145	09/20/2016
002	MW-8A	Aqueous	09/19/2016 1220	09/20/2016
003	MW-8B	Aqueous	09/19/2016 1242	09/20/2016
004	MW-9A	Aqueous	09/19/2016 1305	09/20/2016
005	MW-9B	Aqueous	09/19/2016 1335	09/20/2016
006	MW-10A	Aqueous	09/19/2016 1357	09/20/2016
007	MW-10B	Aqueous	09/19/2016 1427	09/20/2016
008	MW-11A	Aqueous	09/19/2016 1505	09/20/2016
009	MW-11B	Aqueous	09/19/2016 1538	09/20/2016
010	MW-12A	Aqueous	09/19/2016 1618	09/20/2016
011	MW-12B	Aqueous	09/19/2016 1651	09/20/2016
012	MW-13B	Aqueous	09/19/2016 1733	09/20/2016
013	DUPLICATE-1	Aqueous	09/19/2016 1432	09/20/2016
014	FIELD BLANK	Aqueous	09/19/2016 1138	09/20/2016
015	TRIP BLANK	Aqueous	09/19/2016	09/20/2016

(15 samples)

Executive Summary
Enviro-Test Services Inc.
Lot Number: RI20011

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-7A	Aqueous	Nitrate - N	9056A	0.062		mg/L	5
001	MW-7A	Aqueous	Sulfate	9056A	0.73	BJ	mg/L	5
002	MW-8A	Aqueous	Nitrate - N	9056A	0.12		mg/L	7
002	MW-8A	Aqueous	Sulfate	9056A	0.76	BJ	mg/L	7
003	MW-8B	Aqueous	Nitrate - N	9056A	0.45		mg/L	9
003	MW-8B	Aqueous	Sulfate	9056A	1.1	B	mg/L	9
004	MW-9A	Aqueous	Nitrate - N	9056A	0.63		mg/L	11
004	MW-9A	Aqueous	Sulfate	9056A	0.70	BJ	mg/L	11
004	MW-9A	Aqueous	Methyl tertiary butyl ether	8260B	2.8	J	ug/L	11
005	MW-9B	Aqueous	Nitrate - N	9056A	0.19		mg/L	13
005	MW-9B	Aqueous	Sulfate	9056A	1.6	B	mg/L	13
005	MW-9B	Aqueous	Methyl tertiary butyl ether	8260B	6.2		ug/L	13
005	MW-9B	Aqueous	Methane	RSK - 175	36		ug/L	14
006	MW-10A	Aqueous	Nitrate - N	9056A	0.071	J	mg/L	15
006	MW-10A	Aqueous	Sulfate	9056A	3.5	B	mg/L	15
006	MW-10A	Aqueous	Toluene	8260B	0.61	J	ug/L	15
006	MW-10A	Aqueous	Methane	RSK - 175	450	B	ug/L	16
007	MW-10B	Aqueous	Nitrate - N	9056A	0.27		mg/L	17
007	MW-10B	Aqueous	Sulfate	9056A	10	B	mg/L	17
008	MW-11A	Aqueous	Nitrate - N	9056A	0.25		mg/L	19
008	MW-11A	Aqueous	Sulfate	9056A	6.6	B	mg/L	19
008	MW-11A	Aqueous	Benzene	8260B	3.0	J	ug/L	19
008	MW-11A	Aqueous	Methyl tertiary butyl ether	8260B	1.5	J	ug/L	19
008	MW-11A	Aqueous	Naphthalene	8260B	1.3	J	ug/L	19
008	MW-11A	Aqueous	Methane	RSK - 175	64		ug/L	20
009	MW-11B	Aqueous	Nitrate - N	9056A	0.52		mg/L	21
009	MW-11B	Aqueous	Sulfate	9056A	4.1	B	mg/L	21
009	MW-11B	Aqueous	Methyl tertiary butyl ether	8260B	0.95	J	ug/L	21
010	MW-12A	Aqueous	Nitrate - N	9056A	0.053		mg/L	23
010	MW-12A	Aqueous	Sulfate	9056A	0.22	BJ	mg/L	23
011	MW-12B	Aqueous	Nitrate - N	9056A	0.14		mg/L	25
011	MW-12B	Aqueous	Sulfate	9056A	0.47	BJ	mg/L	25
012	MW-13B	Aqueous	Nitrate - N	9056A	0.94		mg/L	27
012	MW-13B	Aqueous	Sulfate	9056A	0.60	J	mg/L	27
013	DUPLICATE-1	Aqueous	Nitrate - N	9056A	0.23		mg/L	29
013	DUPLICATE-1	Aqueous	Sulfate	9056A	10		mg/L	29

(36 detections)

Client: **Enviro-Test Services Inc.**
Description: **MW-7A**
Date Sampled: **09/19/2016 1145**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-001**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/20/2016 1613	SLU		22463
1		(Sulfate) 9056A	1	09/28/2016 0047	SLU		23119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.062**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**0.73**	**BJ**	**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/23/2016 1506	ALL		22730

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		105	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		103	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 1649	MEM	09/23/2016 0900	22713

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0051	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-7A**
Date Sampled: **09/19/2016 1145**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-001**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		85	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/22/2016 2025	JJG		22691

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	74-82-8	RSK - 175	ND		10	2.3	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-8A**
Date Sampled: **09/19/2016 1220**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-002**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/20/2016 1637	SLU		22463
1		(Sulfate) 9056A	1	09/28/2016 0059	SLU		23119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.12**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**0.76**	**BJ**	**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/23/2016 1233	ALL		22730

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		104	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		107	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 1700	MEM	09/23/2016 0900	22713

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0049	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-8A**
Date Sampled: **09/19/2016 1220**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-002**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		137	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/22/2016 2038	JJG		22691

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	74-82-8	RSK - 175	ND		10	2.3	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-8B**
Date Sampled: **09/19/2016 1242**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-003**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/20/2016 1701	SLU		22463
1		(Sulfate) 9056A	1	09/28/2016 0111	SLU		23119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.45**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**1.1**	**B**	**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/23/2016 1258	ALL		22730

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		106	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		106	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 1711	MEM	09/23/2016 0900	22713

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0049	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-8B**
Date Sampled: **09/19/2016 1242**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-003**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		103	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/22/2016 2051	JJG		22691

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	74-82-8	RSK - 175	ND		10	2.3	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-9A**
Date Sampled: **09/19/2016 1305**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-004**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/20/2016 1725	SLU		22463
1		(Sulfate) 9056A	1	09/28/2016 0123	SLU		23119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.63**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**0.70**	**BJ**	**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/23/2016 1324	ALL		22730

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**2.8**	**J**	**5.0**	**0.40**	**ug/L**	**1**
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		103	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		108	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 1721	MEM	09/23/2016 0900	22713

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.021	0.0051	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-9A**
Date Sampled: **09/19/2016 1305**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-004**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		93	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/24/2016 1407	JJG		22818

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	74-82-8	RSK - 175	ND		10	2.3	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-9B**
Date Sampled: **09/19/2016 1335**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-005**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/20/2016 1749	SLU		22463
1		(Sulfate) 9056A	1	09/28/2016 0136	SLU		23119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.19**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**1.6**	**B**	**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/23/2016 1350	ALL		22730

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**6.2**		**5.0**	**0.40**	**ug/L**	**1**
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		105	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		107	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 1732	MEM	09/23/2016 0900	22713

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0050	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-9B**
Date Sampled: **09/19/2016 1335**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-005**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		104	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/22/2016 2136	JJG		22691

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	**74-82-8**	**RSK - 175**	**36**		**10**	**2.3**	**ug/L**	**1**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-10A**
Date Sampled: **09/19/2016 1357**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-006**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	5	09/20/2016 1813	SLU		22463
1		(Sulfate) 9056A	1	09/28/2016 0148	SLU		23119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.071**	**J**	**0.10**	**0.025**	**mg/L**	**1**
Sulfate		**9056A**	**3.5**	**B**	**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/23/2016 1413	ALL		22730

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	**108-88-3**	**8260B**	**0.61**	**J**	**5.0**	**0.40**	**ug/L**	**1**
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		105	70-130
Bromofluorobenzene		95	70-130
Toluene-d8		110	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 1743	MEM	09/23/2016 0900	22713

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0051	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-10A**
Date Sampled: **09/19/2016 1357**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-006**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		94	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
3		RSK - 175	2	09/25/2016 1142	JJG		22831

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	**74-82-8**	**RSK - 175**	**450**	**B**	**20**	**4.6**	**ug/L**	**3**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-10B**
Date Sampled: **09/19/2016 1427**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-007**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/20/2016 1837	SLU		22463
1		(Sulfate) 9056A	1	09/28/2016 0224	SLU		23119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.27**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**10**	**B**	**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/23/2016 2342	TML		22777

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		108	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		108	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 1753	MEM	09/23/2016 0900	22713

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0051	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-10B**
Date Sampled: **09/19/2016 1427**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-007**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		92	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/22/2016 2245	JJG		22691

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	74-82-8	RSK - 175	ND		10	2.3	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-11A**
Date Sampled: **09/19/2016 1505**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-008**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/20/2016 1901	SLU		22463
1		(Sulfate) 9056A	1	09/28/2016 0236	SLU		23119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.25**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**6.6**	**B**	**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/24/2016 0008	TML		22777

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	**71-43-2**	**8260B**	**3.0**	**J**	**5.0**	**0.40**	**ug/L**	**1**
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**1.5**	**J**	**5.0**	**0.40**	**ug/L**	**1**
Naphthalene	**91-20-3**	**8260B**	**1.3**	**J**	**5.0**	**0.40**	**ug/L**	**1**
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		104	70-130
Bromofluorobenzene		91	70-130
Toluene-d8		110	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 1804	MEM	09/23/2016 0900	22713

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.019	0.0048	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-11A**
Date Sampled: **09/19/2016 1505**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-008**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		77	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/22/2016 2257	JJG		22691

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	**74-82-8**	**RSK - 175**	**64**		**10**	**2.3**	**ug/L**	**1**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-11B**
Date Sampled: **09/19/2016 1538**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-009**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/20/2016 1925	SLU		22463
1		(Sulfate) 9056A	1	09/28/2016 0248	SLU		23119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.52**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**4.1**	**B**	**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/24/2016 0034	TML		22777

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**0.95**	**J**	**5.0**	**0.40**	**ug/L**	**1**
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		103	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		108	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 1815	MEM	09/23/2016 0900	22713

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0050	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-11B**
Date Sampled: **09/19/2016 1538**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-009**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		130	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/24/2016 1419	JJG		22818

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	74-82-8	RSK - 175	ND		10	2.3	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-12A**
Date Sampled: **09/19/2016 1618**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-010**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/20/2016 2037	SLU		22463
1		(Sulfate) 9056A	1	09/28/2016 0300	SLU		23119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.053**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**0.22**	**BJ**	**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/24/2016 0100	TML		22777

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		105	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		109	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 1826	MEM	09/23/2016 0900	22713

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0051	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-12A**
Date Sampled: **09/19/2016 1618**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-010**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		94	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/24/2016 1459	JJG		22818

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	74-82-8	RSK - 175	ND		10	2.3	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-12B**
Date Sampled: **09/19/2016 1651**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-011**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/20/2016 2101	SLU		22463
1		(Sulfate) 9056A	1	09/28/2016 0312	SLU		23119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.14**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**0.47**	**BJ**	**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/24/2016 0127	TML		22777

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		105	70-130
Bromofluorobenzene		91	70-130
Toluene-d8		110	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 1836	MEM	09/23/2016 0900	22713

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.021	0.0053	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-12B**
Date Sampled: **09/19/2016 1651**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-011**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		97	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/24/2016 1519	JJG		22818

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	74-82-8	RSK - 175	ND		10	2.3	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-13B**
Date Sampled: **09/19/2016 1733**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-012**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/20/2016 2125	SLU		22463
1		(Sulfate) 9056A	1	09/28/2016 0400	SLU		23121

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.94**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**0.60**	**J**	**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/24/2016 0152	TML		22777

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		105	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		107	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 1847	MEM	09/23/2016 0900	22713

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0049	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-13B**
Date Sampled: **09/19/2016 1733**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-012**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		91	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/24/2016 1529	JJG		22818

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	74-82-8	RSK - 175	ND		10	2.3	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **DUPLICATE-1**
Date Sampled: **09/19/2016 1432**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-013**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/20/2016 2149	SLU		22463
1		(Sulfate) 9056A	1	09/28/2016 0437	SLU		23121

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.23**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**10**		**1.0**	**0.20**	**mg/L**	**1**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/24/2016 0219	TML		22777

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		106	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		110	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 1858	MEM	09/23/2016 0900	22713

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.019	0.0048	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **DUPLICATE-1**
Date Sampled: **09/19/2016 1432**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-013**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		83	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/24/2016 1539	JJG		22818

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	74-82-8	RSK - 175	ND		10	2.3	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **FIELD BLANK**
Date Sampled: **09/19/2016 1138**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-014**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/23/2016 2251	TML		22777

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		103	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		108	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 1908	MEM	09/23/2016 0900	22713

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.019	0.0048	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		110	57-137

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **TRIP BLANK**
Date Sampled: **09/19/2016**
Date Received: **09/20/2016**

Laboratory ID: **RI20011-015**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/23/2016 2316	TML		22777

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		104	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		108	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

QC Summary

Inorganic non-metals - MB

Sample ID: RQ22463-001
Batch: 22463
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Nitrate - N	ND		1	0.020	0.0050	mg/L	09/20/2016 1524

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - LCS

Sample ID: RQ22463-002 **Matrix:** Aqueous
Batch: 22463
Analytical Method: 9056A

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Nitrate - N	0.80	0.80		1	100	80-120	09/20/2016 1549

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MS

Sample ID: RI20011-013MS
Batch: 22463
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Nitrate - N	0.23	0.80	0.99		1	96	80-120	09/20/2016 2213

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MSD

Sample ID: RI20011-013MD
Batch: 22463
Analytical Method: 9056A

Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Nitrate - N	0.23	0.80	0.99		1	95	0.10	80-120	20	09/20/2016 2237

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MB

Sample ID: RQ23119-001
Batch: 23119
Analytical Method: 9056A

Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Sulfate	**0.43**	**J**	**1**	**1.0**	**0.20**	**mg/L**	**09/27/2016 2122**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - LCS

Sample ID: RQ23119-002
Batch: 23119
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Sulfate	20	22		1	110	80-120	09/27/2016 2134

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MB

Sample ID: RQ23121-001
Batch: 23121
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Sulfate	ND		1	1.0	0.20	mg/L	09/28/2016 0336

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - LCS

Sample ID: RQ23121-002 **Matrix:** Aqueous
Batch: 23121
Analytical Method: 9056A

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Sulfate	20	21		1	103	80-120	09/28/2016 0348

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MS

Sample ID: RI20011-012MS
Batch: 23121
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Sulfate	0.60	20	21		1	102	80-120	09/28/2016 0412

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MSD

Sample ID: RI20011-012MD
Batch: 23121
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Sulfate	0.60	20	21		1	103	0.086	80-120	20	09/28/2016 0425

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: RQ22730-001
Batch: 22730
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	09/23/2016 0944
tert-Amyl methyl ether (TAME)	ND		1	10	0.40	ug/L	09/23/2016 0944
Benzene	ND		1	5.0	0.40	ug/L	09/23/2016 0944
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	09/23/2016 0944
1,2-Dichloroethane	ND		1	5.0	0.40	ug/L	09/23/2016 0944
Diisopropyl ether (IPE)	ND		1	5.0	0.40	ug/L	09/23/2016 0944
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	09/23/2016 0944
Ethanol	ND		1	100	40	ug/L	09/23/2016 0944
Ethylbenzene	ND		1	5.0	0.40	ug/L	09/23/2016 0944
Ethyl-tert-butyl ether (ETBE)	ND		1	1 0	0.40	ug/L	09/23/2016 0944
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0 40	ug/L	09/23/2016 0944
Naphthalene	ND		1	5.0	0 40	ug/L	09/23/2016 0944
tert-butyl alcohol (TBA)	ND		1	20	8.0	ug/L	09/23/2016 0944
Toluene	ND		1	5.0	0.40	ug/L	09/23/2016 0944
Xylenes (total)	ND		1	5.0	0.40	ug/L	09/23/2016 0944

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		90	70-130
1,2-Dichloroethane-d4		104	70-130
Toluene-d8		105	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: RQ22730-002
Batch: 22730
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	1100		1	109	70-130	09/23/2016 0842
tert-Amyl methyl ether (TAME)	50	53		1	106	70-130	09/23/2016 0842
Benzene	50	55		1	110	70-130	09/23/2016 0842
tert-Butyl formate (TBF)	250	280		1	111	70-130	09/23/2016 0842
1,2-Dichloroethane	50	53		1	106	70-130	09/23/2016 0842
Diisopropyl ether (IPE)	50	56		1	112	70-130	09/23/2016 0842
3,3-Dimethyl-1-butanol	1000	1000		1	103	70-130	09/23/2016 0842
Ethanol	5000	5600		1	112	60-140	09/23/2016 0842
Ethylbenzene	50	53		1	106	70-130	09/23/2016 0842
Ethyl-tert-butyl ether (ETBE)	50	56		1	111	70-130	09/23/2016 0842
Methyl tertiary butyl ether (MTBE)	50	56		1	111	70-130	09/23/2016 0842
Naphthalene	50	53		1	105	70-130	09/23/2016 0842
tert-butyl alcohol (TBA)	1000	1100		1	110	70-130	09/23/2016 0842
Toluene	50	53		1	106	70-130	09/23/2016 0842
Xylenes (total)	100	110		1	106	70-130	09/23/2016 0842

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		90	70-130
1,2-Dichloroethane-d4		101	70-130
Toluene-d8		103	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: RQ22777-001
Batch: 22777
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	09/23/2016 2225
tert-Amyl methyl ether (TAME)	ND		1	10	0.40	ug/L	09/23/2016 2225
Benzene	ND		1	5.0	0.40	ug/L	09/23/2016 2225
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	09/23/2016 2225
1,2-Dichloroethane	ND		1	5.0	0.40	ug/L	09/23/2016 2225
Diisopropyl ether (IPE)	ND		1	5 0	0.40	ug/L	09/23/2016 2225
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	09/23/2016 2225
Ethanol	ND		1	100	40	ug/L	09/23/2016 2225
Ethylbenzene	ND		1	5.0	0.40	ug/L	09/23/2016 2225
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	0.40	ug/L	09/23/2016 2225
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.40	ug/L	09/23/2016 2225
Naphthalene	ND		1	5.0	0.40	ug/L	09/23/2016 2225
tert-butyl alcohol (TBA)	ND		1	20	8.0	ug/L	09/23/2016 2225
Toluene	ND		1	5.0	0.40	ug/L	09/23/2016 2225
Xylenes (total)	ND		1	5.0	0.40	ug/L	09/23/2016 2225

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		93	70-130
1,2-Dichloroethane-d4		106	70-130
Toluene-d8		111	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: RQ22777-002
Batch: 22777
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	970		1	97	70-130	09/23/2016 2133
tert-Amyl methyl ether (TAME)	50	50		1	101	70-130	09/23/2016 2133
Benzene	50	52		1	104	70-130	09/23/2016 2133
tert-Butyl formate (TBF)	250	260		1	105	70-130	09/23/2016 2133
1,2-Dichloroethane	50	49		1	99	70-130	09/23/2016 2133
Diisopropyl ether (IPE)	50	55		1	111	70-130	09/23/2016 2133
3,3-Dimethyl-1-butanol	1000	910		1	91	70-130	09/23/2016 2133
Ethanol	5000	4300		1	85	60-140	09/23/2016 2133
Ethylbenzene	50	50		1	100	70-130	09/23/2016 2133
Ethyl-tert-butyl ether (ETBE)	50	55		1	109	70-130	09/23/2016 2133
Methyl tertiary butyl ether (MTBE)	50	55		1	111	70-130	09/23/2016 2133
Naphthalene	50	52		1	104	70-130	09/23/2016 2133
tert-butyl alcohol (TBA)	1000	970		1	97	70-130	09/23/2016 2133
Toluene	50	50		1	100	70-130	09/23/2016 2133
Xylenes (total)	100	100		1	100	70-130	09/23/2016 2133

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		92	70-130
1,2-Dichloroethane-d4		102	70-130
Toluene-d8		104	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

EDB & DBCP by Microextraction - MB

Sample ID: RQ22713-001
Batch: 22713
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 09/23/2016 900

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
1,2-Dibromoethane (EDB)	ND		1	0.020	0.0050	ug/L	09/26/2016 1534

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		97	57-137

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

EDB & DBCP by Microextraction - LCS

Sample ID: RQ22713-002
Batch: 22713
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 09/23/2016 900

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	0.25	0.26		1	104	60-140	09/26/2016 1545

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		97	57-137

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - MB

Sample ID: RQ22691-001
Batch: 22691
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Methane	ND		1	10	2.3	ug/L	09/22/2016 1513

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - LCS

Sample ID: RQ22691-002
Batch: 22691
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Methane	150	120		1	78	70-130	09/22/2016 1445

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - LCSD

Sample ID: RQ22691-003
Batch: 22691
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Methane	150	170	+	1	110	34	70-130	30	09/22/2016 1458

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - MB

Sample ID: RQ22818-001
Batch: 22818
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Methane	ND		1	10	2.3	ug/L	09/24/2016 1233

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - LCS

Sample ID: RQ22818-002
Batch: 22818
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Methane	150	150		1	99	70-130	09/24/2016 1153

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - LCSD

Sample ID: RQ22818-003
Batch: 22818
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Methane	150	170		1	110	10	70-130	30	09/24/2016 1209

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - MB

Sample ID: RQ22831-001
Batch: 22831
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Methane	3.2	J	1	10	2.3	ug/L	09/25/2016 1133

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - LCS

Sample ID: RQ22831-002
Batch: 22831
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Methane	150	150		1	96	70-130	09/25/2016 1120

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

SHEALY

Chain of Custody Record

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 64700

Client: Enviro-Test Services	Report to Contact: Michael Faris	Telephone No. / E-mail: 413-4936 mfaris@SC.RR.COM	Quote No.
Address: P.O. Box 2237	Sampler's Signature: Terry L. Teate	Analysis: (Attach list if more space is needed)	Page 1 of 2
City: Irmo	State: SC Zip Code: 29063	Printed Name: Terry L. Teate	
Project Name: Broad River AMOCO			RI20011
Project No.: DHEC # 11946	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Grab	Comp	Matrix: Aqueous	Matrix: Solid	Matrix: Other	No. of Containers by Preservative Type: Types	HNO3	H2SO4	HCl	NaOH	ZnAc/NaOH	BTEX, N, MTBE	1,2-DCA	8-SC Oxygenates	EDB - 8011	Nitrate	Sulfate	Methane
MW-7A	9-19-16	1145	G		X			1			8			X	X	X	X	X	X	X
MW-8A		1220																		
MW-8B		1242																		
MW-9A		1305																		
MW-9B		1335																		
MW-10A		1357																		
MW-10B		1427																		
MW-11A		1505																		
MW-11B		1538																		
MW-12A		1618																		

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☐ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

1. Relinquished by: Terry L. Teate	Date: 9-20-16	Time: 0720	1. Received by:		Date: 9/20/16	Time: 0720
2. Relinquished by:	Date: 9/20/16	Time: 0816	2. Received by:		Date	Time
3. Relinquished by	Date	Time	3. Received by:		Date	Time
4. Relinquished by	Date	Time	4. Laboratory received by:		Date: 9/20/16	Time: 0816

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY — Received on Ice (Circle) Yes No Ice Pack — Receipt Temp: 3.0 °C TB

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

Shealy Environmental Services, Inc. 106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

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SHEALY

Chain of Custody Record

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 64701

413-4936

Client: Enviro-Test Services	Report to Contact: M. Faris	Telephone No. / E-mail: MFaris@SCRR.com	Quote No.
Address: P.O. Box 2237	Sampler's Signature: x Terry L. Teate	Analysis (Attach list if more space is needed)	Page ___ of ___
City: Irmo	State: SC Zip Code: 29063	Printed Name: Terry L. Teate	
Project Name: Broad River AMOCO			RI20011
Project No.: DHEC # 11946	P.O. No.		Preservation / Cooler I.D.

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Composite	Grab	Matrix: Aqueous	Soil	Air	Sludge	No. of Containers by Preservative Type: Water	HNO3	H2SO4	HCl	NaOH	Other	BTEX, N, MTBE	1,2-DCA	1,2-SC, Oxygenates	EDB-8011	Nitrate	Sulfate	Methane
MW-12B	9-19-16	1651		X								8			X	X	X	X	X	X	X
MW-13B	"	1733																			
Duplicate-1	"	1432																			
Field Blank	"	1138																			
Trip Blank																					

Turn Around Time Required (Prior lab approval required for expedited TAT.)	Sample Disposal	Possible Hazard Identification	QC Requirements (Specify)
☐ Standard ☐ Rush (Specify)	☐ Return to Client ☐ Disposal by Lab	☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown	

	Date	Time		Date	Time
1. Relinquished by: Terry L. Teate	9-20-16	0720	1. Received by:	9/20/16	0720
2. Relinquished by:	9/20/16	0816	2. Received by:	Date	Time
3. Relinquished by:	Date	Time	3. Received by:	Date	Time
4. Relinquished by:	Date	Time	4. Laboratory received by:	9/20/16	0816

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) Yes No Ice Pack Receipt Temp. ___ °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-139 Effective Date: 08-01-2014

SHEALY ENVIRONMENTAL SERVICES, INC.

SHEALY ENVIRONMENTAL SERVICES, INC.

Sample Receipt Checklist (SRC)

Client: Enviro Test Cooler Inspected by/date: EC 9/20/16 Lot #: RI2041

Means of receipt: ☐ SESI ☑ Client ☐ UPS ☐ FedEx ☐ Other			
Yes ☐	No ☑		1. Were custody seals present on the cooler?
Yes ☐	No ☐	NA ☐	2. If custody seals were present, were they intact and unbroken?

pH strip ID: _____ Cl strip ID: _____

Cooler ID/Original temperature upon receipt/Derived (corrected) temperature upon receipt:

13-0 / 13-0 °C ___ / ___ / ___ °C ___ / ___ / ___ °C ___ / ___ / ___ °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Blue Ice ☐ Dry Ice ☐ None

Yes ☐	No ☐	NA ☑	3. If temperature of any cooler exceeded 6.0°C, was Project Manager notified? PM was notified by: phone / email / face-to-face (circle one).
Yes ☐	No ☐	NA ☑	4. Is the commercial courier's packing slip attached to this form?
Yes ☑	No ☐		5. Were proper custody procedures (relinquished/received) followed?
Yes ☑	No ☐		6. Were sample IDs listed on the COC?
Yes ☑	No ☐		7. Were sample IDs listed on all sample containers?
Yes ☑	No ☐		8. Was collection date & time listed on the COC?
Yes ☑	No ☐		9. Was collection date & time listed on all sample containers?
Yes ☑	No ☐		10. Did all container label information (ID, date, time) agree with the COC?
Yes ☑	No ☐		11. Were tests to be performed listed on the COC?
Yes ☑	No ☐		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
Yes ☑	No ☐		13. Was adequate sample volume available?
Yes ☑	No ☐		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
Yes ☐	No ☑		15. Were any samples containers missing/excess (circle one) samples not listed on COC?
Yes ☑	No ☐	NA ☐	16. Were bubbles present >"pea-size" (¼"or 6mm in diameter) in any VOA vials?
Yes ☐	No ☐	NA ☑	17. Were all metals/O&G/HEM/nutrient samples received at a pH of <2?
Yes ☐	No ☐	NA ☑	18. Were all cyanide and/or sulfide samples received at a pH >12?
Yes ☐	No ☐	NA ☑	19. Were all applicable NH3/TKN/cyanide/phenol (<0.2mg/L) samples free of residual chlorine?
Yes ☐	No ☐	NA ☑	20. Were collection temperatures documented on the COC for NC samples?
Yes ☐	No ☐	NA ☑	21. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
Yes ☐	No ☐		22. Was the quote number used taken from the container label?

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____ (H_2SO_4, HNO3, HCl, NaOH) using SR # _____.

Sample(s) 006 (7) _____ were received with bubbles >6 mm in diameter.

Samples(s) _____ were received with TRC >0.2 mg/L (If #21 is No) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: _____.

SC Drinking Water Project Sample(s) pH verified to be ≥ 2 by _____ _____ Date: _____

Sample(s) _____ were not received at a pH of <2 and were adjusted accordingly using SR# _____

Sample labels applied by: EC Verified by: _____ Date: 9/20/16

Comments: _____

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

Enviro-Test Services Inc.
PO Box 2237
Irmo, SC 29063
Attention: Terry Teate

Project Name: **Broad River Amoco**

Project Number: **DHEC # 11946**

Lot Number: **RI21044**

Date Completed: **10/03/2016**

Lucas Odom
Project Manager

LABORATORY ACCREDITATION BUREAU ACCREDITED ISO/IEC 17025

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The following non-paginated documents are considered part of this report: Chain of Custody Record and Sample Receipt Checklist.

Case Narrative
Enviro-Test Services Inc.
Lot Number: RI21044

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

VOCs by GC/MS

The Method Blank associated with batch 22811 yielded "J" value detections for Ethanol and Naphthalene. No corrective action is required as these are estimated values recovered below the PQL. All associated samples have been qualified with a "B".

Methane

The Method Blank associated with batch 22831 yielded a "J" value detection for Methane. No corrective action is required as this is an estimated value recovered below the PQL. All associated samples have been qualified with a "B".

Sample Summary
Enviro-Test Services Inc.
Lot Number: RI21044

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-14A	Aqueous	09/20/2016 0853	09/21/2016
002	MW-14B	Aqueous	09/20/2016 0917	09/21/2016
003	MW-15B	Aqueous	09/20/2016 0950	09/21/2016
004	MW-17B	Aqueous	09/20/2016 1018	09/21/2016
005	MW-18A	Aqueous	09/20/2016 1618	09/21/2016
006	MW-18B	Aqueous	09/20/2016 1707	09/21/2016
007	MW-19A	Aqueous	09/20/2016 1127	09/21/2016
008	MW-19B	Aqueous	09/20/2016 1158	09/21/2016
009	MW-20A	Aqueous	09/20/2016 1237	09/21/2016
010	MW-20B	Aqueous	09/20/2016 1308	09/21/2016
011	MW-21A	Aqueous	09/20/2016 1452	09/21/2016
012	MW-21B	Aqueous	09/20/2016 1534	09/21/2016
013	MW-22B	Aqueous	09/20/2016 1341	09/21/2016
014	MW-D-2	Aqueous	09/20/2016 1055	09/21/2016
015	MW-D-3	Aqueous	09/20/2016 1419	09/21/2016
016	DUPLICATE #2	Aqueous	09/20/2016 1713	09/21/2016
017	FIELD BLANK	Aqueous	09/20/2016 0834	09/21/2016
018	TRIP BLANK	Aqueous	09/20/2016	09/21/2016

(18 samples)

Executive Summary
Enviro-Test Services Inc.
Lot Number: RI21044

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-14A	Aqueous	Nitrate - N	9056A	0.15		mg/L	6
001	MW-14A	Aqueous	Sulfate	9056A	2.2		mg/L	6
002	MW-14B	Aqueous	Nitrate - N	9056A	4.9		mg/L	8
002	MW-14B	Aqueous	tert-Amyl alcohol (TAA)	8260B	20		ug/L	8
003	MW-15B	Aqueous	Nitrate - N	9056A	5.7		mg/L	10
004	MW-17B	Aqueous	Nitrate - N	9056A	0.024		mg/L	12
004	MW-17B	Aqueous	Sulfate	9056A	0.33	J	mg/L	12
004	MW-17B	Aqueous	tert-Amyl alcohol (TAA)	8260B	500		ug/L	12
004	MW-17B	Aqueous	tert-Amyl methyl ether	8260B	0.75	J	ug/L	12
004	MW-17B	Aqueous	Benzene	8260B	40		ug/L	12
004	MW-17B	Aqueous	Diisopropyl ether (IPE)	8260B	7.0		ug/L	12
004	MW-17B	Aqueous	Ethyl-tert-butyl ether (ETBE)	8260B	2.0		ug/L	12
004	MW-17B	Aqueous	Methyl tertiary butyl ether	8260B	400		ug/L	12
004	MW-17B	Aqueous	Naphthalene	8260B	3.4	BJ	ug/L	12
004	MW-17B	Aqueous	tert-butyl alcohol (TBA)	8260B	2300		ug/L	12
004	MW-17B	Aqueous	Xylenes (total)	8260B	6.4		ug/L	12
004	MW-17B	Aqueous	Methane	RSK - 175	490	B	ug/L	13
005	MW-18A	Aqueous	Nitrate - N	9056A	0.84		mg/L	14
005	MW-18A	Aqueous	Sulfate	9056A	39		mg/L	14
005	MW-18A	Aqueous	Methyl tertiary butyl ether	8260B	1.1	J	ug/L	14
005	MW-18A	Aqueous	Methane	RSK - 175	6.8	BJ	ug/L	15
006	MW-18B	Aqueous	Nitrate - N	9056A	0.16		mg/L	16
006	MW-18B	Aqueous	Sulfate	9056A	0.60	J	mg/L	16
007	MW-19A	Aqueous	Nitrate - N	9056A	0.99		mg/L	18
007	MW-19A	Aqueous	Sulfate	9056A	3.2		mg/L	18
007	MW-19A	Aqueous	Benzene	8260B	0.55	J	ug/L	18
007	MW-19A	Aqueous	Methyl tertiary butyl ether	8260B	1.4	J	ug/L	18
007	MW-19A	Aqueous	Methane	RSK - 175	410	B	ug/L	19
008	MW-19B	Aqueous	Nitrate - N	9056A	0.0089	J	mg/L	20
008	MW-19B	Aqueous	Sulfate	9056A	0.80	J	mg/L	20
008	MW-19B	Aqueous	Methyl tertiary butyl ether	8260B	1.4	J	ug/L	20
008	MW-19B	Aqueous	Methane	RSK - 175	71	B	ug/L	21
009	MW-20A	Aqueous	Nitrate - N	9056A	0.38		mg/L	22
009	MW-20A	Aqueous	Sulfate	9056A	16		mg/L	22
009	MW-20A	Aqueous	Methane	RSK - 175	4.3	BJ	ug/L	23
010	MW-20B	Aqueous	Nitrate - N	9056A	0.076		mg/L	24
010	MW-20B	Aqueous	Sulfate	9056A	0.43	J	mg/L	24
010	MW-20B	Aqueous	Methyl tertiary butyl ether	8260B	22		ug/L	24
011	MW-21A	Aqueous	Nitrate - N	9056A	0.87		mg/L	26
011	MW-21A	Aqueous	Sulfate	9056A	13		mg/L	26
011	MW-21A	Aqueous	Methane	RSK - 175	19	B	ug/L	27
012	MW-21B	Aqueous	Nitrate - N	9056A	0.15		mg/L	28
012	MW-21B	Aqueous	Sulfate	9056A	0.46	J	mg/L	28
012	MW-21B	Aqueous	Methyl tertiary butyl ether	8260B	7.5		ug/L	28
013	MW-22B	Aqueous	Nitrate - N	9056A	0.071		mg/L	30

Executive Summary (Continued)

Lot Number: RI21044

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
013	MW-22B	Aqueous	Sulfate	9056A	3.0		mg/L	30
013	MW-22B	Aqueous	Methyl tertiary butyl ether	8260B	4.9	J	ug/L	30
013	MW-22B	Aqueous	Methane	RSK - 175	10	B	ug/L	31
014	MW-D-2	Aqueous	Nitrate - N	9056A	0.84		mg/L	32
014	MW-D-2	Aqueous	Sulfate	9056A	17		mg/L	32
014	MW-D-2	Aqueous	Methyl tertiary butyl ether	8260B	6.3		ug/L	32
015	MW-D-3	Aqueous	Nitrate - N	9056A	0.46		mg/L	34
015	MW-D-3	Aqueous	Sulfate	9056A	78		mg/L	34
015	MW-D-3	Aqueous	Methyl tertiary butyl ether	8260B	1.2	J	ug/L	34
015	MW-D-3	Aqueous	Methane	RSK - 175	3.7	BJ	ug/L	35
016	DUPLICATE #2	Aqueous	Nitrate - N	9056A	0.11		mg/L	36
016	DUPLICATE #2	Aqueous	Sulfate	9056A	0.34	J	mg/L	36

(57 detections)

Client: **Enviro-Test Services Inc.**
Description: **MW-14A**
Date Sampled: **09/20/2016 0853**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-001**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/21/2016 1723	SLU		22572
3		(Sulfate) 9056A	1	10/02/2016 2106	TAF		23454

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.15**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**2.2**		**1.0**	**0.20**	**mg/L**	**3**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/24/2016 1203	ALL		22811

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		101	70-130
Bromofluorobenzene		87	70-130
Toluene-d8		102	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 1919	MEM	09/23/2016 0900	22713

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.019	0.0048	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-14A**
Date Sampled: **09/20/2016 0853**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-001**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		113	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/24/2016 1602	JJG		22818

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	74-82-8	RSK - 175	ND		10	2.3	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-14B**
Date Sampled: **09/20/2016 0917**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-002**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/21/2016 1747	SLU		22572
3		(Sulfate) 9056A	1	10/02/2016 2118	TAF		23454

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**4.9**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		9056A	ND		1.0	0.20	mg/L	3

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/24/2016 1229	ALL		22811

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	**75-85-4**	**8260B**	**20**		**20**	**8.0**	**ug/L**	**1**
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		107	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		105	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 2013	MEM	09/23/2016 1414	22714

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.021	0.0052	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-14B**
Date Sampled: **09/20/2016 0917**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-002**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		89	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/24/2016 1621	JJG		22818

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	74-82-8	RSK - 175	ND		10	2.3	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-15B**
Date Sampled: **09/20/2016 0950**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-003**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/21/2016 1811	SLU		22572
3		(Sulfate) 9056A	1	10/02/2016 2154	TAF		23454

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**5.7**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		9056A	ND		1.0	0.20	mg/L	3

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/24/2016 1254	ALL		22811

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		110	70-130
Bromofluorobenzene		95	70-130
Toluene-d8		107	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 1930	MEM	09/23/2016 0900	22713

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.021	0.0053	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-15B**
Date Sampled: **09/20/2016 0950**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-003**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		107	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/24/2016 1631	JJG		22818

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	74-82-8	RSK - 175	ND		10	2.3	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-17B**
Date Sampled: **09/20/2016 1018**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-004**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/21/2016 1835	SLU		22572
3		(Sulfate) 9056A	1	10/02/2016 2207	TAF		23454

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.024**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**0.33**	**J**	**1.0**	**0.20**	**mg/L**	**3**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/24/2016 1320	ALL		22811
2	5030B	8260B	5	09/27/2016 0339	ECP		22937

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	**75-85-4**	**8260B**	**500**		**20**	**8.0**	**ug/L**	**1**
tert-Amyl methyl ether (TAME)	**994-05-8**	**8260B**	**0.75**	**J**	**10**	**0.40**	**ug/L**	**1**
Benzene	**71-43-2**	**8260B**	**40**		**5.0**	**0.40**	**ug/L**	**1**
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	**108-20-3**	**8260B**	**7.0**		**5.0**	**0.40**	**ug/L**	**1**
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	**637-92-3**	**8260B**	**2.0**		**1.0**	**0.40**	**ug/L**	**1**
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**400**		**25**	**2.0**	**ug/L**	**2**
Naphthalene	**91-20-3**	**8260B**	**3.4**	**BJ**	**5.0**	**0.40**	**ug/L**	**1**
tert-butyl alcohol (TBA)	**75-65-0**	**8260B**	**2300**		**20**	**8.0**	**ug/L**	**1**
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	**1330-20-7**	**8260B**	**6.4**		**5.0**	**0.40**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		107	70-130		98	70-130
Bromofluorobenzene		92	70-130		91	70-130
Toluene-d8		105	70-130		99	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 2023	MEM	09/23/2016 1414	22714

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0050	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-17B**
Date Sampled: **09/20/2016 1018**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-004**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		75	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/25/2016 1207	JJG		22831

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	**74-82-8**	**RSK - 175**	**490**	**B**	**10**	**2.3**	**ug/L**	**1**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-18A**
Date Sampled: **09/20/2016 1618**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-005**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/22/2016 0124	SLU		22573
3		(Sulfate) 9056A	5	10/02/2016 2219	TAF		23454

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.84**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**39**		**5.0**	**1.0**	**mg/L**	**3**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/24/2016 1346	ALL		22811
2	5030B	8260B	1	09/26/2016 2359	ECP		22937

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**1.1**	**J**	**5.0**	**0.40**	**ug/L**	**2**
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		105	70-130		98	70-130
Bromofluorobenzene		92	70-130		91	70-130
Toluene-d8		107	70-130		98	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 2055	MEM	09/23/2016 1414	22714

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0051	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-18A**
Date Sampled: **09/20/2016 1618**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-005**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		86	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/25/2016 1218	JJG		22831

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	**74-82-8**	**RSK - 175**	**6.8**	**BJ**	**10**	**2.3**	**ug/L**	**1**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-18B**
Date Sampled: **09/20/2016 1707**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-006**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/22/2016 0148	SLU		22573
3		(Sulfate) 9056A	1	10/02/2016 2231	TAF		23454

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.16**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**0.60**	**J**	**1.0**	**0.20**	**mg/L**	**3**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/24/2016 1413	ALL		22811

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		105	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		107	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	8011	8011	1	09/27/2016 1721	MEM	09/27/2016 0937	22950

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.021	0.0052	ug/L	2

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-18B**
Date Sampled: **09/20/2016 1707**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-006**
Matrix: **Aqueous**

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		83	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/25/2016 1242	JJG		22831

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	74-82-8	RSK - 175	ND		10	2.3	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-19A**
Date Sampled: **09/20/2016 1127**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-007**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/21/2016 1923	SLU		22572
3		(Sulfate) 9056A	1	10/02/2016 2243	TAF		23454

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.99**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**3.2**		**1.0**	**0.20**	**mg/L**	**3**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/24/2016 1439	ALL		22811

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	**71-43-2**	**8260B**	**0.55**	**J**	**5.0**	**0.40**	**ug/L**	**1**
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**1.4**	**J**	**5.0**	**0.40**	**ug/L**	**1**
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		109	70-130
Bromofluorobenzene		94	70-130
Toluene-d8		108	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 2117	MEM	09/23/2016 1414	22714

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0050	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-19A**
Date Sampled: **09/20/2016 1127**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-007**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		82	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/25/2016 1253	JJG		22831

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	**74-82-8**	**RSK - 175**	**410**	**B**	**10**	**2.3**	**ug/L**	**1**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-19B**
Date Sampled: **09/20/2016 1158**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-008**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/21/2016 1947	SLU		22572
3		(Sulfate) 9056A	1	10/02/2016 2255	TAF		23454

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.0089**	**J**	**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**0.80**	**J**	**1.0**	**0.20**	**mg/L**	**3**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/24/2016 1505	ALL		22811

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**1.4**	**J**	**5.0**	**0.40**	**ug/L**	**1**
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		109	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		105	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 2127	MEM	09/23/2016 1414	22714

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0051	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-19B**
Date Sampled: **09/20/2016 1158**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-008**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		81	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/25/2016 1305	JJG		22831

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	**74-82-8**	**RSK - 175**	**71**	**B**	**10**	**2.3**	**ug/L**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-20A**
Date Sampled: **09/20/2016 1237**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-009**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/21/2016 2011	SLU		22572
3		(Sulfate) 9056A	1	10/02/2016 2343	TAF		23454

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.38**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**16**		**1.0**	**0.20**	**mg/L**	**3**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/24/2016 1530	ALL		22811

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		107	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		104	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 2138	MEM	09/23/2016 1414	22714

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0051	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-20A**
Date Sampled: **09/20/2016 1237**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-009**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		92	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/25/2016 1322	JJG		22831

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	**74-82-8**	**RSK - 175**	**4.3**	**BJ**	**10**	**2.3**	**ug/L**	**1**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-20B**
Date Sampled: **09/20/2016 1308**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-010**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/21/2016 2035	SLU		22572
2		(Sulfate) 9056A	1	10/01/2016 1816	TAF		23426

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.076**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**0.43**	**J**	**1.0**	**0.20**	**mg/L**	**2**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/24/2016 1556	ALL		22811

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**22**		**5.0**	**0.40**	**ug/L**	**1**
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		108	70-130
Bromofluorobenzene		93	70-130
Toluene-d8		105	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 2149	MEM	09/23/2016 1414	22714

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.021	0.0052	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-20B**
Date Sampled: **09/20/2016 1308**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-010**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		93	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/25/2016 1331	JJG		22831

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	74-82-8	RSK - 175	ND		10	2.3	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-21A**
Date Sampled: **09/20/2016 1452**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-011**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/21/2016 2235	SLU		22572
2		(Sulfate) 9056A	1	10/02/2016 2355	TAF		23454

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.87**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**13**		**1.0**	**0.20**	**mg/L**	**2**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/24/2016 1621	ALL		22811

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		109	70-130
Bromofluorobenzene		96	70-130
Toluene-d8		106	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 2159	MEM	09/23/2016 1414	22714

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0050	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-21A**
Date Sampled: **09/20/2016 1452**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-011**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		67	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/25/2016 1415	JJG		22831

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	**74-82-8**	**RSK - 175**	**19**	**B**	**10**	**2.3**	**ug/L**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-21B**
Date Sampled: **09/20/2016 1534**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-012**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/22/2016 0100	SLU		22573
2		(Sulfate) 9056A	1	10/03/2016 0007	TAF		23454

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.15**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**0.46**	**J**	**1.0**	**0.20**	**mg/L**	**2**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/24/2016 1647	ALL		22811

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**7.5**		**5.0**	**0.40**	**ug/L**	**1**
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		100	70-130
Bromofluorobenzene		86	70-130
Toluene-d8		104	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	8011	8011	1	09/27/2016 1731	MEM	09/27/2016 0937	22950

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.021	0.0052	ug/L	2

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-21B**
Date Sampled: **09/20/2016 1534**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-012**
Matrix: **Aqueous**

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		88	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/25/2016 1424	JJG		22831

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	74-82-8	RSK - 175	ND		10	2.3	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-22B**
Date Sampled: **09/20/2016 1341**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-013**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/21/2016 2147	SLU		22572
2		(Sulfate) 9056A	1	10/03/2016 0019	TAF		23454

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.071**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**3.0**		**1.0**	**0.20**	**mg/L**	**2**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/24/2016 1713	ALL		22811

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**4.9**	**J**	**5.0**	**0.40**	**ug/L**	**1**
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		111	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		103	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 2221	MEM	09/23/2016 1414	22714

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0049	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-22B**
Date Sampled: **09/20/2016 1341**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-013**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		80	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/25/2016 1436	JJG		22831

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	**74-82-8**	**RSK - 175**	**10**	**B**	**10**	**2.3**	**ug/L**	**1**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-D-2**
Date Sampled: **09/20/2016 1055**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-014**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/21/2016 1859	SLU		22572
2		(Sulfate) 9056A	1	10/03/2016 0031	TAF		23454

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.84**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**17**		**1.0**	**0.20**	**mg/L**	**2**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/24/2016 1738	ALL		22811

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**6.3**		**5.0**	**0.40**	**ug/L**	**1**
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		109	70-130
Bromofluorobenzene		91	70-130
Toluene-d8		105	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 2231	MEM	09/23/2016 1414	22714

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0050	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-D-2**
Date Sampled: **09/20/2016 1055**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-014**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		78	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/25/2016 1445	JJG		22831

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	74-82-8	RSK - 175	ND		10	2.3	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-D-3**
Date Sampled: **09/20/2016 1419**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-015**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/21/2016 2211	SLU		22572
2		(Sulfate) 9056A	5	10/03/2016 0107	TAF		23454

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.46**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**78**		**5.0**	**1.0**	**mg/L**	**2**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/24/2016 1804	ALL		22811

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**1.2**	**J**	**5.0**	**0.40**	**ug/L**	**1**
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		108	70-130
Bromofluorobenzene		93	70-130
Toluene-d8		105	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	8011	8011	1	09/27/2016 1742	MEM	09/27/2016 0937	22950

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0050	ug/L	2

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **MW-D-3**
Date Sampled: **09/20/2016 1419**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-015**
Matrix: **Aqueous**

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		85	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/25/2016 1457	JJG		22831

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	**74-82-8**	**RSK - 175**	**3.7**	**BJ**	**10**	**2.3**	**ug/L**	**1**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **DUPLICATE #2**
Date Sampled: **09/20/2016 1713**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-016**
Matrix: **Aqueous**

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Nitrate - N) 9056A	1	09/22/2016 0212	SLU		22573
2		(Sulfate) 9056A	1	10/03/2016 0119	TAF		23454

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Nitrate - N		**9056A**	**0.11**		**0.020**	**0.0050**	**mg/L**	**1**
Sulfate		**9056A**	**0.34**	**J**	**1.0**	**0.20**	**mg/L**	**2**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/26/2016 1152	ALL		22869

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		107	70-130
Bromofluorobenzene		91	70-130
Toluene-d8		106	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 2253	MEM	09/23/2016 1414	22714

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.0050	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **DUPLICATE #2**
Date Sampled: **09/20/2016 1713**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-016**
Matrix: **Aqueous**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		88	57-137

Methane

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	09/25/2016 1507	JJG		22831

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methane	74-82-8	RSK - 175	ND		10	2.3	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **FIELD BLANK**
Date Sampled: **09/20/2016 0834**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-017**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/26/2016 1100	ALL		22869

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		103	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		104	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	09/26/2016 2303	MEM	09/23/2016 1414	22714

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.022	0.0054	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		99	57-137

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Enviro-Test Services Inc.**
Description: **TRIP BLANK**
Date Sampled: **09/20/2016**
Date Received: **09/21/2016**

Laboratory ID: **RI21044-018**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	09/26/2016 1126	ALL		22869

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.40	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	40	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		108	70-130
Bromofluorobenzene		93	70-130
Toluene-d8		105	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

QC Summary

Inorganic non-metals - MB

Sample ID: RQ22572-001
Batch: 22572
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Nitrate - N	ND		1	0.020	0.0050	mg/L	09/21/2016 1051

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - LCS

Sample ID: RQ22572-002
Batch: 22572
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Nitrate - N	0.80	0.80		1	100	80-120	09/21/2016 1115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MS

Sample ID: RI21044-015MS
Batch: 22572
Analytical Method: 9056A

Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Nitrate - N	0.46	0.80	1.2		1	97	80-120	09/21/2016 2259

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MSD

Sample ID: RI21044-015MD
Batch: 22572
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Nitrate - N	0.46	0.80	1.2		1	96	0.80	80-120	20	09/21/2016 2323

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MB

Sample ID: RQ22573-001
Batch: 22573
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Nitrate - N	ND		1	0.020	0.0050	mg/L	09/22/2016 0011

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - LCS

Sample ID: RQ22573-002
Batch: 22573
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Nitrate - N	0.80	0.80		1	99	80-120	09/22/2016 0036

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MS

Sample ID: RI21044-016MS
Batch: 22573
Analytical Method: 9056A

Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Nitrate - N	0.11	0.80	0.89		1	97	80-120	09/22/2016 0300

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MSD

Sample ID: RI21044-016MD
Batch: 22573
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Nitrate - N	0.11	0.80	0.90		1	98	1.2	80-120	20	09/22/2016 0324

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MB

Sample ID: RQ23426-001
Batch: 23426
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Sulfate	ND		1	1.0	0.20	mg/L	10/01/2016 1628

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - LCS

Sample ID: RQ23426-002 **Matrix:** Aqueous

Batch: 23426

Analytical Method: 9056A

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Sulfate	20	22		1	108	80-120	10/01/2016 1640

PQL = Practical quantitation limit

ND = Not detected at or above the MDL

P = The RPD between two GC columns exceeds 40%

J = Estimated result < PQL and ≥ MDL

N = Recovery is out of criteria

+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MB

Sample ID: RQ23454-001
Batch: 23454
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Sulfate	ND		1	1.0	0.20	mg/L	10/02/2016 2054

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - LCS

Sample ID: RQ23454-002 **Matrix:** Aqueous
Batch: 23454
Analytical Method: 9056A

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Sulfate	20	20		1	101	80-120	10/02/2016 2042

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MS

Sample ID: RI21044-002MS
Batch: 23454
Analytical Method: 9056A

Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Sulfate	ND	20	19		1	93	80-120	10/02/2016 2130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MSD

Sample ID: RI21044-002MD
Batch: 23454
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Sulfate	ND	20	19		1	95	1.6	80-120	20	10/02/2016 2142

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MS

Sample ID: RI21044-014MS
Batch: 23454
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Sulfate	17	20	37		1	100	80-120	10/03/2016 0043

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MSD

Sample ID: RI21044-014MD
Batch: 23454
Analytical Method: 9056A
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Sulfate	17	20	36		1	96	1.9	80-120	20	10/03/2016 0055

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: RQ22811-001
Batch: 22811
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	09/24/2016 1009
tert-Amyl methyl ether (TAME)	ND		1	10	0.40	ug/L	09/24/2016 1009
Benzene	ND		1	5 0	0.40	ug/L	09/24/2016 1009
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	09/24/2016 1009
1,2-Dichloroethane	ND		1	5.0	0.40	ug/L	09/24/2016 1009
Diisopropyl ether (IPE)	ND		1	5.0	0.40	ug/L	09/24/2016 1009
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	09/24/2016 1009
Ethanol	**60**	**J**	**1**	**100**	**40**	**ug/L**	**09/24/2016 1009**
Ethylbenzene	ND		1	5.0	0.40	ug/L	09/24/2016 1009
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	0 40	ug/L	09/24/2016 1009
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.40	ug/L	09/24/2016 1009
Naphthalene	**0.56**	**J**	**1**	**5.0**	**0.40**	**ug/L**	**09/24/2016 1009**
tert-butyl alcohol (TBA)	ND		1	20	8.0	ug/L	09/24/2016 1009
Toluene	ND		1	5.0	0.40	ug/L	09/24/2016 1009
Xylenes (total)	ND		1	5.0	0.40	ug/L	09/24/2016 1009

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		92	70-130
1,2-Dichloroethane-d4		108	70-130
Toluene-d8		105	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: RQ22811-002
Batch: 22811
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	1200		1	123	70-130	09/24/2016 0908
tert-Amyl methyl ether (TAME)	50	57		1	114	70-130	09/24/2016 0908
Benzene	50	61		1	122	70-130	09/24/2016 0908
tert-Butyl formate (TBF)	250	310		1	123	70-130	09/24/2016 0908
1,2-Dichloroethane	50	58		1	116	70-130	09/24/2016 0908
Diisopropyl ether (IPE)	50	63		1	125	70-130	09/24/2016 0908
3,3-Dimethyl-1-butanol	1000	1200		1	116	70-130	09/24/2016 0908
Ethanol	5000	5800		1	116	60-140	09/24/2016 0908
Ethylbenzene	50	58		1	117	70-130	09/24/2016 0908
Ethyl-tert-butyl ether (ETBE)	50	63		1	125	70-130	09/24/2016 0908
Methyl tertiary butyl ether (MTBE)	50	62		1	124	70-130	09/24/2016 0908
Naphthalene	50	59		1	119	70-130	09/24/2016 0908
tert-butyl alcohol (TBA)	1000	1200		1	121	70-130	09/24/2016 0908
Toluene	50	59		1	118	70-130	09/24/2016 0908
Xylenes (total)	100	120		1	117	70-130	09/24/2016 0908

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		83	70-130
1,2-Dichloroethane-d4		93	70-130
Toluene-d8		101	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: RQ22869-001
Batch: 22869
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	09/26/2016 1033
tert-Amyl methyl ether (TAME)	ND		1	10	0.40	ug/L	09/26/2016 1033
Benzene	ND		1	5.0	0.40	ug/L	09/26/2016 1033
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	09/26/2016 1033
1,2-Dichloroethane	ND		1	5.0	0.40	ug/L	09/26/2016 1033
Diisopropyl ether (IPE)	ND		1	5.0	0.40	ug/L	09/26/2016 1033
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	09/26/2016 1033
Ethanol	ND		1	100	40	ug/L	09/26/2016 1033
Ethylbenzene	ND		1	5.0	0.40	ug/L	09/26/2016 1033
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	0.40	ug/L	09/26/2016 1033
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0 40	ug/L	09/26/2016 1033
Naphthalene	ND		1	5.0	0 40	ug/L	09/26/2016 1033
tert-butyl alcohol (TBA)	ND		1	20	8.0	ug/L	09/26/2016 1033
Toluene	ND		1	5.0	0.40	ug/L	09/26/2016 1033
Xylenes (total)	ND		1	5.0	0.40	ug/L	09/26/2016 1033

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		93	70-130
1,2-Dichloroethane-d4		109	70-130
Toluene-d8		106	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: RQ22869-002
Batch: 22869
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	1100		1	114	70-130	09/26/2016 0929
tert-Amyl methyl ether (TAME)	50	52		1	103	70-130	09/26/2016 0929
Benzene	50	53		1	106	70-130	09/26/2016 0929
tert-Butyl formate (TBF)	250	270		1	109	70-130	09/26/2016 0929
1,2-Dichloroethane	50	51		1	103	70-130	09/26/2016 0929
Diisopropyl ether (IPE)	50	53		1	107	70-130	09/26/2016 0929
3,3-Dimethyl-1-butanol	1000	1100		1	107	70-130	09/26/2016 0929
Ethanol	5000	6000		1	120	60-140	09/26/2016 0929
Ethylbenzene	50	51		1	102	70-130	09/26/2016 0929
Ethyl-tert-butyl ether (ETBE)	50	54		1	108	70-130	09/26/2016 0929
Methyl tertiary butyl ether (MTBE)	50	53		1	106	70-130	09/26/2016 0929
Naphthalene	50	52		1	103	70-130	09/26/2016 0929
tert-butyl alcohol (TBA)	1000	1100		1	113	70-130	09/26/2016 0929
Toluene	50	49		1	99	70-130	09/26/2016 0929
Xylenes (total)	100	100		1	103	70-130	09/26/2016 0929

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		89	70-130
1,2-Dichloroethane-d4		97	70-130
Toluene-d8		98	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: RQ22937-001
Batch: 22937
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.40	ug/L	09/26/2016 2158

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		91	70-130
1,2-Dichloroethane-d4		95	70-130
Toluene-d8		99	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: RQ22937-002
Batch: 22937
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Methyl tertiary butyl ether (MTBE)	50	55		1	110	70-130	09/26/2016 2056

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		91	70-130
1,2-Dichloroethane-d4		96	70-130
Toluene-d8		100	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

EDB & DBCP by Microextraction - MB

Sample ID: RQ22713-001
Batch: 22713
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 09/23/2016 900

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
1,2-Dibromoethane (EDB)	ND		1	0.020	0.0050	ug/L	09/26/2016 1534

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		97	57-137

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

EDB & DBCP by Microextraction - LCS

Sample ID: RQ22713-002
Batch: 22713
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 09/23/2016 900

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	0.25	0.26		1	104	60-140	09/26/2016 1545

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		97	57-137

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

EDB & DBCP by Microextraction - MB

Sample ID: RQ22714-001
Batch: 22714
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 09/23/2016 1414

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
1,2-Dibromoethane (EDB)	ND		1	0.020	0.0050	ug/L	09/26/2016 1951

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		79	57-137

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

EDB & DBCP by Microextraction - LCS

Sample ID: RQ22714-002
Batch: 22714
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 09/23/2016 1414

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	0.25	0.21		1	85	60-140	09/26/2016 2002

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		80	57-137

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

EDB & DBCP by Microextraction - MS

Sample ID: RI21044-004MS
Batch: 22714
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 09/23/2016 1414

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	ND	0.25	0.30		1	119	60-140	09/26/2016 2034

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		83	57-137

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

EDB & DBCP by Microextraction - MSD

Sample ID: RI21044-004MD
Batch: 22714
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 09/23/2016 1414

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
1,2-Dibromoethane (EDB)	ND	0.24	0.21	+	1	88	33	60-140	20	09/26/2016 2045

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		74	57-137

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

EDB & DBCP by Microextraction - MB

Sample ID: RQ22950-001
Batch: 22950
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 09/27/2016 937

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
1,2-Dibromoethane (EDB)	ND		1	0.020	0.0050	ug/L	09/27/2016 1648

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		87	57-137

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

EDB & DBCP by Microextraction - LCS

Sample ID: RQ22950-002
Batch: 22950
Analytical Method: 8011
Matrix: Aqueous
Prep Method: 8011
Prep Date: 09/27/2016 937

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	0.25	0.24		1	98	60-140	09/27/2016 1659

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		95	57-137

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - MB

Sample ID: RQ22818-001
Batch: 22818
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Methane	ND		1	10	2.3	ug/L	09/24/2016 1233

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - LCS

Sample ID: RQ22818-002
Batch: 22818
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Methane	150	150		1	99	70-130	09/24/2016 1153

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - LCSD

Sample ID: RQ22818-003
Batch: 22818
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Methane	150	170		1	110	10	70-130	30	09/24/2016 1209

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - MB

Sample ID: RQ22831-001
Batch: 22831
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Methane	3.2	J	1	10	2.3	ug/L	09/25/2016 1133

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - LCS

Sample ID: RQ22831-002
Batch: 22831
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Methane	150	150		1	96	70-130	09/25/2016 1120

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

SHEALY

Chain of Custody Record

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 65142

Client: Enviro-Test Services	Report to Contact: M. Faris	Telephone No. / Email: mfaris@SC.RR.Com	Quote No.
Address: P.O. Box 2237	Sampler's Signature: x Terry L. Teate	Analysis (Attach list if more space is needed)	Page 1 of 2
City: Irmo	State: SC Zip Code: 29063	Printed Name: Terry L. Teate	
Project Name: Broad River Amoco			RI21044
Project No.: DHEC # 11946	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Sealed On Containers	Matrix: Aqueous	Matrix: Solid	Matrix: Other (Specify)	No. of Containers by Preservative Type: Unpres.	HNO3	HCl	NaOH	NH2SO4	Other	BTEX, MTBE	1,2-DCA	8 SCO Oxygenates	EDB-8011	Nitrate	Sulfate	Methane	Remarks / Cooler I.D.
MW-14A	9/20/16	853	▽	X			1			8			X	X	X	X	X	X	X	
MW-14B	9/20/16	917																		
MW-15B		950																		
MW-17B		1018																		
MW-18A		1618																		
MW-18B		1707																		
MW-19A		1127																		
MW-19B		1158																		
MW-20A		1237																		
MW 20B		1308																		

Turn Around Time Required (Prior lab approval required for expedited TAT.)
☐ Standard ☐ Rush (Specify)

Sample Disposal
☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification
☐ Non Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Terry L. Teate	9/21/16	1230	1. Received by		
2. Relinquished by			2. Received by		
3. Relinquished by			3. Received by		
4. Relinquished by			4. Laboratory received by: S. Elliott	9/21/16	1230

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) (Yes) No Ice Pack
Receipt Temp: 1.9 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

SHEALY ENVIRONMENTAL SERVICES, INC.

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

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Chain of Custody Record

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106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 65127

Client: Enviro-Test Services	Report to Contact: M. Faris	Telephone No. / E-mail: MFaris@SCRR.Com	Quote No.
Address: P.O. Box 2237	Sampler's Signature: X Terry L Teate	Analysis (Attach list if more space is needed)	Page 2 of 2
City: Irmo	State: SC Zip Code: 29063	Printed Name: Terry L Teate	
Project Name: Broad River Amoco			RI21044
Project No.: DHEC # 11946	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Grab / Composite	Matrix: Aqueous	Soil	Other (Specify)	No. of Containers by Preservative Type: HCl	HNO3	NaOH	H2SO4	NaOH+ZN Ac	5035 Kit	BTEX, MTBE	1,2-DCA	8 Oxygenates	EDB-8011	Nitrate	Sulfate	Methane	Remarks / Cooler I.D.
MW - 21A	9-20-16	1452	G	X			1			8										
MW - 21B		1534																		
MW - 22B		1341																		
MW - D-2		1055																		
MW - D-3		1419																		
Duplicate #2		1713																		
Field Blank		834																		
Trip Blank																				

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☐ Standard ☐ Rush (Specify)	Sample Disposal ☐ Return to Client ☐ Disposal by Lab	Possible Hazard Identification ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown	QC Requirements (Specify)				
1. Relinquished by: Terry L Teate	Date: 9-21-16	Time: 1230	1. Received by	Date	Time		
2. Relinquished by	Date	Time	2. Received by	Date	Time		
3. Relinquished by	Date	Time	3. Received by	Date	Time		
4. Relinquished by	Date	Time	4. Laboratory received by: D. Elliott	Date: 9/21/16	Time: 1230		

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) Yes No Ice Pack Receipt Temp. 1.9 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-130 Effective Date: 08-01-2014

SHEALY ENVIRONMENTAL SERVICES, INC.

Shealy Environmental Services, Inc
Document Number: ME0018C-01

Page 1 of 1
Effective Date: 02/05/2016
Expiry Date: 02/05/2021

Sample Receipt Checklist (SRC)

Client: Envirotest Cooler Inspected by/date: SBE / 9/21/16 Lot #: R121044

Means of receipt: ☐ SESI ☑ Client ☐ UPS ☐ FedEx ☐ Other			
Yes ☐	No ☑		1. Were custody seals present on the cooler?
Yes ☐	No ☐	NA ☑	2. If custody seals were present, were they intact and unbroken?

pH strip ID: _____ Cl strip ID: _____

Cooler ID/Original temperature upon receipt/Derived (corrected) temperature upon receipt:

1 / 1.9 / 1.9 °C ___ / ___ / ___ °C ___ / ___ / ___ °C ___ / ___ / ___ °C

Method: ☐ Temperature Blank ☑ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Blue Ice ☐ Dry Ice ☐ None

Yes ☐	No ☐	NA ☑	3. If temperature of any cooler exceeded 6.0°C, was Project Manager notified? PM was notified by: phone / email / face-to-face (circle one).
Yes ☐	No ☐	NA ☑	4. Is the commercial courier's packing slip attached to this form?
Yes ☑	No ☐		5. Were proper custody procedures (relinquished/received) followed?
Yes ☑	No ☐		6. Were sample IDs listed on the COC?
Yes ☑	No ☐		7. Were sample IDs listed on all sample containers?
Yes ☑	No ☐		8. Was collection date & time listed on the COC?
Yes ☑	No ☐		9. Was collection date & time listed on all sample containers?
Yes ☐	No ☑		10. Did all container label information (ID, date, time) agree with the COC?
Yes ☑	No ☐		11. Were tests to be performed listed on the COC?
Yes ☑	No ☐		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
Yes ☑	No ☐		13. Was adequate sample volume available?
Yes ☐	No ☑		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
Yes ☐	No ☑		15. Were any samples containers missing/excess (circle one) samples not listed on COC?
Yes ☐	No ☑	NA ☐	16. Were bubbles present >"pea-size" (¼"or 6mm in diameter) in any VOA vials?
Yes ☐	No ☐	NA ☑	17. Were all metals/O&G/HEM/nutrient samples received at a pH of <2?
Yes ☐	No ☐	NA ☑	18. Were all cyanide and/or sulfide samples received at a pH >12?
Yes ☐	No ☐	NA ☑	19. Were all applicable NH3/TKN/cyanide/phenol (<0.2mg/L) samples free of residual chlorine?
Yes ☐	No ☐	NA ☑	20. Were collection temperatures documented on the COC for NC samples?
Yes ☐	No ☐	NA ☑	21. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc...) correctly transcribed from the COC into the comment section in LIMS?
Yes ☐	No ☑		22. Was the quote number used taken from the container label?

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____ (H_2SO_4, HNO3, HCl, NaOH) using SR # _____.

Sample(s) _____ were received with bubbles >6 mm in diameter.

Samples(s) _____ were received with TRC >0.2 mg/L (If #21 is No) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: _____.

SC Drinking Water Project Sample(s) pH verified to be > 2 by _____ Date: _____

Sample(s) _____ were not received at a pH of <2 and were adjusted accordingly using SR#

Sample labels applied by: SBE Verified by: _____ Date: 9/21/16

Comments: one vial mislabeled for 14A as 953 instead of 853

APPENDIX C
NOT INCLUDED

APPENDIX D
NOT INCLUDED

APPENDIX E
NOT INCLUDED

APPENDIX F
NOT INCLUDED

APPENDIX G
DISPOSAL MANIFEST(S)

C 210110

Crandall

Please print or type
(Form designed for use on elite (12 - pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of
. . . . .	33805	1

GENERATOR

3. Generator's Name and Mailing Address
Enviro-Test Services
1621 Lake Murray Blvd
Columbia, SC 29212

4. Generator's Phone ((803)) 413-4926

5. Transporter 1 Company Name	6. US EPA ID Number	A. Transporter's Phone
Enviro-Test Services	. . . . .	(803) 732-5770
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone
	. . . . .	
9. Designated Facility Name and Site Address	10. US EPA ID Number	C. Facility's Phone
Crandall Corporation 100 Rich Lex Dr Lexington, SC 29072	SCD981864499	(803) 791-4800

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. Non Hazardous Waste, Petroleum Contact Water	001	TT	205	G
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above	E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Purge Water from Broad River AMOCO #92116
2nd Variation Sample event 9-20-16
Infotrac 800-535-5053 Registrant Crandall Corp Richland Co.
Srv Call ID: GLB0233505

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Terry L. Teate	Terry L Teate	10	17	16

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Terry L. Teate	Terry L Teate	10	17	16

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
		.	.	.

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in item 19.

Printed/Typed Name	Signature	Month	Day	Year
Bob Grooms		10	17	16

GENERATOR COPY

12-BLC-M5

APPENDIX H
NOT INCLUDED

APPENDIX I
NOT INCLUDED

APPENDIX J
NOT INCLUDED

APPENDIX K
SCDHEC CONTRACTOR CHECKLIST

Contractor Checklist

For each report submitted to the UST Management Division, the contractor will be required to verify that all data elements for the required scope of work have been provided. For items not required for the scope of work, the N/A box should be checked. For items required and not completed or provided, the No box should be checked and a thorough description of the reason must be provided.

Item #	Item	Yes	No	N/A
1	Is Facility Name, Permit #, and address provided?	☒	☐	☐
2	Is UST Owner/Operator name, address, & phone number provided?	☒	☐	☐
3	Is name, address, & phone number of current property owner provided?	☒	☐	☐
4	Is the DHEC Certified UST Site Rehabilitation Contractor's Name, Address, telephone number, and certification number provided?	☒	☐	☐
5	Is the name, address, telephone number, and certification number of the well driller that installed borings/monitoring wells provided?	☐	☐	☒
6	Is the name, address, telephone number, and certification number of the certified laboratory(ies) performing analytical analyses provided?	☒	☐	☐
7	Has the facility history been summarized?	☒	☐	☐
8	Has the regional geology and hydrogeology been described?	☒	☐	☐
9	Are the receptor survey results provided as required?	☐	☐	☒
10	Has current use of the site and adjacent land been described?	☒	☐	☐
11	Has the site-specific geology and hydrogeology been described?	☒	☐	☐
12	Has the primary soil type been described?	☒	☐	☐
13	Have field screening results been described?	☐	☐	☒
14	Has a description of the soil sample collection and preservation been detailed?	☐	☐	☒
15	Has the field screening methodology and procedure been detailed?	☐	☐	☒
16	Has the monitoring well installation and development dates been provided?	☐	☐	☒
17	Has the method of well development been detailed?	☐	☐	☒
18	Has justification been provided for the locations of the monitoring wells?	☐	☐	☒
19	Have the monitoring wells been labeled in accordance with the UST QAPP guidelines?	☐	☐	☒
20	Has the groundwater sampling methodology been detailed?	☒	☐	☐
21	Have the groundwater sampling dates and groundwater measurements been provided?	☒	☐	☐
22	Has the purging methodology been detailed?	☒	☐	☐
23	Has the volume of water purged from each well been provided along with measurements to verify that purging is complete?	☒	☐	☐
24	If free-product is present, has the thickness been provided?	☒	☐	☐
25	Does the report include a brief discussion of the assessment done and the results?	☒	☐	☐
26	Does the report include a brief discussion of the aquifer evaluation and results?	☐	☐	☒
27	Does the report include a brief discussion of the fate & transport models used?	☐	☐	☒

Item #	Item	Yes	No	N/A
28	Are the site-conceptual model tables included? (Tier 1 Risk Evaluation)	☐	☐	☒
29	Have the exposure pathways been analyzed? (Tier 2 Risk Evaluation)	☐	☐	☒
30	Have the SSTLs for each compound and pathway been calculated? (Tier 2 Risk Evaluation)	☐	☐	☒
31	Have recommendations for further action been provided and explained?	☒	☐	☐
32	Has the soil analytical data for the site been provided in tabular format? (Table 1)	☐	☐	☒
33	Has the potentiometric data for the site been provided in tabular format? (Table 2)	☒	☐	☐
34	Has the current and historical laboratory data been provided in tabular format?	☒	☐	☐
35	Have the aquifer characteristics been provided and summarized on the appropriate form?	☐	☐	☒
36	Have the Site conceptual model tables been included? (Tier 1 Risk Evaluation)	☐	☐	☒
37	Has the topographic map been provided with all required elements? (Figure 1)	☒	☐	☐
38	Has the site base map been provided with all required elements? (Figure 2)	☒	☐	☐
39	Have the CoC site maps been provided? (Figure 3 & Figure 4)	☒	☐	☐
40	Has the site potentiometric map been provided? (Figure 5)	☒	☐	☐
41	Have the geologic cross-sections been provided? (Figure 6)	☐	☐	☒
42	Have maps showing the predicted migration of the CoCs through time been provided? (Tier 2 Risk Evaluation)	☐	☐	☒
43	Has the site survey been provided and include all necessary elements? (Appendix A)	☐	☐	☒
44	Have the sampling logs, chain of custody forms, and the analytical data package been included with all required elements? (Appendix B)	☒	☐	☐
45	Is the laboratory performing the analyses properly certified?	☒	☐	☐
46	Has the tax map been included with all necessary elements? (Appendix C)	☐	☐	☒
47	Have the soil boring/field screening logs been provided? (Appendix D)	☐	☐	☒
48	Have the well completion logs and SCDHEC Form 1903 been provided? (Appendix E)	☐	☐	☒
49	Have the aquifer evaluation forms, data, graphs, equations, etc. been provided? (Appendix F)	☐	☐	☒
50	Have the disposal manifests been provided? (Appendix G)	☒	☐	☐
51	Has a copy of the local zoning regulations been provided? (Appendix H)	☐	☐	☒
52	Has all fate and transport modeling been provided? (Appendix I)	☐	☐	☒
53	Have copies of all access agreements obtained by the contractor been provided? (Appendix J)	☐	☐	☒
54	Has a copy of this form been attached to the final report and are explanations for any missing or incomplete data been provided?	☒	☐	☐

Broad River Amoco
3rd Quarter 2016 CASE
UST Permit #11946; CA #46916

Explanation for missing and incomplete information?

USTH 11946

Re: letter of concern

Kuhn, Kimberly M.

Tue 1/31/2017 11:26 AM

To: fred.cecchini5 <fred.cecchini5@gmail.com>;

Thank you Mr. Cecchini, I will get this out to you as soon as possible.

Sincerely,

Kimberly Kuhn
Hydrogeologist
Corrective Action, UST Management Division
S.C. Dept. of Health & Environmental Control
Office: (803) 898-0634
Fax: (803) 898-0673
Connect: www.scdhec.gov Facebook Twitter

From: fred.cecchini5 <fred.cecchini5@gmail.com>
Sent: Tuesday, January 31, 2017 11:22 AM
To: Kuhn, Kimberly M.
Subject: letter of concern

please send letter of concern. fax # 803-749-0331. Frederick Cecchini 429 Press Lindler Rd. Columbia, S.C. Thanks. Please respond so I know you received this email thank you

Sent from my Verizon, Samsung Galaxy smartphone

ENVIRO-TEST SERVICES

UST
APR 11 2011
PROGRAM

TIER I ASSESSMENT

Broad River Amoco (BP)
4335 Broad River Road
Columbia, South Carolina
Richland County

SCDHEC SITE ID # 11946

Hech
UST
DOCKET

Submitted to:

Bureau of Underground Storage Tank Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Prepared By:

ENVIRO-TEST SERVICES INC.
P.O. Box 2237
Irmo, South Carolina 29063
(803) 413-4936

4-8-11

April 8, 2011

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TIER I ASSESSMENT REPORT OF FINDINGS

I. INTRODUCTION

A. Owner/Operator Information

Mr. Fredrick N. Cecchini
4335 Broad River Road
Columbia, SC 29210-4009

B. Property Owner

Mr. Fredrick N. Cecchini
4335 Broad River Road
Columbia, SC 29210-4009

C. Tier I Contractor

Enviro-Test Services Inc.
SCDHEC Certification No. 14
P.O. Box 2237
Irmo, SC 29063
(803) 413-4936

D. Facility Information

Broad River Amoco (BP)
4335 Broad River Road
Columbia, SC 29210-4009

The subject site is located in northwest Richland County in Columbia, South Carolina and is situated on the southwest side of Broad River Road, a five-lane local thoroughfare. The site is comprised of approximately 0.85 acres and is currently owned and operated as a petroleum retail facility, convenience store and restaurant (Broad River BP). Currently, the property is improved with a store building of 2,000 square feet. The store building is located toward the rear (southwest) area of the property. Fronting the store building are three product dispensers covered by a canopy. An underground storage tank (UST) basin is located proximal (north) to the dispenser islands. An automobile water and vacuum servicing unit is located adjacent to the northwest property boundary, Dothan Road. The surface of the property is paved primarily with asphalt except over the area of the UST basin and proximal to the dispenser islands where concrete is present. Nearly the entire property is developed on apparent fill material. The property slopes moderately from Broad River Road southwest toward the curbed edge of the asphalt pavement behind the store building. The curbed edge directs rainfall runoff toward a drainage culvert near the west corner of the property and ultimately to a subsurface municipal storm water sewer system beneath Dothan Road. The west corner is the lowest area of the subject property. Just beyond the curbed edge of the asphalt pavement, a chain link fence is situated at the top of an earthen embankment which slopes steeply toward the southwest property line, located parallel to the foot of the embankment.

The subject property is bounded by Broad River Road to the northeast and beyond Broad River Road, a property currently occupied by the South Carolina Law Enforcement Division (SCLED). The adjacent property to the southeast is apparently commercially utilized (Nail and Beauty Salon). The adjacent property to the southwest is commercially utilized as a nursery school and day care (Play Pal Day Care). The Play Pal Day Care facility encompasses two properties fronting Dothan Road. The subject property is bounded to the northwest by Dothan Road and a commercially utilized property beyond (MDC Associates, an apparent mechanical engineering firm). The commercial usage of the subject property and adjacent properties is expected to remain the same in the future.

E. Site History

From the Richland County Geographic Information System (GIS), a 1939 aerial photograph shows that the subject property was utilized for agriculture and was partially wooded. Broad River Road appears as a two-lane road. Information available through the Richland County Assessors Office indicates that property was owned by B.O. Derrick in 1955 and a 1959 aerial photograph indicates that the property had apparently been developed as a petroleum retail facility. Subsequently, the property was acquired by Associated Oils of South Carolina, Inc. in February 1988 and the previous UST system was properly closed, as reported to the SCDHEC in 1989. Reportedly, the closure included proper abandonment by removal of one 2,000-gallon UST and one 3,000-gallon UST. Additionally, the property redevelopment activities of 1988 and 1989 reportedly included the demolition of pre-existing structures and construction of the existing store building, dispenser islands and UST system. Subsequently, the property was acquired by Mr. Frederick N. Cecchini in June 1997, and Mr. Cecchini remains the current owner. On March 18, 2011, Mr. Cecchini provided a photograph circa 1988 for the perusal of representatives of Enviro-Test Services, Inc. The photograph depicts a view of the property along Dothan Road (the northwest boundary), the adjacent property across Dothan Road, and the area of the subject property proximal to the west property corner. The photograph indicates that an automobile service garage was located in the area of the west property corner. Also, the photograph indicates that a dispenser island with two product fuel pumps was located at the approximate location where vent pipes for the current UST system are presently located.

Reportedly, no soil samples were collected for analysis at the time of proper abandonment of the previous UST system as reported to SCDHEC in 1989. In December 2010, a Phase II Subsurface Investigation was performed by Partner Engineering and Science, Inc. of El Segundo, California. The Phase II investigation included the installation of four soil borings and a Temporary Monitoring Well Permit (Approval No. 4053) was obtained from the SCDHEC for the purpose of groundwater sample collection. Reportedly, the soil borings extended to terminal depths of 26 feet below land surface (BLS) utilizing direct push penetration technology with continuous soil sample collection. Drilling refusal was encountered in all four soil borings before groundwater was encountered; therefore, no groundwater samples were collectable for laboratory analysis. Eight soil samples (two from each soil boring) were submitted for laboratory analysis for Volatile Organic Compounds (VOC) and Polynuclear Aromatic Hydrocarbons (PAH). The laboratory analytical results indicated the detection of various VOC and PAH chemical compounds at concentrations deemed reportable to the SCDHEC.

An Initial Groundwater Assessment (IGWA) was completed by Enviro-Test Services, Inc. during January, 2011 and an IGWA report was submitted on February 4, 2011. On January 20, 2011, the soil boring for monitoring well MW-1 was installed and soil samples were collected at five-foot intervals for field screening with a Photo Ionization Detector (PID). The highest PID reading (1,782 ppm) was yielded by the soil sample from the 10 to 15 feet sampling interval and this sample was submitted for laboratory analysis for benzene, toluene, ethylbenzene, xylenes (BTEX), naphthalene, and methyl tert butyl ether (MTBE) by EPA Method 8260 and for polynuclear aromatic hydrocarbons (PAH) by EPA Method 8270 and lead by EPA Method 3050B. Saturated sediments were encountered at the depth interval of 35 to 40 feet below grade level (BGL). As such, monitoring well MW-1 was installed to a depth of 40 feet BGL and was screened from 40 to 20 feet BGL. Groundwater recharge into the monitoring well was initially rapid (rising approximately 10 feet in five to ten minutes) and then very slow to reach an unusually static level (rising 10 to 15 additional feet in 24 to 48 hours). On January 21, 2011, a groundwater sample was collected from monitoring well MW-1 and laboratory analysis for BTEX, naphthalene, MTBE, PAH and lead was performed. The depth to groundwater in monitoring well MW-1 was measured from the top-of-casing to be 20.92 feet. The analytical results from the soil sample indicated the detection of various chemicals of concern (COC) including naphthalene at 635 mg/kg. The groundwater sample yielded detected COC concentrations as follows: benzene (929 ug/l), toluene (10,300 ug/l), ethylbenzene (684 ug/l), MTBE (243 ug/l) and naphthalene (922 ug/l). Following review of the IGWA report, the SCDHEC requested a Tier I Assessment in correspondence dated February 7, 2011.

Date Release Reported to SCDHEC: Unknown.

Estimated Quantity of Product Released: Unknown.

Cause of Release: Unknown.

UST #	Product	Date Installed	Currently in use (Yes or No)	If not in use, Date Removed
1	Gasoline (2,000 gallon)	(?)	No	1989
2	Gasoline (3,000 gallon)	(?)	No	1989
3	Diesel (3,000 gallon)	1989	Yes	-
4	Gasoline Unleaded (3,000 gallon)	1989	Yes	-
5	Gasoline Plus (3,000 gallon)	1989	Yes	-
6	Gasoline Plus (8,000 gallon)	1989	Yes	-
7	Gasoline Super (8,000 gallon)	1989	Yes	-
8	Kerosene (1,000 gallon)	1989	Yes	-

Other Releases at this site? None known.
If yes, Date Release Reported to SCDHEC: N/A
Status of Releases: N/A
No Further Action Date: N/A

II. SITE CHARACTERISTICS

A. Site Geography

As available via the Richland County GIS, the applicable portion of the United States Geological Survey (USGS), Columbia North, South Carolina Quadrangle, 7.5 minute series topographic map was reviewed (Figure 1). The USGS map was published in 1972 and updated in 1990.

Review of the topographic map indicates that the site (at the area of the existing UST system) is located approximately 275 feet above MSL. In general, the site is located on the west side of a topographically ridge extending southeast to northwest. Broad River Road lies at or near the crest of the apparent topographic ridge. Storm water runoff on the east side of the ridge ultimately flows into the Broad River located approximately 2 miles east of the site. On the west side of the ridge, storm water runoff flows toward Stoop Creek located approximately 1,650 feet to the southwest (near the southwest dead end of Dothan Road). From this point, Stoop Creek flows southward approximately 2.6 miles before emptying into the Saluda River.

In the general vicinity, numerous surface water features are evident on the USGS topographic map including several unnamed creeks (apparently spring fed) and several small to medium-sized surface water impoundments. In relative close proximity to the site, three surface water features are apparent on the west side of the topographic ridge and three on the east side of the topographic ridge. These surface water features are visibly apparent of Figure 1 and on Figure 2A, a site location map. On the west side of the topographic ridge, located approximately 1,430 feet to the northwest is a small pond with an estimated surface elevation of 265 feet MSL, approximately 1,680 feet to the southwest is the afore mentioned Stoop Creek (estimated surface elevation of 233 feet MSL) and approximately 2,370 feet to the south-southeast is an apparent spring-fed creek (estimated surface elevation of 252 feet MSL at depicted point of emergence). On the east side of the topographic ridge, located approximately 1,240 feet to the northeast is an apparent spring-fed creek (estimated surface elevation of 248 feet MSL at the depicted point of emergence), approximately 1,820 feet to the east-northeast is an apparent spring-fed creek (estimated surface elevation of 230 feet MSL at the depicted point of emergence) and approximately 2,480 feet to the southeast is an apparent incised, spring-fed creek (estimated surface elevation of 235 feet MSL at the depicted point of emergence). Estimated surface elevations were obtained via the Richland County GIS utilizing a topographic option depicting contour intervals of two feet. For purposes of estimation, the depicted contours are deemed to be reasonably reliable.

Visual reconnaissance of the site and adjoining properties to the southwest and south on March 18, 2011 indicated that the land surface in this general area is low-lying and receives storm water runoff from the southeast and northwest (Figure 2B). Hydrophilic trees such as large-diameter loblolly pines and trees with fluted trunks were noted to present in this area suggesting that historically, prior to any development, standing water was most likely prevalent during periods of wet weather. Additionally, the reconnaissance revealed the presence of a drainage ditch that had been emplaced to enhance drainage from this area southwestwardly toward Stoop Creek. The drainage ditch begins at the outlet of a municipal subsurface storm water concrete pipe at the back (southwest) corner of a property fronting Dothan Road at an address of 1238 Dothan Road. At the time of site reconnaissance abundant standing water was noted to be present in the drainage ditch at the point of outlet from the subsurface storm water pipe. The outlet to the drainage ditch is located approximately 180 feet from the southwest property corner of the subject site. The elevation of the standing water in the drainage ditch at the point of outlet was estimated to be approximately 260 feet MSL

On a Figure 2B, the Richland County GIS was utilized in depicting contour intervals of two feet to provide a detailed topographic map of the site study area. The topographic contours convey a volumetric expression of the fill material on which the site improvements are constructed in comparison to the surface elevation of the adjacent properties to the southwest and southeast. The embankments formed by the fill material are visibly apparent along the southwest and southeast property boundaries. Also depicted on Figure 2B as obtained from the Richland County GIS are intermittent surface water features referred to as "Flow Accumulation" which depict the estimated locations of accumulated storm water runoff during rainfall events. The previously described drainage ditch at the point of outlet.

Information concerning the history of the subject site and the adjacent property to the southwest currently occupied by the Play Pals Day Care became verbally available during Tier I field activities. Reportedly, ponded water at the rear of the subject property and the adjoining property to the southwest was a common occurrence in years past. The current commercial building on the adjacent property to the southwest (Play Pals Day Care) was constructed in 1987 according to information obtained from the Richland County Assessors Office. Reportedly, at the time of construction, the naturally occurring soil was deemed structurally incompetent for construction of the foundation and concrete slab floor of the building engineering design. The naturally occurring soil (i.e. clay of high plasticity) was excavated and replaced with sand. Additionally, drainage of accumulated storm water runoff was enhanced with the installation of subsurface drainage lines, reportedly.

The municipal subsurface storm water pipeline is depicted on Figure 2B as a blue line and points of storm water inlet are depicted as three yellow circles on Dothan Road, one of which is located adjacent to the northwest property corner according to the Richland County GIS. Additionally, two small yellow squares are described as inlets along the pipeline extending southeastward from Dothan Road to the southwest corner of the Play Pas Day Care property before turning to the southwest and extending approximately 90 feet to the point of outlet (drainage ditch). During field reconnaissance, the storm water inlet at the southwest corner of the Play Pals Day Care property was noted to be designed to receive storm water rainfall runoff from the playground surface of the Play Pals Day Care. According to the Richland County GIS, the point of discharge from the subsurface storm water pipe is 270 feet from the southwest property corner of the subject site and the point of outlet is indicated by a green circle.

B. Exposure Analysis

No water supply wells (drinking or non-drinking) are known to be present in the site vicinity and none were observed during Tier I field activities. Additionally, information available through the Richland County Assessors Office indicated that the subject property and all adjacent properties are serviced with municipal water supply (City of Columbia Water Works). However, no restrictions in the general vicinity are enforced by the City of Columbia Water Works, Richland County or SCDHEC that would preclude the installation of water supply wells for domestic use or for irrigation at single family residences. Additionally, no restrictions are enforced that would preclude the installation of water

supply wells at commercial or industrial properties for irrigation purposes or as a source of process water. The installation of water supply wells as a public drinking water source at industrial or commercial properties requires a permitting process that may preclude installation on a case by case basis.

Saturated sediments of the site uppermost aquifer were encountered at depths of 35 to 40 feet BGL during soil boring installation. As such, underground utilities on site and in the vicinity of the site are viewed as non-problematic as a means of conveyance of potentially impacted groundwater. Although the on-site subsurface utility lines transect some areas of impacted vadose soils, these lines are viewed as non-problematic due to the shallow depths of the utilities, their limited horizontal extent and the overlying pavement which should impede migration of detected subsurface contaminants vertically. Cracks in the concrete pavement overlying the UST basin, however, were noticeable.

RECEPTOR	DESCRIPTION	OVA	DISTANCE/DIRECTION FROM UST SOURCE
1	Standing water at the storm water outlet from a subsurface pipe into a drainage ditch	N/A	Approximately 425 Feet Southwest from the site UST basin.
2	Unnamed Spring-Fed Creek	N/A	1240 ft Northeast
3	Unnamed Spring-Fed Creek	N/A	1,820 ft. East-Northeast
4	Unnamed Spring-Fed Creek	N/A	2,480 ft. Southeast
5	Stoop Creek	N/A	1,680 ft. Southwest
6	Unnamed Spring-Fed Creek	N/A	2,370 ft. South-Southeast
7	Pond	N/A	1,430 ft. Northwest

C. Utilities Survey

UTILITY	DEPTH (FT)	ON-SITE DISTANCE FROM SOURCE
On-Site Water Lines	<5	Extending from Broad River Road to Store Building; Water and Vacuum Servicing Unit
On-Site Subsurface Electrical Lines	<5	Extending from Store Building to USTs, Dispenser Islands and Water and Vacuum Servicing Unit
Municipal Water Lines	<5	Parallel to Broad River and Dothan Roads
Sanitary Sewer Lines	<10	Parallel to Broad River and Dothan Roads
Storm Sewer Lines	<10	Parallel to Dothan Road
Communication Lines	<5	Parallel to Broad River and Dothan Roads
Gas Lines	<5	Parallel to Broad River and Dothan Roads

D. Site Geology/Hydrology

Regional - The Broad River Amoco (BP) lies within the Lower Piedmont Physiographic Provence in close proximity and northwest of the contact zone with the Upper Coastal Plain Physiographic Provence. The dominant rock types of the general area are related to the Carolina Slate Belt and specifically the Precambrian to Early Cambrian, Persimmon Fork Formation which is comprised primarily of green-gray to blue-gray, moderately metamorphosed, felsic volcanic (metavolcanic) tuffs and to a lesser extent mafic metavolcanic tuffs. These rocks occur as very weathered to moderately weathered outcrops in the site study area and are most often visible at areas of excavation related to road and building construction.

In the general vicinity, the uppermost aquifer generally occurs under unconfined conditions and receives water from precipitation, which infiltrates the unsaturated surface soils and migrates downward to the saturated zone. Underlying the uppermost aquifer is the fractured bedrock aquifer in which groundwater occurs in fractures, joints and faults. The fractured bedrock aquifer is often an important water resource for rural residences and commercial and light industrial properties at areas where municipal water supply is unavailable or unfeasible. Well yields are typically 1 to 350 gpm in the crystalline and metamorphic rocks with the larger yields located in areas of intensely fractured metamorphic rocks.

Site Specific - Soils encountered at the subject site were dry to moist, yellow brown, brown yellow, red brown and gray to dark gray sandy clay to ten feet BGL. At SB-1 and SB-2, installed adjacent to the UST basin, the soils were moist to damp at 10 feet. Black organic material was noticeable at soil borings SB-3 through SB-6 at depths ranging from 4 to 10 feet. From 10 feet to 15 feet and below, encountered soils were generally dryer, light yellow brown, light pink brown, white, gray and sometimes dark yellow brown and dark red brown silty/sandy clay. Infrequent to frequent fragments of very weathered to moderately weathered metavolcanic tuff of the Carolina Slate Belt were noticeable beginning at 15 and 20 feet to 35 feet in soil borings SB-1 and SB-2 and at 30 to 35 feet in SB-8 and 20 to 40 feet in SB-4. Saturated soils were encountered in soil borings SB-1, SB-2, SB-3 and SB-4 at 35 to 40 feet BGL.

E. Soil Boring Data

Drilling Dates: February 24, 25, 2011

SB-1: (MW-2) In/near the former UST basin.

SB-2: In/near the former UST basin.

SB-3: In/near the former product pipelines.

SB-4: In/near the former product pipelines/dispenser island.

SB-5: In/near the former product pipelines/dispenser island.

SB-6: In/near the former product pipelines/dispenser island.

SB-7: In/near the former product pipelines/dispenser island.

SB-8: (MW-3) Southeast parking area (asphalt), near the southeast property boundary (background).

SB-9: (MW-4) Southwest parking area (asphalt), near southwest property boundary (down-gradient).

UST Area Borings –

Borehole SB-1 Sampling Date: 2/24/11 Sample Depth: 40 feet

Sample Interval (ft.)	OVA (mg/kg)	Lithology	Soil Conditions
0 – 5	90	Light Yellow Brown, sandy clay; firm, infrequent granite gravel	Moist, Mod. HC odor
5 – 10	778	Yellow Brown/Gray/Orange, slightly sandy clay; soft	Moist to Damp, Strong HC odor
10 – 15	85	Light Pink Brown/White/Brown Yellow, slightly silty, very sandy clay; soft to moderately firm	Dry, Mod. HC odor
15 – 20	63	Light Yellow Brown/Gray/White, sandy/silty clay; mod. firm, infrequent fragments of very weathered, gray metavolcanic tuff (slate)	Dry, Mod. HC odor
20 – 25	55	Yellow Brown/Gray, sandy, silty clay; moderately firm, frequent fragments of gray slate (moderately weathered)	Dry, Mod. HC odor
25 – 30	21	Dark Yellow Brown/Gray, silty/sandy clay; moist, soft, infrequent fragments of gray slate (very weathered)	Moist, Mod. HC odor
30 – 35	12	Dark Yellow Brown/Red Brown/Gray, sandy/silty clay: soft, infrequent fragments of v. weathered gray slate	Moist to damp, Mod. NC Odor
35 – 40	5	Dark Yellow Brown/Gray, sandy/silty clay; soft	Wet, Mod. HC odor

Borehole SB-2 Sampling Date: 2/24/11 Sample Depth: 40 feet

Sample Interval (ft.)	OVA (mg/kg)	Lithology	Soil Conditions
0 – 5	286	Dark Brown Yellow/Dark Gray, sandy clay; soft	Moist, Strong HC odor
5 – 10	241	Brown Red/Dark Brown Yellow, slightly sandy clay; soft	Moist to Damp, Strong HC odor
10 – 15	161	SAME	Moist, Mod. To Strong HC odor
15 – 20	144	SAME	Moist to Damp, Mod. HC odor
20 – 25	42	Yellow Red Brown/Gray, sandy, silty clay; firm, frequent fragments of mod. weathered gray metavolcanic tuff (slate)	Dry, no HC odor
25 – 30	18	Dark Red Brown/Yellow Brown/Gray, silty/sandy clay; soft, infrequent very weathered gray slate fragments	Moist, no HC odor
30 – 35	10	Dark Yellow Brown/Red Brown/Gray, sandy/silty clay; soft, infrequent fragments of very weathered gray slate	Moist to Damp, no HC odor
35 - 40	4	Dark Yellow Brown/Gray, sandy/silty clay; soft	Wet, no HC odor

Pipeline Borings –

Borehole SB-3 Sampling Date: 2/24/11 Sample Depth: 10 feet

Sample Interval (ft.)	OVA (mg/kg)	Lithology	Soil Conditions
0 – 2	0	Light Yellow Brown, silty, fine sand, soft	Dry, no HC odor
2 – 4	0	Yellow Brown/Dark Red/Gray, sandy clay; moderately firm, infrequent gray granite gravel	Moist, no HC odor
4 – 6	0	Dark Yellow Brown/Dark Red/Dark Gray, sandy clay; firm, infrequent gray granite gravel, organics (black)	Moist, no HC odor
6 – 8	2	Yellow Brown/Dark Gray, sandy/silty clay; firm, black organic material	Moist, no HC odor
8 – 10	6	Yellow Brown/Dark Red Brown/Gray, sandy/silty clay; moist, firm	Moist, Slight HC odor

Product Dispenser/Pipeline Borings –

Borehole SB-4 Sampling Date: 2/24/11 Sample Depth: 10 feet

Sample Interval (ft.)	OVA (mg/kg)	Lithology	Soil Conditions
0 – 2	0	Light Yellow Brown, slightly silty, sandy clay; soft	Moist, no HC odor
2 – 4	0	Dark Yellow Brown/Dark Gray, slightly sandy/silty clay; firm, black organic material	Moist, no HC odor
4 – 6	8	Dark Yellow Brown/Dark Gray, silty/sandy clay; firm, black organic material	Moist, Moderate HC odor
6 – 8	4	Dark Red Brown/Gray, silty/sandy clay; mod. firm, organics (black)	Moist to Damp, Slight HC odor
8 – 10	0	Dark Brown Yellow/Dark Brown Red/Dark Gray, sandy clay; firm	Dry, Slight HC odor

Borehole SB-5 Sampling Date: 2/24/11 Sample Depth: 10 feet

Sample Interval (ft.)	OVA (mg/kg)	Lithology	Soil Conditions
0 – 2	0	Brown Red Yellow, sandy clay; firm	Moist, Slight HC odor
2 – 4	4	Brown Red Yellow/Dark Gray, silty/sandy clay; firm to soft, black organic material	Moist, Slight HC odor
4 – 6	22	Dark Yellow Brown/Dark Gray, silty clay; soft, black organic material	Moist, Moderate HC odor
6 – 8	0	Red Brown/Dark Gray, slightly sandy clay; dry, moderately firm	Dry, Slight HC odor
8 – 10	0	Red Brown, slightly sandy clay; dry, moderately firm	Dry, Slight HC odor

Borehole SB-6 Sampling Date: 2/24/11 Sample Depth: 10 feet

Sample Interval (ft.)	OVA (mg/kg)	Lithology	Soil Conditions
0 – 2	0	Yellow Brown/Brown Red, slightly sandy clay; moist, soft	Moist, no HC odor
2 – 4	0	SAME – soft to firm	Moist, Slight HC odor
4 – 6	8	Yellow Brown/Gray/Brown Red, slightly sandy clay; firm	Moist, Moderate HC odor
6 – 8	4	Brown Yellow/Dark Gray sandy clay; mod. firm, infrequent granite gravel	Damp, Moderate HC odor
8 – 10	16	Brown/Dark Gray, slightly silty, sandy clay; sticky, firm, black organic material	Damp, Moderate HC odor

Borehole SB-7 Sampling Date: 2/24/11 Sample Depth: 10 feet

Sample Interval (ft.)	OVA (mg/kg)	Lithology	Soil Conditions
0 – 2	0	Light Yellow Brown/White, sandy clay; soft	Dry, no HC odor
2 – 4	0	White/Light Brown Yellow/Light Red Brown, sandy clay; soft	Dry, Slight HC odor
4 – 6	2	White/Light Brown Yellow/Light Red Brown, sandy clay; soft	Dry, Moderate HC odor
6 – 8	14	Dark Brown Red/Dark Brown Yellow/Gray sandy clay; mod. firm	Moist, Moderate HC odor
8 – 10	8	Dark Yellow Brown/Dark Red Brown/Dark Gray, slightly silty, sandy clay; moderately firm	Damp, Moderate HC odor

Background/Down-gradient Borings -

Borehole SB-8 Sampling Date: 2/24/11 Sample Depth: 40 feet

Sample Interval (ft.)	OVA (mg/kg)	Lithology	Soil Conditions
0 – 5	6	Dark Yellow Brown, sandy clay; soft	Moist, no HC odor
5 – 10	10	SAME	Moist, no HC odor
10 – 15	14	Red Brown, sandy clay; soft	Moist, no HC odor
15 – 20	0	Light Red/Yellow Brown, slightly sandy, silty clay; soft	Dry, no HC odor
20 – 25	0	Dark Brown Red, slightly sandy, silty clay; soft	Moist, Slight HC odor
25 – 30	18	SAME	Moist to Damp, Mod. no HC odor
30 – 35	12	Dark Brown Red/Gray, slightly sandy, silty clay; soft, infrequent, v. weathered metavolcanic tuff	Damp, Moderate HC odor
35 - 40	2	Red Gray, slightly sandy clay; soft	Wet, Slight HC odor

Borehole SB-9 Sampling Date: 2/25/11 Sample Depth: 40 feet

Sample Interval (ft.)	OVA (mg/kg)	Lithology	Soil Conditions
0 – 5	2	Dark Yellow Brown/Dark Gray, sandy clay; soft	Moist, no HC odor
5 – 10	9	SAME	Damp, no HC odor
10 – 15	13	Dark Red Brown/Dark Gray, sandy clay; soft	Damp, no HC odor
15 – 20	27	Dark Yellow Brown/Dark Red, slightly silty, sandy clay; soft	Moist, no HC odor
20 – 25	4	Light Pink Brown/Light Gray, silty/sandy clay; soft to firm, infrequent fragments of weathered gray metavolcanic tuff (slate)	Dry, no HC odor
25 – 30	7	Light Gray/Light Yellow Brown, sandy/silty clay; soft, infrequent very weathered gray slate fragments	Dry, no HC odor
30 – 35	3	SAME – infrequent fragments of moderately weathered, gray slate	Dry, no HC odor
35 - 40	185	Gray/Light Yellow Brown, slightly sandy clay; soft, frequent fragments of weathered, gray slate	Wet, Strong HC odor

Soil Analytical Results

CoC (mg/kg)	RBSL	SB-1 10' (MW-2)	SB-2 5'	SB-3 8'	SB-4 6'	SB-5 6'	SB-6 10'	SB-7 8'	SB-8 35' (MW-3)	SB-9 - (MW-4)
Benzene	0.187	**4.11J**	**0.291**	**0.343**	0.00294J	0.103	0.115	0.00617	<0.001	-
Toluene	12.085	<0.254	0.0702J	0.123J	0.00228J	0.00581	0.0048	<0.001	<0.001	-
Ethylbenzene	1114.5	22.7	0.707	0.536	0.00363J	0.00273J	<0.001	<0.001	<0.001	-
Xylenes	176.8	5.34J	1.46	0.722	0.00651J	0.00575J	<0.001	<0.001	<0.001	-
Total BTEX	N/A	32.404	2.5282	1.724	0.01536	0.11729	0.1198	0.00617	-	-
MTBE	N/A	4.96	2.67	0.151J	0.00485	0.0051	0.00296J	<0.001	0.00434J	-
Naphthalene (8260)	0.292	**33.0**	**0.35**	**0.275**	<0.001	<0.001	<0.001	<0.001	<0.001	-
Naphthalene (8270)	0.292	**4.5**	0.23	0.219J	0.0489J	**0.402J**	0.108J	0.0481J	<0.0168	-
Benzo(a)anthracene	-	<0.066	<0.066	0.241J	<0.066	<0.066	<0.066	0.0632J	<0.066	-
Benzo(b)fluoranthene	-	<0.066	<0.066	0.449J	<0.066	<0.066	<0.066	0.0602J	<0.066	-
Benzo(k)fluoranthene	-	<0.066	<0.066	0.192J	<0.066	<0.066	<0.066	0.0518J	<0.066	-
Chrysene	298.55	<0.066	<0.066	0.348J	<0.066	<0.066	<0.066	0.107J	<0.066	-
Dibenzo(a,h)anthracene	-	<0.066	<0.066	<0.126	<0.066	<0.066	<0.066	<0.066	<0.066	-
Lead	-	10.4	5.45	21.3	8.76	6.42	8.59	7.6	5.68	-
TPH (DRO Range)	N/A	59,000	-	-	-	-	-	-	-	-
TOC (Background)	N/A	-	-	-	-	-	-	-	868	-
Grain Size Analysis:	N/A	22% SD 11% SL 67% CL		-	-	-	-	-	-	-

NOTE: The listed Risk Based Screening Levels (RBSL) are based on the depth of worst case soil sample from SB-1 which was collected at 10 feet, approximately 20 to 25 feet above the saturated sediments of the uppermost aquifer (35 to 40 feet).

The soil sample collected from soil boring SB-1 (10 ft.) yielded the most elevated concentrations of COC, with similar but less elevated concentrations detected in the soil sample from SB-2 (5 ft.). Soil borings SB-1 and SB-2 were installed adjacent to the UST basin. Soil boring SB-3 (8 ft.) yielded COC concentrations of similar magnitude as SB-2. The soil samples from SB-4, SB-5, SB-6 and SB-7 yielded slightly elevated concentrations, with the exception of benzene and naphthalene (8270). No COC concentrations were detected in the soil sample from SB-8 with exception of MTBE at a very low concentration. A concentration for Total Petroleum Hydrocarbons – Diesel Range Organics (TPH-DRO) of 59,000 mg/kg was detected in soil sample SB-1. A concentration of total organic carbon (TOC) of 868 mg/kg was detected in the soil sample from SB-8. Lead was uniformly detected at relatively low concentrations in all of the soil samples.

F. Chemicals of Concern - Ground Water

MW	INSTALLATION DATE	DEVELOPMENT DATE	SAMPLING DATE
1	1/20/11	1/21/11	3/5/11
2	2/25/11	3/5/11	3/5/11
3	2/25/11	3/5/11	3/5/11
4	2/25/11	3/5/11	3/5/11

SOIL COC (mg/kg)	MW-1 (IGWA)	MW-2 (SB-1)	MW-3 (SB-8)	MW-4 (SB-9)
Depth of sample (ft)	15	10	35	-
Benzene	<0.00802	4.11J	<0.001	-
Toluene	0.834	<0.254	<0.001	-
Ethylbenzene	0.520	22.7	<0.001	-
Xylenes	2.260	5.34J	<0.001	-
Total BTEX	3.614	32.404	-	-
MTBE	0.189J	4.96	0.00434J	-
Naphthalene (8260)	0.635	33.0	<0.001	-
Naphthalene (8270)	0.046J	4.5	<0.0168	-
Benzo(a)anthracene	0.0659J	<0.066	<0.066	-
Benzo(b)fluoranthene	0.083J	<0.066	<0.066	-
Benzo(k)fluoranthene	0.0556J	<0.066	<0.066	-
Chrysene	0.0969J	<0.066	<0.066	-
Dibenzo(a,h)anthracene	<0.0111	<0.066	<0.066	-
Lead	4.77	10.4	5.68	-

MW #	TOC ELEVATION (FT)	SCREENED INTERVAL (BLS)	DEPTH TO WATER (BLS) 4/2/11	WATER TABLE ELEVATION (FT) 4/2/11
1	100.59	20 – 40	14.45	86.14
2	99.94	18 – 28	13.50	86.44
3	99.91	21 – 31	13.72	86.19
4	95.85	15 – 25	9.15	86.70

Groundwater Analytical Results

Groundwater COC (µg/l)	RBSL	MW-1	MW-2	MW-3	MW-4
Free Product Thickness (inches)	-	None	None	None	None
Benzene	5	**1,760**	**1,650**	**9.93**	**1,830**
Toluene	1,000	**18,400**	**3,230**	10.4	198
Ethylbenzene	700	**1,270**	422	9.52	**1,270**
Xylenes	10,000	5,140	2,190	30.6	3,160
Total BTEX	-	26,570	7,492	60.45	6,458
MTBE	40	<83.9	**3,420**	7.91	**3,100**
1,2-Dichloroethane	Site Specific	<121	<12.1	<0.121	<12.1
Naphthalene (8260)	25	**4,070J**	**462J**	4.74J	**598**
Naphthalene (8270)	25	**369**	**1,050**	2.94J	**508**
Benzo (a) anthracene	10	<10.1	<10.1	<10.1	<10.1
Benzo (b) fluoranthene	10	<10.1	<10.1	<10.1	<10.1
Benzo (k) fluoranthene	10	<10.1	<10.1	<10.1	<10.1
Chrysene	10	<10.1	<10.1	<10.1	<10.1
Dibenzo (a,h) anthracene	10	<10.1	<10.1	<10.1	<10.1
Lead	Site Specific	18	<15	<15	<15
1,2-Dibromoethane (EDB)	Site Specific	<0.0032	1.42	<0.0032	<0.0032
Sulfate (mg/l)	-	2.41	20.8	111	22
Nitrates (mg/l)	-	0.499	0.015	0.148	0.016
Methane	-	1,100	441	554	1,880
Dissolved Oxygen (mg/l)	-	-	2.33	1.78	1.68
Ferrous Iron (mg/l)	-	-	0.6	0.2	2.4

COC above RBSL are shown in bold.

Monitoring well MW-1 (installed adjacent and northwest of the dispenser island area) yielded the highest volume of COC concentrations above RBSL, although benzene and naphthalene (both 8260 and 8270) were detected at similarly elevated concentrations in wells MW-2 and MW-4. The chemical compound MTBE was detected at elevated concentrations in monitoring wells MW-2 (3,420 ug/l) and MW-4 (3,100 ug/l) but at a less elevated concentration in well MW-3 (7.91 ug/l) and was not detected above the method detection limit (<83.9 ug/l) in MW-1. Monitoring well MW-8 yielded no concentrations of COC above RBSL with the exception of benzene (9.93 ug/l).

G. Aquifer Characteristics

Enviro-Test Services, Inc. personnel measured the groundwater levels in the monitoring wells on April 2, 2001. Based on the survey data and the groundwater level measurements of April 2, 2011, the estimated direction of groundwater flow is toward the southeast, with a gradient of approximately 0.004 ft/ft.

On March 25 and 28, 2011, Enviro-Test Services, Inc. personnel performed slug tests manually at monitoring wells MW-1, MW-2, MW-3 and MW-4. The Starpoint Software Super Slug, Version 2.2 was utilized to estimate hydraulic conductivity using the Bouwer and Rice Method. At each monitoring well groundwater displacement was achieved by manually extracting groundwater with a disposable bailer. At wells MW-1 and MW-3, groundwater recovered to static levels (i.e. 0.00 feet groundwater displacement) at the 60 minute and 90 minute time-measurement increments, respectively. At monitoring well MW-2, groundwater recovered to 9.65 feet displacement at the 60 minute time-measurement increment and remained at that level until the termination of the slug test at the 90 minute time-measurement increment. At well MW-4, groundwater was extracted from the well until near dryness, but no appreciable groundwater recovery occurred for approximately 2 hours, at which point the slug test was terminated.

For purposes of calculating average hydraulic conductivity for the site, Enviro-Test Services, Inc. elected to utilize the hydraulic conductivity values from wells MW-1 (0.0959 ft/day) and MW-3 (0.1065 ft/day) because a return to static level was achieved in both wells. Although return to static level was not achieved at well MW-2, hydraulic conductivity was estimated to be 0.0046 ft/day.

Hydraulic Conductivity: 0.1012 feet/day

Hydraulic Gradient: 0.004 feet/feet

Porosity: 25 (clayey soils)

Estimated Seepage Velocity: 0.6 feet/year

Estimation of seepage velocity for the site uppermost aquifer inclusive of the estimated hydraulic conductivity value of 0.0046 ft/day from well MW-2 yields an estimated seepage velocity of 0.4 feet/year. As depicted in Figure 5, the groundwater flow direction is apparently toward the southeast based on the estimated potentiometric surface of the site uppermost aquifer.

III. Tier I Evaluation

A. CURRENT LAND USE - The following table identifies any potential receptors or human exposure pathways (e.g. basements, contaminated soils from UST closures, etc.) within a 1000-foot radius for current land use.

Media (for exposure)	Exposure Route	Pathway Selected for Evaluation? (Yes or No)	Exposure point or Reason for Non-Selection	Data Requirement (If pathway selected)
Air	Inhalation	No	COCs are very limited in detected concentrations and are subsurface	
	Explosion Hazard	No		
Ground-Water	Ingestion	No	No water supply wells are known to be present in the site study area.	
	Dermal Contact	No		
	Volatile Inhalation	No		
Surface Water	Ingestion	No	No surface waters are located in close proximity to the UST basin	
	Dermal contact	No		
	Volatile Inhalation	No		
Surficial Soil	Ingestion	No	The surficial soils are apparently currently non-problematic	
	Dermal contact	No		
	Volatile Inhalation	No		
	Leaching to Ground-Water	No		
Subsurface Soil	Ingestion	No	Contaminants are subsurface and apparently inaccessible unless excavated	
	Dermal contact	No		
	Volatile Inhalation	No		
	Leaching to Ground-Water	Yes	Groundwater	Soil Leachability Model

B. FUTURE LAND USE - The following table identifies any potential receptors or human exposure pathways (e.g. basements, contaminated soils from UST closures, etc.) within a 1000-foot radius for projected future land use.

Media (for exposure)	Exposure Route	Pathway Selected for Evaluation? (Yes or No)	Exposure point or Reason for Non-Selection	Data Requirement (If pathway selected)
Air	Inhalation	No	COCs are subsurface	
	Explosion Hazard	No		
Ground-Water	Ingestion	YES	No municipal restrictions are enforced that would preclude the installation of water supply wells for drinking water	
	Dermal Contact	YES		
	Volatile Inhalation	YES		
Surface Water	Ingestion	No	No surface waters are located in close proximity to the UST basin	
	Dermal contact	No		
	Volatile Inhalation	No		
Surficial Soil	Ingestion	No	The surficial soils are apparently currently non-problematic are expected to remain so unless disturbed	
	Dermal contact	No		
	Volatile Inhalation	No		
	Leaching to Ground-Water	No		
Subsurface Soil	Ingestion	Yes	Potential future excavation	Site Development Planning
	Dermal contact	Yes	" "	" "
	Volatile Inhalation	Yes	" "	" "
	Leaching to Ground-Water	Yes	Groundwater	Soil Leachability Model

Discussion

During drilling for soil boring and monitoring well installation for soil borings SB-1, SB-2, SB-8 and SB-9 and monitoring wells MW-1 through MW-4, groundwater of the uppermost aquifer was encountered at the drilling depth interval of 35 to 40 feet BGL. In general, seepage of groundwater into the soil borings and monitoring wells was noticeably rapid at first but then very slow to reach unusually high static levels. As indicated in the above table which lists the groundwater levels of April 2, 2011, none of the four monitoring wells were found to be bracketing the water table of the uppermost aquifer despite the efforts of Enviro-Test Services, Inc. to achieve bracketing as follows: 1) Each borehole for monitoring wells MW-2, MW-3 and MW-4 was advanced to saturated soils found to occur at 35 to 40 feet, 2) following removal of the drilling tools from each borehole, a PVC, Schedule 40 well screen (10 feet in length) and riser were installed at an estimated depth at which adequate volumes of groundwater would most likely be available for sample collection and possible bracketing of the water table could be achieved, and 3) the sand filter pack, bentonite seal and grout column were installed as normal. Obviously, adequate groundwater recharge to enable sample collection was achieved; however, bracketing of the water table was not achieved due to the unusually high static levels. Apparently, the uppermost aquifer is semi-confined or possibly confined and hydrostatic pressures within the uppermost aquifer are of an intensity that exerts a substantial hydraulic head vertically upward in the monitoring wells.

Recommendations for Further Action

The four monitoring wells (MW-1 through MW-4) should be periodically monitored pending approval and implementation of a Tier II Assessment. Collection of a surface water sample from the standing water in the drainage ditch at the point of outlet from the municipal storm water pipe may be advisable even though this pipe line receives runoff from various locations including the Play Pals Day Care facility, Dothan Road, Broad River Road and the Broad River Amoco (BP).

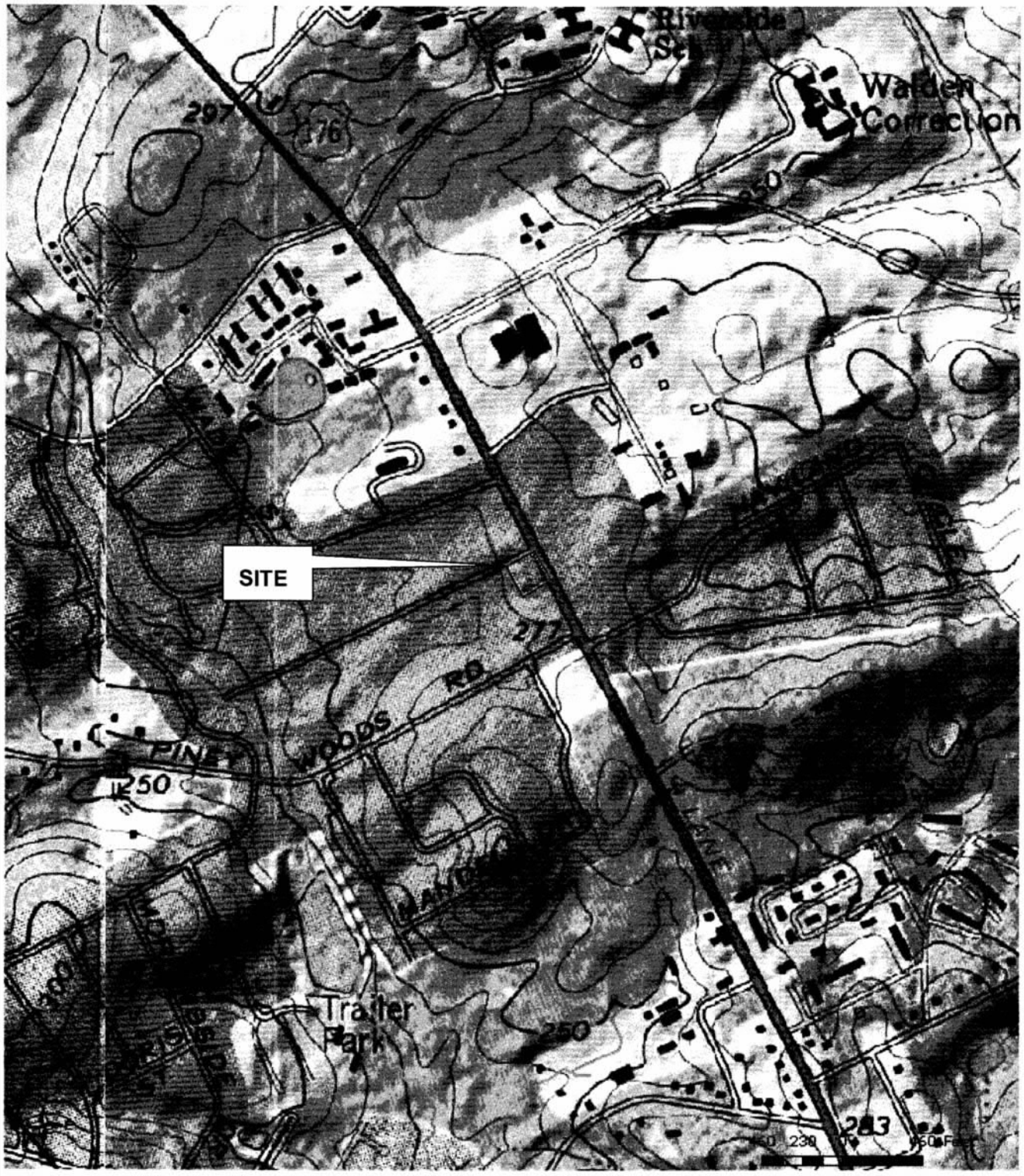


FIGURE 1: USGS Topographic Map

Source: Richland County GIS System

N↑

Enviro-Test Services, Inc.

Site Name: Broad River Amoco (BP)
4335 Broad River Road
Columbia, SC 29210

Project Number: SCDHEC # 11946

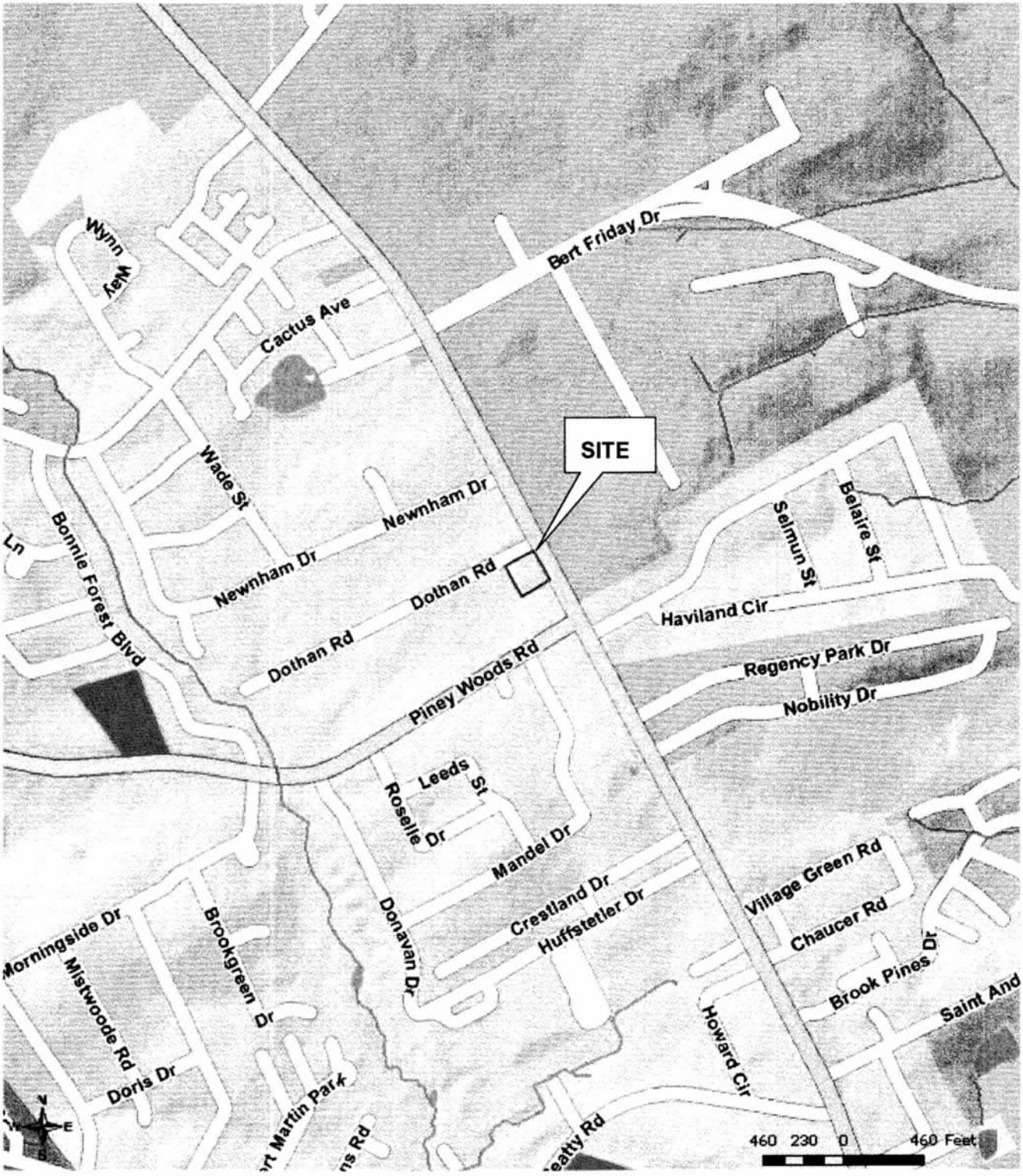


FIGURE 2A: Site Location Map

Source: Richland County GIS System

N↑

Enviro-Test Services, Inc.

Site Name: Broad River Amoco (BP)
4335 Broad River Road
Columbia, SC 29210

Project Number: SCDHEC # 11946

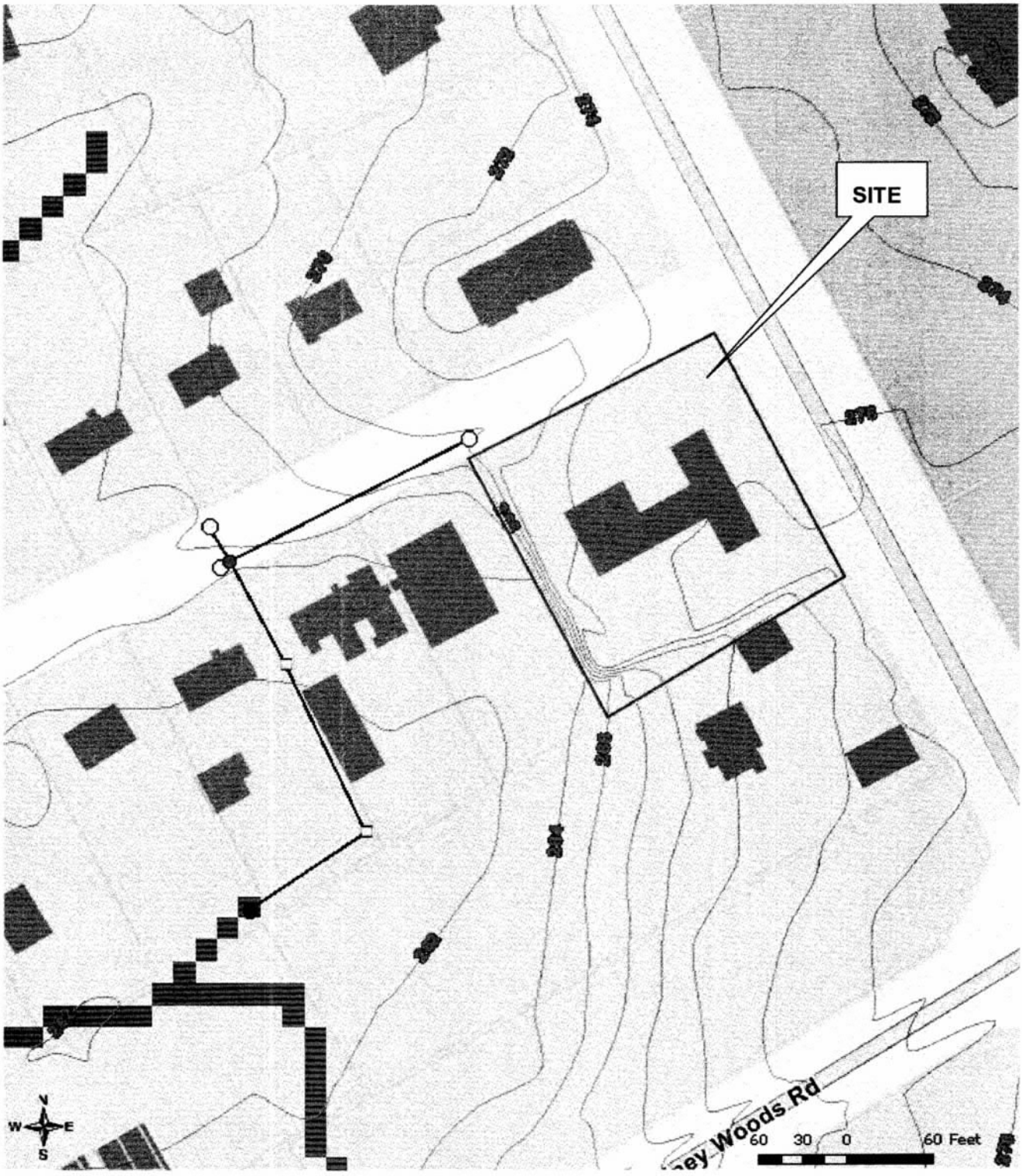


FIGURE 2B: Site Location Map

Source: Richland County GIS System

N↑

Enviro-Test Services, Inc.

Site Name: Broad River Amoco (BP)
4335 Broad River Road
Columbia, SC 29210

Project Number: SCDHEC # 11946

FILE NO. ENV4052

SITE MAP

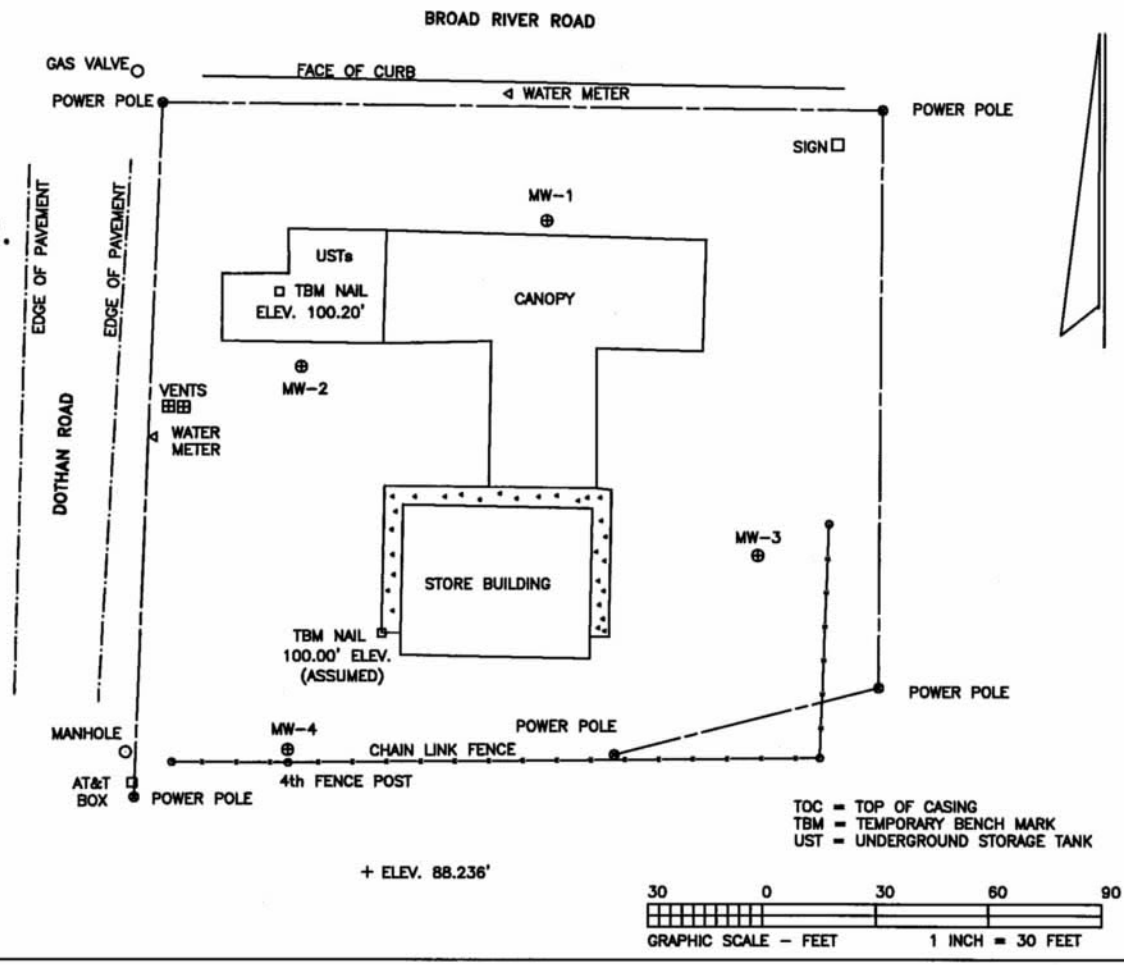
PREPARED FOR

ENVIRO-TEST SERVICES, INC.

BP STATION
4335 BROAD RIVER ROAD
COLUMBIA, SC 29210

MARCH 11, 2011

DESC.	NORTHING	EASTING	TOC ELEVATION
MW-1	10016.4329	10038.6067	100.59
MW-2	9977.6001	9973.9117	99.94
MW-3	9927.4183	10094.4101	99.91
MW-4	9875.6309	9970.2245	95.85

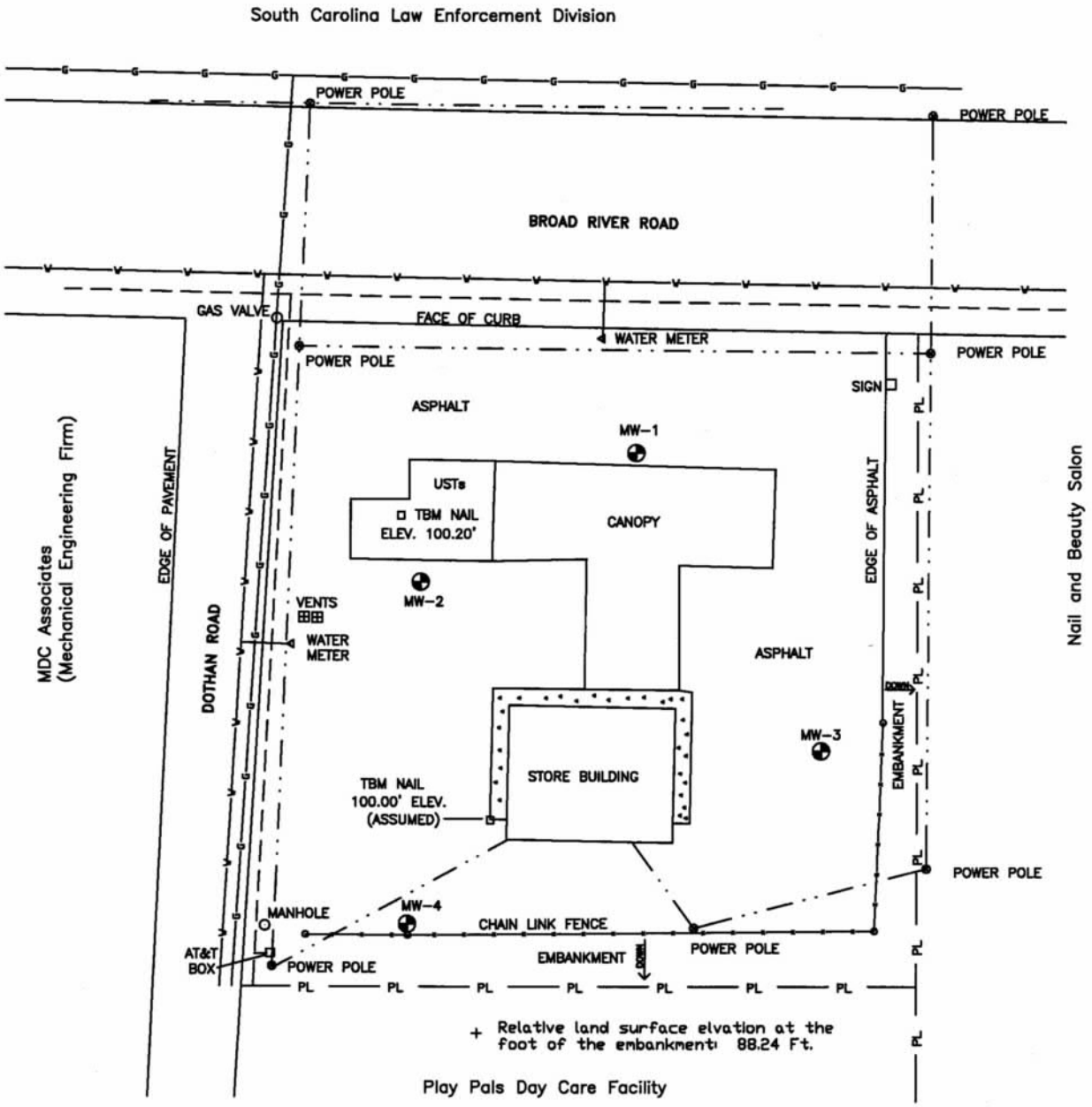


W. J. WEBB, P.L.S. NO. 19021
10141 DUNBARTON BLVD.
BARNWELL, SC 29812
TELEPHONE 803-259-5144

PRINT SCALE

0 50 100
1 INCH = 50 FEET

FIGURE 3A: Surveyed Site Map	
Enviro-Test Services, Inc.	Broad River Amoco (BP) 4335 Broad River Road Columbia, SC, Richland County SCDHEC ID #11946
DWG BY: JDK	
DWG DATE: 3/29/11	



		TOC ELEVATION
TOC = TOP OF CASING	MW-1	100.59
TBM = TEMPORARY BENCH MARK	MW-2	99.94
UST = UNDERGROUND STORAGE TANK	MW-3	99.91
	MW-4	95.85

- Monitoring Well
- Water Line
- Gas Line
- Overhead Power Line
- Communication Line
- Property Line (Approximate)

0 50 100

1 INCH = 50 FEET

FIGURE 3B: Site Base Map

Enviro-Test Services, Inc.	Broad River Amoco (BP)
DWG BY: JDK	4335 Broad River Road
DWG DATE: 3/29/11	Columbia, SC, Richland County
	SCDHEC ID #11946

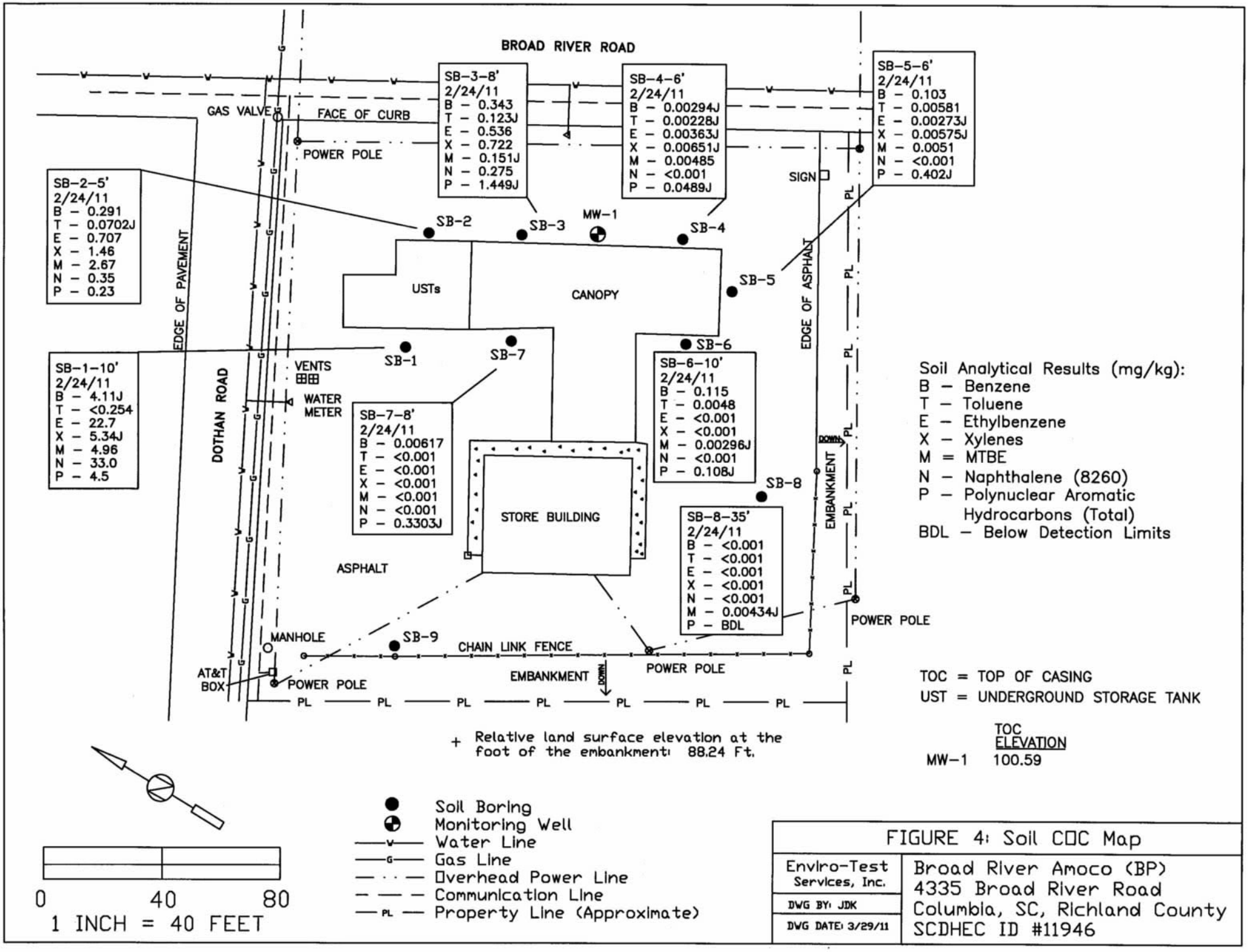


FIGURE 4: Soil COC Map

Enviro-Test Services, Inc.	Broad River Amoco (BP) 4335 Broad River Road Columbia, SC, Richland County SCDHEC ID #11946
DWG BY: JDK	
DWG DATE: 3/29/11	

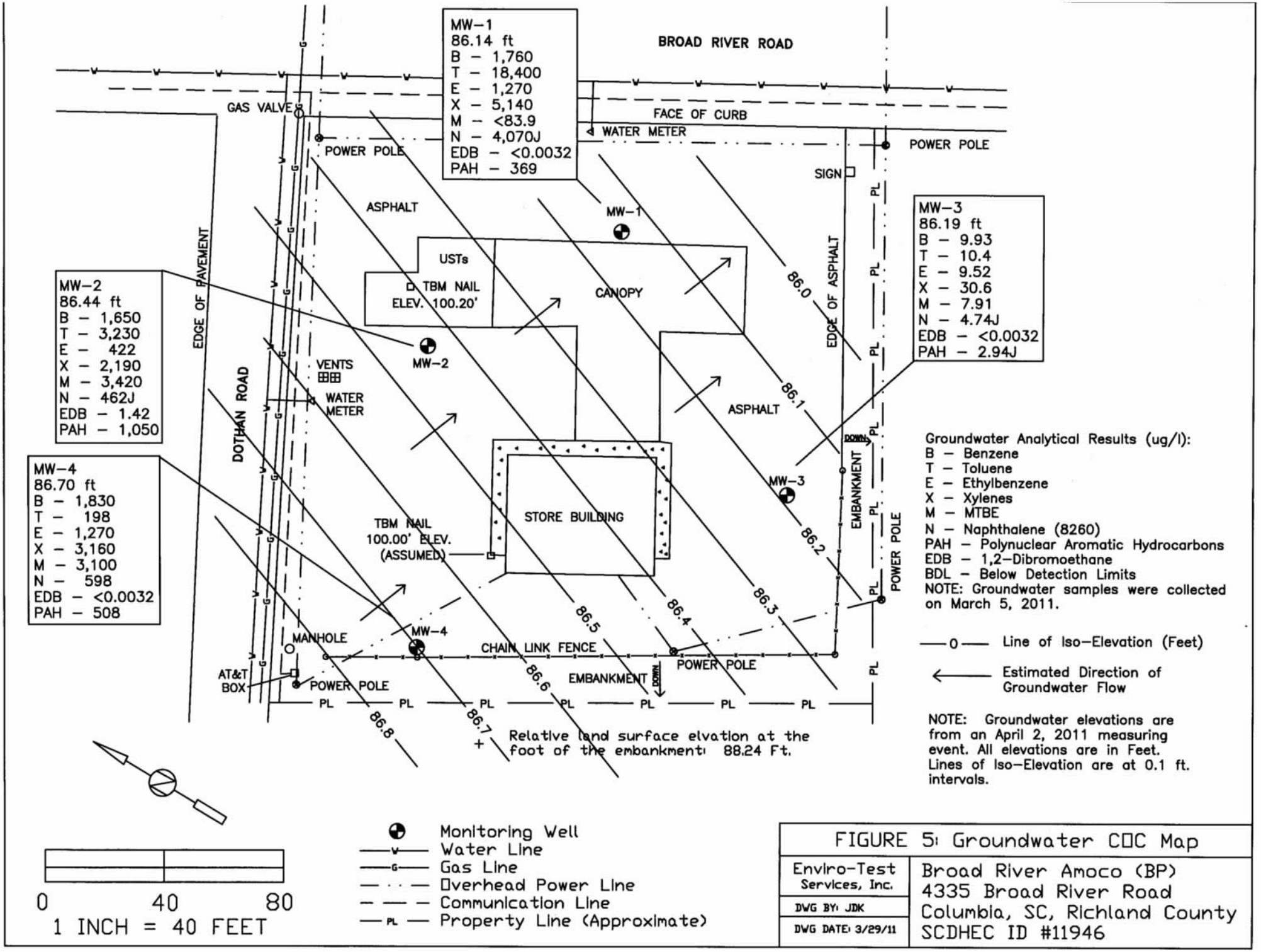


FIGURE 5: Groundwater COC Map

Enviro-Test Services, Inc.	Broad River Amoco (BP)
DWG BY: JDK	4335 Broad River Road
DWG DATE: 3/29/11	Columbia, SC, Richland County
	SCDHEC ID #11946

APPENDIX A

Soil Boring Logs

SOIL BORING LOG

Project Name: Broad River Amoco	Site #: 11946	Location: 4335 Broad River Road Columbia, SC	County: Richland
Driller: Terry L. Teate	Logged by: T. Teate	Sampled: 2-24-2011	TD: 40 Feet
Sample Method: Auger			

DEPTH (FT)	DESCRIPTION: 5 ft. Intervals	PPM	ODOR
5	Light Yellow Brown, sandy clay; moist, firm, infrequent quartz/granitic pebbles and gravel	90	Moderate
10	Yellow Brown/Gray/Orange, slightly sandy clay; moist to damp, soft	778	Strong
15	Light Pink Brown/White/Brown Yellow, slightly silty, very sandy clay; dry, soft to moderately firm	85	Moderate
20	Light Yellow Brown/Gray/White, sandy/silty clay; dry, moderately firm, infrequent fragments of very weathered, gray metavolcanic tuff (Carolina Slate Belt)	63	Moderate
25	Yellow Brown/Gray, sandy, silty clay; dry, moderately firm, frequent fragments of gray metavolcanic tuff (moderately weathered)	55	Moderate
30	Dark Yellow Brown/Gray, silty/sandy clay; moist, soft, infrequent fragments of gray metavolcanic tuff (very weathered)	21	Moderate
35	Dark Yellow Brown/Red Brown/Gray, sandy/silty clay; moist to damp, soft, infrequent fragments of very weathered gray metavolcanic tuff	12	Moderate
40	Dark Yellow Brown, sandy/silty clay; wet, soft	5	Slight
45			
50			

SOIL BORING LOG

Project Name: Broad River Amoco	Site #: 11946	Location: 4335 Broad River Road Columbia, SC	County: Richland
Driller: Terry L. Teate	Logged by: T. Teate	Sampled: 2-24-2011	TD: 40 Feet
Sample Method: Auger			

DEPTH (FT)	DESCRIPTION: 5 ft. Intervals	PPM	ODOR
5	Dark Brown Yellow/Dark Gray, sandy clay; moist, soft, infrequent quartz/granite pebbles/gravel	286	Strong
10	Brown Red/Dark Brown Yellow, slightly sandy clay; moist to damp, soft	241	Strong
15	SAME – moist, soft	161	Moderate to Strong
20	SAME	144	Moderate
25	Yellow Red Brown/Gray, sandy, silty clay; dry, firm, frequent fragments of moderately weathered gray metavolcanic tuff (Carolina Slate Belt)	42	Moderate
30	Dark Red Brown/Yellow Brown/Gray, silty/sandy clay; moist, soft, infrequent fragments of metavolcanic gray tuff (very weathered)	18	Moderate
35	Dark Yellow Brown/Red Brown/Gray, sandy/silty clay; moist to damp, soft, infrequent fragments of very weathered gray metavolcanic tuff	10	Moderate
40	Dark Yellow Brown/Gray, sandy/silty clay; wet, soft	4	Slight
45			
50			

SOIL BORING LOG

Project Name: Broad River Amoco	Site #: 11946	Location: 4335 Broad River Road Columbia, SC	County: Richland
Driller: Terry L. Teate	Logged by: T. Teate	Sampled: 2-24-2011	TD: 10 Feet
Sample Method: Auger			

DEPTH (FT)	DESCRIPTION: 2 ft. Intervals	PPM	ODOR
1			
2	Light Yellow Brown, silty, fine sand; dry, soft	0	None
3			
4	Yellow Brown/Dark Red/Gray, sandy clay; moist, moderately firm	0	None
	infrequent gray granite gravel		
5			
6	Dark Yellow Brown/Dark Red/Dark Gray, sandy clay; moist, firm	0	None
	infrequent gray granite gravel, black organic material		
7			
8	Yellow Brown/Dark Gray, sandy/silty clay; moist, firm, black organic material	2	None
9			
10	Yellow Brown/Dark Red Brown/Gray, sandy/silty clay; moist, firm	6	Slight
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

SOIL BORING LOG

Project Name: Broad River Amoco	Site #: 11946	Location: 4335 Broad River Road Columbia, SC	County: Richland
Driller: Terry L. Teate	Logged by: T. Teate	Sampled: 2-24-2011	TD: 10 Feet
Sample Method: Auger			

DEPTH (FT)	DESCRIPTION: 2 ft. Intervals	PPM	ODOR
1			
2	Light Yellow Brown, slightly silty, sandy clay; moist, soft	0	None
3			
4	Dark Yellow Brown/Dark Gray, slightly sandy/silty clay; moist, firm, black	0	None
	organic material		
5			
6	Dark Yellow Brown/Dark Gray, silty/sandy clay; moist, firm, black organic	8	Moderate
	material		
7			
8	Dark Red Brown/Gray, silty/sandy clay; moist to damp, moderately firm	4	Slight
	black organic material		
9			
10	Dark Brown Yellow/Dark Brown Red/Dark Gray, sandy clay; dry, firm	0	Slight
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

SOIL BORING LOG

Project Name: Broad River Amoco	Site #: 11946	Location: 4335 Broad River Road Columbia, SC	County: Richland
Driller: Terry L. Teate	Logged by: T. Teate	Sampled: 2-24-2011	TD: 10 Feet
Sample Method: Auger			

DEPTH (FT)	DESCRIPTION: 2 ft. Intervals	PPM	ODOR
1			
2	Brown Red Yellow, sandy clay; moist, firm	0	Slight
3			
4	Brown Red Yellow/Dark Gray, silty/sandy clay; moist, firm to soft, black	4	Slight
	organic material		
5			
6	Dark Yellow Brown/Dark Gray, silty clay; moist, soft, black organic material	22	Moderate
7			
8	Red Brown/Dark Gray, slightly sandy clay; dry, moderately firm	0	Slight
9			
10	Red Brown, slightly sandy clay; dry, moderately firm	0	Slight
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

SOIL BORING LOG

Project Name: Broad River Amoco	Site #: 11946	Location: 4335 Broad River Road Columbia, SC	County: Richland
Driller: Terry L. Teate	Logged by: T. Teate	Sampled: 2-24-2011	TD: 10 Feet
Sample Method: Auger			

DEPTH (FT)	DESCRIPTION: 2 ft. Intervals	PPM	ODOR
1			
2	Yellow Brown/Brown Red, slightly sandy clay; moist, soft	0	None
3			
4	SAME – soft to firm	0	Slight
5			
6	Yellow Brown/Gray/Brown Red, slightly sandy clay; moist, firm	8	Moderate
7			
8	Brown Yellow/Dark Gray sandy clay; damp, moderately firm, infrequent granite gravel	4	Moderate
9			
10	Brown/Dark Gray, slightly silty, sandy clay; damp, sticky, firm, black organic material	16	Moderate
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

SOIL BORING LOG

Project Name: Broad River Amoco	Site #: 11946	Location: 4335 Broad River Road Columbia, SC	County: Richland
Driller: Terry L. Teate	Logged by: T. Teate	Sampled: 2-24-2011	TD: 10 Feet
Sample Method: Auger			

DEPTH (FT)	DESCRIPTION: 2 ft. Intervals	PPM	ODOR
1			
2	Light Yellow Brown/White, sandy clay; dry, soft	0	None
3			
4	White/Light Brown Yellow/Light Red Brown, sandy clay; dry, soft	0	Slight
5			
6	White/Light Brown Yellow/Light Red Brown, sandy clay; dry, soft	2	Moderate
7			
8	Dark Brown Red/Dark Brown Yellow/Gray sandy clay; moist, moderately firm	14	Moderate
9			
10	Dark Yellow Brown/Dark Red Brown/Dark Gray, slightly silty, sandy clay; damp, moderately firm	8	Moderate
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

SOIL BORING LOG

Project Name: Broad River Amoco	Site #: 11946	Location: 4335 Broad River Road Columbia, SC	County: Richland
Driller: Terry L. Teate	Logged by: T. Teate	Sampled: 2-24-2011	TD: 40 Feet
Sample Method: Auger			

DEPTH (FT)	DESCRIPTION: 5 ft. Intervals	PPM	ODOR
5	Dark Yellow Brown, sandy clay; moist, soft	6	None
10	SAME	10	None
15	Red Brown, sandy clay; moist, soft	14	None
20	Light Red/Yellow Brown, slightly sandy, silty clay; dry, soft	0	None
25	Dark Brown Red, slightly sandy, silty clay; moist, soft	0	Slight
30	SAME – moist to damp	18	Moderate
35	Dark Brown Red/Gray, slightly sandy, silty clay; damp, soft, infrequent, very weathered gray metavolcanic tuff (Carolina Slate Belt)	12	Moderate
40	Red Gray, slightly sandy clay, wet, soft	2	Slight
45			
50			

SOIL BORING LOG

Project Name: Broad River Amoco	Site #: 11946	Location: 4335 Broad River Road Columbia, SC	County: Richland
Driller: Terry L. Teate	Logged by: T. Teate	Sampled: 2-25-2011	TD: 40 Feet
Sample Method: Auger			

DEPTH (FT)	DESCRIPTION: 5 ft. Intervals	PPM	ODOR
5	Dark Yellow Brown/Dark Gray, sandy clay; moist, soft	2	None
10	SAME – damp	9	None
15	Dark Red Brown/Dark Gray, sandy clay; damp, soft	13	Slight
20	Dark Yellow Brown/Dark Red, slightly silty, sandy clay; moist, soft	27	Slight
25	Light Pink Brown/Light Gray, silty/sandy clay; dry, soft to firm, infrequent fragments of weathered gray metavolcanic tuff (Carolina Slate Belt)	4	None
30	Light Gray/Light Yellow Brown, sandy/silty clay; dry, soft, infrequent fragments of very weathered, gray metavolcanic tuff	7	Slight
35	SAME – infrequent fragments of mod. weathered, gray metavolcanic tuff	3	Slight
40	Gray/Light Yellow Brown, slightly sandy clay; wet, soft, frequent fragments of weathered, gray metavolcanic tuff	185	Strong
45			
50			

SOIL BORING LOG

Project Name: Broad River Amoco (BP)	Site #: 11946	Location: 4335 Broad River Road Columbia, SC	County: Richland
Driller: Terry L. Teate	Logged by: T. Teate	Sampled: 2-25-2011	TD: 28 Feet
Sample Method: None			

DEPTH (FT)	DESCRIPTION:	PPM	ODOR
5			
10			
15			
20			
25			
	Direct Push from 0 to 28 ft. for installation of Monitoring Well MW-2		
30	(No soil samples)		
35			
40			
45			
50			
55			
60			
65			
70			
75			
80			
85			
90			
100			
105			

SOIL BORING LOG

Project Name: Broad River Amoco (BP)	Site #: 11946	Location: 4335 Broad River Road Columbia, SC	County: Richland
Driller: Terry L. Teate	Logged by: T. Teate	Sampled: 2-25-2011	TD: 31 Feet
Sample Method: None			

DEPTH (FT)	DESCRIPTION:	PPM	ODOR
5			
10			
15			
20			
25			
30	Direct Push from 0 to 31 ft. for installation of Monitoring Well MW-3		
	(No soil samples)		
35			
40			
45			
50			
55			
60			
65			
70			
75			
80			
85			
90			
100			
105			

SOIL BORING LOG

Project Name: Broad River Amoco (BP)	Site #: 11946	Location: 4335 Broad River Road Columbia, SC	County: Richland
Driller: Terry L. Teate	Logged by: T. Teate	Sampled: 2-25-2011	TD: 25 Feet
Sample Method: None			

DEPTH (FT)	DESCRIPTION:	PPM	ODOR
5			
10			
15			
20			
25	Direct Push from 0 to 25 ft for installation of Monitoring Well MW-4		
	(No soil samples)		
30			
35			
40			
45			
50			
55			
60			
65			
70			
75			
80			
85			
90			
100			
105			

APPENDIX B

Monitoring Well Construction Records

APPENDIX B

Monitor Well Construction Records

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: SCDHEC (last) (first)
Address: 2600 Bull Street
City: Columbia State: SC Zip: 29201-0000
Telephone: Work: 898-3432 Home:

2. LOCATION OF WELL: **COUNTY:** Richland
Name: Broad River Amoco (BP) Permit # 11946
Street Address: 4335 Broad River Road
City: Columbia Zip: 29210-4009
Latitude: N 34* 03 .931' Longitude: W 081* 07 .008'

3. PUBLIC SYSTEM NAME: Monitor Well **PUBLIC SYSTEM NUMBER:** MW-2

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from NA ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Borning Logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-24111 UST Permit # 11946

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 28 ft. Date Started: 2-24-11 Date Completed: 2-30-11

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 inch
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to 0 ft. depth
_____ in. to 18 ft. depth
Height: Above /Below Surface 0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2 inch
Slot/Gauge: 0.010 Length: 10 ft.
Set Between: 18 ft. and 28 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☑ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 14.50 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
NA ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☑ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 28 ft. to 15 ft.
Effective size No. 2 sand Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 15 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: 4 ft. N direction
Type Petroleum
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: NA Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Terry L. Teate **CERT. NO.:** 1242
Address: (Print) Level: A B C D (circle one)
P.O Box 2237 Irmo, SC 29063
Telephone No.: 803 413-4936 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Terry L. Teate (Well Driller) Date: 04/10/11

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003)

COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: SCDHEC (last) (first)
Address: 2600 Bull Street
City: Columbia State: SC Zip: 29201-0000
Telephone: Work: 898-3432 Home:

2. LOCATION OF WELL: **COUNTY:** Richland
Name: Broad River Amoco (BP) Permit # 11946
Street Address: 4335 Broad River Road
City: Columbia Zip: 29210-4009
Latitude: N 34*03 .907' Longitude: W 081* 07 .006'

3. PUBLIC SYSTEM NAME: Monitor Well **PUBLIC SYSTEM NUMBER:** MW-3

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from NA ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Borning Logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-24111 UST Permit # 11946

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 2-24-11
30 ft. Date Completed: 2-30-11

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 inch
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to 0 ft. depth
_____ in. to 20 ft. depth
Height: Above /Below Surface 0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2 inch
Slot/Gauge: 0.010 Length: 10 ft.
Set Between: 20 ft. and 30 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☑ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 15.32 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
NA ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☑ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 30 ft. to 18 ft.
Effective size No. 2 sand Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 18 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: 100 ft. SE direction
Type Petroleum
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: NA Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Terry L. Teate **CERT. NO.:** 1242
Address: (Print) Level: A B C D (circle one)
P.O Box 2237 Irmo, SC 29063
Telephone No.: 803 413-4936 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Terry L. Teate Well Driller Date: 04/10/11

If D Level Driller, provide supervising driller's name:

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: SCDHEC (last) (first)
Address: 2600 Bull Street
City: Columbia State: SC Zip: 29201-0000
Telephone: Work: 898-3432 Home:

2. LOCATION OF WELL: **COUNTY:** Richland
Name: Broad River Amoco (BP) Permit # 11946
Street Address: 4335 Broad River Road
City: Columbia Zip: 29210-4009
Latitude: N 34*03 .923' Longitude: W 081* 07 .028'

3. PUBLIC SYSTEM NAME: Monitor Well **PUBLIC SYSTEM NUMBER:** MW-4

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from NA ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Borning Logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-24111 UST Permit # 11946

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 2-24-11
25 ft. Date Completed: 2-30-11

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 inch
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to 0 ft. depth
_____ in. to 15 ft. depth
Height: Above /Below Surface 0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2 inch
Slot/Gauge: 0.010 Length: 10 ft.
Set Between: 15 ft. and 25 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☑ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 9.84 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
NA ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☑ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 25 ft. to 13 ft.
Effective size No. 2 sand Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 13 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: 200 ft. S direction
Type Petroleum
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: NA Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Terry L. Teate **CERT. NO.:** 1242
Address: (Print) Level: A B C D (circle one)
P.O Box 2237 Irmo, SC 29063
Telephone No.: 803 413-4936 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Terry L. Teate Well Driller Date: 04/10/11

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

APPENDIX C

Laboratory Analytical Data Sheets and Chain of Custody

ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT
Enviro-Test Services
P.O. Box 2237
Irmo, SC 29063

ATTENTION
Terry Teate

PROJECT ID
Broad River BP

LABORATORY REPORT NUMBER
211030816

DATE
03/14/2011

Primary Data Review By

Curtis Ekker
Data Validation Manager, GCAL

Secondary Data Review By

Ashley B. Amick
Project Manager, Access Analytical, Inc.
aamick@accessanalyticalinc.com

PLEASE NOTE:

- **Unless otherwise noted, all analysis on this report performed at Gulf Coast Analytical Labs (GCAL), 7979 GSRI Avenue, Baton Rouge, LA 70820.**
- **GCAL is SCDHEC certified laboratory # 73006, NCDENR certified lab # 618, GA certified lab # LA-01955, NELAP certified laboratory # 01955**
- Local support services for this project are provided by Access Analytical, Inc.. Access Analytical is a representative of GCAL serving clients in the SC/NC/GA areas. All questions regarding this report should be directed to your local Access Analytical representative at 803.781.4243 or toll free at 888.315.4243.

NELAP CERTIFICATE NUMBER 01955
DOD ELAP CERTIFICATE NUMBER ADE - 1482

ANALYTICAL RESULTS

PERFORMED BY

GULF COAST ANALYTICAL LABORATORIES, INC.
7979 GSRI Avenue
Baton Rouge, LA 70820

Report Date 03/14/2011

GCAL Report 211030816

Deliver To	Enviro-Test Services P.O. Box 2237 Irmo, SC 29063 803-732-5770
Attn	Terry Teate

Project Broad River BP

CASE NARRATIVE

Client: Enviro-Test Services **Report:** 211030816

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the sample cross-reference page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

VOLATILES MASS SPECTROMETRY

In the SW-846 8260B analysis, samples 21103081602 (MW-2), 21103081604 (MW-4) and 21103081601 (MW-1) had to be diluted to bracket the concentration of target compounds within the calibration range of the instrument.

VOLATILES GAS CHROMATOGRAPHY

In the RSK 175 analysis, samples 21103081601 (MW-1), 21103081603 (MW-3), 21103081604 (MW-4) and 21103081602 (MW-2) had to be diluted to bracket the concentrations within the calibration range of the instrument. The recovery for the surrogate is reported as diluted out for samples 21103081601 (MW-1), 21103081603 (MW-3), 21103081604 (MW-4) and 21103081602 (MW-2).

CONVENTIONALS

In the EPA 300.0 analysis, samples 21103081602 (MW-2), 21103081603 (MW-3) and 21103081604 (MW-4) had to be diluted in order to bracket the concentration within the calibration range of the instrument.

Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

Common Abbreviations Utilized in this Report

ND	Indicates the result was Not Detected at the specified RDL
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
RDL	Reporting Detection Limit
00:00	Reported as a time equivalent to 12:00 AM

Reporting Flags Utilized in this Report

J	Indicates an estimated value
U	Indicates the compound was analyzed for but not detected
B	(ORGANICS) Indicates the analyte was detected in the associated Method Blank
B	(INORGANICS) Indicates the result is between the RDL and MDL

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with the NELAC standard and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.

IntegriSign

Robyn Migues
Technical Director
GCAL REPORT 211030816

THIS REPORT CONTAINS 29 PAGES.

Report Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103081601	MW-1	Water	03/05/2011 13:40	03/08/2011 08:55
21103081602	MW-2	Water	03/05/2011 14:15	03/08/2011 08:55
21103081603	MW-3	Water	03/05/2011 12:10	03/08/2011 08:55
21103081604	MW-4	Water	03/05/2011 12:58	03/08/2011 08:55

Summary of Compounds Detected

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103081601	MW-1	Water	03/05/2011 13:40	03/08/2011 08:55

SW-846 6010B

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	0.018	0.015	0.0014	mg/L

EPA 300.0 Inorganic Anions

CAS#	Parameter	Result	RDL	MDL	Units
14808-79-8	Sulfate	2.41	0.200	0.079	mg/L

SW-846 8260B

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	1760	1000	49.0	ug/L
100-41-4	Ethylbenzene	1270	1000	180	ug/L
91-20-3	Naphthalene	4070J	5000	175	ug/L
108-88-3	Toluene	18400	1000	77.6	ug/L
1330-20-7	Xylene (total)	5140	3000	123	ug/L

EPA 353.2 N+N

CAS#	Parameter	Result	RDL	MDL	Units
C-005	Nitrate/Nitrite	0.499	0.010	0.003	mg/L

RSK 175

CAS#	Parameter	Result	RDL	MDL	Units
74-82-8	Methane	1100	250	18.1	ug/L

SW-846 8270D

CAS#	Parameter	Result	RDL	MDL	Units
83-32-9	Acenaphthene	0.418J	10.1	0.271	ug/L
206-44-0	Fluoranthene	0.311J	10.1	0.270	ug/L
86-73-7	Fluorene	0.455J	10.1	0.291	ug/L
85-01-8	Phenanthrene	1.26J	10.1	0.307	ug/L

SW-846 8270D

CAS#	Parameter	Result	RDL	MDL	Units
91-20-3	Naphthalene	369	20.2	0.592	ug/L

Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103081602	MW-2	Water	03/05/2011 14:15	03/08/2011 08:55

SW-846 6010B

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	0.014B	0.015	0.0014	mg/L

SW-846 8270D

CAS#	Parameter	Result	RDL	MDL	Units
120-12-7	Anthracene	0.672J	10.1	0.319	ug/L
206-44-0	Fluoranthene	0.931J	10.1	0.270	ug/L
86-73-7	Fluorene	2.57J	10.1	0.291	ug/L
85-01-8	Phenanthrene	4.77J	10.1	0.307	ug/L
129-00-0	Pyrene	0.750J	10.1	0.491	ug/L

SW-846 8270D

CAS#	Parameter	Result	RDL	MDL	Units
91-20-3	Naphthalene	1050	101	2.96	ug/L

EPA 300.0 Inorganic Anions

CAS#	Parameter	Result	RDL	MDL	Units
14808-79-8	Sulfate	20.8	1.00	0.395	mg/L

SW-846 8011

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	1.42	0.010	0.00320	ug/L

RSK 175

CAS#	Parameter	Result	RDL	MDL	Units
74-82-8	Methane	441	250	18.1	ug/L

EPA 353.2 N+N

CAS#	Parameter	Result	RDL	MDL	Units
C-005	Nitrate/Nitrite	0.015	0.010	0.003	mg/L

SW-846 8260B

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	1650	100	4.90	ug/L
100-41-4	Ethylbenzene	422	100	18.0	ug/L
91-20-3	Naphthalene	462J	500	17.5	ug/L
108-88-3	Toluene	3230	100	7.76	ug/L
1330-20-7	Xylene (total)	2190	300	12.3	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	3420	100	8.39	ug/L

Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103081603	MW-3	Water	03/05/2011 12:10	03/08/2011 08:55

SW-846 6010B

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	0.010B	0.015	0.0014	mg/L

SW-846 8270D

CAS#	Parameter	Result	RDL	MDL	Units
83-32-9	Acenaphthene	0.671J	10.1	0.271	ug/L
120-12-7	Anthracene	0.362J	10.1	0.319	ug/L
206-44-0	Fluoranthene	0.828J	10.1	0.270	ug/L
86-73-7	Fluorene	1.08J	10.1	0.291	ug/L
91-20-3	Naphthalene	2.94J	10.1	0.296	ug/L
85-01-8	Phenanthrene	3.98J	10.1	0.307	ug/L

EPA 353.2 N+N

CAS#	Parameter	Result	RDL	MDL	Units
C-005	Nitrate/Nitrite	0.148	0.010	0.003	mg/L

EPA 300.0 Inorganic Anions

CAS#	Parameter	Result	RDL	MDL	Units
14808-79-8	Sulfate	111	4.00	1.58	mg/L

SW-846 8260B

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	9.93	1.00	0.049	ug/L
100-41-4	Ethylbenzene	9.52	1.00	0.180	ug/L
91-20-3	Naphthalene	4.74J	5.00	0.175	ug/L
108-88-3	Toluene	10.4	1.00	0.078	ug/L
1330-20-7	Xylene (total)	30.6	3.00	0.123	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	7.91	1.00	0.084	ug/L

RSK 175

CAS#	Parameter	Result	RDL	MDL	Units
74-82-8	Methane	554	250	18.1	ug/L

Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103081604	MW-4	Water	03/05/2011 12:58	03/08/2011 08:55

EPA 353.2 N+N

CAS#	Parameter	Result	RDL	MDL	Units
C-005	Nitrate/Nitrite	0.016	0.010	0.003	mg/L

SW-846 8260B

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	1830	100	4.90	ug/L
100-41-4	Ethylbenzene	1270	100	18.0	ug/L
91-20-3	Naphthalene	598	500	17.5	ug/L
108-88-3	Toluene	198	100	7.76	ug/L
1330-20-7	Xylene (total)	3160	300	12.3	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	3100	100	8.39	ug/L

SW-846 6010B

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	0.013B	0.015	0.0014	mg/L

RSK 175

CAS#	Parameter	Result	RDL	MDL	Units
74-82-8	Methane	1880	250	18.1	ug/L

SW-846 8270D

CAS#	Parameter	Result	RDL	MDL	Units
83-32-9	Acenaphthene	0.662J	10.1	0.271	ug/L
206-44-0	Fluoranthene	0.581J	10.1	0.270	ug/L
86-73-7	Fluorene	1.04J	10.1	0.291	ug/L
85-01-8	Phenanthrene	1.66J	10.1	0.307	ug/L

SW-846 8270D

CAS#	Parameter	Result	RDL	MDL	Units
91-20-3	Naphthalene	508	50.5	1.48	ug/L

EPA 300.0 Inorganic Anions

CAS#	Parameter	Result	RDL	MDL	Units
14808-79-8	Sulfate	22.0	1.00	0.395	mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103081601	MW-1	Water	03/05/2011 13:40	03/08/2011 08:55

SW-846 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1000	03/09/2011 16:34	BKR	452095

CAS#	Parameter	Result	RDL	MDL	Units
107-06-2	1,2-Dichloroethane	121U	1000	121	ug/L
71-43-2	**Benzene**	**1760**	**1000**	**49.0**	**ug/L**
100-41-4	**Ethylbenzene**	**1270**	**1000**	**180**	**ug/L**
91-20-3	**Naphthalene**	**4070J**	**5000**	**175**	**ug/L**
108-88-3	**Toluene**	**18400**	**1000**	**77.6**	**ug/L**
1330-20-7	**Xylene (total)**	**5140**	**3000**	**123**	**ug/L**
1634-04-4	tert-Butyl methyl ether (MTBE)	83.9U	1000	83.9	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50000	49600	ug/L	99	78 - 130
1868-53-7	Dibromofluoromethane	50000	51100	ug/L	102	77 - 127
2037-26-5	Toluene d8	50000	49600	ug/L	99	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50000	51700	ug/L	103	71 - 127

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/09/2011 09:30	452072	3510C	1	03/09/2011 17:21	RLY	452104

CAS#	Parameter	Result	RDL	MDL	Units
83-32-9	**Acenaphthene**	**0.418J**	**10.1**	**0.271**	**ug/L**
208-96-8	Acenaphthylene	0.306U	10.1	0.306	ug/L
120-12-7	Anthracene	0.319U	10.1	0.319	ug/L
56-55-3	Benzo(a)anthracene	0.319U	10.1	0.319	ug/L
50-32-8	Benzo(a)pyrene	0.126U	10.1	0.126	ug/L
205-99-2	Benzo(b)fluoranthene	0.219U	10.1	0.219	ug/L
191-24-2	Benzo(g,h,i)perylene	0.217U	10.1	0.217	ug/L
207-08-9	Benzo(k)fluoranthene	0.238U	10.1	0.238	ug/L
218-01-9	Chrysene	0.437U	10.1	0.437	ug/L
53-70-3	Dibenz(a,h)anthracene	0.219U	10.1	0.219	ug/L
206-44-0	**Fluoranthene**	**0.311J**	**10.1**	**0.270**	**ug/L**
86-73-7	**Fluorene**	**0.455J**	**10.1**	**0.291**	**ug/L**
193-39-5	Indeno(1,2,3-cd)pyrene	0.159U	10.1	0.159	ug/L
85-01-8	**Phenanthrene**	**1.26J**	**10.1**	**0.307**	**ug/L**
129-00-0	Pyrene	0.491U	10.1	0.491	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	50.5	43	ug/L	85	52 - 120
321-60-8	2-Fluorobiphenyl	50.5	41.8	ug/L	83	16 - 128
1718-51-0	Terphenyl-d14	50.5	36.4	ug/L	72	43 - 138

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/09/2011 09:30	452072	3510C	2	03/10/2011 09:49	RLY	452205

CAS#	Parameter	Result	RDL	MDL	Units
91-20-3	**Naphthalene**	**369**	**20.2**	**0.592**	**ug/L**

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103081601	MW-1	Water	03/05/2011 13:40	03/08/2011 08:55

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/09/2011 09:30	452072	3510C	2	03/10/2011 09:49	RLY	452205

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	50.5	45.7	ug/L	90	52 - 120
321-60-8	2-Fluorobiphenyl	50.5	43	ug/L	85	16 - 128
1718-51-0	Terphenyl-d14	50.5	42	ug/L	83	43 - 138

RSK 175

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			50	03/10/2011 14:24	JAR	452125

CAS#	Parameter	Result	RDL	MDL	Units
74-82-8	**Methane**	**1100**	**250**	**18.1**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.5	Diluted Out	ug/L	0*	40 - 143

SW-846 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/10/2011 16:00	452062	SW-846 8011	1	03/11/2011 10:48	TLS	452288

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00320U	0.010	0.00320	ug/L

SW-846 6010B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/08/2011 13:15	452030	SW-846 3010A	1	03/11/2011 14:23	AJW	452270

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	**Lead**	**0.018**	**0.015**	**0.0014**	**mg/L**

EPA 353.2 N+N

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/10/2011 10:25	AEL	452163

CAS#	Parameter	Result	RDL	MDL	Units
C-005	**Nitrate/Nitrite**	**0.499**	**0.010**	**0.003**	**mg/L**

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103081601	MW-1	Water	03/05/2011 13:40	03/08/2011 08:55

EPA 300.0 Inorganic Anions

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/10/2011 17:22	AEL	452211

CAS#	Parameter	Result	RDL	MDL	Units
14808-79-8	Sulfate	2.41	0.200	0.079	mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103081602	MW-2	Water	03/05/2011 14:15	03/08/2011 08:55

SW-846 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			100	03/09/2011 15:46	BKR	452095

CAS#	Parameter	Result	RDL	MDL	Units
107-06-2	1,2-Dichloroethane	12.1U	100	12.1	ug/L
71-43-2	**Benzene**	**1650**	**100**	**4.90**	**ug/L**
100-41-4	**Ethylbenzene**	**422**	**100**	**18.0**	**ug/L**
91-20-3	**Naphthalene**	**462J**	**500**	**17.5**	**ug/L**
108-88-3	**Toluene**	**3230**	**100**	**7.76**	**ug/L**
1330-20-7	**Xylene (total)**	**2190**	**300**	**12.3**	**ug/L**
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**3420**	**100**	**8.39**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	5000	5010	ug/L	100	78 - 130
1868-53-7	Dibromofluoromethane	5000	5140	ug/L	103	77 - 127
2037-26-5	Toluene d8	5000	5050	ug/L	101	76 - 134
17060-07-0	1,2-Dichloroethane-d4	5000	5300	ug/L	106	71 - 127

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/09/2011 09:30	452072	3510C	1	03/09/2011 17:38	RLY	452104

CAS#	Parameter	Result	RDL	MDL	Units
83-32-9	Acenaphthene	0.271U	10.1	0.271	ug/L
208-96-8	Acenaphthylene	0.306U	10.1	0.306	ug/L
120-12-7	**Anthracene**	**0.672J**	**10.1**	**0.319**	**ug/L**
56-55-3	Benzo(a)anthracene	0.319U	10.1	0.319	ug/L
50-32-8	Benzo(a)pyrene	0.126U	10.1	0.126	ug/L
205-99-2	Benzo(b)fluoranthene	0.219U	10.1	0.219	ug/L
191-24-2	Benzo(g,h,i)perylene	0.217U	10.1	0.217	ug/L
207-08-9	Benzo(k)fluoranthene	0.238U	10.1	0.238	ug/L
218-01-9	Chrysene	0.437U	10.1	0.437	ug/L
53-70-3	Dibenz(a,h)anthracene	0.219U	10.1	0.219	ug/L
206-44-0	**Fluoranthene**	**0.931J**	**10.1**	**0.270**	**ug/L**
86-73-7	**Fluorene**	**2.57J**	**10.1**	**0.291**	**ug/L**
193-39-5	Indeno(1,2,3-cd)pyrene	0.159U	10.1	0.159	ug/L
85-01-8	**Phenanthrene**	**4.77J**	**10.1**	**0.307**	**ug/L**
129-00-0	**Pyrene**	**0.750J**	**10.1**	**0.491**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	50.5	46.9	ug/L	93	52 - 120
321-60-8	2-Fluorobiphenyl	50.5	41	ug/L	81	16 - 128
1718-51-0	Terphenyl-d14	50.5	31.9	ug/L	63	43 - 138

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/09/2011 09:30	452072	3510C	10	03/10/2011 10:06	RLY	452205

CAS#	Parameter	Result	RDL	MDL	Units
91-20-3	**Naphthalene**	**1050**	**101**	**2.96**	**ug/L**

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103081602	MW-2	Water	03/05/2011 14:15	03/08/2011 08:55

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/09/2011 09:30	452072	3510C	10	03/10/2011 10:06	RLY	452205

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	50.5	Diluted Out	ug/L	0*	52 - 120
321-60-8	2-Fluorobiphenyl	50.5	Diluted Out	ug/L	0*	16 - 128
1718-51-0	Terphenyl-d14	50.5	Diluted Out	ug/L	0*	43 - 138
4165-62-2	Phenol-d5	101	Diluted Out	ug/L	0*	10 - 120
367-12-4	2-Fluorophenol	101	Diluted Out	ug/L	0*	10 - 120
118-79-6	2,4,6-Tribromophenol	101	Diluted Out	ug/L	0*	52 - 121

RSK 175

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			50	03/10/2011 14:36	JAR	452125

CAS#	Parameter	Result	RDL	MDL	Units
74-82-8	Methane	441	250	18.1	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.5	Diluted Out	ug/L	0*	40 - 143

SW-846 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/10/2011 16:00	452062	SW-846 8011	1	03/11/2011 11:10	TLS	452288

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	1.42	0.010	0.00320	ug/L

SW-846 6010B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/08/2011 13:15	452030	SW-846 3010A	1	03/11/2011 15:01	AJW	452270

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	0.014B	0.015	0.0014	mg/L

EPA 353.2 N+N

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/10/2011 10:29	AEL	452163

CAS#	Parameter	Result	RDL	MDL	Units
C-005	Nitrate/Nitrite	0.015	0.010	0.003	mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103081602	MW-2	Water	03/05/2011 14:15	03/08/2011 08:55

EPA 300.0 Inorganic Anions

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			5	03/11/2011 09:33	AEL	452211

CAS#	Parameter	Result	RDL	MDL	Units
14808-79-8	Sulfate	20.8	1.00	0.395	mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103081603	MW-3	Water	03/05/2011 12:10	03/08/2011 08:55

SW-846 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/12/2011 17:28	RJU	452323

CAS#	Parameter	Result	RDL	MDL	Units
107-06-2	1,2-Dichloroethane	0.121U	1.00	0.121	ug/L
71-43-2	**Benzene**	**9.93**	**1.00**	**0.049**	**ug/L**
100-41-4	**Ethylbenzene**	**9.52**	**1.00**	**0.180**	**ug/L**
91-20-3	**Naphthalene**	**4.74J**	**5.00**	**0.175**	**ug/L**
108-88-3	**Toluene**	**10.4**	**1.00**	**0.078**	**ug/L**
1330-20-7	**Xylene (total)**	**30.6**	**3.00**	**0.123**	**ug/L**
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**7.91**	**1.00**	**0.084**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	50.7	ug/L	101	78 - 130
1868-53-7	Dibromofluoromethane	50	51.6	ug/L	103	77 - 127
2037-26-5	Toluene d8	50	48.5	ug/L	97	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.8	ug/L	98	71 - 127

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/09/2011 09:30	452072	3510C	1	03/10/2011 09:33	RLY	452205

CAS#	Parameter	Result	RDL	MDL	Units
83-32-9	**Acenaphthene**	**0.671J**	**10.1**	**0.271**	**ug/L**
208-96-8	Acenaphthylene	0.306U	10.1	0.306	ug/L
120-12-7	**Anthracene**	**0.362J**	**10.1**	**0.319**	**ug/L**
56-55-3	Benzo(a)anthracene	0.319U	10.1	0.319	ug/L
50-32-8	Benzo(a)pyrene	0.126U	10.1	0.126	ug/L
205-99-2	Benzo(b)fluoranthene	0.219U	10.1	0.219	ug/L
191-24-2	Benzo(g,h,i)perylene	0.217U	10.1	0.217	ug/L
207-08-9	Benzo(k)fluoranthene	0.238U	10.1	0.238	ug/L
218-01-9	Chrysene	0.437U	10.1	0.437	ug/L
53-70-3	Dibenz(a,h)anthracene	0.219U	10.1	0.219	ug/L
206-44-0	**Fluoranthene**	**0.828J**	**10.1**	**0.270**	**ug/L**
86-73-7	**Fluorene**	**1.08J**	**10.1**	**0.291**	**ug/L**
193-39-5	Indeno(1,2,3-cd)pyrene	0.159U	10.1	0.159	ug/L
91-20-3	**Naphthalene**	**2.94J**	**10.1**	**0.296**	**ug/L**
85-01-8	**Phenanthrene**	**3.98J**	**10.1**	**0.307**	**ug/L**
129-00-0	Pyrene	0.491U	10.1	0.491	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	50.5	43	ug/L	85	52 - 120
321-60-8	2-Fluorobiphenyl	50.5	41.9	ug/L	83	16 - 128
1718-51-0	Terphenyl-d14	50.5	39.4	ug/L	78	43 - 138

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103081603	MW-3	Water	03/05/2011 12:10	03/08/2011 08:55

RSK 175

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			50	03/10/2011 14:43	JAR	452125

CAS#	Parameter	Result	RDL	MDL	Units
74-82-8	Methane	554	250	18.1	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.5	Diluted Out	ug/L	0*	40 - 143

SW-846 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/10/2011 16:00	452062	SW-846 8011	1	03/11/2011 11:32	TLS	452288

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00320U	0.010	0.00320	ug/L

SW-846 6010B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/08/2011 13:15	452030	SW-846 3010A	1	03/11/2011 15:07	AJW	452270

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	0.010B	0.015	0.0014	mg/L

EPA 353.2 N+N

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/10/2011 10:30	AEL	452163

CAS#	Parameter	Result	RDL	MDL	Units
C-005	Nitrate/Nitrite	0.148	0.010	0.003	mg/L

EPA 300.0 Inorganic Anions

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			20	03/11/2011 09:51	AEL	452211

CAS#	Parameter	Result	RDL	MDL	Units
14808-79-8	Sulfate	111	4.00	1.58	mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103081604	**MW-4**	Water	03/05/2011 12:58	03/08/2011 08:55

SW-846 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			100	03/09/2011 16:10	BKR	452095

CAS#	Parameter	Result	RDL	MDL	Units
107-06-2	1,2-Dichloroethane	12.1U	100	12.1	ug/L
71-43-2	**Benzene**	**1830**	**100**	**4.90**	**ug/L**
100-41-4	**Ethylbenzene**	**1270**	**100**	**18.0**	**ug/L**
91-20-3	**Naphthalene**	**598**	**500**	**17.5**	**ug/L**
108-88-3	**Toluene**	**198**	**100**	**7.76**	**ug/L**
1330-20-7	**Xylene (total)**	**3160**	**300**	**12.3**	**ug/L**
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**3100**	**100**	**8.39**	**ug/L**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	5000	5000	ug/L	100	78 - 130
1868-53-7	Dibromofluoromethane	5000	5090	ug/L	102	77 - 127
2037-26-5	Toluene d8	5000	5010	ug/L	100	76 - 134
17060-07-0	1,2-Dichloroethane-d4	5000	5270	ug/L	105	71 - 127

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/09/2011 09:30	452072	3510C	1	03/09/2011 18:11	RLY	452104

CAS#	Parameter	Result	RDL	MDL	Units
83-32-9	**Acenaphthene**	**0.662J**	**10.1**	**0.271**	**ug/L**
208-96-8	Acenaphthylene	0.306U	10.1	0.306	ug/L
120-12-7	Anthracene	0.319U	10.1	0.319	ug/L
56-55-3	Benzo(a)anthracene	0.319U	10.1	0.319	ug/L
50-32-8	Benzo(a)pyrene	0.126U	10.1	0.126	ug/L
205-99-2	Benzo(b)fluoranthene	0.219U	10.1	0.219	ug/L
191-24-2	Benzo(g,h,i)perylene	0.217U	10.1	0.217	ug/L
207-08-9	Benzo(k)fluoranthene	0.238U	10.1	0.238	ug/L
218-01-9	Chrysene	0.437U	10.1	0.437	ug/L
53-70-3	Dibenz(a,h)anthracene	0.219U	10.1	0.219	ug/L
206-44-0	**Fluoranthene**	**0.581J**	**10.1**	**0.270**	**ug/L**
86-73-7	**Fluorene**	**1.04J**	**10.1**	**0.291**	**ug/L**
193-39-5	Indeno(1,2,3-cd)pyrene	0.159U	10.1	0.159	ug/L
85-01-8	**Phenanthrene**	**1.66J**	**10.1**	**0.307**	**ug/L**
129-00-0	Pyrene	0.491U	10.1	0.491	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	50.5	41.6	ug/L	82	52 - 120
321-60-8	2-Fluorobiphenyl	50.5	41.5	ug/L	82	16 - 128
1718-51-0	Terphenyl-d14	50.5	38.1	ug/L	75	43 - 138

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/09/2011 09:30	452072	3510C	5	03/10/2011 10:22	RLY	452205

CAS#	Parameter	Result	RDL	MDL	Units
91-20-3	**Naphthalene**	**508**	**50.5**	**1.48**	**ug/L**

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103081604	MW-4	Water	03/05/2011 12:58	03/08/2011 08:55

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/09/2011 09:30	452072	3510C	5	03/10/2011 10:22	RLY	452205

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	50.5	39.8	ug/L	79	52 - 120
321-60-8	2-Fluorobiphenyl	50.5	38.8	ug/L	77	16 - 128
1718-51-0	Terphenyl-d14	50.5	38.3	ug/L	76	43 - 138

RSK 175

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			50	03/10/2011 14:49	JAR	452125

CAS#	Parameter	Result	RDL	MDL	Units
74-82-8	Methane	1880	250	18.1	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.5	Diluted Out	ug/L	0*	40 - 143

SW-846 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/10/2011 16:00	452062	SW-846 8011	1	03/11/2011 11:55	TLS	452288

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00320U	0.010	0.00320	ug/L

SW-846 6010B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/08/2011 13:15	452030	SW-846 3010A	1	03/11/2011 15:14	AJW	452270

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	0.013B	0.015	0.0014	mg/L

EPA 353.2 N+N

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/10/2011 10:32	AEL	452163

CAS#	Parameter	Result	RDL	MDL	Units
C-005	Nitrate/Nitrite	0.016	0.010	0.003	mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103081604	**MW-4**	Water	03/05/2011 12:58	03/08/2011 08:55

EPA 300.0 Inorganic Anions

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			5	03/11/2011 10:08	AEL	452211

CAS#	Parameter	Result	RDL	MDL	Units
14808-79-8	**Sulfate**	**22.0**	**1.00**	**0.395**	**mg/L**

GC/MS Volatiles Quality Control Summary

Analytical Batch	452095	Client ID	MB452095			LCS452095			LCSD452095			
Prep Batch	N/A	GCAL ID	927485			927486			927487			
		Sample Type	Method Blank			LCS			LCSD			
		Analytical Date	03/09/2011 09:21			03/09/2011 07:52			03/09/2011 08:35			
		Matrix	Water			Water			Water			
SW-846 8260B		Units / Result	ug/L / RDL	Spike Added	Result	% R	Control Limits % R	Result	% R	RPD	RPD Limit
107-06-2	1,2-Dichloroethane	0.121U	0.121	50.0	54.0	108	71 - 129	53.4	107	1	30
100-41-4	Ethylbenzene	0.180U	0.180	50.0	51.0	102	74 - 126	51.2	102	0.4	30
1634-04-4	tert-Butyl methyl ether (MTBE)	0.084U	0.084	50.0	53.9	108	71 - 125	51.9	104	4	30
1330-20-7	Xylene (total)	0.123U	0.123	150	158	105	74 - 127	155	103	2	30
91-20-3	Naphthalene	0.175U	0.175	50.0	52.0	104	57 - 138	51.2	102	2	35
71-43-2	Benzene	0.049U	0.049	50.0	50.9	102	70 - 129	50.9	102	0	20
108-88-3	Toluene	0.078U	0.078	50.0	50.8	102	72 - 120	49.6	99	2	20
Surrogate											
460-00-4	4-Bromofluorobenzene	50.7	101	50	51.8	104	78 - 130	50.8	102		
1868-53-7	Dibromofluoromethane	49.3	99	50	51.2	102	77 - 127	51.1	102		
2037-26-5	Toluene d8	50.9	102	50	50.2	100	76 - 134	49.7	99		
17060-07-0	1,2-Dichloroethane-d4	50.8	102	50	52.7	105	71 - 127	52.6	105		

Analytical Batch	452323	Client ID	MB452323			LCS452323			LCSD452323			
Prep Batch	N/A	GCAL ID	928665			928666			928667			
		Sample Type	Method Blank			LCS			LCSD			
		Analytical Date	03/12/2011 10:48			03/12/2011 06:53			03/12/2011 08:24			
		Matrix	Water			Water			Water			
SW-846 8260B		Units / Result	ug/L / RDL	Spike Added	Result	% R	Control Limits % R	Result	% R	RPD	RPD Limit
107-06-2	1,2-Dichloroethane	0.121U	0.121	50.0	45.0	90	71 - 129	48.2	96	7	30
100-41-4	Ethylbenzene	0.180U	0.180	50.0	52.5	105	74 - 126	54.1	108	3	30
1634-04-4	tert-Butyl methyl ether (MTBE)	0.084U	0.084	50.0	44.3	89	71 - 125	46.8	94	5	30
1330-20-7	Xylene (total)	0.123U	0.123	150	158	105	74 - 127	160	107	1	30
91-20-3	Naphthalene	0.175U	0.175	50.0	56.4	113	57 - 138	64.0	128	13	35
71-43-2	Benzene	0.049U	0.049	50.0	48.9	98	70 - 129	50.8	102	4	20
108-88-3	Toluene	0.078U	0.078	50.0	47.7	95	72 - 120	49.4	99	4	20
Surrogate											
460-00-4	4-Bromofluorobenzene	48.7	97	50	51	102	78 - 130	50.4	101		
1868-53-7	Dibromofluoromethane	50.4	101	50	49.1	98	77 - 127	46	92		
2037-26-5	Toluene d8	48.6	97	50	49.6	99	76 - 134	48.9	98		
17060-07-0	1,2-Dichloroethane-d4	47.4	95	50	48	96	71 - 127	49.1	98		

GC/MS Semi-Volatiles Quality Control Summary

Analytical Batch	452104	**Client ID**	MB452072			LCS452072			LCSD452072		
Prep Batch	452072	**GCAL ID**	927405			927406			927407		
Prep Method	3510C	**Sample Type**	Method Blank			LCS			LCSD		
		Prep Date	03/09/2011 09:30			03/09/2011 09:30			03/09/2011 09:30		
		Analytical Date	03/09/2011 16:15			03/09/2011 16:32			03/09/2011 16:48		
		Matrix	Water			Water			Water		

SW-846 8270D		**Units** / **Result**	ug/L / **RDL**	**Spike Added**	**Result**	**% R**	**Control Limits % R**	**Result**	**% R**	**RPD**	**RPD Limit**
208-96-8	Acenaphthylene	0.303U	0.303	100	96.9	97	55 - 120	89.4	89	8	50
120-12-7	Anthracene	0.316U	0.316	100	100	100	58 - 120	93.5	94	7	50
56-55-3	Benzo(a)anthracene	0.316U	0.316	100	96.5	97	56 - 120	88.6	89	9	50
205-99-2	Benzo(b)fluoranthene	0.217U	0.217	100	85.9	86	55 - 120	92.0	92	7	50
207-08-9	Benzo(k)fluoranthene	0.236U	0.236	100	91.6	92	49 - 121	75.3	75	20	50
191-24-2	Benzo(g,h,i)perylene	0.215U	0.215	100	120	120	44 - 132	109	109	10	50
50-32-8	Benzo(a)pyrene	0.125U	0.125	100	96.2	96	56 - 120	89.7	90	7	50
218-01-9	Chrysene	0.433U	0.433	100	96.6	97	58 - 120	93.1	93	4	50
53-70-3	Dibenz(a,h)anthracene	0.217U	0.217	100	119	119	50 - 138	109	109	9	50
206-44-0	Fluoranthene	0.267U	0.267	100	102	102	55 - 120	95.6	96	6	50
86-73-7	Fluorene	0.288U	0.288	100	96.7	97	54 - 120	92.3	92	5	50
193-39-5	Indeno(1,2,3-cd)pyrene	0.157U	0.157	100	115	115	43 - 133	106	106	8	50
91-20-3	Naphthalene	0.293U	0.293	100	89.5	90	44 - 120	84.6	85	6	50
85-01-8	Phenanthrene	0.304U	0.304	100	97.2	97	58 - 120	90.5	91	7	50
83-32-9	Acenaphthene	0.268U	0.268	100	94.5	95	52 - 120	88.6	89	6	32
129-00-0	Pyrene	0.486U	0.486	100	83.8	84	54 - 120	78.6	79	6	30
Surrogate											
4165-60-0	Nitrobenzene-d5	42	84	50	46	92	52 - 120	41.9	84		
321-60-8	2-Fluorobiphenyl	40	80	50	44.8	90	16 - 128	42.3	85		
1718-51-0	Terphenyl-d14	39.7	79	50	39.8	80	43 - 138	37	74		
4165-62-2	Phenol-d5	25.1	25	100	28.9	29	10 - 120	30.1	30		
367-12-4	2-Fluorophenol	45.6	46	100	48.3	48	10 - 120	47.4	47		
118-79-6	2,4,6-Tribromophenol	77.3	77	100	83.4	83	52 - 121	78.6	79		

General Chromatography Quality Control Summary

Analytical Batch	452125	Client ID	MB452125			LCS452125			LCSD452125			
Prep Batch	N/A	GCAL ID	927659			927660			927661			
		Sample Type	Method Blank			LCS			LCSD			
		Analytical Date	03/10/2011 09:55			03/10/2011 10:07			03/10/2011 10:16			
		Matrix	Water			Water			Water			
RSK 175		Units	ug/L	Spike	Result	% R	Control	Result	% R	RPD	RPD
		Result	RDL	Added			Limits % R				Limit
74-82-8	Methane	0.362U	0.362	17.5	16.7	95	39 - 120	15.9	91	5	27
Surrogate											
115-07-1	Propene	31.9	79	40.5	34.6	85	40 - 143	33.1	82		

General Chromatography Quality Control Summary

Analytical Batch	452288	Client ID	MB452062			LCS452062			LCSD452062			
Prep Batch	452062	GCAL ID	927376			927377			927378			
Prep Method	SW-846 8011	Sample Type	Method Blank			LCS			LCSD			
		Prep Date	03/10/2011 16:00			03/10/2011 16:00			03/10/2011 16:00			
		Analytical Date	03/11/2011 09:43			03/11/2011 10:05			03/11/2011 10:26			
		Matrix	Water			Water			Water			
SW-846 8011		**Units**	**Result**	ug/L **RDL**	**Spike Added**	**Result**	**% R**	**Control Limits % R**	**Result**	**% R**	**RPD**	**RPD Limit**
96-12-8	1,2-Dibromo-3-chloropropane		0.00380U	0.00380	1.11	1.07	96	45 - 150	1.07	95	0	40
106-93-4	1,2-Dibromoethane		0.00320U	0.00320	1.11	1.32	119	55 - 141	1.33	118	0.8	40

Inorganics Quality Control Summary

Analytical Batch	452270	**Client ID**	MB452030			LCS452030		
Prep Batch	452030	**GCAL ID**	927231			927232		
Prep Method	SW-846	**Sample Type**	Method Blank			LCS		
	3010A	**Prep Date**	03/08/2011 13:15			03/08/2011 13:15		
		Analytical Date	03/11/2011 14:09			03/11/2011 14:17		
		Matrix	Water			Water		
SW-846 6010B		**Units**	mg/L	**Spike**	**Result**		**Control**	
		Result	**RDL**	**Added**		**% R**	**Limits % R**	
7439-92-1	Lead	0.0057B	0.0014	0.50	0.50	99	80 - 120	

Analytical Batch	452270	**Client ID**	MW-1			927169MS		
Prep Batch	452030	**GCAL ID**	21103081601			927234		
Prep Method	SW-846	**Sample Type**	SAMPLE			MS		
	3010A	**Prep Date**	03/08/2011 13:15			03/08/2011 13:15		
		Analytical Date	03/11/2011 14:23			03/11/2011 14:38		
		Matrix	Water			Water		
SW-846 6010B		**Units**	mg/L	**Spike**	**Result**		**Control**	
		Result	**RDL**	**Added**		**% R**	**Limits % R**	
7439-92-1	Lead	0.018	0.0014	0.50	0.51	99	75 - 125	

Analytical Batch	452270	**Client ID**	MW-1		927169DUP			
Prep Batch	452030	**GCAL ID**	21103081601		927233			
Prep Method	SW-846	**Sample Type**	SAMPLE		DUP			
	3010A	**Prep Date**	03/08/2011 13:15		03/08/2011 13:15			
		Analytical Date	03/11/2011 14:23		03/11/2011 14:30			
		Matrix	Water		Water			
SW-846 6010B		**Units**	mg/L	**Result**		**RPD**		
		Result	**RDL**		**RPD**	**Limit**		
7439-92-1	Lead	0.018	0.0014	0.018	0	20		

General Chemistry Quality Control Summary

Analytical Batch 452163	Client ID	MB452163			LCS452163		
Prep Batch N/A	GCAL ID	927941			927942		
	Sample Type	Method Blank			LCS		
	Analytical Date	03/10/2011 10:14			03/10/2011 10:15		
	Matrix	Water			Water		
EPA 353.2 N+N	**Units**	**Result**	mg/L **RDL**	**Spike Added**	**Result**	**% R**	**Control Limits % R**
C-005 Nitrate/Nitrite		0.003U	0.003	0.500	0.512	102	89.5 -110.5

Analytical Batch 452163	Client ID	LCMW10W01P			927829MS			927829MSD			
Prep Batch N/A	GCAL ID	21103082911			927943			927944			
	Sample Type	SAMPLE			MS			MSD			
	Analytical Date	03/10/2011 10:18			03/10/2011 10:19			03/10/2011 10:20			
	Matrix	Water			Water			Water			
EPA 353.2 N+N	**Units**	**Result**	mg/L **RDL**	**Spike Added**	**Result**	**% R**	**Control Limits % R**	**Result**	**% R**	**RPD**	**RPD Limit**
C-005 Nitrate/Nitrite		0.014	0.003	0.500	0.480	93.2	89.5 -110.5	0.483	93.7	0.62	25

Analytical Batch 452163	Client ID	U31EPHW (N+N)			928147MS			928147MSD			
Prep Batch N/A	GCAL ID	21103102801			928272			928273			
	Sample Type	SAMPLE			MS			MSD			
	Analytical Date	03/10/2011 16:31			03/10/2011 16:32			03/10/2011 16:33			
	Matrix	Water			Water			Water			
EPA 353.2 N+N	**Units**	**Result**	mg/L **RDL**	**Spike Added**	**Result**	**% R**	**Control Limits % R**	**Result**	**% R**	**RPD**	**RPD Limit**
C-005 Nitrate/Nitrite		10.9	0.260	50.0	60.1	98.2	89.5 -110.5	59.0	96	1.8	25

General Chemistry Quality Control Summary

Analytical Batch 452211	Client ID	MB452211			LCS452211			LCSD452211			
Prep Batch N/A	GCAL ID	928216			928217			928218			
	Sample Type	Method Blank			LCS			LCSD			
	Analytical Date	03/10/2011 15:36			03/10/2011 15:54			03/10/2011 16:12			
	Matrix	Water			Water			Water			
EPA 300.0 Inorganic Anions		Units Result	mg/L RDL	Spike Added	Result	% R	Control Limits % R	Result	% R	RPD	RPD Limit
14808-79-8 Sulfate		0.079U	0.079	5.00	4.97	99.4	80 - 120	4.96	99.2	0.2	25

Analytical Batch 452211	Client ID	MW-1			927169MS			927169MSD			
Prep Batch N/A	GCAL ID	21103081601			928219			928220			
	Sample Type	SAMPLE			MS			MSD			
	Analytical Date	03/10/2011 17:22			03/10/2011 17:40			03/10/2011 17:57			
	Matrix	Water			Water			Water			
EPA 300.0 Inorganic Anions		Units Result	mg/L RDL	Spike Added	Result	% R	Control Limits % R	Result	% R	RPD	RPD Limit
14808-79-8 Sulfate		2.41	0.079	5.00	7.82	108	75 - 125	8.00	112	2.3	25

GCAL

GULF COAST ANALYTICAL LABORATORIES, INC

SAMPLE RECEIVING CHECKLIST

Workorder: 211030816

Client: 4565 - Access Analytical

Profile: 79922 - Enviro-Test Services-

Line Item: 2 - Water BTEX//Naph/MTBE/ EDBby8260/Pb/PAH/EDB

Received by: Raborn, Michelle

Received Date/Time: 3/8/2011 8:55:00 AM

Samples Received via: FEDEX

Number of Coolers Received: 2

Cooler tracking numbers(s): 8753 3642 0658 8753 8642 0669

Cooler temperature(s): 1.7 2.8

Were all coolers received at a temperature of 0 - 6° C?	☑ Yes	☐ No	☐ N/A
Were all custody seals intact?	☑ Yes	☐ No	☐ N/A
Were all samples recevied in proper containers?	☑ Yes	☐ No	☐ N/A
Were all samples properly preserved?	☑ Yes	☐ No	☐ N/A
Was preservative added to any container at the lab?	☐ Yes	☑ No	☐ N/A
Were all containers received in good condition?	☑ Yes	☐ No	☐ N/A
Were all VOA vials received with no head space?	☑ Yes	☐ No	☐ N/A
Do all sample labels match the Chain of Custody?	☑ Yes	☐ No	☐ N/A
Was the client notified about any discrepancies?	☐ Yes	☐ No	☐ N/A

Notes/Comments: _____

Access Analytical - Chain of Custody Record

LAB USE ONLY

Sales Order #: | PO #: | Access Quote #: | Project Work Order #: | Laboratory ID:

Company Name: Enviro-Test Services
Report To: Terry Teate
Address: P.O. Box 2237
City: Irmo State: SC Zip: 29063
Phone: 413-4936 Fax:
Email:
Project ID: Broad River BP
Sampled By: TT

Preservative: (*see codes)
Container Type: (*see codes)

REQUESTED LAB ANALYSIS:

Sample ID/Description	Date Collected	Time Collected	Type (grab or composite)	Matrix* (see codes)	Program Area* (see codes)	Total # of containers	BTEX, Naph, MTBE 12-DCA	EDB - 8011	Nitrate-Nitrite	Sulfate	Methane	Pah's	Lead - Pb		# of containers collected per analysis	NOTES / COMMENTS (if sample is a composite please use space below to note start/finish times & dates)
MW-1	3-5-11	1340	G	GW	SHW	11	X	X	X	X	X	X	X		1	
MW-2	"	1415	"	"	"	"	"	"	"	"	"	"	"		2	
MW-3	"	1210	"	"	"	"	"	"	"	"	"	"	"		3	
MW-4	"	1258	"	"	"	"	"	"	"	"	"	"	"		4	

ACCESS ANALYTICAL, INC.
7478 Carlisle Street
Irmo, SC 29063
Phone: (803) 781-4243
Fax: 781-4303
www.axs-inc.com

*Preservative Codes (place corresponding # in block above analysis field): 0 = None, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Na2SO3, 6 = Methanol (CGS) set w/ NaHSO4 & CH3OH, 7 = NaOH/ZnOAc, 8 = H3PO4

*Matrix Codes (place corresponding codes in matrix column): GW = ground water, WW = waste water, DW = drinking water, S = soil, SL = sludge, A = air, IW = industrial waste, WO = waste oil, OT = other (specify in comments section)

*Program Area Codes: CWA = Clean Water Act (for wastewater), SDWA = Safe Drinking Water Act (for drinking waters), SHW = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

*Container Type: G = Glass, P = Plastic

Turnaround Time:
- V Standard
- ___ RUSH*

*Date Required: _____
(For rush work, results emailed/faxed by end of business day on date required)

Project Location:
- V SC
- ___ NC
- ___ Other

(specify) _____

Relinquished By:	Received By:	Date (mm-dd-yy)	Time (24HR)	Sample Temp. Upon Receipt (°C)	
Tim L. Teate	M. Robertson	3/7/11	952	13.0 (°C)	___ (N/A)
M Robertson	FedEx	3/7/11	1700	___ (°C)	V (N/A)
Fedex	V	3.8.11	855	1.7 (2.8) (°C)	___ (N/A)
				___ (°C)	___ (N/A)

See Reverse for Terms and Conditions

Original Copy - Returned w/Report
Yellow Copy - Access File Copy
Pink Copy - Client Copy

Pg ____ of ____

ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT
Enviro-Test Services
P.O. Box 2237
Irmo, SC 29063

ATTENTION
Terry Teate

PROJECT ID
Broad River BP

LABORATORY REPORT NUMBER
211030218

DATE
03/10/2011

Primary Data Review By

Curtis Ekker
Data Validation Manager, GCAL

Secondary Data Review By

Ashley B. Amick
Project Manager, Access Analytical, Inc.
aamick@accessanalyticalinc.com

PLEASE NOTE:

- **Unless otherwise noted, all analysis on this report performed at Gulf Coast Analytical Labs (GCAL), 7979 GSRI Avenue, Baton Rouge, LA 70820.**
- **GCAL is SCDHEC certified laboratory # 73006, NCDENR certified lab # 618, GA certified lab # LA-01955, NELAP certified laboratory # 01955**
- Local support services for this project are provided by Access Analytical, Inc.. Access Analytical is a representative of GCAL serving clients in the SC/NC/GA areas. All questions regarding this report should be directed to your local Access Analytical representative at 803.781.4243 or toll free at 888.315.4243.

NELAP CERTIFICATE NUMBER 01955
DOD ELAP CERTIFICATE NUMBER ADE - 1482

ANALYTICAL RESULTS

PERFORMED BY

GULF COAST ANALYTICAL LABORATORIES, INC.
7979 GSRI Avenue
Baton Rouge, LA 70820

Report Date 03/10/2011

GCAL Report 211030218

Deliver To	Enviro-Test Services P.O. Box 2237 Irmo, SC 29063 803-732-5770
Attn	Terry Teate

Project Broad River BP

CASE NARRATIVE

Client: Enviro-Test Services **Report:** 211030218

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the sample cross-reference page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

VOLATILES MASS SPECTROMETRY

In the SW-846 8260B analysis, samples 21103021801 (SB-1), 21103021802 (SB-2) and 21103021803 (SB-3) had to be diluted to bracket the concentration of target compounds within the calibration range of the instrument.

SEMI-VOLATILES MASS SPECTROMETRY

In the SW-846 8270D analysis, sample 21103021803 (SB-3) is reported at multiple dilutions due to the recovery of the internal standards being affected by the sample matrix. The sample required the dilution to bring the internal standards within limits.

In the SW-846 8270D analysis for prep batch 451659, the MS/MSD exhibited recovery failures. The LCS/LCSD recoveries are acceptable.

METALS

In the SW-846 6010B analysis, a chemical or physical interference necessitated a dilution for samples 21103021803 (SB-3) and 21103021808 (SB-8). This is reflected in the elevated reporting limits.

Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

Common Abbreviations Utilized in this Report

ND	Indicates the result was Not Detected at the specified RDL
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
RDL	Reporting Detection Limit
00:00	Reported as a time equivalent to 12:00 AM

Reporting Flags Utilized in this Report

J	Indicates an estimated value
U	Indicates the compound was analyzed for but not detected
B	(ORGANICS) Indicates the analyte was detected in the associated Method Blank
B	(INORGANICS) Indicates the result is between the RDL and MDL

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with the NELAC standard and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.

IntegriSign

Robyn Migues
Technical Director
GCAL REPORT 211030218

THIS REPORT CONTAINS 35 PAGES.

Report Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021801	SB-1	Solid	02/24/2011 08:45	03/02/2011 09:20
21103021802	SB-2	Solid	02/24/2011 10:00	03/02/2011 09:20
21103021803	SB-3	Solid	02/24/2011 10:55	03/02/2011 09:20
21103021804	SB-4	Solid	02/24/2011 11:28	03/02/2011 09:20
21103021805	SB-5	Solid	02/24/2011 12:40	03/02/2011 09:20
21103021806	SB-6	Solid	02/24/2011 13:30	03/02/2011 09:20
21103021807	SB-7	Solid	02/24/2011 14:50	03/02/2011 09:20
21103021808	SB-8	Solid	02/25/2011 10:25	03/02/2011 09:20

Summary of Compounds Detected

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021801	SB-1	Solid	02/24/2011 08:45	03/02/2011 09:20

SW-846 8015B

CAS#	Parameter	Result	RDL	MDL	Units
GCSV-00-4	Diesel Range Organics	59000	4790	1540	ug/Kg

SW-846 8270D

CAS#	Parameter	Result	RDL	MDL	Units
120-12-7	Anthracene	15.4J	391	13.5	ug/Kg
56-55-3	Benzo(a)anthracene	31.0J	391	30.6	ug/Kg
50-32-8	Benzo(a)pyrene	20.4J	391	14.6	ug/Kg
191-24-2	Benzo(g,h,i)perylene	15.6J	391	12.4	ug/Kg
207-08-9	Benzo(k)fluoranthene	24.9J	391	15.9	ug/Kg
218-01-9	Chrysene	27.9J	391	17.2	ug/Kg
206-44-0	Fluoranthene	59.2J	391	7.72	ug/Kg
86-73-7	Fluorene	39.3J	391	15.3	ug/Kg
91-20-3	Naphthalene	4500	391	15.6	ug/Kg
85-01-8	Phenanthrene	89.7J	391	12.6	ug/Kg
129-00-0	Pyrene	54.6J	391	18.1	ug/Kg

SW-846 6010B

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	10.4	0.72	0.086	mg/kg

SW-846 8260B

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	4110J	4820	102	ug/Kg
100-41-4	Ethylbenzene	22700	4820	211	ug/Kg
1330-20-7	Xylene (total)	5340J	9640	412	ug/Kg
91-20-3	Naphthalene	33000	4820	169	ug/Kg
1634-04-4	tert-Butyl methyl ether (MTBE)	4960	4820	230	ug/Kg

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021802	SB-2	Solid	02/24/2011 10:00	03/02/2011 09:20

SW-846 6010B

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	5.45	0.68	0.081	mg/kg

Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021802	SB-2	Solid	02/24/2011 10:00	03/02/2011 09:20

SW-846 8270D

CAS#	Parameter	Result	RDL	MDL	Units
91-20-3	Naphthalene	230J	373	14.9	ug/Kg

SW-846 8260B

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	291	195	4.14	ug/Kg
108-88-3	Toluene	70.2J	195	10.3	ug/Kg
100-41-4	Ethylbenzene	707	195	8.55	ug/Kg
1330-20-7	Xylene (total)	1460	390	16.7	ug/Kg
91-20-3	Naphthalene	350	195	6.83	ug/Kg
1634-04-4	tert-Butyl methyl ether (MTBE)	2670	195	9.33	ug/Kg

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021803	SB-3	Solid	02/24/2011 10:55	03/02/2011 09:20

SW-846 8260B

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	343	216	4.58	ug/Kg
108-88-3	Toluene	123J	216	11.4	ug/Kg
100-41-4	Ethylbenzene	536	216	9.46	ug/Kg
1330-20-7	Xylene (total)	722	432	18.5	ug/Kg
91-20-3	Naphthalene	275	216	7.56	ug/Kg
1634-04-4	tert-Butyl methyl ether (MTBE)	151J	216	10.3	ug/Kg

SW-846 6010B

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	21.3	1.31	0.16	mg/kg

SW-846 8270D

CAS#	Parameter	Result	RDL	MDL	Units
83-32-9	Acenaphthene	17.6J	363	14.4	ug/Kg
120-12-7	Anthracene	49.2J	363	12.5	ug/Kg
56-55-3	Benzo(a)anthracene	241J	363	28.4	ug/Kg
218-01-9	Chrysene	348J	363	15.9	ug/Kg
206-44-0	Fluoranthene	633	363	7.17	ug/Kg
86-73-7	Fluorene	22.9J	363	14.2	ug/Kg
91-20-3	Naphthalene	219J	363	14.5	ug/Kg
85-01-8	Phenanthrene	272J	363	11.6	ug/Kg
129-00-0	Pyrene	406	363	16.8	ug/Kg

Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021803	SB-3	Solid	02/24/2011 10:55	03/02/2011 09:20

SW-846 8270D

CAS#	Parameter	Result	RDL	MDL	Units
50-32-8	Benzo(a)pyrene	241J	3630	135	ug/Kg
205-99-2	Benzo(b)fluoranthene	449J	3630	334	ug/Kg
191-24-2	Benzo(g,h,i)perylene	391J	3630	115	ug/Kg
207-08-9	Benzo(k)fluoranthene	192J	3630	147	ug/Kg

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021804	SB-4	Solid	02/24/2011 11:28	03/02/2011 09:20

SW-846 6010B

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	8.76	0.75	0.090	mg/kg

SW-846 8260B

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	2.94J	4.60	0.097	ug/Kg
108-88-3	Toluene	2.28J	4.60	0.243	ug/Kg
100-41-4	Ethylbenzene	3.63J	4.60	0.201	ug/Kg
1330-20-7	Xylene (total)	6.51J	9.20	0.394	ug/Kg
1634-04-4	tert-Butyl methyl ether (MTBE)	4.85	4.60	0.220	ug/Kg

SW-846 8270D

CAS#	Parameter	Result	RDL	MDL	Units
206-44-0	Fluoranthene	21.2J	407	8.05	ug/Kg
91-20-3	Naphthalene	48.9J	407	16.3	ug/Kg
85-01-8	Phenanthrene	26.3J	407	13.1	ug/Kg

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021805	SB-5	Solid	02/24/2011 12:40	03/02/2011 09:20

SW-846 6010B

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	6.42	0.73	0.087	mg/kg

SW-846 8270D

CAS#	Parameter	Result	RDL	MDL	Units
91-20-3	Naphthalene	402J	404	16.1	ug/Kg

Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021805	SB-5	Solid	02/24/2011 12:40	03/02/2011 09:20

SW-846 8260B

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	103	4.87	0.103	ug/Kg
108-88-3	Toluene	5.81	4.87	0.257	ug/Kg
100-41-4	Ethylbenzene	2.73J	4.87	0.213	ug/Kg
1330-20-7	Xylene (total)	5.75J	9.74	0.417	ug/Kg
1634-04-4	tert-Butyl methyl ether (MTBE)	5.10	4.87	0.233	ug/Kg

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021806	SB-6	Solid	02/24/2011 13:30	03/02/2011 09:20

SW-846 6010B

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	8.59	0.72	0.086	mg/kg

SW-846 8270D

CAS#	Parameter	Result	RDL	MDL	Units
91-20-3	Naphthalene	108J	396	15.9	ug/Kg

SW-846 8260B

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	115	4.00	0.085	ug/Kg
108-88-3	Toluene	4.80	4.00	0.211	ug/Kg
1634-04-4	tert-Butyl methyl ether (MTBE)	2.96J	4.00	0.191	ug/Kg

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021807	SB-7	Solid	02/24/2011 14:50	03/02/2011 09:20

SW-846 8270D

CAS#	Parameter	Result	RDL	MDL	Units
120-12-7	Anthracene	35.5J	395	13.6	ug/Kg
56-55-3	Benzo(a)anthracene	63.2J	395	30.8	ug/Kg
50-32-8	Benzo(a)pyrene	41.5J	395	14.7	ug/Kg
205-99-2	Benzo(b)fluoranthene	60.2J	395	36.3	ug/Kg
191-24-2	Benzo(g,h,i)perylene	31.3J	395	12.6	ug/Kg
207-08-9	Benzo(k)fluoranthene	51.8J	395	16.0	ug/Kg
218-01-9	Chrysene	107J	395	17.3	ug/Kg
206-44-0	Fluoranthene	269J	395	7.79	ug/Kg
91-20-3	Naphthalene	48.1J	395	15.8	ug/Kg
85-01-8	Phenanthrene	174J	395	12.7	ug/Kg
129-00-0	Pyrene	175J	395	18.3	ug/Kg

Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021807	SB-7	Solid	02/24/2011 14:50	03/02/2011 09:20

SW-846 8260B

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	6.17	4.88	0.104	ug/Kg

SW-846 6010B

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	7.60	0.71	0.085	mg/kg

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021808	SB-8	Solid	02/25/2011 10:25	03/02/2011 09:20

SW-846 9060 TOC

CAS#	Parameter	Result	RDL	MDL	Units
C-012	Total Organic Carbon	868	200	50.0	mg/kg

SW-846 6010B

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	5.68	1.53	0.18	mg/kg

SW-846 8260B

CAS#	Parameter	Result	RDL	MDL	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	4.34J	5.07	0.242	ug/Kg

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021801	SB-1	Solid	02/24/2011 08:45	03/02/2011 09:20

SW-846 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1000	03/05/2011 04:45	JCK	451864

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	**Benzene**	**4110J**	**4820**	**102**	**ug/Kg**
108-88-3	Toluene	254U	4820	254	ug/Kg
100-41-4	**Ethylbenzene**	**22700**	**4820**	**211**	**ug/Kg**
1330-20-7	**Xylene (total)**	**5340J**	**9640**	**412**	**ug/Kg**
91-20-3	**Naphthalene**	**33000**	**4820**	**169**	**ug/Kg**
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**4960**	**4820**	**230**	**ug/Kg**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	40100	42800	ug/Kg	107	62 - 127
1868-53-7	Dibromofluoromethane	40100	40900	ug/Kg	102	65 - 130
2037-26-5	Toluene d8	40100	38700	ug/Kg	96	71 - 132
17060-07-0	1,2-Dichloroethane-d4	40100	43500	ug/Kg	108	62 - 125

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/03/2011 10:00	451659	3550B	1	03/03/2011 15:46	KCB	451754

CAS#	Parameter	Result	RDL	MDL	Units
83-32-9	Acenaphthene	15.5U	391	15.5	ug/Kg
208-96-8	Acenaphthylene	15.5U	391	15.5	ug/Kg
120-12-7	**Anthracene**	**15.4J**	**391**	**13.5**	**ug/Kg**
56-55-3	**Benzo(a)anthracene**	**31.0J**	**391**	**30.6**	**ug/Kg**
50-32-8	**Benzo(a)pyrene**	**20.4J**	**391**	**14.6**	**ug/Kg**
205-99-2	Benzo(b)fluoranthene	36.0U	391	36.0	ug/Kg
191-24-2	**Benzo(g,h,i)perylene**	**15.6J**	**391**	**12.4**	**ug/Kg**
207-08-9	**Benzo(k)fluoranthene**	**24.9J**	**391**	**15.9**	**ug/Kg**
218-01-9	**Chrysene**	**27.9J**	**391**	**17.2**	**ug/Kg**
53-70-3	Dibenz(a,h)anthracene	13.6U	391	13.6	ug/Kg
206-44-0	**Fluoranthene**	**59.2J**	**391**	**7.72**	**ug/Kg**
86-73-7	**Fluorene**	**39.3J**	**391**	**15.3**	**ug/Kg**
193-39-5	Indeno(1,2,3-cd)pyrene	36.6U	391	36.6	ug/Kg
91-20-3	**Naphthalene**	**4500**	**391**	**15.6**	**ug/Kg**
85-01-8	**Phenanthrene**	**89.7J**	**391**	**12.6**	**ug/Kg**
129-00-0	**Pyrene**	**54.6J**	**391**	**18.1**	**ug/Kg**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	1640	1520	ug/Kg	92	46 - 123
321-60-8	2-Fluorobiphenyl	1640	1660	ug/Kg	101	47 - 127
1718-51-0	Terphenyl-d14	1640	1780	ug/Kg	108	38 - 167

SW-846 8015B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/03/2011 08:50	451661	3550B	1	03/03/2011 15:21	SMH	451796

CAS#	Parameter	Result	RDL	MDL	Units
GCSV-00-4	**Diesel Range Organics**	**59000**	**4790**	**1540**	**ug/Kg**

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021801	SB-1	Solid	02/24/2011 08:45	03/02/2011 09:20

SW-846 8015B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/03/2011 08:50	451661	3550B	1	03/03/2011 15:21	SMH	451796

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	1660	1460	ug/Kg	88	27 - 129

SW-846 6010B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/02/2011 13:03	451653	SW-846 3050B	1	03/03/2011 16:39	BNB	451751

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	10.4	0.72	0.086	mg/kg

RESULTS REPORTED ON A DRY WEIGHT BASIS

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021802	SB-2	Solid	02/24/2011 10:00	03/02/2011 09:20

SW-846 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			50	03/05/2011 05:06	JCK	451864

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	**Benzene**	**291**	**195**	**4.14**	**ug/Kg**
108-88-3	**Toluene**	**70.2J**	**195**	**10.3**	**ug/Kg**
100-41-4	**Ethylbenzene**	**707**	**195**	**8.55**	**ug/Kg**
1330-20-7	**Xylene (total)**	**1460**	**390**	**16.7**	**ug/Kg**
91-20-3	**Naphthalene**	**350**	**195**	**6.83**	**ug/Kg**
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**2670**	**195**	**9.33**	**ug/Kg**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	1720	1810	ug/Kg	105	62 - 127
1868-53-7	Dibromofluoromethane	1720	1710	ug/Kg	99	65 - 130
2037-26-5	Toluene d8	1720	1710	ug/Kg	99	71 - 132
17060-07-0	1,2-Dichloroethane-d4	1720	1790	ug/Kg	104	62 - 125

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/03/2011 10:00	451659	3550B	1	03/04/2011 11:29	KCB	451798

CAS#	Parameter	Result	RDL	MDL	Units
83-32-9	Acenaphthene	14.8U	373	14.8	ug/Kg
208-96-8	Acenaphthylene	14.8U	373	14.8	ug/Kg
120-12-7	Anthracene	12.9U	373	12.9	ug/Kg
56-55-3	Benzo(a)anthracene	29.2U	373	29.2	ug/Kg
50-32-8	Benzo(a)pyrene	13.9U	373	13.9	ug/Kg
205-99-2	Benzo(b)fluoranthene	34.4U	373	34.4	ug/Kg
191-24-2	Benzo(g,h,i)perylene	11.9U	373	11.9	ug/Kg
207-08-9	Benzo(k)fluoranthene	15.2U	373	15.2	ug/Kg
218-01-9	Chrysene	16.4U	373	16.4	ug/Kg
53-70-3	Dibenz(a,h)anthracene	13.0U	373	13.0	ug/Kg
206-44-0	Fluoranthene	7.38U	373	7.38	ug/Kg
86-73-7	Fluorene	14.6U	373	14.6	ug/Kg
193-39-5	Indeno(1,2,3-cd)pyrene	35.0U	373	35.0	ug/Kg
91-20-3	**Naphthalene**	**230J**	**373**	**14.9**	**ug/Kg**
85-01-8	Phenanthrene	12.0U	373	12.0	ug/Kg
129-00-0	Pyrene	17.3U	373	17.3	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	1660	1530	ug/Kg	92	46 - 123
321-60-8	2-Fluorobiphenyl	1660	1580	ug/Kg	95	47 - 127
1718-51-0	Terphenyl-d14	1660	2080	ug/Kg	125	38 - 167

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021802	SB-2	Solid	02/24/2011 10:00	03/02/2011 09:20

SW-846 6010B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/02/2011 13:03	451653	SW-846 3050B	1	03/03/2011 16:46	BNB	451751

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	5.45	0.68	0.081	mg/kg

RESULTS REPORTED ON A DRY WEIGHT BASIS

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021803	SB-3	Solid	02/24/2011 10:55	03/02/2011 09:20

SW-846 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			50	03/05/2011 05:26	JCK	451864

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	**Benzene**	**343**	**216**	**4.58**	**ug/Kg**
108-88-3	**Toluene**	**123J**	**216**	**11.4**	**ug/Kg**
100-41-4	**Ethylbenzene**	**536**	**216**	**9.46**	**ug/Kg**
1330-20-7	**Xylene (total)**	**722**	**432**	**18.5**	**ug/Kg**
91-20-3	**Naphthalene**	**275**	**216**	**7.56**	**ug/Kg**
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**151J**	**216**	**10.3**	**ug/Kg**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	1960	2060	ug/Kg	105	62 - 127
1868-53-7	Dibromofluoromethane	1960	1900	ug/Kg	97	65 - 130
2037-26-5	Toluene d8	1960	2010	ug/Kg	103	71 - 132
17060-07-0	1,2-Dichloroethane-d4	1960	2000	ug/Kg	102	62 - 125

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/03/2011 10:00	451659	3550B	10	03/03/2011 16:51	KCB	451754

CAS#	Parameter	Result	RDL	MDL	Units
50-32-8	**Benzo(a)pyrene**	**241J**	**3630**	**135**	**ug/Kg**
205-99-2	**Benzo(b)fluoranthene**	**449J**	**3630**	**334**	**ug/Kg**
191-24-2	**Benzo(g,h,i)perylene**	**391J**	**3630**	**115**	**ug/Kg**
207-08-9	**Benzo(k)fluoranthene**	**192J**	**3630**	**147**	**ug/Kg**
53-70-3	Dibenz(a,h)anthracene	126U	3630	126	ug/Kg
193-39-5	Indeno(1,2,3-cd)pyrene	340U	3630	340	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	1660	Diluted Out	ug/Kg	0*	46 - 123
321-60-8	2-Fluorobiphenyl	1660	Diluted Out	ug/Kg	0*	47 - 127
1718-51-0	Terphenyl-d14	1660	Diluted Out	ug/Kg	0*	38 - 167
4165-62-2	Phenol-d5	3320	Diluted Out	ug/Kg	0*	43 - 123
367-12-4	2-Fluorophenol	3320	Diluted Out	ug/Kg	0*	51 - 119
118-79-6	2,4,6-Tribromophenol	3320	Diluted Out	ug/Kg	0*	44 - 121

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/03/2011 10:00	451659	3550B	1	03/04/2011 13:07	KCB	451798

CAS#	Parameter	Result	RDL	MDL	Units
83-32-9	**Acenaphthene**	**17.6J**	**363**	**14.4**	**ug/Kg**
208-96-8	Acenaphthylene	14.4U	363	14.4	ug/Kg
120-12-7	**Anthracene**	**49.2J**	**363**	**12.5**	**ug/Kg**
56-55-3	**Benzo(a)anthracene**	**241J**	**363**	**28.4**	**ug/Kg**
218-01-9	**Chrysene**	**348J**	**363**	**15.9**	**ug/Kg**
206-44-0	**Fluoranthene**	**633**	**363**	**7.17**	**ug/Kg**
86-73-7	**Fluorene**	**22.9J**	**363**	**14.2**	**ug/Kg**
91-20-3	**Naphthalene**	**219J**	**363**	**14.5**	**ug/Kg**

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021803	SB-3	Solid	02/24/2011 10:55	03/02/2011 09:20

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/03/2011 10:00	451659	3550B	1	03/04/2011 13:07	KCB	451798

CAS#	Parameter	Result	RDL	MDL	Units
85-01-8	**Phenanthrene**	**272J**	**363**	**11.6**	**ug/Kg**
129-00-0	**Pyrene**	**406**	**363**	**16.8**	**ug/Kg**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	1660	1710	ug/Kg	103	46 - 123
321-60-8	2-Fluorobiphenyl	1660	1610	ug/Kg	97	47 - 127
1718-51-0	Terphenyl-d14	1660	1500	ug/Kg	90	38 - 167

SW-846 6010B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/02/2011 13:03	451653	SW-846 3050B	2	03/04/2011 11:31	BNB	451806

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	**Lead**	**21.3**	**1.31**	**0.16**	**mg/kg**

RESULTS REPORTED ON A DRY WEIGHT BASIS

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021804	SB-4	Solid	02/24/2011 11:28	03/02/2011 09:20

SW-846 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/03/2011 14:38	RJU	451717

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	**Benzene**	**2.94J**	**4.60**	**0.097**	**ug/Kg**
108-88-3	**Toluene**	**2.28J**	**4.60**	**0.243**	**ug/Kg**
100-41-4	**Ethylbenzene**	**3.63J**	**4.60**	**0.201**	**ug/Kg**
1330-20-7	**Xylene (total)**	**6.51J**	**9.20**	**0.394**	**ug/Kg**
91-20-3	Naphthalene	0.161U	4.60	0.161	ug/Kg
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**4.85**	**4.60**	**0.220**	**ug/Kg**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	36.7	35.5	ug/Kg	97	62 - 127
1868-53-7	Dibromofluoromethane	36.7	37.6	ug/Kg	103	65 - 130
2037-26-5	Toluene d8	36.7	39.1	ug/Kg	107	71 - 132
17060-07-0	1,2-Dichloroethane-d4	36.7	40.2	ug/Kg	110	62 - 125

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/03/2011 10:00	451659	3550B	1	03/04/2011 11:45	KCB	451798

CAS#	Parameter	Result	RDL	MDL	Units
83-32-9	Acenaphthene	16.2U	407	16.2	ug/Kg
208-96-8	Acenaphthylene	16.2U	407	16.2	ug/Kg
120-12-7	Anthracene	14.1U	407	14.1	ug/Kg
56-55-3	Benzo(a)anthracene	31.8U	407	31.8	ug/Kg
50-32-8	Benzo(a)pyrene	15.2U	407	15.2	ug/Kg
205-99-2	Benzo(b)fluoranthene	37.5U	407	37.5	ug/Kg
191-24-2	Benzo(g,h,i)perylene	13.0U	407	13.0	ug/Kg
207-08-9	Benzo(k)fluoranthene	16.5U	407	16.5	ug/Kg
218-01-9	Chrysene	17.9U	407	17.9	ug/Kg
53-70-3	Dibenz(a,h)anthracene	14.2U	407	14.2	ug/Kg
206-44-0	**Fluoranthene**	**21.2J**	**407**	**8.05**	**ug/Kg**
86-73-7	Fluorene	15.9U	407	15.9	ug/Kg
193-39-5	Indeno(1,2,3-cd)pyrene	38.1U	407	38.1	ug/Kg
91-20-3	**Naphthalene**	**48.9J**	**407**	**16.3**	**ug/Kg**
85-01-8	**Phenanthrene**	**26.3J**	**407**	**13.1**	**ug/Kg**
129-00-0	Pyrene	18.9U	407	18.9	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	1640	807	ug/Kg	49	46 - 123
321-60-8	2-Fluorobiphenyl	1640	806	ug/Kg	49	47 - 127
1718-51-0	Terphenyl-d14	1640	967	ug/Kg	59	38 - 167

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021804	SB-4	Solid	02/24/2011 11:28	03/02/2011 09:20

SW-846 6010B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/02/2011 13:03	451653	SW-846 3050B	1	03/03/2011 17:12	BNB	451751

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	8.76	0.75	0.090	mg/kg

RESULTS REPORTED ON A DRY WEIGHT BASIS

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021805	SB-5	Solid	02/24/2011 12:40	03/02/2011 09:20

SW-846 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/03/2011 15:58	RJU	451717

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	**Benzene**	**103**	**4.87**	**0.103**	**ug/Kg**
108-88-3	**Toluene**	**5.81**	**4.87**	**0.257**	**ug/Kg**
100-41-4	**Ethylbenzene**	**2.73J**	**4.87**	**0.213**	**ug/Kg**
1330-20-7	**Xylene (total)**	**5.75J**	**9.74**	**0.417**	**ug/Kg**
91-20-3	Naphthalene	0.170U	4.87	0.170	ug/Kg
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**5.10**	**4.87**	**0.233**	**ug/Kg**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	39.8	33.9	ug/Kg	85	62 - 127
1868-53-7	Dibromofluoromethane	39.8	39.7	ug/Kg	100	65 - 130
2037-26-5	Toluene d8	39.8	46.7	ug/Kg	117	71 - 132
17060-07-0	1,2-Dichloroethane-d4	39.8	44.1	ug/Kg	111	62 - 125

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/03/2011 10:00	451659	3550B	1	03/04/2011 12:02	KCB	451798

CAS#	Parameter	Result	RDL	MDL	Units
83-32-9	Acenaphthene	16.0U	404	16.0	ug/Kg
208-96-8	Acenaphthylene	16.0U	404	16.0	ug/Kg
120-12-7	Anthracene	13.9U	404	13.9	ug/Kg
56-55-3	Benzo(a)anthracene	31.6U	404	31.6	ug/Kg
50-32-8	Benzo(a)pyrene	15.0U	404	15.0	ug/Kg
205-99-2	Benzo(b)fluoranthene	37.2U	404	37.2	ug/Kg
191-24-2	Benzo(g,h,i)perylene	12.8U	404	12.8	ug/Kg
207-08-9	Benzo(k)fluoranthene	16.4U	404	16.4	ug/Kg
218-01-9	Chrysene	17.7U	404	17.7	ug/Kg
53-70-3	Dibenz(a,h)anthracene	14.1U	404	14.1	ug/Kg
206-44-0	Fluoranthene	7.98U	404	7.98	ug/Kg
86-73-7	Fluorene	15.8U	404	15.8	ug/Kg
193-39-5	Indeno(1,2,3-cd)pyrene	37.8U	404	37.8	ug/Kg
91-20-3	**Naphthalene**	**402J**	**404**	**16.1**	**ug/Kg**
85-01-8	Phenanthrene	13.0U	404	13.0	ug/Kg
129-00-0	Pyrene	18.7U	404	18.7	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	1670	1520	ug/Kg	91	46 - 123
321-60-8	2-Fluorobiphenyl	1670	1560	ug/Kg	94	47 - 127
1718-51-0	Terphenyl-d14	1670	1830	ug/Kg	110	38 - 167

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021805	SB-5	Solid	02/24/2011 12:40	03/02/2011 09:20

SW-846 6010B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/02/2011 13:03	451653	SW-846 3050B	1	03/03/2011 17:19	BNB	451751

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	6.42	0.73	0.087	mg/kg

RESULTS REPORTED ON A DRY WEIGHT BASIS

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021806	**SB-6**	Solid	02/24/2011 13:30	03/02/2011 09:20

SW-846 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/03/2011 17:17	RJU	451717

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	**Benzene**	**115**	**4.00**	**0.085**	**ug/Kg**
108-88-3	**Toluene**	**4.80**	**4.00**	**0.211**	**ug/Kg**
100-41-4	Ethylbenzene	0.175U	4.00	0.175	ug/Kg
1330-20-7	Xylene (total)	0.342U	7.99	0.342	ug/Kg
91-20-3	Naphthalene	0.140U	4.00	0.140	ug/Kg
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**2.96J**	**4.00**	**0.191**	**ug/Kg**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	33.2	32.7	ug/Kg	99	62 - 127
1868-53-7	Dibromofluoromethane	33.2	32.3	ug/Kg	97	65 - 130
2037-26-5	Toluene d8	33.2	34.4	ug/Kg	104	71 - 132
17060-07-0	1,2-Dichloroethane-d4	33.2	38.9	ug/Kg	117	62 - 125

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/03/2011 10:00	451659	3550B	1	03/04/2011 12:18	KCB	451798

CAS#	Parameter	Result	RDL	MDL	Units
83-32-9	Acenaphthene	15.7U	396	15.7	ug/Kg
208-96-8	Acenaphthylene	15.7U	396	15.7	ug/Kg
120-12-7	Anthracene	13.7U	396	13.7	ug/Kg
56-55-3	Benzo(a)anthracene	31.0U	396	31.0	ug/Kg
50-32-8	Benzo(a)pyrene	14.8U	396	14.8	ug/Kg
205-99-2	Benzo(b)fluoranthene	36.5U	396	36.5	ug/Kg
191-24-2	Benzo(g,h,i)perylene	12.6U	396	12.6	ug/Kg
207-08-9	Benzo(k)fluoranthene	16.1U	396	16.1	ug/Kg
218-01-9	Chrysene	17.4U	396	17.4	ug/Kg
53-70-3	Dibenz(a,h)anthracene	13.8U	396	13.8	ug/Kg
206-44-0	Fluoranthene	7.83U	396	7.83	ug/Kg
86-73-7	Fluorene	15.5U	396	15.5	ug/Kg
193-39-5	Indeno(1,2,3-cd)pyrene	37.1U	396	37.1	ug/Kg
91-20-3	**Naphthalene**	**108J**	**396**	**15.9**	**ug/Kg**
85-01-8	Phenanthrene	12.7U	396	12.7	ug/Kg
129-00-0	Pyrene	18.4U	396	18.4	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	1660	1550	ug/Kg	93	46 - 123
321-60-8	2-Fluorobiphenyl	1660	1590	ug/Kg	96	47 - 127
1718-51-0	Terphenyl-d14	1660	1800	ug/Kg	108	38 - 167

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021806	SB-6	Solid	02/24/2011 13:30	03/02/2011 09:20

SW-846 6010B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/02/2011 13:03	451653	SW-846 3050B	1	03/03/2011 17:25	BNB	451751

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	8.59	0.72	0.086	mg/kg

RESULTS REPORTED ON A DRY WEIGHT BASIS

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021807	SB-7	Solid	02/24/2011 14:50	03/02/2011 09:20

SW-846 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/03/2011 13:45	RJU	451717

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	**Benzene**	**6.17**	**4.88**	**0.104**	**ug/Kg**
108-88-3	Toluene	0.258U	4.88	0.258	ug/Kg
100-41-4	Ethylbenzene	0.214U	4.88	0.214	ug/Kg
1330-20-7	Xylene (total)	0.418U	9.77	0.418	ug/Kg
91-20-3	Naphthalene	0.171U	4.88	0.171	ug/Kg
1634-04-4	tert-Butyl methyl ether (MTBE)	0.233U	4.88	0.233	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	40.7	41.9	ug/Kg	103	62 - 127
1868-53-7	Dibromofluoromethane	40.7	42	ug/Kg	103	65 - 130
2037-26-5	Toluene d8	40.7	41.3	ug/Kg	101	71 - 132
17060-07-0	1,2-Dichloroethane-d4	40.7	45.7	ug/Kg	112	62 - 125

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/03/2011 10:00	451659	3550B	1	03/04/2011 12:35	KCB	451798

CAS#	Parameter	Result	RDL	MDL	Units
83-32-9	Acenaphthene	15.7U	395	15.7	ug/Kg
208-96-8	Acenaphthylene	15.7U	395	15.7	ug/Kg
120-12-7	**Anthracene**	**35.5J**	**395**	**13.6**	**ug/Kg**
56-55-3	**Benzo(a)anthracene**	**63.2J**	**395**	**30.8**	**ug/Kg**
50-32-8	**Benzo(a)pyrene**	**41.5J**	**395**	**14.7**	**ug/Kg**
205-99-2	**Benzo(b)fluoranthene**	**60.2J**	**395**	**36.3**	**ug/Kg**
191-24-2	**Benzo(g,h,i)perylene**	**31.3J**	**395**	**12.6**	**ug/Kg**
207-08-9	**Benzo(k)fluoranthene**	**51.8J**	**395**	**16.0**	**ug/Kg**
218-01-9	**Chrysene**	**107J**	**395**	**17.3**	**ug/Kg**
53-70-3	Dibenz(a,h)anthracene	13.7U	395	13.7	ug/Kg
206-44-0	**Fluoranthene**	**269J**	**395**	**7.79**	**ug/Kg**
86-73-7	Fluorene	15.4U	395	15.4	ug/Kg
193-39-5	Indeno(1,2,3-cd)pyrene	36.9U	395	36.9	ug/Kg
91-20-3	**Naphthalene**	**48.1J**	**395**	**15.8**	**ug/Kg**
85-01-8	**Phenanthrene**	**174J**	**395**	**12.7**	**ug/Kg**
129-00-0	**Pyrene**	**175J**	**395**	**18.3**	**ug/Kg**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	1660	1550	ug/Kg	93	46 - 123
321-60-8	2-Fluorobiphenyl	1660	1610	ug/Kg	97	47 - 127
1718-51-0	Terphenyl-d14	1660	1660	ug/Kg	100	38 - 167

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021807	SB-7	Solid	02/24/2011 14:50	03/02/2011 09:20

SW-846 6010B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/02/2011 13:03	451653	SW-846 3050B	1	03/03/2011 17:31	BNB	451751

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	7.60	0.71	0.085	mg/kg

RESULTS REPORTED ON A DRY WEIGHT BASIS

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021808	SB-8	Solid	02/25/2011 10:25	03/02/2011 09:20

SW-846 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/03/2011 14:12	RJU	451717

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	0.107U	5.07	0.107	ug/Kg
108-88-3	Toluene	0.268U	5.07	0.268	ug/Kg
100-41-4	Ethylbenzene	0.222U	5.07	0.222	ug/Kg
1330-20-7	Xylene (total)	0.434U	10.1	0.434	ug/Kg
91-20-3	Naphthalene	0.177U	5.07	0.177	ug/Kg
1634-04-4	**tert-Butyl methyl ether (MTBE)**	**4.34J**	**5.07**	**0.242**	**ug/Kg**

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	39.8	40	ug/Kg	100	62 - 127
1868-53-7	Dibromofluoromethane	39.8	42.8	ug/Kg	108	65 - 130
2037-26-5	Toluene d8	39.8	39.1	ug/Kg	98	71 - 132
17060-07-0	1,2-Dichloroethane-d4	39.8	43.8	ug/Kg	110	62 - 125

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/03/2011 10:00	451659	3550B	1	03/04/2011 12:51	KCB	451798

CAS#	Parameter	Result	RDL	MDL	Units
83-32-9	Acenaphthene	16.6U	419	16.6	ug/Kg
208-96-8	Acenaphthylene	16.6U	419	16.6	ug/Kg
120-12-7	Anthracene	14.5U	419	14.5	ug/Kg
56-55-3	Benzo(a)anthracene	32.8U	419	32.8	ug/Kg
50-32-8	Benzo(a)pyrene	15.6U	419	15.6	ug/Kg
205-99-2	Benzo(b)fluoranthene	38.6U	419	38.6	ug/Kg
191-24-2	Benzo(g,h,i)perylene	13.3U	419	13.3	ug/Kg
207-08-9	Benzo(k)fluoranthene	17.0U	419	17.0	ug/Kg
218-01-9	Chrysene	18.4U	419	18.4	ug/Kg
53-70-3	Dibenz(a,h)anthracene	14.6U	419	14.6	ug/Kg
206-44-0	Fluoranthene	8.28U	419	8.28	ug/Kg
86-73-7	Fluorene	16.4U	419	16.4	ug/Kg
193-39-5	Indeno(1,2,3-cd)pyrene	39.2U	419	39.2	ug/Kg
91-20-3	Naphthalene	16.8U	419	16.8	ug/Kg
85-01-8	Phenanthrene	13.5U	419	13.5	ug/Kg
129-00-0	Pyrene	19.4U	419	19.4	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	1660	1550	ug/Kg	93	46 - 123
321-60-8	2-Fluorobiphenyl	1660	1540	ug/Kg	93	47 - 127
1718-51-0	Terphenyl-d14	1660	1950	ug/Kg	117	38 - 167

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21103021808	SB-8	Solid	02/25/2011 10:25	03/02/2011 09:20

SW-846 6010B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
03/02/2011 13:03	451653	SW-846 3050B	2	03/04/2011 11:37	BNB	451806

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	5.68	1.53	0.18	mg/kg

SW-846 9060 TOC

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	03/03/2011 11:50	AEL	451706

CAS#	Parameter	Result	RDL	MDL	Units
C-012	Total Organic Carbon	868	200	50.0	mg/kg

RESULTS REPORTED ON A DRY WEIGHT BASIS

GC/MS Volatiles Quality Control Summary

Analytical Batch 451717	Client ID	MB451717			LCS451717			LCSD451717			
Prep Batch N/A	GCAL ID	925826			925827			925828			
	Sample Type	Method Blank			LCS			LCSD			
	Analytical Date	03/03/2011 10:38			03/03/2011 08:14			03/03/2011 12:00			
	Matrix	Solid			Solid			Solid			
SW-846 8260B		**Units** Result	ug/Kg RDL	**Spike** Added	**Result**	**% R**	**Control** Limits % R	**Result**	**% R**	**RPD**	**RPD** Limit
100-41-4	Ethylbenzene	0.219U	0.219	50.0	54.8	110	74 - 130	47.0	94	15	30
1634-04-4	tert-Butyl methyl ether (MTBE)	0.239U	0.239	50.0	48.6	97	69 - 126	49.0	98	0.8	30
1330-20-7	Xylene (total)	0.428U	0.428	150	170	113	71 - 129	151	101	12	30
91-20-3	Naphthalene	0.175U	0.175	50.0	46.6	93	54 - 132	44.6	89	4	30
71-43-2	Benzene	0.106U	0.106	50.0	55.1	110	73 - 128	51.1	102	8	30
108-88-3	Toluene	0.264U	0.264	50.0	57.1	114	74 - 121	51.2	102	11	30
Surrogate											
460-00-4	4-Bromofluorobenzene	51.1	102	50	50.4	101	62 - 127	50.3	101		
1868-53-7	Dibromofluoromethane	49.1	98	50	49.9	100	65 - 130	50.3	101		
2037-26-5	Toluene d8	51.1	102	50	49.3	99	71 - 132	48.6	97		
17060-07-0	1,2-Dichloroethane-d4	49.1	98	50	49.6	99	62 - 125	49.4	99		

Analytical Batch 451717	Client ID	CONFERMATION SAMPLE			925360MS			925360MSD			
Prep Batch N/A	GCAL ID	21103021901			925833			925834			
	Sample Type	SAMPLE			MS			MSD			
	Analytical Date	03/03/2011 11:20			03/03/2011 12:26			03/03/2011 12:52			
	Matrix	Solid			Solid			Solid			
SW-846 8260B		**Units** Result	ug/Kg RDL	**Spike** Added	**Result**	**% R**	**Control** Limits % R	**Result**	**% R**	**RPD**	**RPD** Limit
100-41-4	Ethylbenzene	0.00	0.216	49.2	41.8	85	74 - 130	38.8	79	7	30
1330-20-7	Xylene (total)	0.00	0.421	148	129	87	71 - 129	122	83	6	30
71-43-2	Benzene	0.00	0.104	49.2	44.1	90	73 - 128	44.1	90	0	21
108-88-3	Toluene	0.00	0.260	49.2	45.2	92	74 - 121	43.3	88	4	21
Surrogate											
460-00-4	4-Bromofluorobenzene			49.2	50.2	102	62 - 127	49.8	101		
1868-53-7	Dibromofluoromethane			49.2	51.2	104	65 - 130	52.6	107		
2037-26-5	Toluene d8			49.2	48.7	99	71 - 132	48.8	99		
17060-07-0	1,2-Dichloroethane-d4			49.2	48.9	99	62 - 125	52	106		

GC/MS Volatiles Quality Control Summary

Analytical Batch 451864	Client ID	MB451864			LCS451864			LCSD451864			
Prep Batch N/A	GCAL ID	926507			926508			926509			
	Sample Type	Method Blank			LCS			LCSD			
	Analytical Date	03/04/2011 22:43			03/04/2011 21:33			03/04/2011 21:53			
	Matrix	Solid			Solid			Solid			
SW-846 8260B		**Units**	ug/Kg	**Spike**	**Result**		**Control**	**Result**			**RPD**
		Result	**RDL**	**Added**		**% R**	**Limits % R**		**% R**	**RPD**	**Limit**
100-41-4	Ethylbenzene	11.0U	11.0	2500	2440	98	74 - 130	2310	92	5	30
1634-04-4	tert-Butyl methyl ether (MTBE)	12.0U	12.0	2500	2550	102	69 - 126	2550	102	0	30
1330-20-7	Xylene (total)	21.4U	21.4	7500	7330	98	71 - 129	7040	94	4	30
91-20-3	Naphthalene	8.75U	8.75	2500	2440	98	54 - 132	2380	95	2	30
71-43-2	Benzene	5.30U	5.30	2500	2460	98	73 - 128	2350	94	5	30
108-88-3	Toluene	13.2U	13.2	2500	2430	97	74 - 121	2350	94	3	30
Surrogate											
460-00-4	4-Bromofluorobenzene	2580	103	2500	2520	101	62 - 127	2550	102		
1868-53-7	Dibromofluoromethane	2460	98	2500	2660	106	65 - 130	2690	108		
2037-26-5	Toluene d8	2580	103	2500	2350	94	71 - 132	2380	95		
17060-07-0	1,2-Dichloroethane-d4	2660	106	2500	2680	107	62 - 125	2680	107		

GC/MS Semi-Volatiles Quality Control Summary

Analytical Batch	451754	**Client ID**	MB451659			LCS451659			LCSD451659			
Prep Batch	451659	**GCAL ID**	925477			925478			925479			
Prep Method	3550B	**Sample Type**	Method Blank			LCS			LCSD			
		Prep Date	03/03/2011 10:00			03/03/2011 10:00			03/03/2011 10:00			
		Analytical Date	03/03/2011 14:58			03/03/2011 15:14			03/03/2011 15:30			
		Matrix	Solid			Solid			Solid			
SW-846 8270D		**Units**	ug/Kg	**Spike**	**Result**		**Control**	**Result**			**RPD**	
		Result	**RDL**	**Added**		**% R**	**Limits % R**		**% R**	**RPD**	**Limit**	
208-96-8	Acenaphthylene	13.1U	13.1	3330	3150	95	53 - 120	3360	101	6	40	
120-12-7	Anthracene	11.4U	11.4	3330	3200	96	52 - 120	3500	105	9	40	
56-55-3	Benzo(a)anthracene	25.8U	25.8	3330	3300	99	48 - 120	3510	105	6	40	
205-99-2	Benzo(b)fluoranthene	30.4U	30.4	3330	2770	83	31 - 130	3080	92	11	40	
207-08-9	Benzo(k)fluoranthene	13.4U	13.4	3330	3460	104	36 - 122	3740	112	8	40	
191-24-2	Benzo(g,h,i)perylene	10.5U	10.5	3330	3010	90	29 - 134	3390	102	12	40	
50-32-8	Benzo(a)pyrene	12.3U	12.3	3330	3280	98	44 - 120	3490	105	6	40	
218-01-9	Chrysene	14.5U	14.5	3330	3060	92	51 - 120	3320	100	8	40	
53-70-3	Dibenz(a,h)anthracene	11.5U	11.5	3330	3000	90	27 - 129	3340	100	11	40	
206-44-0	Fluoranthene	6.52U	6.52	3330	2950	89	39 - 120	3230	97	9	40	
86-73-7	Fluorene	12.9U	12.9	3330	3010	90	48 - 120	3160	95	5	40	
193-39-5	Indeno(1,2,3-cd)pyrene	30.9U	30.9	3330	3030	91	43 - 132	3360	101	10	40	
91-57-6	2-Methylnaphthalene	8.96U	8.96	3330	2950	89	43 - 120	3110	93	5	40	
91-20-3	Naphthalene	13.2U	13.2	3330	2990	90	48 - 120	3260	98	9	40	
85-01-8	Phenanthrene	10.6U	10.6	3330	3120	94	53 - 120	3350	101	7	40	
90-12-0	1-Methylnaphthalene	12.5U	12.5	3330	3680	110	37 - 120	3860	116	5	50	
83-32-9	Acenaphthene	13.1U	13.1	3330	3070	92	50 - 120	3320	100	8	40	
129-00-0	Pyrene	15.3U	15.3	3330	3460	104	38 - 136	3620	109	5	40	
Surrogate												
4165-60-0	Nitrobenzene-d5	1570	94	1670	1470	88	46 - 123	1600	96			
321-60-8	2-Fluorobiphenyl	1660	100	1670	1520	91	47 - 127	1660	100			
1718-51-0	Terphenyl-d14	2110	127	1670	1830	110	38 - 167	1890	113			

GC/MS Semi-Volatiles Quality Control Summary

Analytical Batch 451754	**Client ID**	SB-1	925352MS	925352MSD	
Prep Batch 451659	**GCAL ID**	21103021801	925480	925481	
Prep Method 3550B	**Sample Type**	SAMPLE	MS	MSD	
	Prep Date	03/03/2011 10:00	03/03/2011 10:00	03/03/2011 10:00	
	Analytical Date	03/03/2011 15:46	03/03/2011 16:02	03/03/2011 16:19	
	Matrix	Solid	Solid	Solid	

SW-846 8270D		**Units**	ug/Kg	**Spike**	**Result**		**Control**	**Result**			**RPD**
		Result	**RDL**	**Added**		**% R**	**Limits % R**		**% R**	**RPD**	**Limit**
208-96-8	Acenaphthylene	0.00	12.9	3320	3370	101	53 - 120	3500	105	4	40
120-12-7	Anthracene	12.8	11.3	3320	3460	104	52 - 120	3460	103	0	40
56-55-3	Benzo(a)anthracene	25.8	25.5	3320	3460	103	48 - 120	3670	109	6	40
205-99-2	Benzo(b)fluoranthene	11.4	30.0	3320	3230	97	31 - 130	3230	97	0	40
207-08-9	Benzo(k)fluoranthene	20.7	13.2	3320	3060	91	36 - 122	3160	94	3	40
191-24-2	Benzo(g,h,i)perylene	13.0	10.4	3320	4370	131	29 - 134	4970	**149***	13	40
50-32-8	Benzo(a)pyrene	17.0	12.1	3320	3410	102	44 - 120	3450	103	1	40
218-01-9	Chrysene	23.2	14.3	3320	3320	99	51 - 120	3430	102	3	40
53-70-3	Dibenz(a,h)anthracene	6.51	11.3	3320	4340	**130***	27 - 129	4850	**145***	11	40
206-44-0	Fluoranthene	49.3	6.43	3320	3270	97	39 - 120	3290	97	0.6	40
86-73-7	Fluorene	32.7	12.7	3320	3260	97	48 - 120	3430	102	5	40
193-39-5	Indeno(1,2,3-cd)pyrene	11.8	30.5	3320	4330	130	43 - 132	4830	**145***	11	40
91-57-6	2-Methylnaphthalene	3980	8.93	3320	9060	**153***	43 - 120	9720	**172***	7	40
91-20-3	Naphthalene	3750	13.0	3320	8460	**142***	48 - 120	8940	**156***	6	40
85-01-8	Phenanthrene	74.7	10.5	3320	3400	100	53 - 120	3560	105	5	40
90-12-0	1-Methylnaphthalene	2170	12.5	3320	7200	**151***	37 - 120	7740	**167***	7	50
83-32-9	Acenaphthene	0.00	12.9	3320	3270	98	50 - 120	3390	102	4	40
129-00-0	Pyrene	45.5	15.1	3320	3240	96	38 - 136	3400	101	5	40
Surrogate											
4165-60-0	Nitrobenzene-d5	1520	92	1660	1520	92	46 - 123	1590	95		
321-60-8	2-Fluorobiphenyl	1660	101	1660	1640	99	47 - 127	1710	103		
1718-51-0	Terphenyl-d14	1780	108	1660	1700	102	38 - 167	1820	109		

General Chromatography Quality Control Summary

Analytical Batch	451796	**Client ID**	MB451661			LCS451661				LCSD451661		
Prep Batch	451661	**GCAL ID**	925495			925496				925497		
Prep Method	3550B	**Sample Type**	Method Blank			LCS				LCSD		
		Prep Date	03/03/2011 08:50			03/03/2011 08:50				03/03/2011 08:50		
		Analytical Date	03/03/2011 14:27			03/03/2011 14:45				03/03/2011 15:03		
		Matrix	Solid			Solid				Solid		
SW-846 8015B		**Units**	ug/Kg	**Spike**				**Control**				**RPD**
		Result	**RDL**	**Added**	**Result**	**% R**	**Limits % R**		**Result**	**% R**	**RPD**	**Limit**
GCSV-00-4	Diesel Range Organics	1290U	1290	33300	28300	85	50 - 124		29500	89	4	40
Surrogate												
84-15-1	o-Terphenyl	1470	88	1670	1540	92	27 - 129		1560	94		

Analytical Batch	451796	**Client ID**	T69370102			925397MS				925397MSD		
Prep Batch	451661	**GCAL ID**	21103022502			925498				925499		
Prep Method	3550B	**Sample Type**	SAMPLE			MS				MSD		
		Prep Date	03/03/2011 08:50			03/03/2011 08:50				03/03/2011 08:50		
		Analytical Date	03/03/2011 15:39			03/03/2011 15:57				03/03/2011 16:14		
		Matrix	Solid			Solid				Solid		
SW-846 8015B		**Units**	ug/Kg	**Spike**				**Control**				**RPD**
		Result	**RDL**	**Added**	**Result**	**% R**	**Limits % R**		**Result**	**% R**	**RPD**	**Limit**
GCSV-00-4	Diesel Range Organics	3070	1290	33200	31300	85	50 - 124		32000	87	2	40
Surrogate												
84-15-1	o-Terphenyl			1660	1520	92	27 - 129		1470	88		

Inorganics Quality Control Summary

Analytical Batch	451751	**Client ID**	MB451653			LCS451653		
Prep Batch	451653	**GCAL ID**	925447			925448		
Prep Method	SW-846	**Sample Type**	Method Blank			LCS		
	3050B	**Prep Date**	03/02/2011 13:03			03/02/2011 13:03		
		Analytical Date	03/03/2011 15:53			03/03/2011 16:00		
		Matrix	Solid			Solid		
SW-846 6010B		**Units**	mg/kg	**Spike**	**Result**		**Control**	
		Result	**RDL**	**Added**		**% R**	**Limits % R**	
7439-92-1	Lead	0.072U	0.072	20.0	19.2	96	80 - 120	

Analytical Batch	451751	**Client ID**	CONFERMATION SAMPLE			925360MS		
Prep Batch	451653	**GCAL ID**	21103021901			925450		
Prep Method	SW-846	**Sample Type**	SAMPLE			MS		
	3050B	**Prep Date**	03/02/2011 13:03			03/02/2011 13:03		
		Analytical Date	03/03/2011 16:06			03/03/2011 16:20		
		Matrix	Solid			Solid		
SW-846 6010B		**Units**	mg/kg	**Spike**	**Result**		**Control**	
		Result	**RDL**	**Added**		**% R**	**Limits % R**	
7439-92-1	Lead	9.18	0.072	20.0	24.5	76	75 - 125	

Analytical Batch	451751	**Client ID**	CONFERMATION SAMPLE	925360DUP			
Prep Batch	451653	**GCAL ID**	21103021901	925449			
Prep Method	SW-846	**Sample Type**	SAMPLE	DUP			
	3050B	**Prep Date**	03/02/2011 13:03	03/02/2011 13:03			
		Analytical Date	03/03/2011 16:06	03/03/2011 16:13			
		Matrix	Solid	Solid			
SW-846 6010B		**Units**	mg/kg	**Result**	**RPD**	**RPD**	
		Result	**RDL**			**Limit**	
7439-92-1	Lead	9.18	0.072	8.42	9	20	

General Chemistry Quality Control Summary

Analytical Batch 451706	Client ID	MB451706			LCS451706			LCSD451706			
Prep Batch N/A	GCAL ID	925754			925755			925756			
	Sample Type	Method Blank			LCS			LCSD			
	Analytical Date	03/03/2011 09:31			03/03/2011 09:42			03/03/2011 09:50			
	Matrix	Solid			Solid			Solid			
SW-846 9060 TOC	Units	Result	mg/kg RDL	Spike Added	Result	% R	Control Limits % R	Result	% R	RPD	RPD Limit
C-012 Total Organic Carbon		50.0U	50.0	10000	10300	103	69 - 128	10300	103	0	25

Analytical Batch 451706	Client ID	SB-1 10-12		924619DUP		
Prep Batch N/A	GCAL ID	21102260303		925759		
	Sample Type	SAMPLE		DUP		
	Analytical Date	03/03/2011 10:24		03/03/2011 11:06		
	Matrix	Solid		Solid		
SW-846 9060 TOC	Units	Result	mg/kg RDL	Result	RPD	RPD Limit
C-012 Total Organic Carbon		1170	50.0	1440	21	25

GCAL
GULF COAST ANALYTICAL LABORATORIES, INC

SAMPLE RECEIVING CHECKLIST

Workorder: 211030218

Client: 4565 - Access Analytical

Profile: 79922 - Enviro-Test Services-

Line Item: 1 - Soils PAH/BTEX//NAPT/DRO/TOC

Received by: Mason, Adam C.

Received Date/Time: 3/2/2011 9:20:00 AM

Samples Received via: FEDEX

Number of Coolers Received: _____

Cooler tracking numbers(s): 871260758 7313

Cooler temperature(s): 4.8°

Were all coolers received at a temperature of 0 - 6° C?	☑ Yes	☐ No	☐ N/A
Were all custody seals intact?	☑ Yes	☐ No	☐ N/A
Were all samples recevied in proper containers?	☑ Yes	☐ No	☐ N/A
Were all samples properly preserved?	☑ Yes	☐ No	☐ N/A
Was preservative added to any container at the lab?	☐ Yes	☑ No	☐ N/A
Were all containers received in good condition?	☑ Yes	☐ No	☐ N/A
Were all VOA vials received with no head space?	☐ Yes	☐ No	☑ N/A
Do all sample labels match the Chain of Custody?	☑ Yes	☐ No	☐ N/A
Was the client notified about any discrepancies?	☐ Yes	☐ No	☐ N/A

Notes/Comments: _____

Access 45565 211030218 3/1/11

Access Analytical - Chain of Custody Record

LAB USE ONLY

Sales Order # _____ PO # _____ Access Quote # _____

Project Work Order # _____

Laboratory ID: _____

Company Name: Enviro-Test Services
Report To: Terry Teate
Address: P.O. Box 2237
City: Irmo State: SC Zip: 29063
Phone: 413-4936 Fax:
Email:
Project ID: Broad River BP
Sampled By: TT

Preservative: (*see codes)
Container Type: (*see codes)

ACCESS ANALYTICAL, INC.
7478 Carlisle Street
Irmo, SC 29063
Phone: (803) 781-4243
Fax: 781-4303
www.axs-inc.com

*Preservative Codes (place corresponding # in box above analysis field): 0 = None, 1 = HCl, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Na2S2O3, 6 = Methanol, 7 = NaHSO4, 8 = CH3OH, 9 = NaOH/ZnOAC, 10 = H2SO4

*Matrix Codes (place corresponding code in matrix column): GW = ground water, WW = waste water, DW = drinking water, S = soil, SL = sludge, A = air, IW = industrial waste, WO = waste oil, OT = other (specify in comments section)

*Program Area Codes: CWA = Clean Water Act (for wastewater), SDWA = Safe Drinking Water Act (for drinking waters), SHW = Solid and Hazardous Wastes (for soils, ground waters, and waste samples)

*Container Type: G = Glass, P = Plastic

Sample ID/Description	Date Collected	Time Collected	Type: (grab or composite)	Matrix (see codes)	Program Area (see codes)	TOTAL # of containers	BTEX, Naphs, MTBE	PAH's	Pb - Lead	TPH - DRO (3550)	Grain Size	TOC	NOTES / COMMENTS (if sample is a composite please use space below to note start/finish times & dates)
SB-1	2-24-11	0945	G	S	SHW	6	X	X	X	X	X		at 10' 1
SB-2	"	1000	"		"	4	"	"	"				at 5' 2
SB-3	"	1055	"		"	4	"	"	"				at 8' 3
SB-4	"	1128	"		"	4	"	"	"				at 6' 4
SB-5	"	1240	"		"	4	"	"	"				at 6' 5
SB-6	"	1330	"		"	4	"	"	"				at 10' 6
SB-7	"	1450	"		"	4	"	"	"				at 8' 7
SB-8	2-25-11	1025	"		"	5	"	"	"			X	at 35' 8

REQUESTED LAB ANALYSIS

Turnaround Time:
✓ Standard
___ RUSH*
*Date Required: _____
(For rush work, results emailed/faxed by end of business day on date required)

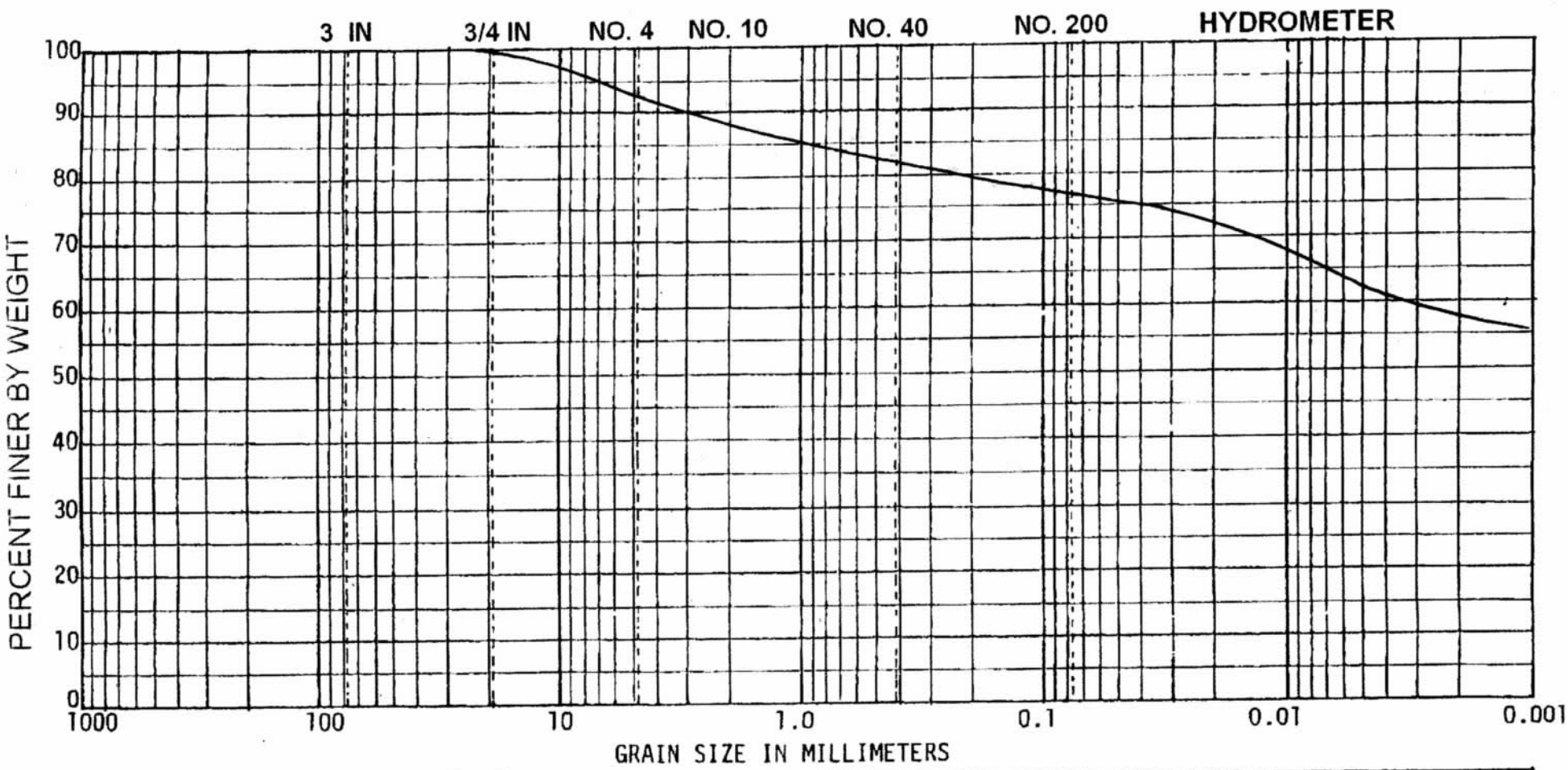
Project Location:
✓ SC
___ NC
___ Other
(specify) _____

Relinquished By:	Received By:	Date (mm-dd-yy)	Time (24HR)	Sample Temp. Upon Receipt (°C):	
Terry L Teate	M. Robertson	3/1/11	1700	____(°C)	____(N/A)
	Fedex			____(°C)	____(N/A)
Fed Up	ALM	3/2/11	0920	4.8 (°C)	____(N/A)
				____(°C)	____(N/A)

See Reverse for Terms and Conditions

Original Copy - Returned w/Report
Yellow Copy - Access File Copy
Pink Copy - Client Copy

Pg____of____



COBBLES	GRAVEL		SAND			SILT OR CLAY
	Coarse	Fine	Coarse	Medium	Fine	

SAMPLE	DEPTH	CLASSIFICATION	NAT WC	LL	PL	PI
SB-1		Tan Fine SAND with Rock				

GRAIN SIZE DISTRIBUTION

Access Analytical
Project Number: 111054

Broad River BP

GEO-SYSTEMS DESIGN & TESTING, INC.
GEOTECHNICAL SERVICES AND MATERIALS TESTING

APPENDIX D

Slug Test Form and Field Data

SUMMARY OF SLUG TEST

SOUTH CAROLINA
Department of Health and Environmental Control (DHEC)

Site Data

SITE ID: # 11946 COUNTY Richland

FACILITY NAME Broad River Road Amoco (BP)

Slug Data

See Appendix D Table ____ Figure ____ for a list of all data measurements.

Water Level Recovery Data was measured by Manually
(Hermit Data Logger, Manually with Water Level Indicator, etc.)

Complete the following table for each well tested.

Slug Test Conducted in Well Number	MW-1	MW-3		
Initial Rise/Drawdown in Well (feet)	5.60	11.82		
Radius of Well Casing (feet)	0.083	0.083		
Effective Radius of Well (feet)	0.167	0.167		
Static Saturated Aquifer Thickness (feet)	50.00	50.00		
Length of Well Screen (feet)	20.00	10.00		
Static Height of Water Column in Well (feet)	24.70	13.22		

Calculations

See Appendix D Table ____ Figure ____ for a list of all data measu-
The method for aquifer calculations was Bouwer-Rice (i.e., Bouwer-Rice, Cooper, etc.)

Calculated values by well were as follows:

Slug Test Conducted in Well(s) Number	MW-1	MW-3	
Hydraulic Conductivity (feet/day)	0.0959	0.1065	

The aquifer is ____ confined x semi-confined ____ water table (Check as appropriate).

The estimated seepage velocity is 0.6 feet per year based on
a hydraulic conductivity of 0.1012, a hydraulic gradient of 0.004, and
a porosity of 25 per cent for clay

SUMMARY OF SLUG TEST

Broad River Amoco (BP)
Columbia, SC
SCDHEC ID # 11946

Shallow:

Hydraulic Conductivity (k)

	MW-1	MW-3
0.1012 ft/day	0.0959	0.1065
36.938 ft/year		
0.030846 m/day		
11.2587 m/year		

Velocity: 0.001619 ft/day $v=(kxdh/dl)/n_e$

0.591008 ft/year or 0.6 ft/year
0.180139 m/year 0.2 m/year

Average hydraulic gradient (dh/dl) 0.004 ft/ft
Effective Porosity (n_e) 0.25

Shallow:

Hydraulic Conductivity (k)

	MW-1	MW-3	MW-2
0.069 ft/day	0.0959	0.1065	0.0046
25.185 ft/year			
0.021031 m/day			
7.676388 m/year			

Velocity: 0.001104 ft/day $v=(kxdh/dl)/n_e$

0.40296 ft/year or 0.4 ft/year
0.122822 m/year 0.1 m/year

Average hydraulic gradient (dh/dl) 0.004 ft/ft
Effective Porosity (n_e) 0.25

Broad River BP
4335 Broad River Rd
Columbia SC
SCDHEC # 11946

SLUG TEST

MW-1
3/28/2011

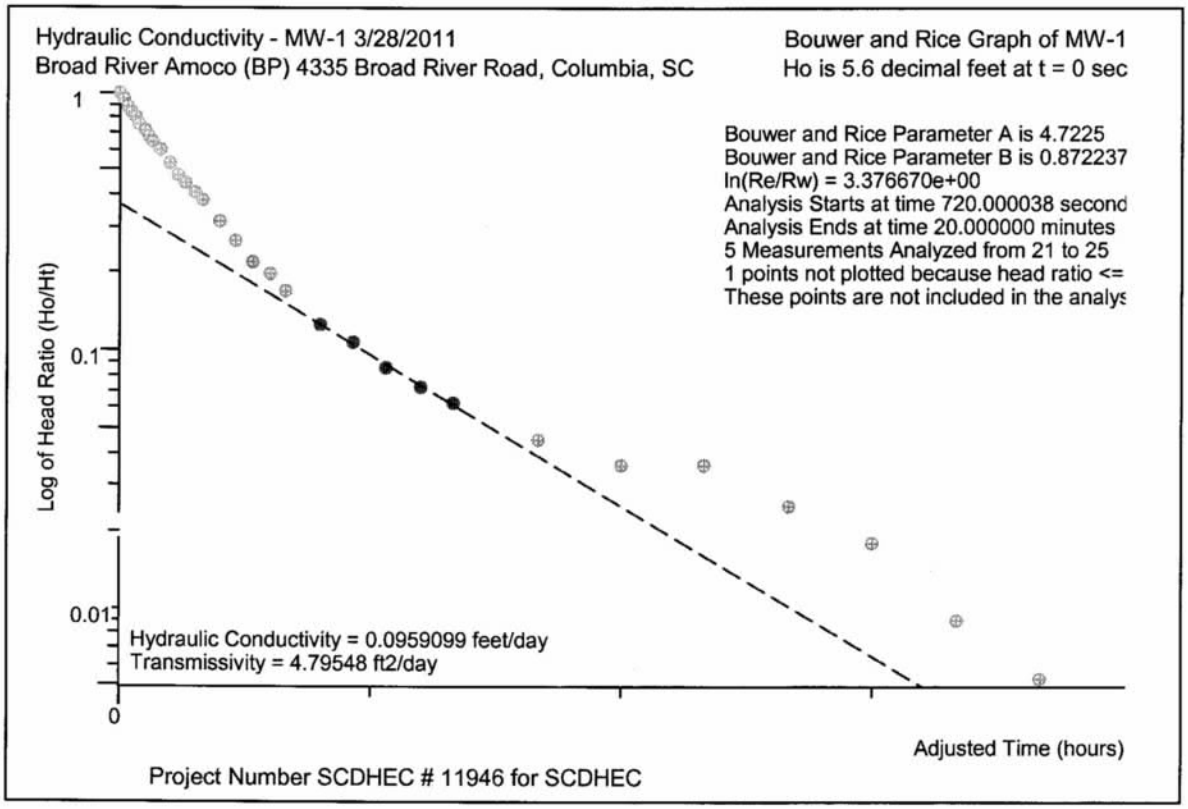
		Bottom of Well	Height of Water Table
STATIC:	15.3 ft.	40 ft.	24.7 ft.

Time (minutes)	Depth	Drawdown	Displacement
0	20.9	19.1	5.6
0.25	20.55	19.45	5.25
0.5	20.2	19.8	4.9
0.75	19.98	20.02	4.68
1	19.78	20.22	4.48
1.25	19.5	20.5	4.2
1.5	19.28	20.72	3.98
1.75	19.06	20.94	3.76
2	18.9	21.1	3.6
2.5	18.65	21.35	3.35
3	18.28	21.72	2.98
3.5	17.97	22.03	2.67
4	17.78	22.22	2.48
4.5	17.6	22.4	2.3
5	17.42	22.58	2.12
6	17.05	22.95	1.75
7	16.78	23.22	1.48
8	16.52	23.48	1.22
9	16.4	23.6	1.1
10	16.25	23.75	0.95
12	16	24	0.7
14	15.9	24.1	0.6
16	15.78	24.22	0.48
18	15.7	24.3	0.4
20	15.65	24.35	0.35
25	15.55	24.45	0.25
30	15.5	24.5	0.2
35	15.5	24.5	0.2
40	15.44	24.56	0.14
45	15.4	24.6	0.1
50	15.35	24.65	0.05
55	15.33	24.67	0.03
60	15.3	24.7	0
65	15.3	24.7	0
70	15.3	24.7	0
75	15.3	24.7	0
80	15.3	24.7	0
85	15.3	24.7	0
90	15.3	24.7	0

Data from file:	C:\ENVIRO~1\BROADR~1\MW1.SLG
Title:	Hydraulic Conductivity - MW-1
Site Name:	Broad River Amoco (BP)
Location:	4335 Broad River Road, Columbia, SC
Client:	SCDHEC
Project Number:	SCDHEC # 11946
Test Date:	3/28/2011
Well Number:	MW-1
Casing Radius:	0.083 feet
Effective Well Radius:	0.167 feet
Aquifer Thickness:	50 feet
Water Table to Screen Bottom:	24.7 feet
Screen Length:	20 feet
Static Water Level:	0 decimal feet

K ratio is not entered
There are 33 time and drawdown measurements
Tests starts with trial 1
Time values will be adjusted by 0 days (0.000000 seconds)

Trial	Time (minutes)	Adjusted Time (minutes)	Drawdown (decimal feet)	Head (decimal feet)	Head Ratio
1	0	0	5.6	5.6	1
2	0.25	0.25	5.25	5.25	0.9375
3	0.5	0.5	4.9	4.9	0.875
4	0.75	0.75	4.68	4.68	0.835714
5	0.999999	0.999999	4.48	4.48	0.8
6	1.25	1.25	4.2	4.2	0.75
7	1.5	1.5	3.98	3.98	0.710714
8	1.75	1.75	3.76	3.76	0.671429
9	2	2	3.6	3.6	0.642857
10	2.5	2.5	3.35	3.35	0.598214
11	3	3	2.98	2.98	0.532143
12	3.5	3.5	2.67	2.67	0.476786
13	4	4	2.48	2.48	0.442857
14	4.5	4.5	2.3	2.3	0.410714
15	5	5	2.12	2.12	0.378571
16	6	6	1.75	1.75	0.3125
17	7	7	1.48	1.48	0.264286
18	8	8	1.22	1.22	0.217857
19	9	9	1.1	1.1	0.196429
20	10	10	0.95	0.95	0.169643
21	12	12	0.7	0.7	0.125
22	14	14	0.6	0.6	0.107143
23	16	16	0.48	0.48	0.0857143
24	18	18	0.4	0.4	0.0714286
25	20	20	0.35	0.35	0.0625
26	25	25	0.25	0.25	0.0446429
27	30	30	0.2	0.2	0.0357143
28	35	35	0.2	0.2	0.0357143
29	40	40	0.14	0.14	0.025
30	45	45	0.1	0.1	0.0178571
31	50	50	0.05	0.05	0.00892857
32	55	55	0.03	0.03	0.00535714
33	60	60	0	0	0


Hydraulic Conductivity - MW-1 3/28/2011
Broad River Amoco (BP) 4335 Broad River Road, Columbia, SC
Bouwer and Rice Graph of MW-1
Ho is 5.6 decimal feet at t = 0 sec
Bouwer and Rice Parameter A is 4.7225
Bouwer and Rice Parameter B is 0.872237
ln(Re/Rw) = 3.376670e+00
Analysis Starts at time 720.000038 second
Analysis Ends at time 20.000000 minutes
5 Measurements Analyzed from 21 to 25
1 points not plotted because head ratio <=
These points are not included in the analys
Log of Head Ratio (Ho/Ht)
1
0.1
0.01
0
Hydraulic Conductivity = 0.0959099 feet/day
Transmissivity = 4.79548 ft2/day
Adjusted Time (hours)
Project Number SCDHEC # 11946 for SCDHEC

Broad River BP
4335 Broad River Rd
Columbia SC
SCDHEC # 11946

SLUG TEST

MW-3
3/25/2011
STATIC: 14.78 ft.

Bottom of Well 28 ft.

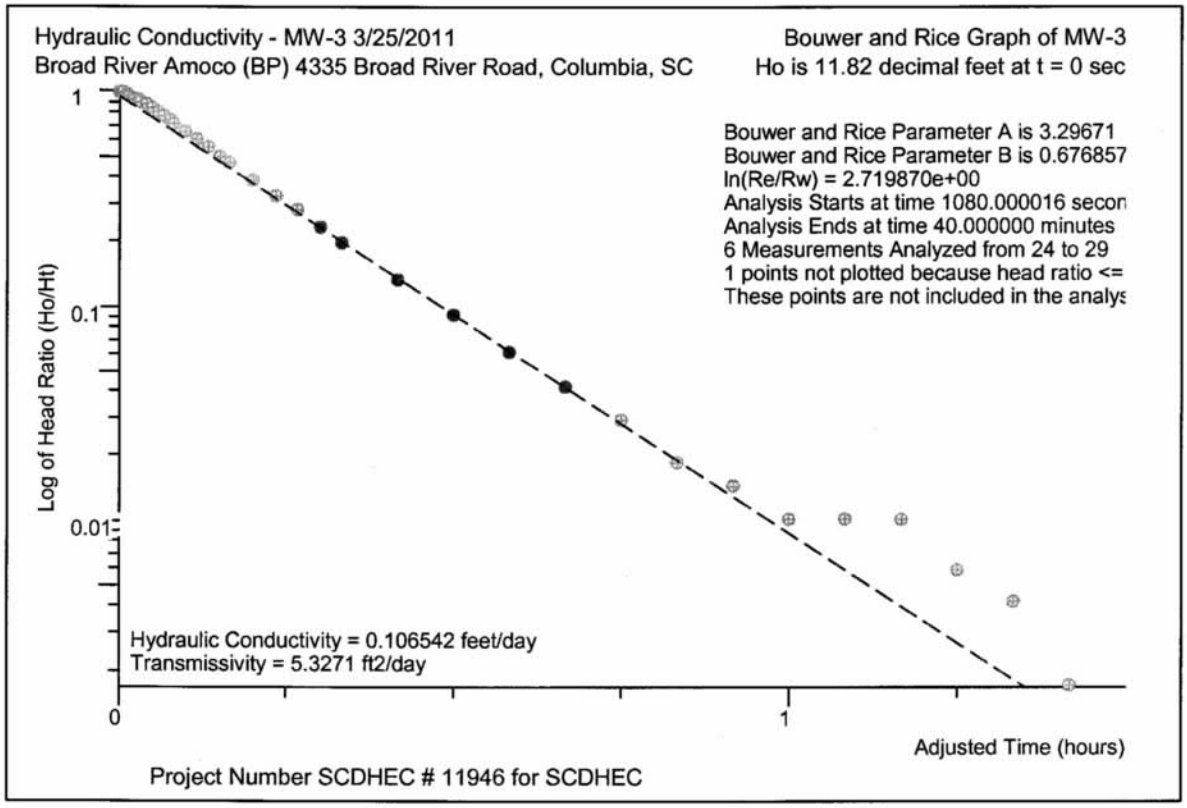
Height of Water Table 13.22 ft.

Time (minutes)	Depth	Drawdown	Displacement
0	26.6	1.4	11.82
0.25	26.5	1.5	11.72
0.5	26.48	1.52	11.7
0.75	26.18	1.82	11.4
1	25.9	2.1	11.12
1.25	25.7	2.3	10.92
1.5	25.58	2.42	10.8
1.75	25.45	2.55	10.67
2	25.3	2.7	10.52
2.5	25.1	2.9	10.32
3	24.65	3.35	9.87
3.5	24.28	3.72	9.5
4	23.92	4.08	9.14
4.5	23.55	4.45	8.77
5	23.15	4.85	8.37
6	22.4	5.6	7.62
7	21.84	6.16	7.06
8	21.25	6.75	6.47
9	20.7	7.3	5.92
10	20.25	7.75	5.47
12	19.35	8.65	4.57
14	18.65	9.35	3.87
16	18.08	9.92	3.3
18	17.55	10.45	2.77
20	17.13	10.87	2.35
25	16.34	11.66	1.56
30	15.85	12.15	1.07
35	15.5	12.5	0.72
40	15.28	12.72	0.5
45	15.13	12.87	0.35
50	15	13	0.22
55	14.95	13.05	0.17
60	14.9	13.1	0.12
65	14.9	13.1	0.12
70	14.9	13.1	0.12
75	14.85	13.15	0.07
80	14.83	13.17	0.05
85	14.8	13.2	0.02
90	14.78	13.22	0

Data from file:	C:\ENVIRO~1\BROADR~1\MW3.SLG
Title:	Hydraulic Conductivity - MW-3
Site Name:	Broad River Amoco (BP)
Location:	4335 Broad River Road, Columbia, SC
Client:	SCDHEC
Project Number:	SCDHEC # 11946
Test Date:	3/25/2011
Well Number:	MW-3
Casing Radius:	0.083 feet
Effective Well Radius:	0.167 feet
Aquifer Thickness:	50 feet
Water Table to Screen Bottom:	13.22 feet
Screen Length:	10 feet
Static Water Level:	0 decimal feet

K ratio is not entered
There are 39 time and drawdown measurements
Tests starts with trial 1
Time values will be adjusted by 0 days (0.000000 seconds)

Trial	Time (minutes)	Adjusted Time (minutes)	Drawdown (decimal feet)	Head (decimal feet)	Head Ratio
1	0	0	11.82	11.82	1
2	0.25	0.25	11.72	11.72	0.99154
3	0.5	0.5	11.7	11.7	0.989848
4	0.75	0.75	11.4	11.4	0.964467
5	1	1	11.12	11.12	0.940778
6	1.25	1.25	10.92	10.92	0.923858
7	1.5	1.5	10.8	10.8	0.913706
8	1.75	1.75	10.67	10.67	0.902707
9	2	2	10.52	10.52	0.890017
10	2.5	2.5	10.32	10.32	0.873096
11	3	3	9.87	9.87	0.835025
12	3.5	3.5	9.5	9.5	0.803723
13	4	4	9.14	9.14	0.773266
14	4.5	4.5	8.77	8.77	0.741963
15	5	5	8.37	8.37	0.708122
16	6	6	7.62	7.62	0.64467
17	7	7	7.06	7.06	0.597293
18	8	8	6.47	6.47	0.547377
19	9	9	5.92	5.92	0.500846
20	10	10	5.47	5.47	0.462775
21	12	12	4.57	4.57	0.386633
22	14	14	3.87	3.87	0.327411
23	16	16	3.3	3.3	0.279188
24	18	18	2.77	2.77	0.234349
25	20	20	2.35	2.35	0.198816
26	25	25	1.56	1.56	0.13198
27	30	30	1.07	1.07	0.0905245
28	35	35	0.72	0.72	0.0609137
29	40	40	0.5	0.5	0.0423012
30	45	45	0.35	0.35	0.0296108
31	50	50	0.22	0.22	0.0186125
32	55	55	0.17	0.17	0.0143824
33	60	60	0.12	0.12	0.0101523
34	65	65	0.12	0.12	0.0101523
35	70	70	0.12	0.12	0.0101523
36	75	75	0.07	0.07	0.00592217
37	80	80	0.05	0.05	0.00423012
38	85	85	0.02	0.02	0.00169205
39	90	90	0	0	0


Hydraulic Conductivity - MW-3 3/25/2011
Broad River Amoco (BP) 4335 Broad River Road, Columbia, SC
Bouwer and Rice Graph of MW-3
Ho is 11.82 decimal feet at t = 0 sec
Bouwer and Rice Parameter A is 3.29671
Bouwer and Rice Parameter B is 0.676857
ln(Re/Rw) = 2.719870e+00
Analysis Starts at time 1080.000016 secon
Analysis Ends at time 40.000000 minutes
6 Measurements Analyzed from 24 to 29
1 points not plotted because head ratio <=
These points are not included in the analys
Log of Head Ratio (Ho/Ht)
1
0.1
0.01
Hydraulic Conductivity = 0.106542 feet/day
Transmissivity = 5.3271 ft2/day
0
1
Adjusted Time (hours)
Project Number SCDHEC # 11946 for SCDHEC

Broad River BP
4335 Broad River Rd
Columbia SC
SCDHEC # 11946

SLUG TEST

MW-2
3/28/2011

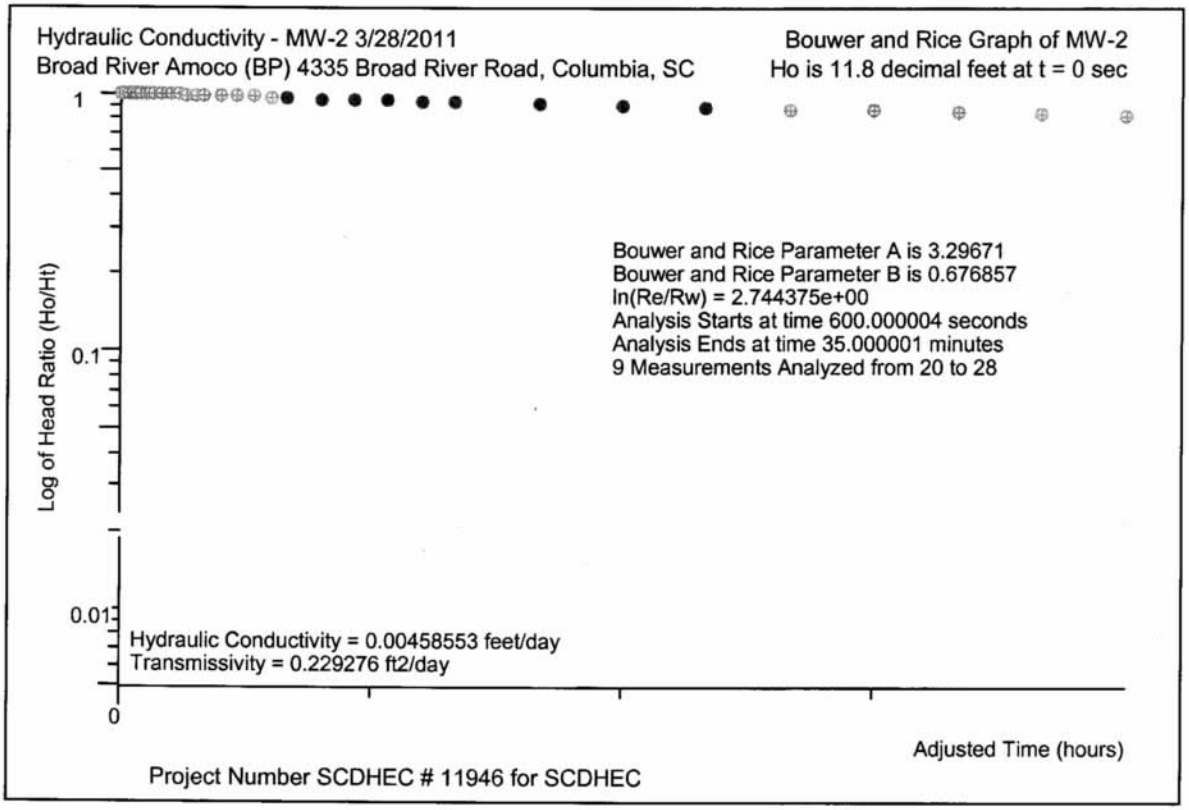
		Bottom of Well	Height of Water Table
STATIC:	14.05 ft.	28 ft.	13.95 ft.

Time (minutes)	Depth	Drawdown	Displacement
0	25.85	2.15	11.8
0.25	25.82	2.18	11.77
0.5	25.8	2.2	11.75
0.75	25.77	2.23	11.72
1	25.77	2.23	11.72
1.25	25.75	2.25	11.7
1.5	25.74	2.26	11.69
1.75	25.73	2.27	11.68
2	25.71	2.29	11.66
2.5	25.7	2.3	11.65
3	26.68	1.32	11.63
3.5	25.65	2.35	11.6
4	26.61	1.39	11.56
4.5	25.58	2.42	11.53
5	25.55	2.45	11.5
6	25.53	2.47	11.48
7	25.5	2.5	11.45
8	25.45	2.55	11.4
9	25.4	2.6	11.35
10	25.35	2.65	11.3
12	25.25	2.75	11.2
14	25.2	2.8	11.15
16	27.14	0.86	11.09
18	25.05	2.95	11
20	24.96	3.04	10.91
25	24.8	3.2	10.75
30	24.63	3.37	10.58
35	24.42	3.58	10.37
40	24.3	3.7	10.25
45	24.16	3.84	10.11
50	24.05	3.95	10
55	23.86	4.14	9.81
60	23.7	4.3	9.65
65	23.7	4.3	9.65
70	23.7	4.3	9.65
75	23.7	4.3	9.65
80	23.7	4.3	9.65
85	23.7	4.3	9.65
90	23.7	4.3	9.65

Data from file:	C:\ENVIRO~1\BROADR~1\MW2.SLG
Title:	Hydraulic Conductivity - MW-2
Site Name:	Broad River Amoco (BP)
Location:	4335 Broad River Road, Columbia, SC
Client:	SCDHEC
Project Number:	SCDHEC # 11946
Test Date:	3/28/2011
Well Number:	MW-2
Casing Radius:	0.083 feet
Effective Well Radius:	0.167 feet
Aquifer Thickness:	50 feet
Water Table to Screen Bottom:	13.95 feet
Screen Length:	10 feet
Static Water Level:	0 decimal feet

K ratio is not entered
There are 33 time and drawdown measurements
Tests starts with trial 1
Time values will be adjusted by 0 days (0.000000 seconds)

Trial	Time (minutes)	Adjusted Time (minutes)	Drawdown (decimal feet)	Head (decimal feet)	Head Ratio
1	0	0	11.8	11.8	1
2	0.25	0.25	11.77	11.77	0.997458
3	0.5	0.5	11.75	11.75	0.995763
4	0.75	0.75	11.72	11.72	0.99322
5	1	1	11.72	11.72	0.99322
6	1.25	1.25	11.7	11.7	0.991525
7	1.5	1.5	11.69	11.69	0.990678
8	1.75	1.75	11.68	11.68	0.98983
9	2	2	11.66	11.66	0.988136
10	2.5	2.5	11.65	11.65	0.987288
11	3	3	11.63	11.63	0.985593
12	3.5	3.5	11.6	11.6	0.983051
13	4	4	11.56	11.56	0.979661
14	4.5	4.5	11.53	11.53	0.977119
15	5	5	11.5	11.5	0.974576
16	6	6	11.48	11.48	0.972881
17	7	7	11.45	11.45	0.970339
18	8	8	11.4	11.4	0.966102
19	9	9	11.35	11.35	0.961864
20	10	10	11.3	11.3	0.957627
21	12	12	11.2	11.2	0.949153
22	14	14	11.15	11.15	0.944915
23	16	16	11.09	11.09	0.939831
24	18	18	11	11	0.932203
25	20	20	10.91	10.91	0.924576
26	25	25	10.75	10.75	0.911017
27	30	30	10.58	10.58	0.89661
28	35	35	10.37	10.37	0.878814
29	40	40	10.25	10.25	0.868644
30	45	45	10.11	10.11	0.85678
31	50	50	10	10	0.847458
32	55	55	9.81	9.81	0.831356
33	60	60	9.65	9.65	0.817797


Hydraulic Conductivity - MW-2 3/28/2011
Broad River Amoco (BP) 4335 Broad River Road, Columbia, SC
Bouwer and Rice Graph of MW-2
Ho is 11.8 decimal feet at t = 0 sec
Log of Head Ratio (Ho/Ht)
1
0.1
0.01
0
Bouwer and Rice Parameter A is 3.29671
Bouwer and Rice Parameter B is 0.676857
ln(Re/Rw) = 2.744375e+00
Analysis Starts at time 600.000004 seconds
Analysis Ends at time 35.000001 minutes
9 Measurements Analyzed from 20 to 28
Hydraulic Conductivity = 0.00458553 feet/day
Transmissivity = 0.229276 ft2/day
Adjusted Time (hours)
Project Number SCDHEC # 11946 for SCDHEC

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Page _ of _

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 3-5-11
Field Personnel T. Teate
General Weather Conditions Cloudy Overcast
Ambient Air Temperature 70 °C

Facility Name Broad River BP Site ID# 11946

Quality Assurance:

pH Meter:
serial no. _____
pH=4.0 _____
pH=7.0 _____
pH=10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

Relinquished by	Date /Time	Received by	Date/Time

Well # MW-2

Well Diameter(D) 2 inch or ____ feet
conversion factor(C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth(TWD) 28 ft.
Depth to GW (DGW) 14.50 ft.

Length of Water Column(LWC=TWD-DGW) 13.5 ft.

1 Csg. Volume(LWC * C) = 13.5 x .163 = 2.2 gals.
3 Csg. Volumes = 3 x 2.2 = 6.6 gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling 6 gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	1415							
pH (s.u.)		8.7	8.0	8.0				
Specific Cond. (umhos/cm)		41	40	70				
Water Temp (°C)		21.3	21.6	22.1				
Turbidity (*)		Clear	Murky	LT org				
PID Readings								

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks Fe = 0.6 DO = 2.33

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 3-5-11
Field Personnel T. Tea Te
General Weather Conditions Cloudy overcast
Ambient Air Temperature 70 °C

Facility Name Broad River BP Site ID# 11946

Quality Assurance:

pH Meter:
serial no.
pH=4.0
pH=7.0
pH=10.0

Conductivity Meter
serial no.
Standard
Standard
Standard

Chain of Custody

Relinquished by	Date /Time	Received by	Date/Time

Well # MW-3

Well Diameter(D) 2 inch or ___ feet
conversion factor(C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth(TWD) 30 ft.
Depth to GW (DGW) 15.32 ft.

Length of Water Column(LWC=TWD-DGW) 14.68 ft.

1 Csg. Volume(LWC * C) = 14.68 x .163 = 2.3 gals.
3 Csg. Volumes = 3 X 2.3 = 7 gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling 7 gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	1210							
pH (s.u.)		8.5	8.3	8.3				
Specific Cond. (umhos/cm)		351	448	364				
Water Temp (°C)		20.4	20.5	20.3				
Turbidity (*)		Clear	LTOrng	OrngRd				
PID Readings								

* subjective (1)None (2) Faint (3) Moderate (4) Strong

Remarks Fe = 0.2 DO = 1.78

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Page _ of _

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 3-5-11
Field Personnel T. Teate
General Weather Conditions Cloudy overcast
Ambient Air Temperature 70 °C
Facility Name Broad River BP Site ID# 11946

Quality Assurance:

pH Meter:
serial no.
pH=4.0
pH=7.0
pH=10.0

Conductivity Meter
serial no.
Standard
Standard
Standard

Chain of Custody

Relinquished by	Date /Time	Received by	Date/Time

Well # MW-4

Well Diameter(D) 2 inch or ___ feet
conversion factor(C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth(TWD) 25 ft.
Depth to GW (DGW) 9.84 ft.

Length of Water Column(LWC=TWD-DGW) 15.16 ft.

1 Csg. Volume(LWC * C) = 15.16 x .163 = 2.4 gals.
3 Csg. Volumes = 3 x 2.4 = 7.4 gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling 7 gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	1258							
pH (s.u.)		8.2	8.1	8.1				
Specific Cond. (umhos/cm)		430	344	441				
Water Temp (°C)		18.7	18.9	18.8				
Turbidity (*)		Clear	LTcrky	Orng Rd				
PID Readings								

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks Fe = 2.4 DO = 1.68

APPENDIX E

Soil and Groundwater Disposal Manifest

C 166348

Crandall

Please print or type.
(Form designed for use on elite (12-pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No. 65603

2. Page 1 of 1

3. Generator's Name and Mailing Address EnviroTech Services
7505 Irmo Dr
Columbia, SC 29212

4. Generator's Phone (803) 782-5770

5. Transporter 1 Company Name
Crandall Corporation

6. US EPA ID Number
SCD981864499

A. Transporter's Phone (803) 791-4500

7. Transporter 2 Company Name

8. US EPA ID Number

B. Transporter's Phone

9. Designated Facility Name and Site Address
Crandall Corporation
100 Rich Lee Dr
Lexington, SC 29072

10. US EPA ID Number
SCD981864499

C. Facility's Phone (803) 791-4800

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt./Vol.
a. Non - Hazardous Waste, Petroleum Contaminated Soil	002	DM	01200	P
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Broad River BP Soil Cuttings
Tier 1 Assessment
Infotrac 800-535-5053 Registrant Crandall Corp
Srv Call ID: GIB0165609
IIa profile: ENV004-001-C

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Terry Teate	Terry L. Teate	03	07	11

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Terry Teate	Terry L. Teate	03	07	11

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in item 19.

Printed/Typed Name	Signature	Month	Day	Year
Bob Grooms		03	07	11

GENERATOR COPY

12-BLC-M5

C 161407

Crandall

Please print or type.
(Form designed for use on elite (12-pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . . | Manifest Document No. 66681 | 2. Page 1 of 1

3. Generator's Name and Mailing Address
Enviro-Test Services
7505 Irmo Dr
Columbia, SC 29212

4. Generator's Phone (803) 732-5770

5. Transporter 1 Company Name: Crandall Corporation | 6. US EPA ID Number: SCD981859489 | A. Transporter's Phone: (803) 791-4800

7. Transporter 2 Company Name | 8. US EPA ID Number | 8. Transporter's Phone

9. Designated Facility Name and Site Address
Crandall Corporation
100 Rich Lex Dr
Lexington, SC 29072

10. US EPA ID Number: SCD981859489 | C. Facility's Phone: (803) 791-4800

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt./Vol.
a. Non-Hazardous Waste, Waste Water	01	TT	0050	G
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Broad River BP
Purge Water + Slug Test

Infotrac 800-535-5053 Registrant Crandall Corp
Srv Call ID: GLB0166981

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Terry Teate	Terry L Teate	04	11	11

GENERATOR

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Terry Teate	Terry L Teate	04	11	11

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in item 19.

Printed/Typed Name	Signature	Month	Day	Year
JamieBerkley	JamieBerkley	04	11	11

GENERATOR COPY

12-BLCM5

APPENDIX F

Local Zoning Regulations

SUMMARY OF ZONING ORDINANCES

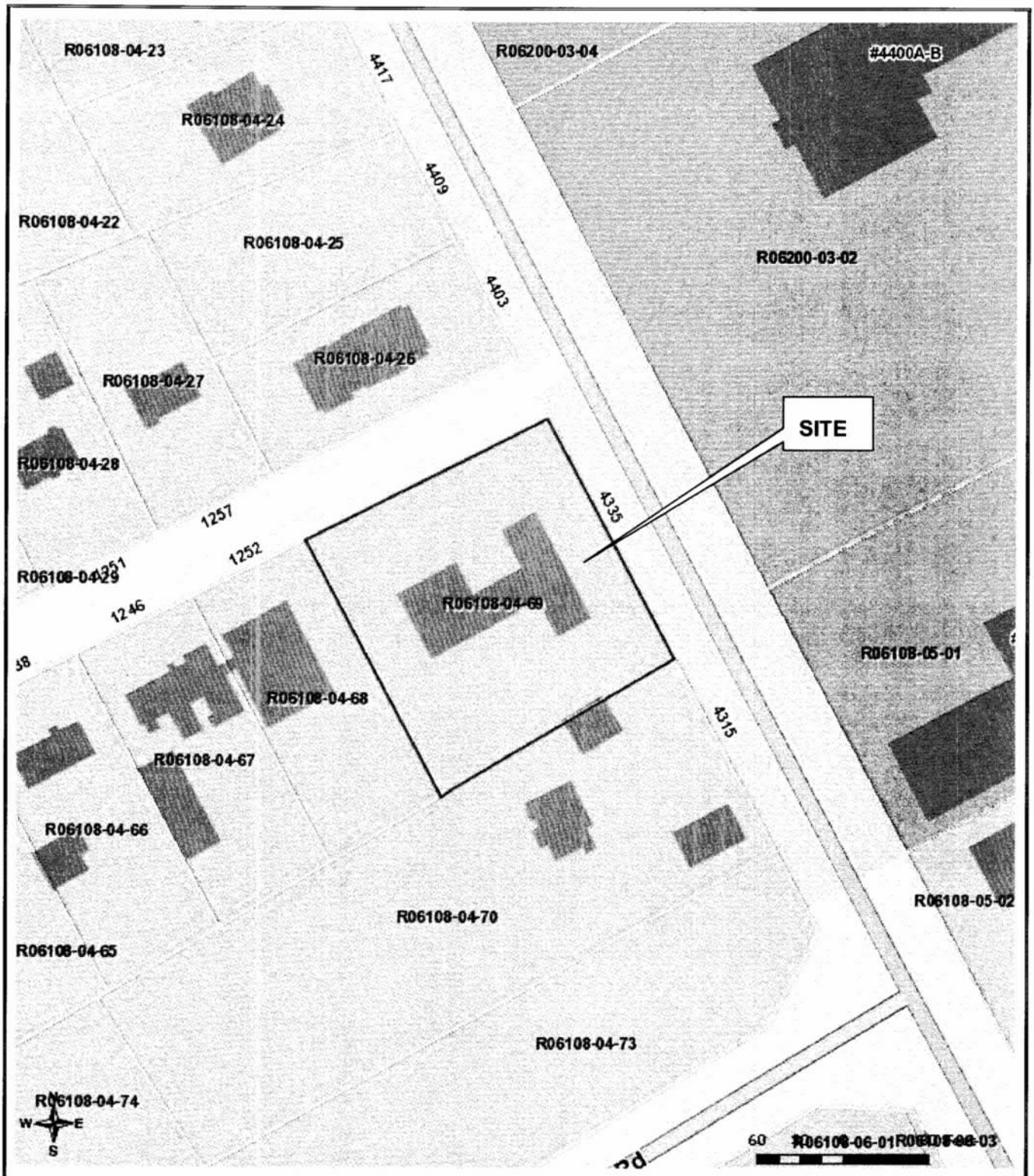
Name: 1) City of Columbia Water Works, (803) 545-3400

2) SCDHEC EQC Office, Richmond County

Relevant Info: Representatives of the City of Columbia Water Works and the SCDHEC EQC Office indicated that no restrictions are enforced in the site study area regarding the installation of water supply wells for drinking water and/or irrigation. For commercial and industrial properties, no restrictions are enforced regarding the installation of water supply wells for irrigation or as source of process water. A permit application is required for commercial and industrial properties regarding the installation of water supply wells (public) as a drinking water source.

APPENDIX G

Tax Map and Subject/Adjacent Property Owners



TAX MAP	Source: Richland County GIS System N↑
Enviro-Test Services, Inc.	Site Name: Broad River Amoco (BP) 4335 Broad River Road Columbia, SC 29210 Project Number: SCDHEC # 11946

Tax Map and Adjacent Property Owners

Broad River Amoco (BP)
4335 Broad River Road
Columbia, South Carolina
Richland County
SCDHEC Site ID # 11946

R06108-04-69 (Site)
Frederick N. Cecchini
4335 Broad River Road
Columbia, SC 29210

R06108-04-26 (North across Dothan Road)
MDC Associates
4403 Broad River Road
Columbia, SC 29210

R06200-03-02 (North across Broad River Road)
State of South Carolina, General Services
300 Gervais Street
Columbia, SC 29201

R06108-05-01 (East across Broad River Road)
State of South Carolina
Wade Hampton Office Bldg.
Columbia, SC 29201

R06108-04-70 (South)
Herteline Lowman
4315 Broad River Road
Columbia, SC 29210

R06108-04-68 and R06108-04-67 (West)
William Ronnie and Bonnie Saville
4509 Wade Street
Columbia, SC 29210

R06108-04-27 (Northwest)
James R. Jr. and Wendy S. Rice
22 Caddis Creek Court
Irmo, SC 29063

dhec
Healthy People Healthy Communities

FEB 0 3 2017

MR FREDERICK CECCHINI
429 PRESS LINDLER ROAD
COLUMBIA, SC 29212

Re: Concern Letter
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit #11946
Phone request received January 30, 2017
Release reported January 4, 2011
Richland County

Dear Mr. Cecchini,

In response to your request for information about environmental conditions and liability associated with the referenced facility, the following is provided.

Our records indicate that six Underground Storage Tanks (USTs) that are currently in operation are registered with the Department by Frederick Cecchini. Two USTs were registered with the Department by Associated Oils of SC Inc and were removed on November 1, 1989. An assessment report received in January 4, 2011 documented a release of petroleum products in the vicinity of the USTs. Our records indicate that Mr. Cecchini complied with the regulatory requirements and stopped the leak from the tanks. In response to the initial report of petroleum chemicals of concern, the UST Division directed Mr. Cecchini as the party responsible for performing this activity under state and federal law, to assess the extent and severity of the contamination. In the near future an aggressive fluid vapor recovery event will be directed.

The UST Management Division would also like to clarify for you the financial and liability issues surrounding the petroleum chemicals of concern at this facility. The release of petroleum products from the UST is qualified to receive funding from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. This means that reasonable costs up to $1,000,000 can be paid by the SUPERB Account for site rehabilitation actions associated with this release.

In 1997, the General Assembly amended Section 80 (B) of the SUPERB Act to clarify that persons who hold "indicia of ownership" primarily to protect a security interest in property impacted by a release from a UST are exempt from the requirements to conduct site rehabilitation activities other than necessary abatement actions to eliminate any imminent threat to human health or the environment. The "indicia of ownership" exemption includes those persons who acquire title to the property through foreclosure or other means necessary to protect their security interest, provided that person does not participate in the management of the UST and is not otherwise engaged in petroleum production, marketing, or refining. This applies equally to subsequent lenders who acquire the USTs and property through foreclosure in the future.

The Division is not aware of any laws or regulations that prohibit the use or development of properties where a petroleum release has occurred. Any future work required by DHEC should not cause any damage to the building, disrupt deliveries, prevent access to customers, or block main access routes. To further assure you, any required activities associated with the petroleum release would be performed by a SC Certified Site Rehabilitation Contractor who maintains specific levels of insurance coverage for General and Professional Liability and Pollution/Property Damage. Such coverage is required by Section IV of the SUPERB Site Rehabilitation and Fund Access Regulations R. 61-98.

If you have any questions, please do not hesitate to call me at (803) 898-0634 or email me at kuhnkm@dhec.sc.gov.

Sincerely,

Kimberly M. Kuhn, Hydrogeologist
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

Cc: Enviro-Test Services, Inc., P.O. Box 2237, Irmo, SC 29063
Technical File

dhec
Healthy People. Healthy Communities.

MR FREDERICK N CECCHINI
429 PRESS LINDLER ROAD
COLUMBIA SC 29212-8322

MAY 0 9 2017

UST 711 DOCKETING

Re: **Site-Specific Work Plan Request for Monitoring Well Installation**
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit # 11946
Release Reported January 4, 2011
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (DHEC) recognizes your commitment to continue work at this site using Enviro-Test Services as your contractor. The next appropriate scope of work at the site is to install three recovery wells near the vicinity of MW-1 and either abandon or adjust MW-7A, MW-8A, MW-8B, MW-9A, and MW-9B so they are flush with the surrounding pavement. The well installations should be conducted in accordance with Enviro-Test Services' Annual Contractor Quality Assurance Plan (ACQAP), and must be conducted in compliance with all applicable regulations.

Please have your contractor complete and submit an approvable Site-Specific Work Plan (SSWP) and Cost Proposal within thirty (30) days of the date of this letter. Every component may not be necessary to complete the above scope of work. The State Underground Petroleum Environmental Response Bank (SUPERB) Account allowable cost for each component is included on the Assessment Component Cost Agreement Form. **Please note that technical and financial preapproval from DHEC must be issued before work begins**.

On all correspondence concerning this site, please reference **UST Permit # 11946.** If there are any questions concerning this project, please contact me at (803) 898-0634 or by email at kuhnkm@dhec.sc.gov.

Sincerely,

Kimberly M Kuhn, Hydrogeologist
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

cc: Enviro-Test Services, Inc., PO Box 2237, Irmo, SC 29063
Technical File

dhec
Healthy People. Healthy Communities

FREDERICK N CECCHINI
429 PRESS LINDLER ROAD
COLUMBIA SC 29212-8322

JUN 0 1 2017

Re: **AFVR Directive**
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit #11946; CA #54706
Release reported January 4, 2011
Richland County

Dear Mr. File:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (DHEC) recognizes your commitment to continue work at this site utilizing Enviro Test Services, Inc. In accordance with Section 280.64 of the South Carolina Underground Storage Tank Control Regulations, a 96-hour Aggressive Fluid and Vapor Recovery (AFVR) event on RW-5 may commence as outlined in this correspondence and the UST Quality Assurance Program Plan (QAPP) Revision 3. The stingers shall be lowered at six inch intervals starting at the water table interface to a target depth near the bottom of each well. Please strive to reach the target depth within the first 8 hours. A copy of UST QAPP Version 3.1 for the Underground Storage Tank Division is available at http://www.dhec.sc.gov/Environment/LW/UST/ReleaseAssessmentClean-up/QualityAssurance/.

As soon as the beginning date of the event has been scheduled, please contact Kim Kuhn at kuhnkm@dhec.sc.gov.

The AFVR Report should be submitted within 90 days from the date of this correspondence. Please note that all applicable South Carolina certification requirements apply to the services and report preparation. All site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

Cost Agreement #54706 has been approved in the amount shown on the enclosed cost agreement. Enviro Test Services, Inc. can submit an invoice for direct billing from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. If the invoice and completed report are not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available.

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval is obtained from the UST Management Division. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be preapproved by DHEC for the cost to be paid. DHEC reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, DHEC reserves the right to question and/or reject costs if deemed unreasonable and the right to audit project records at any time during the project or after completion of work.

DHEC grants preapproval for transportation of virgin petroleum-contaminated groundwater from the referenced site to a permitted treatment facility.

On all correspondence concerning this site, please reference UST Permit #11946. If you have any questions, please contact me at (803) 898-0636 or by e-mail at kuhnkm@dhec.sc.gov.

Sincerely,

Kimberly M. Kuhn, Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Approved Cost Agreement

cc: Technical File (with enclosure)
Enviro Test Services, Inc, P.O. Box 2237, Irmo, SC 29063 (with enclosure)

Approved Cost Agreement 54706

Facility: 11946 BROAD RIVER AMOCO
KUHNKM
PO Number:

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
10 SAMPLE COLLECTION						
		E1	GAUGE WELL ONLY	41.0000	$7.000	287.00
19 RPT/PROJECT MNGT & COORDINATIO						
		PRT	REPORT PREPARATION	0.1200	$23,079.250	2,769.51
23 EFR						
		A4	96 HOUR EVENT	1.0000	$12,567.500	12,567.50
		C4	OFF GAS TREATMENT 96 HOUR	1.0000	$780.000	780.00
		D	SITE RECONNAISSANCE	1.0000	$203.250	203.25
		F1	EFFLUENT DISPOSAL	20,000.0000	$0.440	8,800.00
		G	AFVR EQUIPMENT MOB	1.0000	$391.500	391.50
25 WELL REPAIR						
		A1	ADDITIONAL COPIES OF REPORT	1.0000	$50.000	50.00
				Total Amount		25,848.76

July 3, 2017

UST
JUL 07 2017
DIVISION

ENVIRO-TEST SERVICES

Mrs. Kimberly M. Kuhn, Hydrogeologist
Corrective Action Section
UST Program
Bureau of Land and Waste management

UST
73
Tech
DOCKETING

RE: 96 Hour AFVR Event
Broad River Amoco
Permit # 11946; CA # 54706
4335 Broad River Rd.
Richland Co. Columbia, SC

Dear Mrs. Kuhn,
On June 15, 2017 Enviro-Test Services personnel moved the Vac unit on site and begin an 96 hour Aggressive Fluid Vapor Event (AFVR) The event was performed on Monitor Well RW-5 as requested by the June 01, 2017 directive. This is the first 96 Hour AFVR Event to be preformed on this site. The previous AFVR's were 8 to 24 hrs. long during the Corrective Action Free product Recovery Project. After gauging the SSTL wells with an interface probe and then visually checking them with a Teflon bailer RW-5 had 5.83 ft of Free Product 12.5 gallons of product was removed before the event started. MW-2 had .05 ft., RW-1 had 1.05 ft., RW-2 had .02 ft., RW-3 had .74 ft and MW-5 had 2.56 ft. of Free Product. 4.5 gallons of product was removed from these 5 wells for a total of 17 gallons of product which was removed prior to start up. (See Attachment A, Pg. 16)

The OVA (PID) was calibrated with Zero Air then with 250 ppm of Isobutylene Span gas per factory specifications at the beginning each day . The event started on Thursday at 1400 hrs. on 06/15/17 and ended on Monday at 1400 hrs. 06/19/17. The stinger was lowered at 6 inch intervals to near the bottom of the well in order for the free product from the capillary fringe could be volatilized as outlined in the Revision 3.1 of the QAPP. The stingers were then raised in order to create a washing effect. The temperature ranged from 73 degrees in the mornings to a very hot 98 degrees in the afternoons.
The AFVR Data is contained in Attachment A. The Vacuum Well Map is Figure 1 and 2 the disposal Manifest is Attachment B. The total weight of petroleum removed as vapor was 145.45 lbs. A total of 412.4 gallons of gas cut fluid was recovered.

Conclusions: It has been a year since the free product has returned to the site. This formation is very tight and yields very little contact water, the OVA emission readings decreased in about 24 hours. For this reason I feel that shorter AFVR's be performed, (24 to 48 hours). A Site-Specific Work Plan is being developed to install additional Recovery Wells as requested in the May 9, 2017 SSWP.

Recommendations: Begin AFVR events to be performed on the wells with Free Product in them. For example a 96 hour. AFVR event that for 48 hrs. the stingers are in MW-2, RW-1, and RW-3 and the second 48 hours the stingers are moved to MW-5, RW-2 and RW-5 or 24 hour events on each well. This will be the best way to decrease the chemicals of Concern.

This will close out cost agreement #54706
Thank You for Recognizing our commitment to continuing working on this site.

Terry L. Teate,
Project Manager
Enviro-Test Services Inc.

ATTACHMENT A

ENVIRO-TEST SERVICES

96 HOUR AFVR Pre-Treatment Vapor Concentrations

1 st Page

Site Name: Broad River Amoco | **County** Richland | June 15-19, 2017

UST Permit Number: 11946 | **Field Personnel:** Terry Teate | Callbrate P I D : 1335 6/15/2107

Well Name: RW-5 | **Ambient Temp.** 75-96 deg

Exhaust Stack Diameter(Inches): 3 | Before RW-5 FP: 10.25 GWL: 16.08 | GWL AFTER AFVR GWL: 37.78

Start Time1400 Thurs End Time: 1400 Mon

Weather Conditions: Hot, Clear, Sunny
Rain at 2230

TOTAL FREE PRODUCT MEASURED = 5.83 ft.
TOTAL FREE PRODUCT RECOVERED = 12.5 gal
TOTAL FLUID RECOVERED = 412.4 gallons

Dry Standard CFM Air Flow - Qstd

TOTAL EMISSIONS = 145.45 lbs
Or = 23.6 gallons

Interval	Time	Vacuum, in. of Hg	PPM measured	Humidity Ratio,gpp	Water Vapor,%	Dry Air(1/100)	Discharge Flow Volume, CFM	Temperature, °f	Temperature Constant	Qstd cfm
0	1400 Thurs	25	9	210	0.03	0.9700	540.00	113.00	0.9215	482.66
30	1430	25	1453	275	0.0393	0.9607	467.00	114.00	0.9199	412.70
60	1500	26	3459	279	0.0399	0.9601	402.00	118.00	0.9135	352.59
90	1530	26	3550	185	0.0264	0.9736	378.00	109.00	0.9279	341.49
120	1600	26	3461	175	0.0250	0.9750	333.00	107.00	0.9312	302.34
150	1630	26	3112	171	0.0244	0.9756	305.00	98.00	0.9462	281.55
180	1700	28	3007	234	0.0334	0.9666	291.00	107.00	0.9312	261.93
210	1730	28	3592	229	0.0327	0.9673	287.00	112.00	0.9231	256.26
240	1800	28	3334	243	0.0347	0.9653	273.00	110.00	0.9263	244.11
270	1830	28	3690	241	0.0344	0.9656	270.00	108.00	0.9296	242.34
300	1900	29	3582	230	0.0329	0.9671	271.00	102.00	0.9395	246.24
330	1930	29	3111	205	0.0293	0.9707	252.00	98.00	0.9462	231.47
360	2000	28	2945	114	0.0163	0.9837	222.00	86.00	0.9670	211.19
390	2030	29	2819	129	0.0184	0.9816	234.00	94.00	0.9531	218.91
420	2100	29	2688	118	0.0169	0.9831	220.00	90.00	0.9600	207.64
450	2130	29	2189	112	0.0160	0.9840	241.00	89.00	0.9617	228.07
480	2200	29	2232	110	0.0157	0.9843	237.00	84.00	0.9706	226.41
AVERAGES		27.53	2,837.24	191.76	0.0274	0.9726	307.24	102.29	0.9393	279.29

NOTES:

Vacuum = Level of vacuum being applied as record from the vacuum truck tank, inches of Hg.
PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
Humidity Ratio = Grains of moisture per pound(gpp) of dry air measured at the blower discharge stack.
Water Vapor = Pounds of water per pound of dry air as %.
Dry Air = Calculated pound of dry air,(1 - water vapor %).
Discharge Flow Volume = Measured air flow from 3" discharge stack in cubic feet per minute,cfm.
Temperature = Temperature of the air exiting the discharge stack in deg. Fahrenheit.
Temperature Constant = 528°R / (Temp.,°F + 460)

EQUATION

Qstd = Dry Air x Discharge Flow x Temperature Constant

ENVIRO-TEST SERVICES

96 HOUR AFVR Pre-Treatment Vapor Concentrations

1 st Page

Site Name: Broad River Amoco | **County** Richland | June 15-19, 2017

UST Permit Number: 11946 | **Field Personnel:** Terry Teate | Calibrate P I D : 1335 6/15/2107

Well Name: RW-5 | **Ambient Temp.** 75-96 deg

Exhaust Stack Diameter(Inches): 3 | Before RW-5 FP: 10.25 GWL: 16.08 | GWL AFTER AFVR GWL: 37.78

Start Time 1400 Thurs **End Time:** 1400 Mon

Weather Conditions: Hot, Clear, Sunny

TOTAL FREE PRODUCT MEASURED = 5.83 ft.
TOTAL FREE PRODUCT RECOVERED = 12.5 gal

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
0	482.66	9	1	9	47.86	2.9866E-06	0.0865	0.0000
30	412.70	1453	1	1,453	7,727.05	4.8217E-04	11.9394	5.9697
60	352.59	2459	1	2,459	13,076.96	8.1600E-04	17.2628	8.6314
90	341.49	2555	1	2,555	13,587.49	8.4786E-04	17.3723	8.6861
120	302.34	2461	1	2,461	13,087.60	8.1667E-04	14.8148	7.4074
150	281.55	2112	1	2,112	11,231.62	7.0085E-04	11.8396	5.9198
180	261.93	3007	1	3,007	15,991.23	9.9785E-04	15.6818	7.8409
210	256.26	2592	1	2,592	13,784.26	8.6014E-04	13.2249	6.6125
240	244.11	3334	1	3,334	17,730.21	1.1064E-03	16.2042	8.1021
270	242.34	2671	1	2,671	14,204.38	8.8635E-04	12.8882	6.4441
300	246.24	2582	1	2,582	13,731.08	8.5682E-04	12.6590	6.3295
330	231.47	2111	1	2,111	11,226.30	7.0052E-04	9.7289	4.8645
360	211.19	1945	1	1,945	10,343.51	6.4544E-04	8.1784	4.0892
390	218.91	1,893	1	1,893	10,066.97	6.2818E-04	8.2508	4.1254
420	207.64	2,017	1	2,017	10,726.41	6.6933E-04	8.3387	4.1694
450	228.07	2,189	1	2,189	11,641.10	7.2640E-04	9.9404	4.9702
480	226.41	2,232	1	2,232	11,869.78	7.4067E-04	10.0620	5.0310
AVERAGES		2,213.06		2,213.06	11,769.05	7.3439E-04	11.6749	5.8349

TOTAL EMISSIONS 99.1930 lbs

TOTAL AMOUNT OF FLUID RECOVERED 412.00 gallons

ESTIMATED AMOUNT OF PRODUCT RECOVERED 12.50 gallons

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES

96 HOUR AFVR Pre-Treatment Vapor Concentrations

1 st Page

Site Name: Broad River Amoco | **County** Richland

June 15-19, 2017

UST Permit Number: 11946 | **Field Personnel:** Terry Teate

Calibrate P I D : 1335 6/15/2107

Well Name: RW-5 | **Ambient Temp.** 75-96 deg

Exhaust Stack Diameter(Inches): 3 | RW-5 Before FP: 10.25 GWL: 16.08 | GWL AFTER AFVR GWL: 37.78

Start Time 1400 Thurs **End Time:** 1400 Mon

Weather Conditions: Hot, Clear, Sunny

TOTAL FREE PRODUCT MEASURED = 5.83 ft.
TOTAL FREE PRODUCT RECOVERED = 12.5 gal

PMRg = Cg x Qstd x 60 min/hr
PMR = PMRg x [(T2-T1) / 60], PMRg x [(T3-T2) / 60], ...

VACUUM GAUGE MEASUREMENTS

Interval	Time	Vacuum of Hg in Inches RW-5	MW-5	RW-1	MW-D1
0	1400 Thurs	5.0	.0	.0	0.0
30	1430	8.0	.0	.0	0.0
60	1500	10.0	.0	.0	0.0
90	1530	18.0	.0	.0	0.0
120	1600	20.0	.0	.0	0.0
150	1630	20.0	.0	.0	0.0
180	1700	20.0	.0	.0	0.0
210	1730	20.0	.0	.0	0.0
240	1800	20.3	.0	.0	0.0
270	1830	20.0	.0	.0	0.0
300	1900	23.0	.0	.0	0.0
330	1930	23.0	.0	.0	0.0
360	2000	23.0	.5	.0	0.0
390	2030	23.0	1.0	.0	0.0
420	2100	24.0	1.0	.0	0.0
450	2130	23.0	1.8	.0	0.0
480	2200	23.0	1.8	.0	0.0

STINGER DEPTHS

Stinger Depth in ft. RW-5
10.5
11.0
11.5
12.0
12.5
13.0
13.5
14.0
14.5
15.0
15.5
16.0
16.5
17.0
17.5
18.0
18.5

ENVIRO-TEST SERVICES **96 HOUR AFVR Post-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

June 15-19, 2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate**

Calibrate P I D : 1335 6/15/2107

Well Name: RW-5 **Ambient Temp. 75-96 deg**

		Before		GWL AFTER AFVR
Exhaust Stack Diameter(inches): 3	**RW-5**	**FP: 10.25**	**GWL: 16.08**	**GWL: 37.78**

Start Time1400 Thurs End Time: 1400 Mon

TOTAL FREE PRODUCT MEASURED = 5.83 ft.

Weather Conditions: Hot, Clear, Sunny **TOTAL FREE PRODUCT RECOVERED = 12.5 gal**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
0	482.66	0	1	0	0.00	0.0000E+00	0.0000	0.0000
30	412.70	0	1	0	0.00	0.0000E+00	0.0000	0.0000
60	352.59	0	1	0	0.00	0.0000E+00	0.0000	0.0000
90	341.49	0	1	0	0.00	0.0000E+00	0.0000	0.0000
120	302.34	0	1	0	0.00	0.0000E+00	0.0000	0.0000
150	281.55	0	1	0	0.00	0.0000E+00	0.0000	0.0000
180	261.93	0	1	0	0.00	0.0000E+00	0.0000	0.0000
210	256.26	0	1	0	0.00	0.0000E+00	0.0000	0.0000
240	244.11	0	1	0	0.00	0.0000E+00	0.0000	0.0000
270	242.34	0	1	0	0.00	0.0000E+00	0.0000	0.0000
300	246.24	0	1	0	0.00	0.0000E+00	0.0000	0.0000
330	231.47	0	1	0	0.00	0.0000E+00	0.0000	0.0000
360	211.19	0	1	0	0.00	0.0000E+00	0.0000	0.0000
390	218.91	0	1	0	0.00	0.0000E+00	0.0000	0.0000
420	207.64	0	1	0	0.00	0.0000E+00	0.0000	0.0000
450	228.07	0	1	0	0.00	0.0000E+00	0.0000	0.0000
480	226.41	0	1	0	0.00	0.0000E+00	0.0000	0.0000
AVERAGES		0.00		0.00	0.00	0.0000E+00	0.0000	0.0000

TOTAL EMISSIONS **0.0000 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **412.00 gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **12.50 gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES

96 HOUR AFVR Pre-Treatment Vapor Concentrations

Site Name: Broad River Amoco | **County** | **Richland**

June 15-19, 2017

UST Permit Number: 11946 | **Field Personnel:** | **Terry Teate** | **Calibrate P I D 0640 6/16/2017**

Calibrate P I D 0722 6/17/2017

Well Name: RW-5 | **Ambient Temp. 75-96 deg**

Exhaust Stack Diameter(Inches): 3 | **RW-5** | **Before FP: 10.25** | **GWL: 16.08** | **GWL AFTER AFVR GWL: 37.78**

Start Time 1400 Thurs End Time: 1400 Mon

Weather Conditions: Hot, Clear, Sunny Muggy

TOTAL FREE PRODUCT MEASURED = 5.83 ft.
TOTAL FREE PRODUCT RECOVERED = 12.5 gal
TOTAL FLUID RECOVERED = 412.4 gallons

TOTAL EMISSIONS = 145.45 lbs.
Or = 23.6 gallons

Dry Standard CFM Air Flow - Qstd

Interval	Time	Vacuum, in. of Hg	PPM measured	Humidity Ratio,gpp	Water Vapor,%	Dry Air(1/100)	Discharge Flow Volume, CFM	Temperature, °f	Temperature Constant	Qstd cfm
540	2300	28	2008	184	0.02628571	0.9737	227.00	89.00	0.9617	212.58
600	2400	28	1749	177	0.0253	0.9747	234.00	92.00	0.9565	218.17
1080	0800 Fri	28	1122	147	0.0210	0.9790	197.00	93.00	0.9548	184.14
1140	900	28	1030	134	0.0191	0.9809	224.00	89.00	0.9617	211.31
1200	1000	28	953	105	0.0150	0.9850	258.00	83.00	0.9724	247.11
1260	1100	29	1195	96	0.0137	0.9863	267.00	80.00	0.9778	257.49
1320	1200	29	1044	101	0.0144	0.9856	261.00	82.00	0.9742	250.59
1380	1300	28	880	157	0.0224	0.9776	258.00	95.00	0.9514	239.94
1440	1400	29	676	115	0.0164	0.9836	247.00	87.00	0.9653	234.50
1560	1600	29	441	102	0.0146	0.9854	187.00	85.00	0.9688	178.53
1680	1800	28	837	132	0.0189	0.9811	221.00	88.00	0.9635	208.92
1800	2000	28	347	109	0.0156	0.9844	209.00	83.00	0.9724	200.06
1920	2200	29	361	104	0.0149	0.9851	211.00	80.00	0.9778	203.25
2040	2400	28	418	112	0.0160	0.9840	197.00	81.00	0.9760	189.19
2520	0800 Sat	28	377	81	0.0116	0.9884	194.00	77.00	0.9832	188.54
2640	1000	28	275	109	0.0156	0.9844	188.00	84.00	0.9706	179.63
2760	1200	28	228	139	0.0199	0.9801	173.00	93.00	0.9548	161.90
AVERAGES		28.29	820.06	123.76	0.0177	0.9823	220.76	85.94	0.9672	209.76

NOTES:

Vacuum = Level of vacuum being applied as record from the vacuum truck tank, inches of Hg.
PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
Humidity Ratio = Grains of moisture per pound(gpp) of dry air measured at the blower discharge stack.
Water Vapor = Pounds of water per pound of dry air as %.
Dry Air = Calculated pound of dry air,(1 - water vapor %).
Discharge Flow Volume = Measured air flow from 3" discharge stack in cubic feet per minute,cfm.
Temperature = Temperature of the air exiting the discharge stack in deg. Fahrenheit.
Temperature Constant = 528°R / (Temp.,°F + 460)

EQUATION

Qstd = Dry Air x Discharge Flow x Temperature Constant

ENVIRO-TEST SERVICES **96 HOUR AFVR Pre-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

June 15-19, 2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate** **Calibrate P I D 0640 6/16/2017**

Calibrate P I D 0722 6/17/2017

Well Name: RW-5 **Ambient Temp. 75-96 deg**

		Before		GWL AFTER AFVR
Exhaust Stack Diameter(Inches): 3	**RW-5**	**FP: 10.25**	**GWL: 16.08**	**GWL: 37.78**

Start Time 1400 Thurs End Time: 1400 Mon

TOTAL FREE PRODUCT MEASURED = 5.83 ft.

Weather Conditions: Hot, Clear, Sunny **TOTAL FREE PRODUCT RECOVERED = 12.5 gal**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
540	212.58	2008	1	2008	10,678.54	6.6634E-04	8.4990	0.0000
600	218.17	1749	1	1,749	9,301.18	5.8039E-04	7.5973	3.7987
1080	184.14	1122	1	1,122	5,966.80	3.7233E-04	4.1137	2.0569
1140	211.31	1030	1	1,030	5,477.54	3.4180E-04	4.3335	2.1667
1200	247.11	953	1	953	5,068.05	3.1625E-04	4.6889	2.3444
1260	257.49	1195	1	1,195	6,355.01	3.9655E-04	6.1264	3.0632
1320	250.59	1044	1	1,044	5,551.99	3.4644E-04	5.2089	2.6045
1380	239.94	880	1	880	4,679.84	2.9202E-04	4.2041	2.1021
1440	234.50	676	1	676	3,594.97	2.2433E-04	3.1563	1.5782
1560	178.53	441	1	441	2,345.24	1.4634E-04	1.5676	0.7838
1680	208.92	837	1	837	4,451.17	2.7775E-04	3.4817	1.7408
1800	200.06	347	1	347	1,845.35	1.1515E-04	1.3822	0.6911
1920	203.25	361	1	361	1,919.80	1.1980E-04	1.4609	0.7304
2040	189.19	418	1	418	2,222.92	1.3871E-04	1.5746	0.7873
2520	188.54	377	1	377	2,004.89	1.2510E-04	1.4152	0.7076
2640	179.63	275	1	275	1,462.45	9.1257E-05	0.9835	0.4918
2760	161.90	228	1	228	1,212.50	7.5660E-05	0.7350	0.3675
AVERAGES		820.06		820.06	4,361.07	2.7213E-04	3.5605	1.5303

TOTAL EMISSIONS **26.0149 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **412.00 gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **12.50 gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES

96 HOUR AFVR Pre-Treatment Vapor Concentrations

Site Name: Broad River Amoco | **County** Richland

UST Permit Number: 11946 | **Field Personnel:** | **Terry Teate** | June 15-19, 2017

Calibrate P I D 0640 6/16/2017

Calibrate P I D 0722 6/17/2017

Well Name: RW-5 | **Ambient Temp.** 75-96 deg

Exhaust Stack Diameter(Inches): 3 | Before RW-5 FP: 10.25 | GWL: 16.08 | GWL AFTER AFVR GWL: 37.78

Start Time 1400 Thurs **End Time:** 1400 Mon

TOTAL FREE PRODUCT MEASURED = 5.83 ft.
TOTAL FREE PRODUCT RECOVERED = 12.5 gal

Weather Conditions: Hot, Clear, Sunny

PMRg = Cg x Qstd x 60 min/hr

PMR = PMRg x [(T2-T1) / 60], PMRg x [(T3-T2) / 60], ...

VACUUM GAUGE MEASUREMENTS

Interval	Time	Vacuum of Hg in Inches RW-5	MW-5	RW-1	MW-D1
540	2300	22.0	2.0	.0	0.4
600	2400	22.0	2.0	.0	0.5
1080	0800 Fri	15.0	3.4	.0	2.0
1140	900	15.0	3.6	.0	2.0
1200	1000	18.0	3.4	.0	2.0
1260	1100	20.0	3.2	.0	1.2
1320	1200	18.0	2.8	.0	1.0
1380	1300	22.0	3.0	.0	.0
1440	1400	18.0	2.6	.0	.5
1560	1600	22.0	2.8	.0	.0
1680	1800	22.0	2.8	.0	.5
1800	2000	20.0	2.4	.0	1.0
1920	2200	20.0	2.4	.0	1.0
2040	2400	20.0	2.4	.0	.5
2520	0800 Sat	18.0	1.0	.0	.0
2640	1000	20.0	1.5	.0	1.0
2760	1200	18.0	1.2	.0	.5

STINGER DEPTHS

Stinger Depth in ft. RW-5
20.0
10.5
12.0
10.0
14.0
11.0
13.0
15.0
16.0
18.0
18.0
20.0
17.0
15.0
10.5
11.0
14.0

ENVIRO-TEST SERVICES **96 HOUR AFVR Post-Treatment Vapor Concetrations**

Site Name: Broad River Amoco **County** **Richland**

June 15-19, 2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate** **Calibrate P I D 0640 6/16/2017**

Calibrate P I D 0722 6/17/2017

Well Name: RW-5 **Ambient Temp. 75-96 deg**

		Before		
Exhaust Stack Diameter(Inches): 3	**RW-5**	**FP: 10.25**	**GWL: 16.08**	**GWL AFTER AFVR GWL: 37.78**

Start Time 1400 Thurs End Time: 1400 Mon

TOTAL FREE PRODUCT MEASURED = 5.83 ft.

Weather Conditions: Hot, Clear, Sunny **TOTAL FREE PRODUCT RECOVERED = 12.5 gal**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
540	212.58	0	1	0	0.00	0.0000E+00	0.0000	0.0000
600	218.17	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1080	184.14	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1140	211.31	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1200	247.11	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1260	257.49	48	1	48	255.26	1.5928E-05	0.2461	0.1230
1320	250.59	177	1	177	941.29	5.8736E-05	0.8831	0.4416
1380	0800 Fri	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1440	234.50	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1560	178.53	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1680	208.92	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1800	200.06	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1920	203.25	0	1	0	0.00	0.0000E+00	0.0000	0.0000
2040	189.19	0	1	0	0.00	0.0000E+00	0.0000	0.0000
2520	188.54	0	1	0	0.00	0.0000E+00	0.0000	0.0000
2640	179.63	0	1	0	0.00	0.0000E+00	0.0000	0.0000
2760	161.90	0	1	0	0.00	0.0000E+00	0.0000	0.0000
AVERAGES		13.24		13.24	70.39	4.3920E-06	0.0664	0.0332

TOTAL EMISSIONS **0.5646 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **412.00 gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **12.50 gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES

96 HOUR AFVR Pre-Treatment Vapor Concentrations

Site Name: Broad River Amoco | **County** Richland

UST Permit Number: 11946 | **Field Personnel:** | **Terry Teate** | June 15-19, 2017

Calibrate P I D: 0735 6/18/2017

Calibrate P I D: 0710 6/19/2017

Well Name: RW-5 | **Ambient Temp.** 75-96 deg

Exhaust Stack Diameter(Inches): 3 | **RW-5** | **Before** FP: 10.25 | **GWL: 16.08** | **GWL AFTER AFVR** GWL: 37.78

Start Time 1400 Thurs **End Time:** 1400 Mon

Weather Conditions: Hot, Clear, Sunny Overcast, Muggy

TOTAL FREE PRODUCT MEASURED = 5.83 ft.
TOTAL FREE PRODUCT RECOVERED = 12.5 gal
TOTAL FLUID RECOVERED = 412.4 gallons

Dry Standard CFM Air Flow - Qstd

TOTAL EMISSIONS = 145.45 lbs.
Or = 23.6 gallons

Interval	Time	Vacuum, in. of Hg	PPM measured	Humidity Ratio,gpp	Water Vapor,%	Dry Air(1/100)	Discharge Flow Volume, CFM	Temperature, °f	Temperature Constant	Qstd cfm
2880	1400	28	414	141	0.02014286	0.9799	158.00	90.00	0.9600	148.62
3000	1600	29	764	278	0.0397	0.9603	281.00	113.00	0.9215	248.65
3120	1800	29	707	279	0.0399	0.9601	389.00	141.00	0.8785	328.13
3240	2000	28	629	237	0.0339	0.9661	241.00	110.00	0.9263	215.68
3360	2200	28	534	194	0.0277	0.9723	256.00	108.00	0.9296	231.38
3480	2400	28	312	187	0.0267	0.9733	197.00	97.00	0.9479	181.75
3960	0800 Sun	28	411	102	0.0146	0.9854	181.00	81.00	0.9760	174.08
4080	1000	28	791	240	0.0343	0.9657	268.00	106.00	0.9329	241.44
4200	1200	20	394	392	0.0560	0.9440	363.00	133.00	0.8904	305.11
4320	1400	15	388	317	0.0453	0.9547	430.00	137.00	0.8844	363.08
4440	1600	22	760	119	0.0170	0.9830	110.00	93.00	0.9548	103.24
4560	1800	22	356	105	0.0150	0.9850	241.00	91.00	0.9583	227.48
4680	2000	28	365	100	0.0143	0.9857	241.00	89.00	0.9617	228.47
4800	2200	26	502	147	0.0210	0.9790	230.00	92.00	0.9565	215.38
4920	2400	28	616	165	0.0236	0.9764	241.00	102.00	0.9395	221.08
5400	0800 Mon	28	540	110	0.0157	0.9843	192.00	86.00	0.9670	182.75
5520	1000	28	282	114	0.0163	0.9837	232.00	87.00	0.9653	220.29
AVERAGES		26.06	515.59	189.82	0.0271	0.9729	250.06	103.29	0.9383	225.68

NOTES:

Vacuum = Level of vacuum being applied as record from the vacuum truck tank, inches of Hg.
PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
Humidity Ratio = Grains of moisture per pound(gpp) of dry air measured at the blower discharge stack.
Water Vapor = Pounds of water per pound of dry air as %.
Dry Air = Calculated pound of dry air,(1 - water vapor %).
Discharge Flow Volume = Measured air flow from 3" discharge stack in cubic feet per minute,cfm.
Temperature = Temperature of the air exiting the discharge stack in deg. Fahrenheit.
Temperature Constant = 528°R / (Temp.,°F + 460)

EQUATION

Qstd = Dry Air x Discharge Flow x Temperature Constant

ENVIRO-TEST SERVICES **96 HOUR AFVR Pre-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

June 15-19, 2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate** **Calibrate P I D: 0735 6/18/2017**

Calibrate P I D: 0710 6/19/2017

Well Name: RW-5 **Ambient Temp. 75-96 deg**

		Before		GWL AFTER AFVR
Exhaust Stack Diameter(Inches): 3	**RW-5**	**FP: 10.25**	**GWL: 16.08**	**GWL: 37.78**

Start Time1400 Thurs End Time: 1400 Mon

TOTAL FREE PRODUCT MEASURED = 5.83 ft.

Weather Conditions: Hot, Clear, Sunny **TOTAL FREE PRODUCT RECOVERED = 12.5 gal**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
1400	148.62	414	1	414	2,201.65	1.3738E-04	1.2251	0.0000
1600	248.65	764	1	764	4,062.95	2.5353E-04	3.7824	1.8912
1800	328.13	707	1	707	3,759.83	2.3461E-04	4.6190	2.3095
2000	215.68	629	1	629	3,345.02	2.0873E-04	2.7012	1.3506
2200	231.38	534	1	534	2,839.81	1.7720E-04	2.4601	1.2300
2400	181.75	312	1	312	1,659.22	1.0354E-04	1.1291	0.5645
0800 Sun	174.08	411	1	411	2,185.70	1.3639E-04	1.4245	0.7123
1000	241.44	791	1	791	4,206.54	2.6249E-04	3.8024	1.9012
1200	305.11	394	1	394	2,095.29	1.3075E-04	2.3935	1.1968
1400	363.08	388	1	388	2,063.38	1.2876E-04	2.8049	1.4024
1600	103.24	760	1	760	4,041.68	2.5220E-04	1.5623	0.7811
1800	227.48	356	1	356	1,893.21	1.1814E-04	1.6124	0.8062
2000	228.47	365	1	365	1,941.07	1.2112E-04	1.6604	0.8302
2200	215.38	502	1	502	2,669.64	1.6659E-04	2.1527	1.0764
2400	221.08	616	1	616	3,275.89	2.0442E-04	2.7116	1.3558
0800 Mon	182.75	540	1	540	2,871.72	1.7920E-04	1.9649	0.9825
1000	220.29	282	1	282	1,499.68	9.3580E-05	1.2369	0.6185
AVERAGES		515.59		515.59	2,741.90	1.7109E-04	2.3084	1.1182

TOTAL EMISSIONS **19.0091 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **412.00 gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **12.50 gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES

96 HOUR AFVR Pre-Treatment Vapor Concentrations

Site Name: Broad River Amoco | **County** Richland

UST Permit Number: 11946 | **Field Personnel:** | **Terry Teate** | June 15-19, 2017

Calibrate P I D: 0735 6/18/2017

Calibrate P I D: 0710 6/19/2017

Well Name: RW-5 | **Ambient Temp.** 75-96 deg

Exhaust Stack Diameter(Inches): 3 | Before RW-5 FP: 10.25 | GWL: 16.08 | GWL AFTER AFVR GWL: 37.78

Start Time 1400 Thurs **End Time:** 1400 Mon

TOTAL FREE PRODUCT MEASURED = 5.83 ft.
TOTAL FREE PRODUCT RECOVERED = 12.5 gal

Weather Conditions: Hot, Clear, Sunny

PMRg = Cg x Qstd x 60 min/hr

PMR = PMRg x [(T2-T1) / 60], PMRg x [(T3-T2) / 60], ...

VACUUM GAUGE MEASUREMENTS

Interval	Time	Vacuum of Hg In Inches RW-5	MW-5	RW-1	MW-D1
2880	1400	18.0	1.2	.0	0.0
3000	1600	20.0	1.0	.0	0.0
3120	1800	18.0	1.0	.0	.0
3240	2000	15.0	1.0	.0	.5
3360	2200	15.0	1.0	.0	.5
3480	2400	16.0	1.0	.0	.5
3960	0800 Sun	24.0	2.0	.0	1.0
4080	1000	18.0	.8	.0	1.0
4200	1200	15.0	.0	.0	.0
4320	1400	20.0	.4	.0	.0
4440	1600	23.0	1.0	.0	.0
4560	1800	20.0	1.0	.0	.0
4680	2000	22.0	1.0	.0	.0
4800	2200	18.0	1.2	.0	.0
4920	2400	20.0	1.8	.0	.0
5400	0800 Mon	22.0	1.0	.0	.0
5520	1000	10.0	1.0	.0	.0

STINGER DEPTHS

Stinger Depth In ft. RW-5
15.0
34.0
36.0
10.5
12.0
14.0
16.0
38.0
38.0
38.0
38.0
10.5
14.0
22.0
32.0
16.0
25.0

ENVIRO-TEST SERVICES **96 HOUR AFVR Post-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

June 15-19, 2017

UST Permit Number: 11948 **Field Personnel:** **Terry Teate** **Calibrate P I D: 0735 6/18/2017**

Calibrate P I D: 0710 6/19/2017

Well Name: RW-5 **Ambient Temp. 75-96 deg**

		Before		GWL AFTER AFVR
Exhaust Stack Diameter(inches): 3	**RW-5**	**FP: 10.25**	**GWL: 16.08**	**GWL: 37.78**

Start Time 1400 Thurs End Time: 1400 Mon

TOTAL FREE PRODUCT MEASURED = 5.83 ft.

Weather Conditions: Hot, Clear, Sunny **TOTAL FREE PRODUCT RECOVERED = 12.5 gal**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
1400	148.62	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1600	248.65	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1800	328.13	0	1	0	0.00	0.0000E+00	0.0000	0.0000
2000	215.68	0	1	0	0.00	0.0000E+00	0.0000	0.0000
2200	231.38	0	1	0	0.00	0.0000E+00	0.0000	0.0000
2400	181.75	0	1	0	0.00	0.0000E+00	0.0000	0.0000
0800 Sun	174.08	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1000	241.44	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1200	305.11	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1400	363.08	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1600	103.24	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1800	227.48	0	1	0	0.00	0.0000E+00	0.0000	0.0000
2000	228.47	0	1	0	0.00	0.0000E+00	0.0000	0.0000
2200	215.38	0	1	0	0.00	0.0000E+00	0.0000	0.0000
2400	221.08	0	1	0	0.00	0.0000E+00	0.0000	0.0000
0800 Mon	182.75	97	1	97	515.85	3.2189E-05	0.3530	0.1765
1000	220.29	0	1	0	0.00	0.0000E+00	0.0000	0.0000
AVERAGES		5.71		5.71	30.34	1.8935E-06	0.0208	0.0104

TOTAL EMISSIONS **0.1765 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **412.00 gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **12.50 gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES

96 HOUR AFVR Pre-Treatment Vapor Concentrations

Site Name: Broad River Amoco | **County** Richland

June 15-19, 2017

UST Permit Number: 11946 | **Field Personnel:** | **Terry Teate** | **Calibrate P I D** 0640 6/16/2017

Calibrate P I D 0722 6/17/2017

Well Name: RW-5 | **Ambient Temp.** 75-96 deg

Exhaust Stack Diameter(inches): 3 | **RW-5** | **Before** FP: 10.25 | **GWL: 16.08** | **GWL AFTER AFVR GWL: 37.78**

Start Time 1400 Thurs End Time: 1400 Mon

Weather Conditions: Hot, Clear, Sunny Muggy

TOTALFREE PRODUCT MEASURED = 5.83 ft.
TOTAL FREE PRODUCT RECOVERED = 12.5 gal
TOTAL FLUID RECOVERED = 412.4 gallons

Dry Standard CFM Air Flow - Qstd

TOTAL EMISSIONS = 145.45 lbs
Or = 23.6 gallons

Interval	Time	Vacuum, In. of Hg	PPM measured	Humidity Ratio,gpp	Water Vapor,%	Dry Air(1/100)	Discharge Flow Volume, CFM	Temperature, °f	Temperature Constant	Qstd cfm
5640	**1200**	*24*	***591***	111	0.01585714	0.9841	261.00	95.00	0.9514	244.37
5760	**1400**	*22*	***392***	432	0.0617	0.9383	403.00	170.00	0.8381	316.91
AVERAGES		23.00	491.50	271.50	0.0388	0.9612	332.00	132.50	0.8947	280.64

NOTES:

Vacuum = Level of vacuum being applied as record from the vacuum truck tank, inches of Hg.
PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
Humidity Ratio = Grains of moisture per pound(gpp) of dry air measured at the blower discharge stack.
Water Vapor = Pounds of water per pound of dry air as %.
Dry Air = Calculated pound of dry air,(1 - water vapor %).
Discharge Flow Volume = Measured air flow from 3" discharge stack in cubic feet per minute,cfm.
Temperature = Temperature of the air exiting the discharge stack in deg. Fahrenheit.
Temperature Constant = 528°R / (Temp.,°F + 460)

EQUATION

Qstd = Dry Air x Discharge Flow x Temperature Constant

ENVIRO-TEST SERVICES **96 HOUR AFVR Pre-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

June 15-19, 2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate** **Calibrate P I D 0640 6/16/2017**

Calibrate P I D 0722 6/17/2017

Well Name: RW-5 **Ambient Temp. 75-96 deg**

		Before		GWL AFTER AFVR
Exhaust Stack Diameter(inches): 3	**RW-5**	**FP: 10.25**	**GWL: 16.08**	**GWL: 37.78**

Start Time1400 Thurs End Time: 1400 Mon

TOTALFREE PRODUCT MEASURED = 5.83 ft.

Weather Conditions: Hot, Clear, Sunny **TOTAL FREE PRODUCT RECOVERED = 12.5 gal**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
5640	244.37	591	1	591	3,142.94	1.9612E-04	2.8755	0.0000
5760	316.91	392	1	392	2,084.66	1.3008E-04	2.4735	1.2367
AVERAGES		491.50		491.50	2,613.80	1.6310E-04	2.6745	0.6184

TOTAL EMISSIONS **1.2367 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **412.00 gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **12.50 gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES

96 HOUR AFVR Pre-Treatment Vapor Concentrations

Site Name: Broad River Amoco | **County** Richland

UST Permit Number: 11946 | **Field Personnel:** | **Terry Teate** | June 15-19, 2017

Calibrate P I D 0640 6/16/2017

Calibrate P I D 0722 6/17/2017

Well Name: RW-5 | **Ambient Temp.** 75-96 deg

Exhaust Stack Diameter(Inches): 3 | **RW-5** | **Before FP: 10.25** | **GWL: 16.08** | **GWL AFTER AFVR GWL: 37.78**

Start Time1400 Thurs End Time: 1400 Mon

TOTALFREE PRODUCT MEASURED = 5.83 ft.
TOTAL FREE PRODUCT RECOVERED = 12.5 gal

Weather Conditions: Hot, Clear, Sunny
PMRg = Cg x Qstd x 60 min/hr
PMR = PMRg x [(T2-T1) / 60], PMRg x [(T3-T2) / 60], ...

VACUUM GAUGE MEASUREMENTS

Interval	Time	Vacuum of Hg in inches RW-5	MW-5	RW-1	MW-D1
5640	1200	22.0	.8	.5	0.0
5760	1400	15.0	.8	.0	0.0

STINGER DEPTHS

Stinger Depth in ft. RW-5
30.0
38.0

ENVIRO-TEST SERVICES

96 HOUR AFVR Post-Treatment Vapor Concentrations

Site Name: Broad River Amoco | **County** Richland

UST Permit Number: 11946 | **Field Personnel:** | **Terry Teate** | June 15-19, 2017

Calibrate P I D 0640 6/16/2017

Calibrate P I D 0722 6/17/2017

Well Name: RW-5 | **Ambient Temp.** 75-96 deg

Exhaust Stack Diameter(Inches): 3 | Before RW-5 FP: 10.25 | GWL: 16.08 | GWL AFTER AFVR GWL: 37.78

Start Time1400 Thurs End Time: 1400 Mon

TOTALFREE PRODUCT MEASURED = 5.83 ft.
TOTAL FREE PRODUCT RECOVERED = 12.5 gal

Weather Conditions: Hot, Clear, Sunny
PMRg = Cg x Qstd x 60 min/hr
PMR = PMRg x [(T2-T1) / 60], PMRg x [(T3-T2) / 60], ...

VACUUM GAUGE MEASUREMENTS

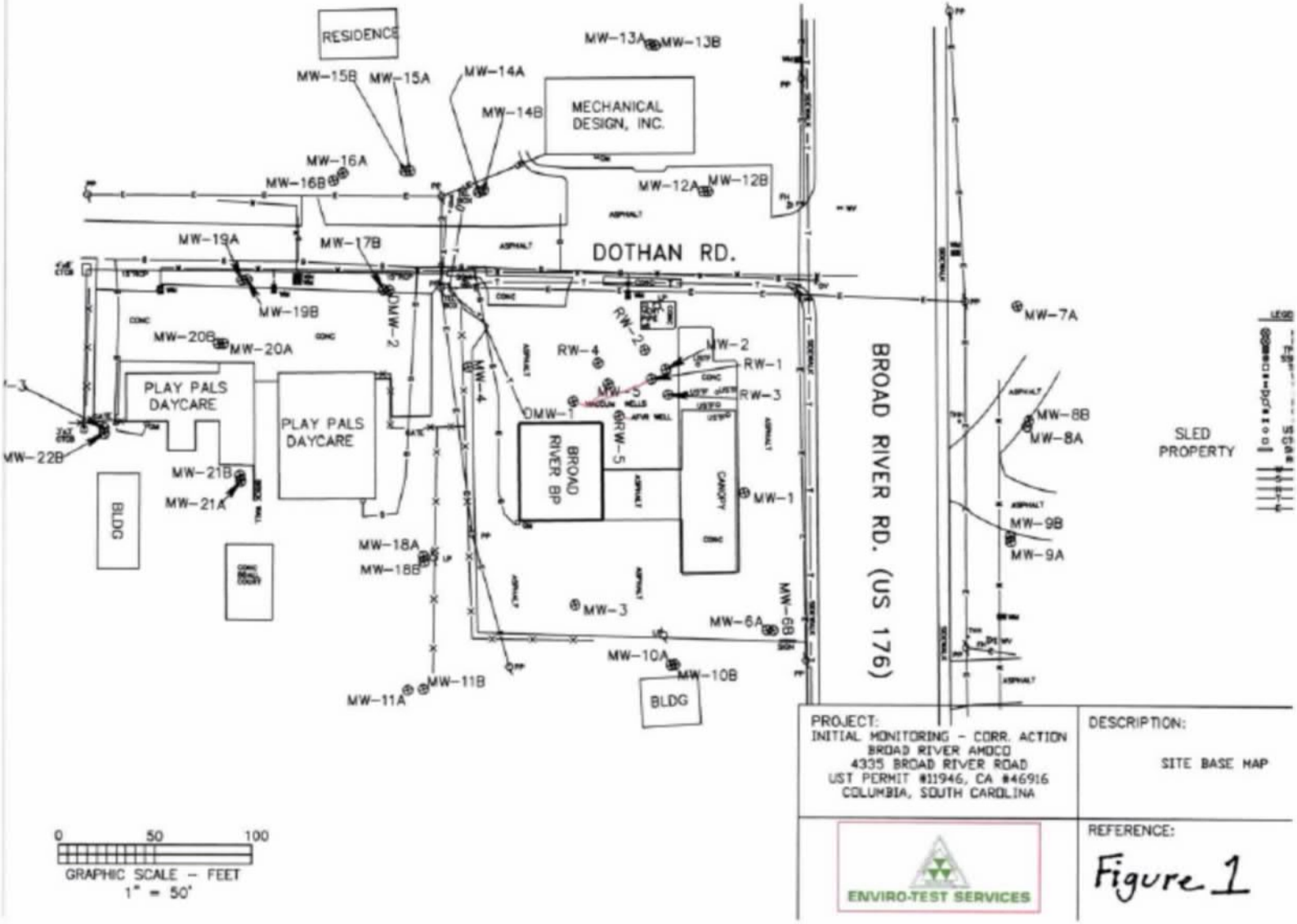
Interval	Time	Vacuum of Hg in Inches RW-5	MW-5	RW-1	MW-D1
5640	1200	22.0	.8	.5	0.0
5760	1400	15.0	.8	.0	0.0

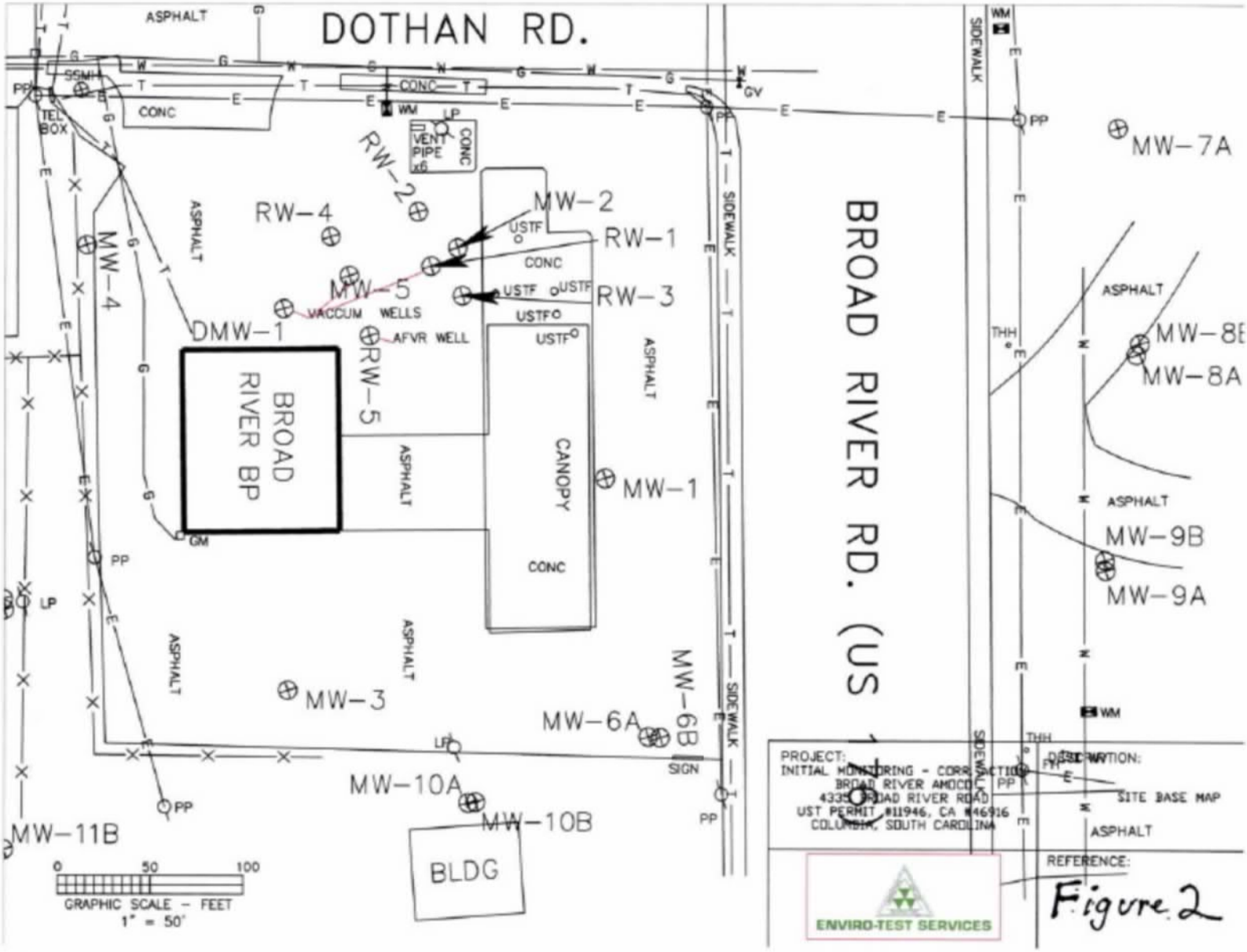
	Before FP: Level	Before GWL:	After FP: Level	After GWL
MW-1		11.82		11.80
MW-2	11.75	11.80	12.24	12.48
MW-4		11.60		9.04
MW-5	9.54	12.10	10.18	10.98
MW-D1		12.64		12.94
RW-1	10.55	11.60	11.18	11.45
RW-2	17.68	17.70	12.18	12.26
RW-3	11.74	12.48	12.64	13.00
RW-4		16.60		11.80
RW-5	10.25	16.08		38.00

STINGER DEPTHS

	Stinger Depth in ft. RW-5
	30.0
	38.0

FIGURE 1 & 2


RESIDENCE
MW-13A
MW-13B
MW-15B
MW-15A
MW-14A
MW-14B
MECHANICAL DESIGN, INC.
MW-16A
MW-16B
MW-12A
MW-12B
MW-19A
MW-17B
DOTHAN RD.
MW-19B
DMW-2
RW-2
MW-7A
MW-20B
MW-20A
RW-4
MW-2
RW-1
MW-4
RW-3
PLAY PALS DAYCARE
PLAY PALS DAYCARE
DMW-1
MW-5
RW-5
MW-8B
MW-8A
SLED PROPERTY
MW-22B
MW-21B
MW-21A
BROAD RIVER BP
MW-1
MW-9B
MW-9A
BLDG
MW-18A
MW-18B
MW-3
MW-6A
MW-6B
MW-10A
MW-10B
MW-11A
MW-11B
BLDG
BROAD RIVER RD. (US 176)
0
50
100
GRAPHIC SCALE - FEET
1" = 50'
PROJECT:
INITIAL MONITORING - CORR. ACTION
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA
DESCRIPTION:
SITE BASE MAP
ENVIRO-TEST SERVICES
REFERENCE:
Figure 1


DOTHAN RD.
BROAD RIVER RD. (US 176)
ASPHALT
CONC
SSMH
TEL BOX
VENT PIPE x6
RW-2
RW-4
MW-2
RW-1
MW-4
MW-5
RW-3
VACCUM WELLS
DMW-1
AFVR WELL
RW-5
BROAD RIVER BP
CANOPY
MW-1
MW-3
MW-6A
MW-6B
SIGN
MW-10A
MW-10B
MW-11B
BLDG
SIDEWALK
MW-7A
MW-8B
MW-8A
MW-9B
MW-9A
0 50 100
GRAPHIC SCALE - FEET
1" = 50'
PROJECT:
INITIAL MONITORING - CORRECTIVE ACTION
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA
DESCRIPTION:
SITE BASE MAP
REFERENCE:
ENVIRO-TEST SERVICES
Figure 2

ATTACHMENT B

C 235173

Crandall

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. 43683 | 2. Page 1 of 1

GENERATOR

3. Generator's Name and Mailing Address
Enviro-Test Services
1621 Lake Murray Blvd
Columbia, SC 29212

4. Generator's Phone (803) 413-4936

5. Transporter 1 Company Name
Enviro-Test Services

6. US EPA ID Number

A. Transporter's Phone (803) 732-5770

7. Transporter 2 Company Name

8. US EPA ID Number

B. Transporter's Phone

9. Designated Facility Name and Site Address
Crandall Corporation
100 Rich Lex Dr
Lexington, SC 29072

10. US EPA ID Number
SCD981864499

C. Facility's Phone (803) 791-4800

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt./Vol.
a. Non Hazardous Waste, Petroleum Contact Water	01	TT	412.40	G
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
96 Hour AFVR at Broad River AMOCO Permit #11946
Richland County, SC
Infotrac 800-535-5053 Registrant Crandall Corp
Srv Call ID: GLB0243683

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
X Terry L. Teate	X Terry L. Teate	06	20	17

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Y Terry L. Teate	Y Terry L. Teate	06	20	17

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in item 19.

Printed/Typed Name	Signature	Month	Day	Year
Phil Stoker		06	20	17

GENERATOR COPY

SITE NAME: Broad River Amoco

SHULTZ TANK 275 Gallon STICK MEASURMENT Conversion from Inches to Gallons

TANK No. 1 **DATE** 6-19-17 **DHEC Permit No.** 11946

Inches = Gallons	Inches = Gallons	Inches = Gallons	Inches = Gallons
0.00 = 0.00	10.00 = 70.50	20.00 = 141.00	30.00 = 211.50
.25 = 1.76	10.25 = 72.26	20.25 = 142.76	30.25 = 213.26
.50 = 3.52	10.50 = 74.02	20.50 = 144.52	30.50 = 215.02
.75 = 5.43	10.75 = 75.78	20.75 = 146.28	30.75 = 216.78
1.00 = 7.05	11.00 = 77.55	21.00 = 148.05	31.00 = 218.55
1.25 = 8.81	11.25 = 79.31	21.25 = 149.81	31.25 = 220.31
1.50 = 10.57	11.50 = 81.07	21.50 = 151.57	31.50 = 222.07
1.75 = 12.33	11.75 = 82.83	21.75 = 153.33	31.75 = 223.83
2.00 = 14.10	12.00 = 84.60	22.00 = 155.10	32.00 = 225.60
2.25 = 15.86	12.25 = 86.36	22.25 = 156.86	32.25 = 227.36
2.50 = 17.62	12.50 = 88.12	22.50 = 158.62	32.50 = 229.12
2.75 = 19.38	12.75 = 89.88	22.75 = 160.38	32.75 = 230.88
3.00 = 21.09	13.00 = 91.67	23.00 = 162.15	33.00 = 232.65
3.25 = 22.91	13.25 = 93.41	23.25 = 163.91	33.25 = 234.41
3.50 = 24.67	13.50 = 95.17	23.50 = 165.67	33.50 = 236.17
3.75 = 26.43	13.75 = 96.93	23.75 = 167.43	33.75 = 237.93
4.00 = 28.20	14.00 = 98.70	24.00 = 169.20	34.00 = 239.70
4.25 = 29.96	14.25 = 100.46	24.25 = 170.96	34.25 = 241.46
4.50 = 31.72	14.50 = 102.22	24.50 = 172.72	34.50 = 243.22
4.75 = 33.48	14.75 = 103.98	24.75 = 174.48	34.75 = 244.98
5.00 = 35.25	15.00 = 105.75	25.00 = 176.25	35.00 = 246.75
5.25 = 37.01	15.25 = 107.51	25.25 = 178.01	35.25 = 248.51
5.50 = 38.77	15.50 = 109.27	25.50 = 179.77	35.50 = 250.27
5.75 = 40.53	15.75 = 111.03	25.75 = 181.53	35.75 = 252.03
6.00 = 42.30	16.00 = 112.80	26.00 = 183.30	36.00 = 253.80
6.25 = 44.06	16.25 = 114.56	26.25 = 185.06	36.25 = 255.56
6.50 = 45.82	16.50 = 116.32	26.50 = 186.82	36.50 = 257.32
6.75 = 47.58	16.75 = 118.08	26.75 = 188.58	36.75 = 259.08
7.00 = 49.35	17.00 = 119.85	27.00 = 190.35	37.00 = 260.85
7.25 = 51.11	17.25 = 121.61	27.25 = 192.11	37.25 = 262.61
7.50 = 52.87	17.50 = 123.37	27.50 = 193.87	37.50 = 264.37
7.75 = 54.63	17.75 = 125.13	27.75 = 195.63	37.75 = 266.13
8.00 = 56.40	18.00 = 126.90	28.00 = 197.40	38.00 = 267.90
8.25 = 58.16	18.25 = 128.66	28.25 = 199.16	38.25 = 269.66
8.50 = 59.95	18.50 = 130.42	28.50 = 200.92	38.50 = 271.45
8.75 = 61.68	18.75 = 132.18	28.75 = 202.68	38.75 = 273.18
9.00 = 63.45	19.00 = 133.95	29.00 = 204.45	39.00 = 275.00
9.25 = 65.21	19.25 = 135.71	29.25 = 206.21	
9.50 = 68.87	19.50 = 137.40	29.50 = 207.97	Amount Measured
9.75 = 69.73	19.75 = 139.23	29.75 = 209.73	275.00 Gal

SITE NAME: Broad River Amoco

SHULTZ TANK 275 Gallon STICK MEASURMENT Conversion from Inches to Gallons

TANK No. 2 **DATE** 6-19-17 **DHEC Permit No.** 11946

Inches = Gallons	Inches = Gallons	Inches = Gallons	Inches = Gallons
0.00 = 0.00	10.00 = 70.50	20.00 = 141.00	30.00 = 211.50
.25 = 1.76	10.25 = 72.26	20.25 = 142.76	30.25 = 213.26
.50 = 3.52	10.50 = 74.02	20.50 = 144.52	30.50 = 215.02
.75 = 5.43	10.75 = 75.78	20.75 = 146.28	30.75 = 216.78
1.00 = 7.05	11.00 = 77.55	21.00 = 148.05	31.00 = 218.55
1.25 = 8.81	11.25 = 79.31	21.25 = 149.81	31.25 = 220.31
1.50 = 10.57	11.50 = 81.07	21.50 = 151.57	31.50 = 222.07
1.75 = 12.33	11.75 = 82.83	21.75 = 153.33	31.75 = 223.83
2.00 = 14.10	12.00 = 84.60	22.00 = 155.10	32.00 = 225.60
2.25 = 15.86	12.25 = 86.36	22.25 = 156.86	32.25 = 227.36
2.50 = 17.62	12.50 = 88.12	22.50 = 158.62	32.50 = 229.12
2.75 = 19.38	12.75 = 89.88	22.75 = 160.38	32.75 = 230.88
3.00 = 21.09	13.00 = 91.67	23.00 = 162.15	33.00 = 232.65
3.25 = 22.91	13.25 = 93.41	23.25 = 163.91	33.25 = 234.41
3.50 = 24.67	13.50 = 95.17	23.50 = 165.67	33.50 = 236.17
3.75 = 26.43	13.75 = 96.93	23.75 = 167.43	33.75 = 237.93
4.00 = 28.20	14.00 = 98.70	24.00 = 169.20	34.00 = 239.70
4.25 = 29.96	14.25 = 100.46	24.25 = 170.96	34.25 = 241.46
4.50 = 31.72	14.50 = 102.22	24.50 = 172.72	34.50 = 243.22
4.75 = 33.48	14.75 = 103.98	24.75 = 174.48	34.75 = 244.98
5.00 = 35.25	15.00 = 105.75	25.00 = 176.25	35.00 = 246.75
5.25 = 37.01	15.25 = 107.51	25.25 = 178.01	35.25 = 248.51
5.50 = 38.77	15.50 = 109.27	25.50 = 179.77	35.50 = 250.27
5.75 = 40.53	15.75 = 111.03	25.75 = 181.53	35.75 = 252.03
6.00 = 42.30	16.00 = 112.80	26.00 = 183.30	36.00 = 253.80
6.25 = 44.06	16.25 = 114.56	26.25 = 185.06	36.25 = 255.56
6.50 = 45.82	16.50 = 116.32	26.50 = 186.82	36.50 = 257.32
6.75 = 47.58	16.75 = 118.08	26.75 = 188.58	36.75 = 259.08
7.00 = 49.35	17.00 = 119.85	27.00 = 190.35	37.00 = 260.85
7.25 = 51.11	17.25 = 121.61	27.25 = 192.11	37.25 = 262.61
7.50 = 52.87	17.50 = 123.37	27.50 = 193.87	37.50 = 264.37
7.75 = 54.63	17.75 = 125.13	27.75 = 195.63	37.75 = 266.13
8.00 = 56.40	18.00 = 126.90	28.00 = 197.40	38.00 = 267.90
8.25 = 58.16	18.25 = 128.66	28.25 = 199.16	38.25 = 269.66
8.50 = 59.95	18.50 = 130.42	28.50 = 200.92	38.50 = 271.45
8.75 = 61.68	18.75 = 132.18	28.75 = 202.68	38.75 = 273.18
9.00 = 63.45	19.00 = 133.95	29.00 = 204.45	39.00 = 275.00
9.25 = 65.21	19.25 = 135.71	29.25 = 206.21	
9.50 = 68.87	19.50 = 137.40	29.50 = 207.97	Amount Measured
9.75 = 69.73	19.75 = 139.23	29.75 = 209.73	137.4 Gal

D H E C
PROMOTE PROTECT PROSPER

Site-Specific Work Plan for Approved ACQAP
Underground Storage Tank Management Division

UST DOCKETING

To: Kimberly Kuhn (SCDHEC Project Manager)
From: Terry Teate (Contractor Project Manager)
Contractor: Enviro-Test Services, Inc. UST Contractor Certification Number: 14

Facility Name: Broad River Amoco UST Permit #: 11946
Facility Address: 4335 Broad River Rd.; Columbia, SC
Responsible Party: Frederick N. Cecchini Phone:
RP Address: 429 Press Lindler Rd.; Columbia, SC 29212-8322
Property Owner (if different):
Property Owner Address:
Current Use of Property: gas station

UST AUG 02 2017 PROGRAM

Scope of Work (Please check all that apply)

☐ IGWA ☐ Tier II ☐ Groundwater Sampling ☐ GAC
☐ Tier I ☐ Monitoring Well Installation ☑ Other RW.Install

Analyses (Please check all that apply)

Groundwater/Surface Water:

☐ BTEXNMDCA (8260B) ☐ Lead ☐ BOD ☐ Methane
☐ Oxygenates (8260B) ☐ 8 RCRA Metals ☐ Nitrate ☐ Ethanol
☐ EDB (8011) ☐ TPH ☐ Sulfate ☐ Dissolved Iron
☐ PAH (8270D) ☐ pH ☐ Other

Soil:

☐ BTEXN ☐ 8 RCRA Metals ☐ TPH-DRO (3550B/8015B) ☐ Grain Size
☐ PAH ☐ Oil & Grease (9071) ☐ TPH-GRO (5030B/8015B) ☐ TOC

Air:

☐ BTEXN

Sample Collection (Estimate the number of samples of each matrix that are expected to be collected.)

_____ Soil _____ Water Supply Wells _____ Air _____ Field Blank
_____ Monitoring Wells _____ Surface Water _____ Duplicate _____ Trip Blank

Field Screening Methodology

Estimate number and total completed depth for each point, and include their proposed locations on the attached map.

# of shallow points proposed: _____ Estimated Footage: _____ feet per point
# of deep points proposed: _____ Estimated Footage: _____ feet per point
Field Screening Methodology: _____

Permanent Monitoring Wells

Estimate number and total completed depth for each well, and include their proposed locations on the attached map.

# of shallow wells: _____ Estimated Footage: _____ feet per point
# of deep wells: _____ Estimated Footage: _____ feet per point
# of recovery wells: 7 Estimated Footage: 35-40' TD feet per point
Monitoring Well development method (consistent with SOP): _____
Comments, if warranted:

_____
_____
_____

UST Permit #: 11946 Facility Name: Broad River Amoco

Implementation Schedule (Number of calendar days from approval)
Field Work Start-Up: 30 Field Work Completion: 31
Report Submittal: 60 # of Copies Provided to Property Owners: 1

Aquifer Characterization
Pump Test: ☐ Slug Test: ☐ (Check one and provide explanation below for choice)

Investigation Derived Waste Disposal
Soil: _____ Tons Purge Water: _____ Gallons
Drilling Fluids: _____ Gallons Free-Phase Product: _____ Gallons

Additional Details For This Scope of Work
For example, list wells to be sampled, wells to be abandoned/repaired, well pads/bolts/caps to replace, details of AFVR event, etc.
RW-6, RW-7, RW-8, RW-9, RW-10, RW-11, RW-12

Compliance With Annual Contractor Quality Assurance Plan (ACQAP)
____ Laboratory as indicated in ACQAP? (Yes/No) If no, indicate laboratory information below.
Name of Laboratory: _____
SCDHEC Certification Number: _____
Name of Laboratory Director: _____

Yes Well Driller as indicated in ACQAO? (Yes/No) If no, indicate driller information below.
Name of Well Driller: ARM Environmental Services may be used for installation if difficult drilling conditions are found
SCLLR Certification Number: _____

____ Other variations from ACQAP. Please describe below.

Attachments
1. Attach a copy of the relevant portion of the USGS topographic map showing the site location.
2. Prepare a site base map. This map must be accurately scaled, but does not need to be surveyed. The map must include the following:
   - North Arrow
   - Location of property lines
   - Location of buildings
   - Previous soil sampling locations
   - Previous monitoring well locations
   - Proposed soil boring locations
   - Proposed monitoring well locations
   - Legend with facility name and address, UST permit number, and bar scale
   - Streets or highways (indicate names and numbers)
   - Location of all present and former ASTs and USTs
   - Location of all potential receptors
3. Assessment Component Cost Agreement, SCDHEC Form D-3664

PROJECT:

SITE SPECIFIC WORK PLAN
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #NA
COLUMBIA, SOUTH CAROLINA

DESCRIPTION:

SITE LOCATION MAP

FIGURE 1

DATE:

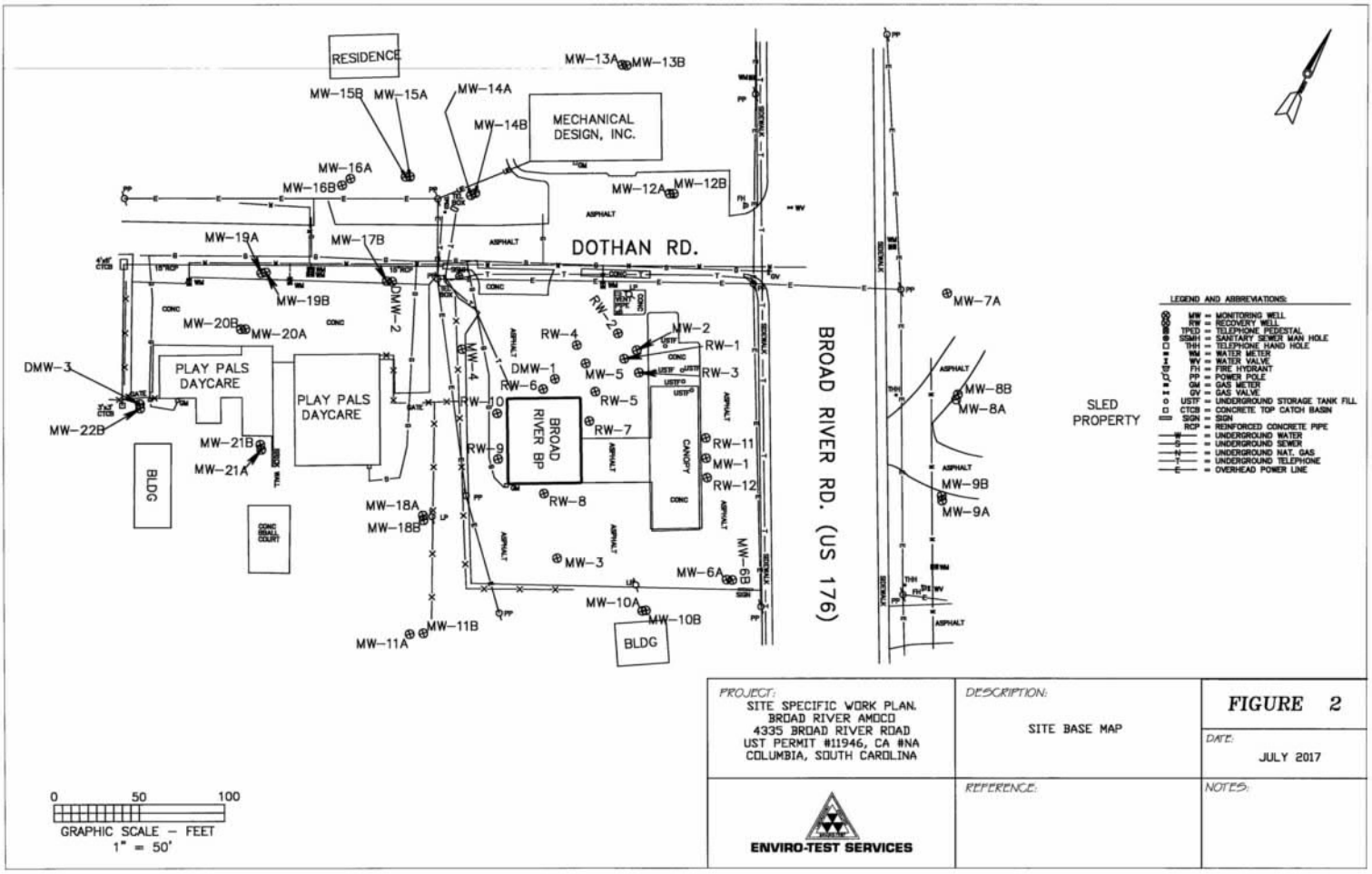
JULY 2017

ENVIRO-TEST SERVICES

REFERENCE:

U.S.G.S. TOPOGRAPHIC MAP
(7.5 MINUTE SERIES)
COLUMBIA NORTH - 1972, REV. 1990
SOUTH CAROLINA QUADRANGLE

LEGEND:



PROJECT: SITE SPECIFIC WORK PLAN. BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #NA COLUMBIA, SOUTH CAROLINA	DESCRIPTION: SITE BASE MAP	**FIGURE 2**
		DATE: JULY 2017
ENVIRO-TEST SERVICES	REFERENCE:	NOTES:

D H E C

PROMOTE PROTECT PROSPER

South Carolina Department of Health and Environmental Control

ASSESSMENT COMPONENT COST AGREEMENT
SOUTH CAROLINA
Department of Health and Environmental Control
Underground Storage Tank Management Division
State Underground Petroleum Environmental Response Bank Account
May 15, 2014

Facility Name: Broad River Amoco

UST Permit #: 11946 **Cost Agreement #:** _____

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
1. **Plan Preparation**				
A1. Site-specific Work Plan	1	each	$150.00	$150.00
B1. Tax Map		each	$70.00	$0.00
C1. Tier II or Comp. Plan /QAPP Appendix B		each	$250.00	$0.00
2. A1. **Receptor Survey** *		each	$551.00	$0.00
3. **Survey (500 ft x 500 ft)**				
A1. Comprehensive Survey		each	$1,040.00	$0.00
B. Subsurface Geophysical Survey				
1B. < 10 meters below grade		each	$1,300.00	$0.00
2B. > 10 meters below grade		each	$2,310.00	$0.00
C1. Geophysical UST or Drum Survey		each	$910.00	$0.00
4. **Mob/Demob**				
A1. Equipment	1	each	$1,020.00	$1,020.00
B1. Personnel	2	each	$423.00	$846.00
C1. Adverse Terrain Vehicle		each	$500.00	$0.00
5. A1. **Soil Borings (hand auger)***		foot	$5.00	$0.00
6. **Soil Borings (requiring equipment, push technology, etc)* or Field Screening (including water ssample, soil sample, soil gas sample, etc.)***				
AA. Standard		per foot	$15.00	$0.00
C1. Fractured Rock		per foot	$20.20	$0.00
7. A1. **Soil Leachability Model**		each	$60.00	$0.00
8. **Abandonment (per foot)***				
A1. 2" diameter or less		per foot	$3.10	$0.00
B1. Greater than 2" to 6" diameter		per foot	$4.50	$0.00
C1. Dug/Bored well (up to 6 feet diameter)		per foot	$15.00	$0.00
9. **Well Installation (per foot)***				
A1. Water Table (hand augered)		per foot	$10.60	$0.00
B1. Water Table (drill rig)		per foot	$38.00	$0.00
CC. Telescoping		per foot	$50.00	$0.00
DD. Rock Drilling		per foot	$58.00	$0.00
E1. 2" Rock Coring		per foot	$30.90	$0.00
G1. Rock Multi-sampling ports/screens		per foot	$33.40	$0.00
HH. Recovery Well (4" diameter)	280	per foot	$45.00	$12,600.00
II. Pushed Pre-packed screen (1.25" dia)		per foot	$15.00	$0.00
J1. Rotosonic (2" diameter)		per foot	$44.00	$0.00
K. Re-develop Existing Well		per foot	$11.00	$0.00
10. **Groundwater Sample Collection / Gauge Depth to Water or Product ***				
A1. Groundwater Purge		per well/recept	$60.00	$0.00
B1. Air or Vapors		per recepto	$12.00	$0.00
C1. Water Supply		per well/recept	$22.00	$0.00
D1. Groundwater No Purge or Duplicate		per well/recept	$28.00	$0.00
E1. Gauge Well only		per well	$7.00	$0.00
F1. Sample Below Product		per well	$12.00	$0.00
G1. Passive Diffusion Bag		each	$26.00	$0.00
H1. Field Blank		each	$24.60	$0.00

11. Laboratory Analyses-Groundwater					
A2. BTEXNM+Oxyg's+1,2 DCA+Eth(8260B)		per sample	$122.00		$0.00
AA1. Lead, Filtered		per sample	$13.80		$0.00
B2. Rush EPA Method 8260B (All of item A.)		per sample	$153.60		$0.00
C2. Trimethal, Butyl, and Isopropyl Benzenes		per sample	$36.40		$0.00
D1. PAH's		per sample	$60.60		$0.00
E1. Lead		per sample	$16.00		$0.00
F1. EDB by EPA 8011		per sample	$45.20		$0.00
FF1. EDB by EPA Method 8011 Rush		per sample	$68.20		$0.00
G1. 8 RCRA Metals		per sample	$63.40		$0.00
H1. TPH (9070)		per sample	$41.00		$0.00
II. pH		per sample	$5.20		$0.00
J1. BOD		per sample	$20.00		$0.00
PP. Ethanol		per sample	$14.80		$0.00
11. Analyses-Soil					
Q1. BTEX + Naphth.		per sample	$64.00		$0.00
R1. PAH's		per sample	$64.04		$0.00
S1. 8 RCRA Metals		per sample	$56.40		$0.00
U1. TPH-DRO (3550C/8015C)		per sample	$40.00		$0.00
V1. TPH- GRO (5030B/8015C)		per sample	$35.96		$0.00
W1. Grain size/hydrometer		per sample	$104.00		$0.00
X1. Total Organic Carbon		per sample	$30.60		$0.00
11. Analyses-Air					
Y1. BTEX + Naphthalene		per sample	$216.00		$0.00
11. Analyses-Free Phase Product					
Z1. Hydrocarbon Fuel Identification		per sample	$357.00		$0.00
12. Aquifer Characterization					
A1. Pumping Test*		per hour	$23.00		$0.00
B1. Slug Test*		per test	$191.00		$0.00
C1. Fractured Rock		per test	$100.00		$0.00
13. A1. **Free Product Recovery Rate Test***		each	$38.00		$0.00
14. Fate/Transport Modeling					
A1. Mathematical Model		each	$100.00		$0.00
B1. Computer Model		each	$100.00		$0.00
15. Risk Evaluation					
A. Tier I Risk Evaluation		each	$300.00		$0.00
B1. Tier II Risk Evaluation		each	$100.00		$0.00
16. A1. **Subsequent Survey***	1	each	$260.00		$260.00
17. Disposal (gallons or tons)*					
AA. Wastewater	150	gallon	$0.56		$84.00
BB. Free Product		gallon	$0.50		$0.00
C1. Soil Treatment/Disposal	8	ton	$60.00		$480.00
D1. Drilling fluids		gallon	$0.42		$0.00
18. Miscellaneous (attach receipts)					
		each	$0.00		$0.00
		each	$0.00		$0.00
		each	$0.00		$0.00
20. Tier I Assessment (Use DHEC 3665 form)		standard			$0.00
21. IGWA (Use DHEC 3666 form)		standard			$0.00
22. Corrective Action (Use DHEC 3667 form)		PFP Bid			$0.00

23. **Aggressive Fluid & Vapor Recovery (AFVR)**					
A1. 8-hour Event*		each	$1,375.00		$0.00
AA. 24-hour Event*		each	$3,825.00		$0.00
A3. 48-hour Event*		each	$6,265.00		$0.00
A4. 96-hour Event*		each	$12,567.50		$0.00
C1. Off-gas Treatment 8 hour		per event	$122.50		$0.00
C2. Off-gas Treatment 24 hour		per event	$241.50		$0.00
C3. Off-gas Treatment 48 hour		per event	$327.00		$0.00
C4. Off-gas Treatment 96 hour		per event	$780.00		$0.00
D. Site Reconnaissance		each	$203.25		$0.00
E1. Additional Hook-ups		each	$25.75		$0.00
F1. Effluent Disposal		gallon	$0.44		$0.00
G. AFVR Mobilization/Demobilization		each	$391.50		$0.00
24. **Granulated Activated Carbon (GAC) filter system installation & service:**					
A1. New GAC System Installation*		each	$1,900.00		$0.00
BB. Refurbished GAC Sys. Install*		each	$900.00		$0.00
C1. Filter replacement/removal*		each	$350.00		$0.00
DD. GAC System removal, cleaning, & refurbishment*		each	$275.00		$0.00
E1. GAC System housing*		each	$250.00		$0.00
F. In-line particulate filter		each	$150.00		$0.00
G1. Additional piping & fittings		foot	$1.50		$0.00
25. **Well Repair**					
A1. Additional Copies of the Report Delivered		each	$50.00		$0.00
B1. Repair 2x2 MW pad*		each	$50.00		$0.00
C1. Repair 4x4 MW pad*		each	$88.00		$0.00
D1. Repair well vault*		each	$118.00		$0.00
F1. Replace well cover bolts		each	$2.60		$0.00
G. Replace locking well cap & lock		each	$15.00		$0.00
H1. Replace/Repair stick-up*		each	$134.00		$0.00
I1. Convert Flush-mount to Stick-up*		each	$150.00		$0.00
J1. Convert Stick-up to Flush-mount*		each	$130.00		$0.00
K1. Replace missing/illegible well ID plate		each	$12.00		$0.00
Report Prep & Project Management	12%	percent	$15,440.00		$1,852.80
TOTAL					$17,292.80

*The appropriate mobilization cost can be added to complete these tasks, as necessary

dhec
Healthy People. Healthy Communities.

UST
75
DOCKETING

MR FREDERICK N CECCHINI
429 PRESS LINDLER ROAD
COLUMBIA SC 29212-8322

SEP 0 8 2017

Re: **Monitoring Well Installation and AFVR Directive**
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit #11946; CA #55498; UMW-26742
Release reported January 4, 2011
Site-Specific Work Plan received August 2, 2017
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (DHEC) recognizes your commitment to continue work at this site utilizing Enviro-Test Services, Inc (Enviro-Test). The next appropriate scope of work at the site is a five (5) 48 hour AFVR events, repair four (4) monitoring wells, and installation of seven (7) recovery wells. In accordance with Section 280.64 of the South Carolina Underground Storage Tank Control Regulations, five 48-hour Aggressive Fluid and Vapor Recovery (AFVR) events may commence as outlined in this correspondence and the UST Quality Assurance Program Plan (QAPP) Revision 3.1.
The stingers shall be lowered at six inch intervals starting at the water table interface to a target depth near the bottom of each well. Please strive to reach the target depth within the first 8 hours. A copy of UST QAPP Version 3.1 for the Underground Storage Tank Division is available at http://www.dhec.sc.gov/Environment/LW/UST/ReleaseAssessmentClean-up/QualityAssurance/.

As soon as the beginning date of the event has been scheduled, please contact Kim Kuhn at kuhnkm@dhec.sc.gov.

The AFVR Report should be submitted within 90 days from the date of this correspondence. Please note that all applicable South Carolina certification requirements apply to the services and report preparation. All site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

Cost Agreement #55498 has been approved in the amount shown on the enclosed cost agreement. Enviro-Test can submit an invoice for direct billing from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. If the invoice and completed report are not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available.

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval is obtained from the UST Management Division. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be preapproved by DHEC for the cost to be paid. DHEC reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, DHEC reserves the right to question and/or reject costs if deemed unreasonable and the right to audit project records at any time during the project or after completion of work.

DHEC grants preapproval for transportation of virgin petroleum-contaminated groundwater from the referenced site to a permitted treatment facility.

On all correspondence concerning this site, please reference UST Permit #11946. If you have any questions, please contact me at (803) 898-0634 or by e-mail at kuhnkm@dhec.sc.gov.

Sincerely,

Kimberly Kuhn, Hydrogeologist
Corrective Action & Quality Assurance Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Approved Cost Agreement
Monitoring Well Approval Form

cc: Enviro-Test Services, Inc., PO Box 2237, Irmo, SC 29063 (with enclosure)
Technical File (with enclosure)

dhec
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Monitoring Well Approval Form

Approval is hereby granted to: Enviro-Test Services, Inc.
(on behalf of): Frederick N. Checchini
Facility: Broad River Amoco, 4335 Broad River Rd., Columbia, SC
UST Permit Number: 11946
County: Richland

This approval is for the installation of seven (7) recovery wells. The monitoring wells are to be installed in the approved locations. The monitoring wells are to be installed following the South Carolina Well Standards, R.61-71, and the applicable guidance documents.

Please note that R.61-71 requires the following:

1. All wells shall be drilled, constructed, and abandoned by a South Carolina certified well driller per R.61-71.D.1.
2. All monitoring wells shall be labeled as required by R.61-71.H.2.c.
3. A Water Well Record Form or other form provided or approved by DHEC shall be completed and submitted to DHEC within 30 days after well completion or abandonment unless another schedule has been approved by DHEC. The form should contain the "as-built" construction details and all other information required by R.61-71.H.1.f
4. All analytical data and water levels obtained from each monitoring well shall be submitted to DHEC within 30 days of receipt of laboratory results unless another schedule has been approved by DHEC as required by R.61-71.H.1.d.
5. If any of the information provided to DHEC changes, notification to Kimberly Kuhn (tel: (803) 898-0634 or e-mail: kuhnkm@dhec.sc.gov) shall be provided a minimum of twenty-four (24) hours prior to well construction as required by R.61-71.H.1.a.
6. All temporary monitoring wells shall be abandoned within 5 days of borehole completion using appropriate methods as required by R.61-71.H.4.c. All other wells shall be properly developed per R.61-71.H.2.d.
7. DHEC approval is required prior to abandonment of all monitoring wells as required by R.61-71.H.1.a.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina code of Laws and R.61-71 of the South Carolina well standards and regulations, dated May 27, 2016. A copy of this approval should be on the site during well installation.

Date of Issuance: September 1, 2017 **Approval #: UMW-26742**

Kimberly M Kuhn, Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

Approved Cost Agreement 55498

Facility: 11946 BROAD RIVER AMOCO
KUHNKM
PO Number:

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
01 PLAN						
		A1	SITE SPECIFIC WORK PLAN	1.0000	$150.000	150.00
04 MOB/DEMOB						
		A1	EQUIPMENT	1.0000	$1,020.000	1,020.00
		B1	PERSONNEL	3.0000	$423.000	1,269.00
09 WELL INSTALLATION						
		HH	RECOVERY WELL (4 INCH DIA)	280.0000	$45.000	12,600.00
16 SUBSEQUENT SURVEY						
		A1	SUBSEQUENT SURVEY	1.0000	$260.000	260.00
17 DISPOSAL						
		AA	WASTEWATER	150.0000	$0.560	84.00
		C1	SOIL TREATMENT DISPOSAL	8.0000	$60.000	480.00
19 RPT/PROJECT MNGT & COORDINATIO						
		PRT	REPORT PREPARATION	0.1200	$71,768.650	8,612.24
23 EFR						
		A3	48 HOUR EVENT	5.0000	$6,265.000	31,325.00
		C3	OFF GAS TREATMENT 48 HOUR	5.0000	$327.000	1,635.00
		D	SITE RECONNAISSANCE	1.0000	$203.250	203.25
		F1	EFFLUENT DISPOSAL	50,000.0000	$0.440	22,000.00
25 WELL REPAIR						
		B1	REPAIR 2X2 MONITORING WELL PAD	4.0000	$50.000	200.00
		D1	REPLACE WELL VAULT	4.0000	$118.000	472.00
		F1	REPLACE WELL COVER BOLTS	4.0000	$2.600	10.40
		G	REPLACE LOCKING WELL CAP & LOC	4.0000	$15.000	60.00
				Total Amount		80,380.89

January 20,2018

ENVIRO-TEST SERVICES

UST
JAN 24 2018
DIVISION
UST
DOCKETING
RECEIVED
JAN 24 2018
SC Department of
Health & Environmental Control

Mrs. Kimberly M. Kuhn, Hydrogeologist
Corrective Action Section
UST Program
Bureau of Land and Waste management

RE: Five 48 Hour AFVR 's and Monitor Well Repair
Broad River Amoco
Permit # 11946; CA # 55498
4335 Broad River Rd Columbia, SC
Richland County

Dear Mrs. Kuhn,

On September 28, 2017 SC licensed water well contractor #1242 Terry Teate repaired 3 monitor wells that had been damaged during the building of the new SLED parking lot. MW-7A, MW-8A & M-8B. Enviro-Test Services personnel moved the Vac unit on site on October 2, 2017 and begin the first of five 48 hour Aggressive Fluid Vapor Events (AFVR) These events included Monitor Wells MW-2, MW-5, RW-1, RW-3 and RW-5 as requested in the June September 08, 2017 directive. MW-2 is Attachment A, RW-1 is Attachment B, RW-3 is Attachment C, MW-5 is Attachment D and RW-5 is Attachment E. After gauging the wells with an interface probe . A Teflon bailer was used to remove the free product from each well before the events started The OVA (PID) was calibrated with Zero Air then with 250 ppm of Isobutylene Span gas per factory specifications at the beginning each day .

The first event was performed on MW-2, Attachment A ,and Figure 1. The event began on Tuesday at 1600 hrs. on October 3rd and ended on Thursday at 1600 hrs on October 5th 2017. Total free product Measured was 0.07 ft. There was 1.5 gallons of free product that was recovered and 109.27 gallons of gas cut fluid, The total Emissions 112 lbs. Or 17.73 gallons.

RW-1 is Attachment B, and Figure 2. The Event began at 1200 hrs on Friday October the 6th 2017 and ended at 1200 hrs. on Sunday October 8th 2017. Total Free product measured was 1.74.ft. There was 4.5 gallons of Free product recovered and 153.33 gallons of gas cut fluid. The total emissions was 47.15 or 7.65 gallons.

RW-3 is Attachment C, and Figure 3. The event began at 1200 hrs. on Thursday October 12th 2017 and ended at 1200 hrs. on Saturday October 14th, 2017. Total Free Product measured was 0.55 ft. There was 3.75 gallons of Free Product recovered and 93.41 gallons of gas cut fluid removed. The total emissions was 58.34 lbs. Or 9.47 gallons.

MW-5 is Attachment D, and Figure 4. The event began on Sunday October 15, 2017 at 1000 hrs. and ended at 1000 hrs on Tuesday October 17th 2017. Total Free Product measured was 0.87 ft. There was 2.5 gallons pf Free product recovered and 70.50 gallons of gas cut fluid recovered The total Emissions was 52.08 lbs. or 8.45 gallons.

RW-5 is Attachment E and Figure 5. The event began on Wednesday October 18, 2018 at 1400 hrs. and ended at 1400 hrs. Friday October 20th 2017. Total Free Product measured was 1.03 ft. There was 4.25 gallons of free product recovered and 123.37 gallons of gas cut fluid recovered . The total emissions was 145.45 lbs. or 23.6 gallons.

There has not been any 48 hour AFVR events performed at this site therefore the totals can not be compared to previous events. The combined total of the five events are 4.24 ft. of Free Product measured. There was 16.6 gallons of Free Product recovered and 549.88gallons of gas cut fluid recovered.

The total Emissions were 415.02 lbs or 66.9 gallons recovered.

The Disposal Manifest is Attachment F.

This will not close out close out Cost Agreement # 55498. There are 7 Recovery Wells in the process of being installed. Once the Recovery Wells have been installed then all wells with a history of Free Product will be gauged and included with the Completion reports with the conclusions and recommendations.

Thank You, for Recognizing our commitment to continue working on this site.

Terry L. Teate

Terry L. Teate
Project Manager
Enviro-Test Services Inc.

ATTACHMENT A

ENVIRO-TEST SERVICES

48 HOUR AFVR Pre-Treatment Vapor Concentrations

1 st Page

Site Name: Broad River Amoco | **County** Richland | October 3-5 2017

UST Permit Number: 11946 | **Field Personnel:** Terry Teate | **Calibrate P I D : 1510 10-3-2017**

Well Name: MW-2 | **Ambient Temp.** 58-82

Exhaust Stack Diameter(inches): 3 | Before MW-2 FP: 14.85 GWL: 14.92 | GWL AFTER AFVR GWL: 27.8

Start Time 1400 Tues **End Time:** 1400 Thurs

Weather Conditions: Cool, Clear, Sunny

TOTAL FREE PRODUCT MEASURED = 0.07 ft.
TOTAL FREE PRODUCT RECOVERED = 1.5 gal.
TOTAL FLUID RECOVERED = 109.27 gal

Dry Standard CFM Air Flow - Qstd

TOTAL EMISSIONS = 112 lbs
Or = 17.73 gallons

Interval	Time	Vacuum, in. of Hg	PPM measured	Humidity Ratio,gpp	Water Vapor,%	Dry Air(1/100)	Discharge Flow Volume, CFM	Temperature, °f	Temperature Constant	Qstd cfm
0	1600 Thurs	26	32	69	0.00985714	0.9901	402	84	0.9708	386.33
30	1630	26	482	62	0.0089	0.9911	378	88	0.9635	360.98
60	1700	28	760	77	0.0110	0.9890	322	92	0.9565	304 61
90	1730	28	1112	72	0.0103	0.9897	290	89	0.9617	276.04
120	1800	28	1105	78	0.0111	0.9889	281	88	0.9635	267.73
150	1830	28	1017	69	0.0099	0.9901	286	82	0.9742	275.87
180	1900	28	1134	62	0.0089	0.9911	266	85	0.9688	255.42
210	1930	26	1211	51	0.0073	0.9927	248	89	0.9617	236.78
240	2000	26	1186	48	0.0069	0.9931	230	80	0.9778	223.35
270	2030	28	902	66	0.0094	0.9906	258	79	0.9796	250.35
300	2100	28	798	88	0.0126	0.9874	234	82	0.9742	225.09
330	2130	28	809	92	0.0131	0.9869	227	89	0.9617	215.45
360	2200	29	804	89	0.0127	0.9873	197	71	0.9944	193.40
390	2230	29	674	102	0.0146	0.9854	178	80	0.9778	171.51
420	2300	29	622	98	0.0140	0.9860	188	79	0.9796	181.58
450	2330	28	341	100	0.0143	0.9857	164	75	0.9869	159.54
480	2400	28	365	92	0.0131	0.9869	142	74	0.9888	138.56
AVERAGES		27.71	780.18	77.35	0.0111	0.9889	252.41	82.71	0.9730	242.50

NOTES:

Vacuum = Level of vacuum being applied as record from the vacuum truck tank, inches of Hg.
PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
Humidity Ratio = Grains of moisture per pound(gpp) of dry air measured at the blower discharge stack.
Water Vapor = Pounds of water per pound of dry air as %.
Dry Air = Calculated pound of dry air,(1 - water vapor %).
Discharge Flow Volume = Measured air flow from 3" discharge stack in cubic feet per minute,cfm.
Temperature = Temperature of the air exiting the discharge stack in deg. Fahrenheit.
Temperature Constant = 528°R / (Temp.,°F + 460)

EQUATION

Qstd = Dry Air x Discharge Flow x Temperature Constant

ENVIRO-TEST SERVICES **48 HOUR AFVR Pre-Treatment Vapor Concentrations**

1 st Page

Site Name: Broad River Amoco **County** **Richland**

October 3-5 2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate**

Calibrate P I D : 1610 10-3-2017

Well Name MW-2 **Ambient Temp. 58-82**

Before **GWL AFTER AFVR**

Exhaust Stack Diameter(inches): 3 **MW-2** **FP: 14.85** **GWL: 14.92** **GWL: 27.6**

Start Time 1400 Tues **End Time: 1400 Thurs**

TOTAL FREE PRODUCT MEASURED = 0.07 ft.

Weather Conditions: Cool, Clear, Sunny **TOTAL FREE PRODUCT RECOVERED = 1.5 gal.**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
0	386.33	32	1	32	170.18	1.0619E-05	0.2461	0.0000
30	360.98	482	1	482	2,563.28	1.5995E-04	3.4643	1.7321
60	304.61	760	1	760	4,041.68	2.5220E-04	4.6094	2.3047
90	276.04	1112	1	1,112	5,913.62	3.6901E-04	6.1116	3.0558
120	267.73	1105	1	1,105	5,876.39	3.6669E-04	5.8903	2.9452
150	275.87	1017	1	1,017	5,408.41	3.3748E-04	5.5860	2.7930
180	255.42	1134	1	1,134	6,030.61	3.7631E-04	5.7670	2.8835
210	236.78	1211	1	1,211	6,440.10	4.0186E-04	5.7091	2.8545
240	223.35	1195	1	1,195	6,355.01	3.9655E-04	5.3141	2.6571
270	250.35	902	1	902	4,796.84	2.9932E-04	4.4962	2.2481
300	225.09	798	1	798	4,243.76	2.6481E-04	3.5764	1.7882
330	215.45	809	1	809	4,302.26	2.6846E-04	3.4704	1.7352
360	193.40	804	1	804	4,275.67	2.6680E-04	3.0959	1.5480
390	171.51	674	1	674	3,584.33	2.2366E-04	2.3016	1.1508
420	181.58	522	1	522	2,776.00	1.7322E-04	1.8873	0.9436
450	159.54	341	1	341	1,813.44	1.1316E-04	1.0832	0.5416
480	138.56	365	1	365	1,941.07	1.2112E-04	1.0070	0.5035
AVERAGES		780.18		780.18	4,148.98	2.5890E-04	3.7421	1.8638

TOTAL EMISSIONS **68.8590 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **109.27 gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **1.50 gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES

48 HOUR AFVR Pre-Treatment Vapor Concentrations

1 st Page

Site Name: Broad River Amoco | County Richland

October 3-5 2017

UST Permit Number: 11946 | Field Personnel: Terry Teate

Calibrate P I D : 1610 10-3-2017

Well Name:MW-2 | Ambient Temp. 58-82

Before | GWL AFTER AFVR

Exhaust Stack Diameter(inches): 3 | MW-2 FP: 14.85 GWL: 14.92 | GWL: 27.6

Start Time1400 Tues End Time: 1400 Thurs

TOTAL FREE PRODUCT MEASURED = 0.07 ft.

Weather Conditions: Cool, Clear, Sunny

TOTAL FREE PRODUCT RECOVERED = 1.5 gal.

PMRg = Cg x Qstd x 60 min/hr

PMR = PMRg x [(T2-T1) / 60], PMRg x [(T3-T2) / 60], ...

VACUUM GAUGE MEASUREMENTS

Interval	Time	Vacuum of Hg in Inches MW-2	RW-1	RW-2	RW-3
0	1600	18.0	0.0	0.0	0.0
30	1630	18.0	0.0	0.0	0.0
60	1700	18.0	0.0	0.0	0.0
90	1730	18.0	0.0	0.0	0.0
120	1800	20.0	0.2	0.0	0.0
150	1830	20.0	0.2	0.0	0.0
180	1900	20.0	0.2	0.4	0.0
210	1930	20.0	0.4	0.4	0.0
240	2000	22.0	0.4	0.4	0.0
270	2030	22.0	0.4	0.6	0.0
300	2100	22.0	1.0	0.6	0.0
330	2130	20.0	1.0	1.0	0.0
360	2200	20.0	1.0	1.0	0.0
390	2230	20.0	1.4	1.4	0.0
420	2300	22.0	2.0	2.0	0.0
450	2330	22.0	2.2	2.2	0.0
480	2400	22.0	2.2	2.6	0.0

STINGER DEPTHS

Stinger Depth in ft. MW-2
15.0
15.5
16.0
16.5
17.0
17.5
18.0
18.5
19.0
19.5
20.0
20.5
21.0
21.5
22.0
22.5
23.0

ENVIRO-TEST SERVICES **48 HOUR AFVR Post-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

October 3-5 2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate**

Calibrate P I D : 1510 10-3-2017

Well Name:MW-2 **Ambient Temp. 68-82**

Before **GWL AFTER AFVR**

Exhaust Stack Diameter(inches): 3 **MW-2** **FP: 14.85** **GWL: 14.92** **GWL: 27.6**

Start Time1400 Tues **End Time: 1400 Thurs**

TOTAL FREE PRODUCT MEASURED = 0.07 ft.

Weather Conditions: Cool, Clear, Sunny **TOTAL FREE PRODUCT RECOVERED = 1.6 gal.**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
0	386.33	0	1	0	0.00	0.0000E+00	0.0000	0.0000
30	360.98	0	1	0	0.00	0.0000E+00	0.0000	0.0000
60	304.61	0	1	0	0.00	0.0000E+00	0.0000	0.0000
90	276.04	0	1	0	0.00	0.0000E+00	0.0000	0.0000
120	267.73	0	1	0	0.00	0.0000E+00	0.0000	0.0000
150	275.87	0	1	0	0.00	0.0000E+00	0.0000	0.0000
180	255.42	0	1	0	0.00	0.0000E+00	0.0000	0.0000
210	236.78	0	1	0	0.00	0.0000E+00	0.0000	0.0000
240	223.35	0	1	0	0.00	0.0000E+00	0.0000	0.0000
270	250.35	0	1	0	0.00	0.0000E+00	0.0000	0.0000
300	225.09	0	1	0	0.00	0.0000E+00	0.0000	0.0000
330	215.45	0	1	0	0.00	0.0000E+00	0.0000	0.0000
360	193.40	0	1	0	0.00	0.0000E+00	0.0000	0.0000
390	171.51	0	1	0	0.00	0.0000E+00	0.0000	0.0000
420	181.58	0	1	0	0.00	0.0000E+00	0.0000	0.0000
450	159.54	0	1	0	0.00	0.0000E+00	0.0000	0.0000
480	138.56	0	1	0	0.00	0.0000E+00	0.0000	0.0000
AVERAGES		0.00		0.00	0.00	0.0000E+00	0.0000	0.0000

TOTAL EMISSIONS **0.0000 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **109.27 gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **1.60 gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES

48 HOUR AFVR Pre-Treatment Vapor Concentrations

Site Name: Broad River Amoco | **County** Richland

UST Permit Number: 11946 | **Field Personnel:** Terry Teate | October 3-6 2017 | **Calibrate P I D** 0725 10-4-2017 | **Calibrate P I D** 0715 10-5-2017

Well Name: MW-2 | **Ambient Temp.** 58-82

Exhaust Stack Diameter(inches): 3 | Before MW-2 FP: 14.85 | GWL: 14.92 | GWL AFTER AFVR GWL: 27.6

Start Time 1600 Tues **End Time:** 1600 Thurs

Weather Conditions: Cool, Clear, Sunny

TOTAL FREE PRODUCY MEASURED = 0.07 ft.
TOTAL FREE PRODUCT RECOVERED = 1.5 gallon
TOTAL FLUOD RECOVERED = 109.27 gal

Dry Standard CFM Air Flow - Qstd

TOTAL EMISSIONS = 112.0 lbs
Or = 17.73 gallons

Interval	Time	Vacuum, in. of Hg	PPM measured	Humidity Ratio,gpp	Water Vapor,%	Dry Air(1/100)	Discharge Flow Volume, CFM	Temperature, °f	Temperature Constant	Qstd cfm
960	0800 Wed	28	280	43	0.00614286	0.9939	159	59	0.9429	148.99
1020	900	29	343	57	0.0081	0.9919	172	66	0.9412	160.56
1080	1000	28	318	170	0.0243	0.9757	176	95	0.9600	164.86
1140	1100	29	367	141	0 0201	0.9799	110	87	0.9583	103.29
1200	1200	28	363	198	0.0283	0.9717	205	100	0.9688	192.99
1260	1300	29	346	157	0.0224	0.9776	221	101	0.9688	209.30
1320	1400	29	384	120	0.0171	0.9829	187	90	0.9412	172.98
1380	1500	29	321	115	0.0164	0.9836	131	91	0 9565	123.25
1440	1600	29	349	83	0.0119	0.9881	197	85	0.9653	187.90
1560	1800	28	363	70	0.0100	0.9900	182	85	1.0057	181.21
1680	2000	28	310	127	0.0181	0.9819	137	101	0.9135	122.88
1800	2200	29	344	103	0.0147	0.9853	158	92	0.9617	149.72
1920	2400	29	321	97	0 0139	0.9861	188	87	0.9462	175.43
2400	0800 Thurs	28	389	58	0.0083	0.9917	129	65	1.0057	128.66
2520	1000	28	360	197	0.0281	0.9719	251	118	0.9135	222.83
2640	1200	28	297	111	0.0159	0.9841	188	89	0.9617	177.94
2760	1400	29	309	121	0.0173	0.9827	126	98	0.9462	117.16
AVERAGES		28.53	338.47	115.76	0.0165	0.9835	171.59	88.76	0.9563	161.17

NOTES:

Vacuum = Level of vacuum being applied as record from the vacuum truck tank, inches of Hg.
PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
Humidity Ratio = Grains of moisture per pound(gpp) of dry air measured at the blower discharge stack.
Water Vapor = Pounds of water per pound of dry air as %.
Dry Air = Calculated pound of dry air,(1 - water vapor %)
Discharge Flow Volume = Measured air flow from 3" discharge stack in cubic feet per minute,cfm.
Temperature = Temperature of the air exiting the discharge stack in deg Fahrenheit.
Temperature Constant = 528°R / (Temp ,°F + 460)

EQUATION

Qstd = Dry Air x Discharge Flow x Temperature Constant

ENVIRO-TEST SERVICES **48 HOUR AFVR Pre-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

October 3-5 2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate** **Calibrate P I D 0725 10-4-2017**

Calibrate P I D 0715 10-5-2017

Well Name:MW-2 **Ambient Temp. 58-82**

		Before		
Exhaust Stack Diameter(inches): 3	**MW-2**	**FP: 14.86**	**GWL: 14.92**	**GWL AFTER AFVR GWL: 27.6**

Start Time1600 Tues End Time: 1600 Thurs

TOTAL FREE PRODUCY MEASURED = 0.07 ft.

Weather Conditions: Cool, Clear, Sunny **TOTAL FREE PRODUCT RECOVERED = 1.5 gallon**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
960	148.99	280	1	280	1,489.04	9.2916E-05	0.8306	0.0000
1020	160.56	343	1	343	1,824.07	1.1382E-04	1.0965	0.5483
1080	164.86	2459	1	2,459	13,076.96	8.1600E-04	8.0714	4.0357
1140	103.29	2555	1	2,555	13,587.49	8.4786E-04	5.2543	2.6271
1200	192.99	2461	1	2,461	13,087.60	8.1667E-04	9.4564	4.7282
1260	209.30	2112	1	2,112	11,231.62	7.0085E-04	8.8015	4.4007
1320	172.98	384	1	384	2,042.11	1.2743E-04	1.3226	0.6613
1380	123.25	2592	1	2,592	13,784.26	8.6014E-04	6.3805	3.1902
1440	187.90	349	1	349	1,855.98	1.1581E-04	1.3057	0.6528
1560	181.21	2671	1	2,671	14,204.38	8.8635E-04	9.6369	4.8185
1680	122.88	2582	1	2,582	13,731.08	8.5682E-04	6.3171	3.1585
1800	149.72	2111	1	2,111	11,226.30	7.0052E-04	6.2929	3.1465
1920	175.43	1945	1	1,945	10,343.51	6.4544E-04	6.7936	3.3968
2400	128.66	1,893	1	1,893	10,066.97	6.2818E-04	4.8494	2.4247
2520	222.83	2,017	1	2,017	10,726.41	6.6933E-04	8.9490	4.4745
2640	177.94	297	1	297	1,579.45	9.8557E-05	1.0522	0.5261
2760	117.16	309	1	309	1,643.26	1.0254E-04	0.7208	0.3604
AVERAGES		1,609.41		1,609.41	8,558.85	5.3407E-04	5.1242	2.5377

TOTAL EMISSIONS **43.1404 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **109.27 gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **1.50 gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES

48 HOUR AFVR Pre-Treatment Vapor Concentrations

Site Name: Broad River Amoco | **County** Richland

UST Permit Number: 11946 | **Field Personnel:** Terry Teate | October 3-5 2017

Calibrate P I D 0725 10-4-2017

Calibrate P I D 0715 10-5-2017

Well Name MW-2 | **Ambient Temp.** 58-82

		Before		
Exhaust Stack Diameter(inches): 3	**MW-2**	**FP: 14.85**	**GWL: 14.92**	**GWL AFTER AFVR GWL: 27.6**

Start Time 1600 Tues **End Time:** 1600 Thurs

TOTAL FREE PRODUCY MEASURED = 0.07 ft.
TOTAL FREE PRODUCT RECOVERED = 1.5 gallon

Weather Conditions: Cool, Clear, Sunny
PMRg = Cg x Qstd x 60 min/hr
PMR = PMRg x [(T2-T1) / 60], PMRg x [(T3-T2) / 60], ...

VACUUM GAUGE MEASUREMENTS

STINGER DEPTHS

Interval	Time	Vacuum of Hg in inches MW-2	RW-1	RW-2	RW-3	Stinger Depth in ft. MW-2
960	0800 Wed	20.0	3.6	3.0	0.0	24.0
1020	900	18.0	5.0	4.0	0.0	28.0
1080	1000	18.0	6.0	4.5	0.0	30.0
1140	1100	16.0	7.0	4.5	0.0	30.0
1200	1200	20.0	7.0	4.0	0.0	28.0
1260	1300	22.0	7.0	3.8	0.0	28.0
1320	1400	22.0	7.0	3.5	0.0	25.0
1380	1500	24.0	7.5	3.0	0.0	20.0
1440	1600	22.0	8.0	3.0	0.0	20.0
1560	1800	24.0	8.5	3.0	0.0	16.0
1680	2000	24.0	9.0	3.2	0.0	15.0
1800	2200	22.0	9.0	3.0	0.0	15.0
1920	2400	22.0	9.0	3.0	0.0	18.0
2400	0800 Thurs	22.0	8.2	2.6	0.0	20.0
2520	1000	20.0	7.6	2.0	0.0	25.0
2640	1200	18.0	8.0	2.0	0.0	28.0
2760	1400	20.0	8.0	2.0	0.0	28.0

ENVIRO-TEST SERVICES **48 HOUR AFVR Post- Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

October 3-5 2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate** **Calibrate P I D 0725 10-4-2017**

Calibrate P I D 0715 10-5-2017

Well Name:MW-2 **Ambient Temp. 58-82**

	Before		GWL AFTER AFVR
Exhaust Stack Diameter(inches): 3	**MW-2**	**FP: 14.85** **GWL: 14.92**	**GWL: 27.6**

Start Time 1600 Tues **End Time: 1600 Thurs**

TOTAL FREE PRODUCY MEASURED = 0.07 ft.

Weather Conditions: Cool, Clear, Sunny **TOTAL FREE PRODUCT RECOVERED = 1.5 gallon**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
960	148.99	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1020	160.56	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1080	164.86	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1140	103.29	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1200	192.99	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1260	209.30	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1320	172.98	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1380	123.25	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1440	187.90	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1560	181.21	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1680	122.88	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1800	149.72	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1920	175.43	0	1	0	0.00	0.0000E+00	0.0000	0.0000
2400	128.66	0	1	0	0.00	0.0000E+00	0.0000	0.0000
2520	222.83	0	1	0	0.00	0.0000E+00	0.0000	0.0000
2640	177.94	0	1	0	0.00	0.0000E+00	0.0000	0.0000
2760	117.16	0	1	0	0.00	0.0000E+00	0.0000	0.0000
AVERAGES		0.00		0.00	0.00	0.0000E+00	0.0000	0.0000

TOTAL EMISSIONS **0.0000 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **109.27 gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **1.50 gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES **48 HOUR AFVR Pre-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

October 3-5 2017

UST Permit Number: 11946 **Field Personnel: Terry Teats** **Calibrate P I D 0725 10-4-2017**

Calibrate P I D 0715 10-5-2017

Well Name: MW-2 **Ambient Temp. 58-82**

Exhaust Stack Diameter(inches): 3 **MW-2** **Before FP: 14.85** **GWL: 14.92** **GWL AFTER AFVR GWL: 27.6**

Start Time 1600 Tues **End Time: 1600 Thurs**

Weather Conditions: Cool, Clear, Sunny

TOTAL FREE PRODUCT MEASURED = 0.07 ft.
TOTAL FREE PRODUCT RECOVERED = 1.5 gal
TOTAL FLUID RECOVERED = 109.27 gal

Dry Standard CFM Air Flow - Qstd **TOTAL EMISSIONS = 112.0 lbs. Or = 17.73 gallons**

Interval	Time	Vacuum, In. of Hg	PPM measured	Humidity Ratio,gpp	Water Vapor,%	Dry Air(1/100)	Discharge Flow Volume, CFM	Temperature, °f	Temperature Constant	Qstd cfm
2880	1600	28	336	114	0.01628571	0.9837	181	95	1.1478	204.37
AVERAGES		28.00	336.00	114.00	0.0163	0.9837	181.00	95.00	1.1478	204.37

NOTES:

Vacuum = Level of vacuum being applied as record from the vacuum truck tank, inches of Hg.
PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
Humidity Ratio = Grains of moisture per pound(gpp) of dry air measured at the blower discharge stack.
Water Vapor = Pounds of water per pound of dry air as %.
Dry Air = Calculated pound of dry air,(1 - water vapor %).
Discharge Flow Volume = Measured air flow from 3" discharge stack in cubic feet per minute,cfm.
Temperature = Temperature of the air exiting the discharge stack in deg. Fahrenheit.
Temperature Constant = 528°R / (Temp.,°F + 460)

EQUATION

Qstd = Dry Air x Discharge Flow x Temperature Constant

ENVIRO-TEST SERVICES **48 HOUR AFVR Pre-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

October 3-5 2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate** **Calibrate P I D 0725 10-4-2017**

Calibrate P I D 0715 10-5-2017

Well Name:MW-2 **Ambient Temp. 58-82**

		Before		GWL AFTER AFVR
Exhaust Stack Diameter(inches): 3	**MW-2**	**FP: 14.85**	**GWL: 14.92**	**GWL: 27.6**

Start Time 1600 Tues **End Time: 1600 Thurs**

TOTAL FREE PRODUCT MEASURED = 0.07 ft.

Weather Conditions: Cool, Clear, Sunny **TOTAL FREE PRODUCT RECOVERED = 1.6 gal**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
2880	204.37	336	1	336	1,786 85	1.1150E-04	1.3672	0.0000

AVERAGES	336.00	336.00	1.786.85	1 1150E-04	1.3672	0.0000	

TOTAL EMISSIONS **0.0000 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **109.27 gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **1.60 gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES **48 HOUR AFVR Pre-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

October 3-5 2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate** **Calibrate P I D 0725 10-4-2017**

Calibrate P I D 0715 10-5-2017

Well Name MW-2 **Ambient Temp. 58-82**

Before **GWL AFTER AFVR**

Exhaust Stack Diameter(Inches): 3 **MW-2** **FP: 14.85** **GWL: 14.92** **GWL: 27.6**

Start Time 1600 Tues End Time: 1600 Thurs

TOTAL FREE PRODUCT MEASURED = 0.07 ft.
TOTAL FREE PRODUCT RECOVERED = 1.5 gal

Weather Conditions: Cool, Clear, Sunny
PMRg = Cg x Qstd x 60 min/hr
PMR = PMRg x [(T2-T1) / 60], PMRg x [(T3-T2) / 60], ...

VACUUM GAUGE MEASUREMENTS

Interval	Time	Vacuum of Hg in Inches MW-2	RW-1	RW-2	RW-3
2880	1600	22.0	8.0	2.0	0.0

STINGER DEPTHS

Stinger Depth in ft. MW-2
28.0

	BEFORE Free Product	GWL:	AFTER Free Product	GWL:
RW-1	12.18	13.92	15.35	15.94
RW-2		14.80	15.60	
RW-3	14.92	15.47	15.61	15.93

ENVIRO-TEST SERVICES **48 HOUR AFVR Post-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

October 3-5 2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate** **Calibrate P I D 0725 10-4-2017**

Calibrate P I D 0715 10-5-2017

Well Name: MW-2 **Ambient Temp. 58-82**

Before **GWL AFTER AFVR**

Exhaust Stack Diameter(inches): 3 **MW-2** **FP: 14.86** **GWL: 14.92**

Start Time 1600 Tues **End Time: 1600 Thurs**

TOTAL FREE PRODUCT MEASURED = 0.07 ft.

Weather Conditions: Cool, Clear, Sunny **TOTAL FREE PRODUCT RECOVERED = 1.5 gal**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
2880	204.37	0	1	0	0.00	0.0000E+00	0.0000	0 0000
AVERAGES		0.00		0.00	0.00	0 0000E+00	0.0000	0.0000

TOTAL EMISSIONS **0.0000 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **109.27 gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **1.50 gallons**

NOTES:

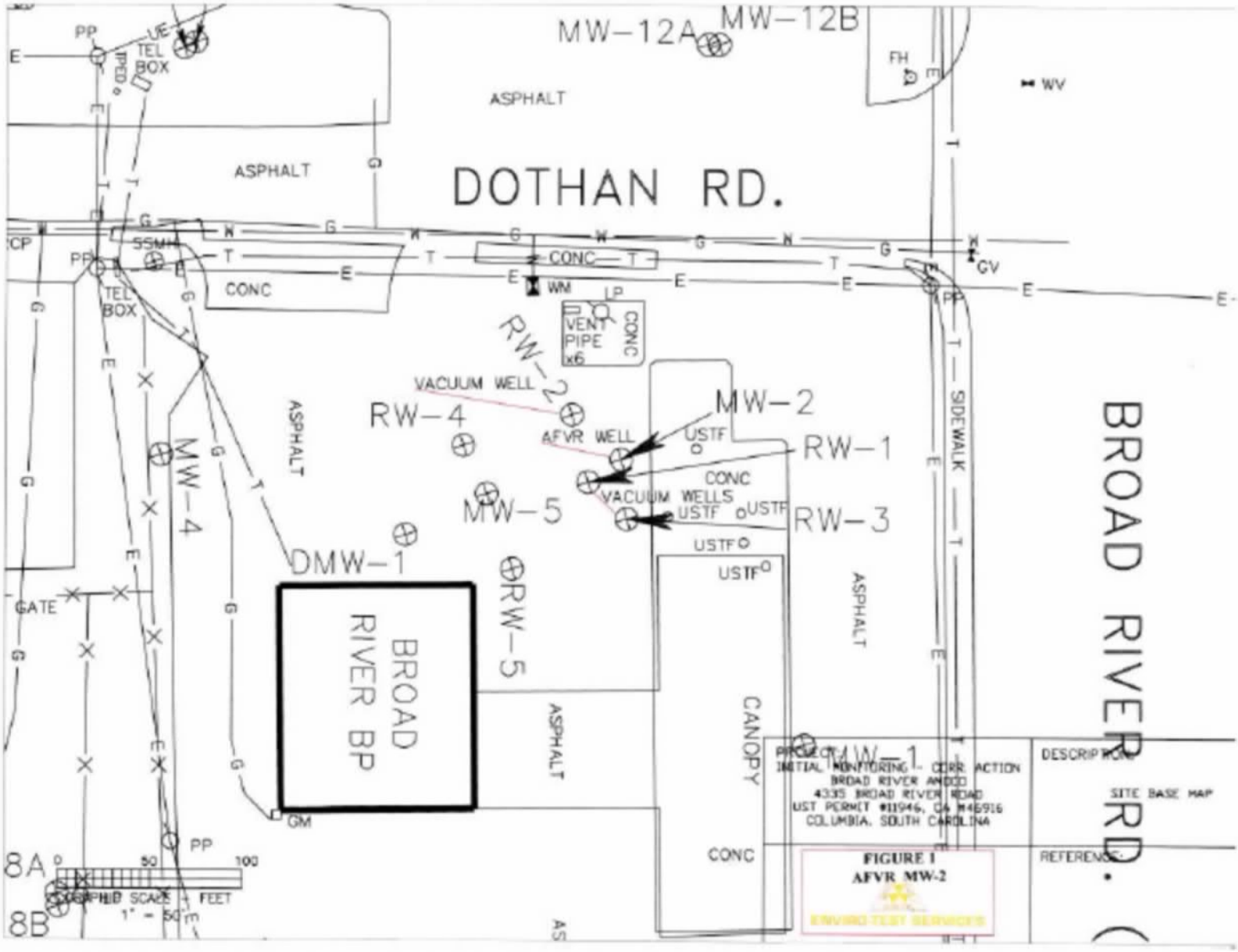
PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

FIGURE 1

AFVR MW-2


MW-12A
MW-12B
ASPHALT
DOTHAN RD.
ASPHALT
SSMH
CONC
TEL BOX
CONC
WM
LP
VENT PIPE x6
CONC
RW-2
VACUUM WELL
RW-4
MW-2
AFVR WELL
USTF
RW-1
CONC
VACUUM WELLS
USTF
USTF
RW-3
MW-5
MW-4
DMW-1
RW-5
USTF
ASPHALT
BROAD RIVER BP
GATE
GM
ASPHALT
CANOPY
CONC
PP
50
100
GRAPHIC SCALE IN FEET
1" = 50'
8A
8B
MW-1
INITIAL MONITORING - CORR ACTION
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT #11946, CA #46916
COLUMBIA, SOUTH CAROLINA
FIGURE 1
AFVR MW-2
ENVIRO-TEST SERVICES
DESCRIPTION
SITE BASE MAP
REFERENCE
BROAD RIVER RD.
SIDEWALK
WV
GV
FH

ATTACHMENT B

ENVIRO-TEST SERVICES

48 HOUR AFVR Pre-Treatment Vapor Concentrations

1 st Page

Site Name: Broad River Amoco | **County** Richland | October 6-8 2017

UST Permit Number: 11946 | **Field Personnel:** Terry Teate | Calibrate P I D 1135 10-6-2017

Well Name: RW-1 | **Ambient Temp.** 58-82

Exhaust Stack Diameter(inches): 3 | Before RW-1 FP: 12.18 GWL: 13.92 | GWL AFTER AFVR GWL: 39.7

Start Time 1200 Fri **End Time:** 1200 Sun

Weather Conditions: Cool, Clear, Sunny

TOTAL FREE PRODUCT MEASURED = 1.74 ft.
TOTAL FREE PRODUCT RECOVERED = 4.5 gal
TOTAL FLUID RECOVERED = 153.33 gal

Dry Standard CFM Air Flow - Qstd

TOTAL EMISSIONS = 47.15
Or = 7.65 gallons

Interval	Time	Vacuum, in. of Hg	PPM measured	Humidity Ratio,gpp	Water Vapor,%	Dry Air(1/100)	Discharge Flow Volume, CFM	Temperature, °F	Temperature Constant	Qstd cfm
0	1200 Fri	28	616	112	0.016	0.9840	402	90	0.9600	379.75
30	1230	28	631	144	0.0206	0.9794	378	102	0.9395	347.83
60	1300	28	718	126	0.0180	0.9820	281	94	0.9531	262.99
90	1330	27	1044	151	0.0216	0.9784	219	96	0.9496	203.48
120	1400	26	1121	148	0.0211	0.9789	193	88	0.9635	182.02
150	1430	28	1217	157	0.0224	0.9776	205	90	0.9600	192.39
180	1500	26	1203	170	0.0243	0.9757	220	92	0.9565	205.32
210	1530	26	943	127	0.0181	0.9819	194	100	0.9429	179.60
240	1600	28	901	122	0.0174	0.9826	205	98	0.9462	190.60
270	1630	29	1117	125	0.0179	0.9821	190	99	0.9445	176.26
300	1700	29	778	149	0.0213	0.9787	182	104	0.9362	166.76
330	1730	29	752	132	0.0189	0.9811	144	97	0.9479	133.93
360	1800	28	677	140	0.0200	0.9800	169	99	0.9445	156.44
390	1830	28	573	178	0.0254	0.9746	158	110	0.9263	142.64
420	1900	27	592	163	0.0233	0.9767	131	105	0.9345	119.57
450	1930	27	602	152	0.0217	0.9783	127	96	0.9496	117.99
480	2000	28	611	114	0.0163	0.9837	140	92	0.9565	131.73
AVERAGES		27.65	829.18	141.76	0.0203	0.9797	208.12	97.18	0.9477	193.49

NOTES:

Vacuum = Level of vacuum being applied as record from the vacuum truck tank, inches of Hg.
PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
Humidity Ratio = Grains of moisture per pound(gpp) of dry air measured at the blower discharge stack.
Water Vapor = Pounds of water per pound of dry air as %.
Dry Air = Calculated pound of dry air,(1 - water vapor %).
Discharge Flow Volume = Measured air flow from 3" discharge stack in cubic feet per minute,cfm.
Temperature = Temperature of the air exiting the discharge stack in deg. Fahrenheit.
Temperature Constant = 528°R / (Temp.,°F + 460)

EQUATION

Qstd = Dry Air x Discharge Flow x Temperature Constant

ENVIRO-TEST SERVICES **48 HOUR AFVR Pre-Treatment Vapor Concentrations**

1 st Page

Site Name: Broad River Amoco | County Richland | October 6-8 2017

UST Permit Number: 11946 | Field Personnel: Terry Teats | Calibrate P I D 1135 10-6-2017

Well Name:RW-1 | Ambient Temp. 58-82

Exhaust Stack Diameter(inches): 3 | Before RW-1 FP: 12.18 GWL: 13.92 | GWL AFTER AFVR GWL: 39.7

Start Time 1200 Fri End Time: 1200 Sun

Weather Conditions: Cool, Clear, Sunny

TOTAL FREE PRODUCT MEASURED = 1.74 ft.
TOTAL FREE PRODUCT RECOVERED = 4.5 gal

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
0	379.75	616	1	616	3,275.89	2.0442E-04	4.6575	0.0000
30	347.83	631	1	631	3,355.66	2.0939E-04	4.3699	2.1850
60	262.99	718	1	718	3,818.32	2.3826E-04	3 7597	1.8798
90	203.48	1044	1	1,044	5,551.99	3.4644E-04	4.2298	2.1149
120	182.02	1121	1	1,121	5,961.48	3.7200E-04	4 0627	2.0314
150	192.39	1217	1	1,217	6,472.01	4.0385E-04	4.6617	2.3309
180	205.32	1203	1	1,203	6,397.55	3.9921E-04	4.9180	2.4590
210	179.60	943	1	943	5,014.87	3.1293E-04	3 3720	1.6860
240	190.60	901	1	901	4,791.52	2.9899E-04	3.4192	1.7096
270	176.26	1117	1	1,117	5,940.21	3.7067E-04	3.9200	1.9600
300	166.76	778	1	778	4,137.40	2 5817E-04	2.5831	1.2916
330	133 93	752	1	752	3,999.14	2.4955E-04	2.0053	1.0026
360	156.44	677	1	677	3,600.29	2.2466E-04	2.1087	1.0543
390	142.64	573	1	573	3,047.21	1 9015E-04	1 6273	0.8137
420	119.57	592	1	592	3,148.26	1.9645E-04	1.4094	0.7047
450	117.99	602	1	602	3,201.44	1.9977E-04	1.4142	0.7071
480	131.73	611	1	611	3,249.30	2.0276E-04	1.6026	0.8013
AVERAGES		829.18		829.18	4,409.56	2.7516E-04	3.1836	1.4548

TOTAL EMISSIONS 24.7318 lbs

TOTAL AMOUNT OF FLUID RECOVERED 163.33 gallons

ESTIMATED AMOUNT OF PRODUCT RECOVERED 4.50 gallons

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES

48 HOUR AFVR Pre-Treatment Vapor Concentrations

1 st Page

Site Name: Broad River Amoco | County Richland

October 6-8 2017

UST Permit Number: 11946 | Field Personnel: Terry Teate

Calibrate P I D 1135 10-6-2017

Well Name:RW-1 | Ambient Temp. 58-82

Exhaust Stack Diameter(inches): 3 | Before RW-1 FP: 12.18 GWL: 13.92 | GWL AFTER AFVR GWL: 39.7

Start Time1200 Fri End Time: 1200 Sun

TOTAL FREE PRODUCT MEASURED = 1.74 ft.
TOTAL FREE PRODUCT RECOVERED = 4.5 gal

Weather Conditions: Cool, Clear, Sunny
PMRg = Cg x Qstd x 60 min/hr
PMR = PMRg x [(T2-T1) / 60], PMRg x [(T3-T2) / 60], ...

VACUUM GAUGE MEASUREMENTS

STINGER DEPTHS

Interval	Time	Vacuum of Hg in inches RW-1	RW-2	RW-3	MW-2	Stinger Depth in ft. MW-2
0	1200 Fri	20.0	.0	.0	0.0	15.0
30	1230	20.0	.0	.0	0.0	15.5
60	1300	20.0	.0	.0	0.0	16.0
90	1330	22.0	.0	.0	0.0	16.5
120	1400	22.0	.0	.0	0.0	17.0
150	1430	22.0	.0	.0	0.0	17.5
180	1500	20.0	.0	.0	0.0	18.0
210	1530	18.0	.0	.0	0.0	18.5
240	1600	18.0	.0	.0	0.0	19.0
270	1630	16.0	.0	.0	0.0	19.5
300	1700	18.0	.0	.0	0.0	20.0
330	1730	18.0	.0	.0	0.0	20.5
360	1800	20.0	1.0	.0	0.0	21.0
390	1830	22.0	1.0	.0	0.0	21.5
420	1900	22.0	1.6	.0	0.0	22.0
450	1930	20.0	2.0	.0	0.0	22.5
480	2000	20.0	2.2	.0	0.0	23.0

ENVIRO-TEST SERVICES **48 HOUR AFVR Post-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

October 6-8 2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate**

Calibrate P I D 1135 10-6-2017

Well Name:RW-1 **Ambient Temp.** **68-82**

		Before		GWL AFTER AFVR
Exhaust Stack Diameter(Inches): 3	**RW-1**	**FP: 12.18**	**GWL: 13.92**	**GWL: 39.7**

Start Time 1200 Fri **End Time: 1200 Sun**

TOTAL FREE PRODUCT MEASURED = 1.74 ft.

Weather Conditions: Cool, Clear, Sunny **TOTAL FREE PRODUCT RECOVERED = 4.5 gal**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
0	379.75	0	1	0	0.00	0.0000E+00	0.0000	0 0000
30	347.83	0	1	0	0.00	0.0000E+00	0.0000	0.0000
60	262.99	0	1	0	0.00	0.0000E+00	0.0000	0.0000
90	203.48	0	1	0	0.00	0.0000E+00	0 0000	0.0000
120	182.02	0	1	0	0.00	0.0000E+00	0.0000	0.0000
150	192.39	0	1	0	0.00	0.0000E+00	0.0000	0.0000
180	205.32	0	1	0	0.00	0.0000E+00	0 0000	0.0000
210	179.60	0	1	0	0.00	0.0000E+00	0.0000	0.0000
240	190.60	0	1	0	0.00	0.0000E+00	0.0000	0.0000
270	176.26	0	1	0	0.00	0.0000E+00	0 0000	0.0000
300	166.76	0	1	0	0.00	0.0000E+00	0.0000	0.0000
330	133.93	0	1	0	0.00	0.0000E+00	0.0000	0.0000
360	156 44	0	1	0	0.00	0.0000E+00	0 0000	0.0000
390	142.64	0	1	0	0.00	0 0000E+00	0.0000	0.0000
420	119.57	0	1	0	0.00	0.0000E+00	0.0000	0.0000
450	117.99	0	1	0	0.00	0.0000E+00	0.0000	0 0000
480	131.73	0	1	0	0.00	0 0000E+00	0.0000	0.0000
AVERAGES		0.00		0.00	0.00	0.0000E+00	0.0000	0 0000

TOTAL EMISSIONS **0.0000 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **163.33 gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **4.50 gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES **48 HOUR AFVR Pre-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

October 6-8 2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate** **Calibrate P I D 1135 10-6-2017**

Calibrate P I D : 0720 10-7-2017

Well Name:RW-1 **Ambient Temp. 58-82**

		Before		
Exhaust Stack Diameter(Inches): 3	**RW-1**	**FP: 12.18**	**GWL: 13.92**	**GWL AFTER AFVR GWL: 39.7**

Start Time1200 Fri **End Time: 1200 Sun**

Weather Conditions: Cool, Clear, Sunny

TOTAL FREE PRODUCT MEASURED = 1.74 ft.
TOTAL FREE PRODUCT RECOVERED = 4.6 gal
TOTAL FLUID RECOVERED = 163.33 gal

Dry Standard CFM Air Flow - Qstd

TOTAL EMISSIONS = 47.16 lbs.
Or = 7.65 gallons

Interval	Time	Vacuum, in. of Hg	PPM measured	Humidity Ratio,gpp	Water Vapor,%	Dry Air(1/100)	Discharge Flow Volume, CFM	Temperature, °f	Temperature Constant	Qstd cfm
540	2100	27	634	134	0.01914286	0.9809	251	102	0.9395	231.30
600	2200	29	603	128	0.0183	0.9817	258	104	0.9362	237.12
660	2300	28	587	113	0.0161	0.9839	244	100	0.9429	226.35
720	2400	28	592	99	0.0141	0.9859	262	102	0.9395	242.67
1200	0800 Sat	26	688	113	0.0161	0.9839	259	80	0.9778	249.16
1260	900	27	675	120	0.0171	0.9829	252	86	0.9670	239.51
1320	1000	27	587	92	0.0131	0.9869	248	83	0.9724	237.98
1380	1100	28	490	88	0.0126	0.9874	241	77	0.9832	233.98
1440	1200	28	492	92	0 0131	0.9869	252	80	0 9778	243.16
1560	1400	28	508	247	0.0353	0.9647	261	117	0 9151	230.41
1680	1600	26	621	132	0.0189	0.9811	260	90	0.9600	244.89
1800	1800	25	639	126	0.0180	0.9820	254	97	0.9479	236.44
1920	2000	26	610	118	0.0169	0.9831	227	85	0.9688	216.21
2040	2200	25	613	115	0.0164	0.9836	250	93	0.9548	234.78
2160	2400	28	591	110	0.0157	0.9843	253	96	0 9496	236.48
2640	0600 Sun	29	723	105	0 0150	0.9850	235	80	0 9778	226.33
2760	1000	27	545	201	0.0287	0.9713	252	97	0.9479	232.02
AVERAGES		27.18	599.88	125.47	0.0179	0.9821	250.53	92.29	0.9564	235.22

NOTES:

Vacuum = Level of vacuum being applied as record from the vacuum truck tank, inches of Hg
PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack
Humidity Ratio = Grains of moisture per pound(gpp) of dry air measured at the blower discharge stack
Water Vapor = Pounds of water per pound of dry air as %.
Dry Air = Calculated pound of dry air,(1 - water vapor %).
Discharge Flow Volume = Measured air flow from 3" discharge stack in cubic feet per minute,cfm.
Temperature = Temperature of the air exiting the discharge stack in deg. Fahrenheit.
Temperature Constant = 528°R / (Temp.,°F + 460)

EQUATION

Qstd = Dry Air x Discharge Flow x Temperature Constant

ENVIRO-TEST SERVICES **48 HOUR AFVR Pre-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

October 6-8 2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate** **Calibrate P I D 1135 10-6-2017**

Calibrate P I D : 0720 10-7-2017

Well Name:RW-1 **Ambient Temp. 68-82**

		Before		GWL AFTER AFVR
Exhaust Stack Diameter(inches): 3	**RW-1**	**FP: 12.18**	**GWL: 13.92**	**GWL: 39.7**

Start Time1200 Fri **End Time: 1200 Sun**

TOTAL FREE PRODUCT MEASURED = 1.74 ft.

Weather Conditions: Cool, Clear, Sunny **TOTAL FREE PRODUCT RECOVERED = 4.5 gal**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
540	231.30	634	1	634	3,371.61	2.1039E-04	2.9196	0.0000
600	237.12	603	1	603	3,206.75	2.0010E-04	2.8468	1.4234
660	226.35	587	1	587	3,121.67	1.9479E-04	2.6455	1.3228
720	242.67	592	1	592	3,148.26	1.9645E-04	2.8603	1.4302
1200	249.16	688	1	688	3,658.78	2.2831E-04	3.4131	1.7065
1260	239.51	675	1	675	3,589.65	2.2399E-04	3.2190	1 6095
1320	237.98	587	1	587	3,121.67	1.9479E-04	2.7814	1.3907
1380	233.98	490	1	490	2,605.82	1.6260E-04	2.2828	1 1414
1440	243.16	492	1	492	2,616.46	1.6327E-04	2.3820	1 1910
1560	230.41	508	1	508	2,701.54	1.6858E-04	2.3305	1.1652
1680	244.89	621	1	621	3,302.48	2.0607E-04	3.0280	1.5140
1800	236.44	639	1	639	3,398.20	2.1205E-04	3.0082	1 5041
1920	216.21	610	1	610	3,243.98	2.0242E-04	2.6260	1.3130
2040	234.78	613	1	613	3,259.93	2.0342E-04	2.8655	1.4327
2160	236.48	591	1	591	3,142.94	1.9612E-04	2.7827	1 3914
2640	226.33	723	1	723	3,844.91	2.3992E-04	3.2581	1.6291
2760	232.02	545	1	545	2,898.31	1.8085E-04	2.5177	1.2589
AVERAGES		599.88		599.88	3,190 17	1.9907E-04	2.8098	1.3190

TOTAL EMISSIONS **22.4238 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **16.33 gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **4.60 gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES

48 HOUR AFVR Pre-Treatment Vapor Concentrations

Site Name: Broad River Amoco | **County** Richland

UST Permit Number: 11946 | **Field Personnel:** | **Terry Teate** | **Calibrate P I D** October 6-8 2017 1135 10-6-2017 | **Calibrate P I D** : 0720 10-7-2017

Well Name RW-1 | **Ambient Temp.** 68-82

Exhaust Stack Diameter(inches): 3 | **Before** RW-1 FP: 12.18 GWL: 13.92 | **GWL AFTER AFVR** GWL: 39.7

Start Time 1200 Fri **End Time:** 1200 Sun

Weather Conditions: Cool, Clear, Sunny

TOTAL FREE PRODUCT MEASURED = 1.74 ft.
TOTAL FREE PRODUCT RECOVERED = 4.5 gal

PMRg = Cg x Qstd x 60 min/hr
PMR = PMRg x [(T2-T1) / 60], PMRg x [(T3-T2) / 60], ...

VACUUM GAUGE MEASUREMENTS

Interval	Time	Vacuum of Hg in inches RW-1	RW-2	RW-3	MW-2
540	2100	20.0	2.2	0.0	0.0
600	2200	18.0	2.2	0.0	0.0
660	2300	18.0	2.0	0.0	0.0
720	2400	20.0	2.0	0.0	0.0
1200	0800 Sat	20.0	2.0	0.0	0.0
1260	900	22.0	2.0	1.4	0.0
1320	1000	22.0	2.0	1.8	0.0
1380	1100	22.0	2.0	2.0	0.0
1440	1200	20.0	2.0	2.8	0.0
1560	1400	20.0	2.0	2.8	0.0
1680	1600	28.0	2.0	3.0	0.0
1800	1800	20.0	1.8	4.2	0.0
1920	2000	20.0	1.8	7.6	0.0
2040	2200	20.0	1.8	8.0	0.0
2160	2400	22.0	1.6	9.0	0.0
2640	0800 Sun	20.0	1.0	6.8	0.0
2760	1000	18.0	1.0	6.0	0.0

STINGER DEPTHS

Stinger Depth in ft. RW-1
20.0
20.0
20.0
16.0
18.0
18.0
22.0
22.0
25.0
28.0
30.0
34.0
38.0
40.0
16.0
25.0
35.0

ENVIRO-TEST SERVICES **48 HOUR AFVR Post-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

October 6-8 2017

UST Permit Number: 11948 **Field Personnel:** **Terry Teate** **Calibrate P I D 1135 10-6-2017**

Calibrate P I D : 0720 10-7-2017

Well Name:RW-1 **Ambient Temp. 58-82**

		Before		GWL AFTER AFVR
Exhaust Stack Diameter(inches): 3	**RW-1**	**FP: 12.18**	**GWL: 13.92**	**GWL: 39.7**

Start Time1200 Fri **End Time: 1200 Sun**

TOTAL FREE PRODUCT MEASURED = 1.74 ft.

Weather Conditions: Cool, Clear, Sunny **TOTAL FREE PRODUCT RECOVERED = 4.6 gal**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
540	231.30	0	1	0	0.00	0.0000E+00	0.0000	0.0000
600	237.12	0	1	0	0.00	0.0000E+00	0.0000	0.0000
660	226.35	0	1	0	0.00	0.0000E+00	0.0000	0.0000
720	242.67	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1200	249.16	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1260	239.51	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1320	237.98	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1380	233.98	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1440	243.16	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1560	230.41	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1680	244.89	38	1	38	202.08	1.2610E-05	0 1853	0.0926
1800	236.44	102	1	102	542.44	3.3848E-05	0.4802	0.2401
1920	216.21	0	1	0	0.00	0.0000E+00	0.0000	0.0000
2040	234.78	0	1	0	0.00	0.0000E+00	0 0000	0.0000
2160	236.48	0	1	0	0.00	0.0000E+00	0.0000	0.0000
2640	226.33	0	1	0	0.00	0.0000E+00	0.0000	0.0000
2760	232.02	0	1	0	0.00	0.0000E+00	0.0000	0.0000
AVERAGES		8.24		8.24	43.80	2.7328E-06	0.0391	0.0196

TOTAL EMISSIONS **0.3327 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **163.33 gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **4.60 gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES

48 HOUR AFVR Pre-Treatment Vapor Concentrations

Site Name: Broad River Amoco | **County** | **Richland**

October 6-8 2017

UST Permit Number: 11946 | **Field Personnel:** | **Terry Teate** | **Calibrate P I D** 1135 10-6-2017

Calibrate P I D : 0720 10-7-2017

Well Name: RW-1 | **Ambient Temp.** 58-82

Exhaust Stack Diameter(Inches): 3 | **Before** RW-1 FP: 12.18 GWL: 13.92 | **GWL AFTER AFVR** GWL 39.7

Start Time 1200 Fri **End Time:** 1200 Sun

Weather Conditions: Cool, Clear, Sunny

TOTAL FREE PRODUCT MEASURED = 1.74
TOTAL FREE PRODUCT RECOVERED = 4.6 gal
TOTAL FLUID RECOVERED = 163.33 gal

Dry Standard CFM Air Flow - Qstd

TOTAL EMISSIONS = 47.15
Or = 7.65 gallons

Interval	Time	Vacuum, in. of Hg	PPM measured	Humidity Ratio,gpp	Water Vapor,%	Dry Air(1/100)	Discharge Flow Volume, CFM	Temperature, °f	Temperature Constant	Qstd cfm
2880	1200 Sun	27	689	152	0.02171429	0.9783	152	90	0.9600	142.75
AVERAGES		27.00	689.00	152.00	0.0217	0.9783	152.00	90.00	0.9600	142.75

NOTES:

Vacuum = Level of vacuum being applied as record from the vacuum truck tank, inches of Hg.
PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
Humidity Ratio = Grains of moisture per pound(gpp) of dry air measured at the blower discharge stack.
Water Vapor = Pounds of water per pound of dry air as %.
Dry Air = Calculated pound of dry air,(1 - water vapor %).
Discharge Flow Volume = Measured air flow from 3" discharge stack in cubic feet per minute,cfm.
Temperature = Temperature of the air exiting the discharge stack in deg. Fahrenheit.
Temperature Constant = 528°R / (Temp.,°F + 460)

EQUATION

Qstd = Dry Air x Discharge Flow x Temperature Constant

ENVIRO-TEST SERVICES **48 HOUR AFVR Pre-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

October 6-8 2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate** **Calibrate P I D 1135 10-6-2017**

Calibrate P I D : 0720 10-7-2017

Well Name:RW-1 **Ambient Temp. 58-82**

Before **GWL AFTER AFVR**

Exhaust Stack Diameter(inches): 3 **RW-1** **FP: 12.18** **GWL: 13.92** **GWL 39.7**

Start Time1200 Fri **End Time: 1200 Sun**

TOTAL FREE PRODUCT MEASURED = 1.74

Weather Conditions: Cool, Clear, Sunny **TOTAL FREE PRODUCT RECOVERED = 4.6 gal**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
2880	142.75	0	1	0	0.00	0.0000E+00	0.0000	0.0000
AVERAGES		0.00		0.00	0.00	0.0000E+00	0.0000	0.0000

TOTAL EMISSIONS **0.0000 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **163.33 gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **4.60 gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES **48 HOUR AFVR Pre-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

October 6-8 2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate** **Calibrate P I D 1135 10-6-2017**

Calibrate P I D : 0720 10-7-2017

Well Name RW-1 **Ambient Temp. 58-82**

Before **GWL AFTER AFVR**

Exhaust Stack Diameter(inches): 3 **RW-1** **FP: 12.18** **GWL: 13.92** **GWL 39.7**

Start Time 1200 Fri **End Time: 1200 Sun**

TOTAL FREE PRODUCT MEASURED = 1.74
TOTAL FREE PRODUCT RECOVERED = 4.5 gal

Weather Conditions: Cool, Clear, Sunny
PMRg = Cg x Qstd x 60 min/hr
PMR = PMRg x [(T2-T1) / 60], PMRg x [(T3-T2) / 60], ...

VACUUM GAUGE MEASUREMENTS

Interval	Time	Vacuum of Hg in inches RW-1	RW-2	RW-3	MW-2
2880	1200 Sun	20.0	.0	6.0	0.4

STINGER DEPTHS

Stinger Depth in ft. RW-1
40.0

	BEFORE Free Product	GWL:	AFTER Free Product	GWL:
RW-2		14.80		39.70
RW-3	14.92	15.47	15.40	15.50
MW-2	14.85	14.92		17.25

ENVIRO-TEST SERVICES **48 HOUR AFVR Post-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

October 6-8 2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate** **Calibrate P I D 1135 10-6-2017**

Calibrate P I D : 0720 10-7-2017

Well Name:RW-1 **Ambient Temp. 68-82**

Before **GWL AFTER AFVR**

Exhaust Stack Diameter(inches): 3 **RW-1** **FP: 12.18** **GWL: 13.92** **GWL 39.7**

Start Time 1200 Fri **End Time: 1200 Sun**

TOTAL FREE PRODUCT MEASURED = 1.74

Weather Conditions: Cool, Clear, Sunny **TOTAL FREE PRODUCT RECOVERED = 4.6 gal**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
2880	142.75	0	1	0	0.00	0.0000E+00	0.0000	0.0000
AVERAGES		0.00		0.00	0.00	0.0000E+00	0.0000	0.0000

TOTAL EMISSIONS **0.0000 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **163.33 gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **4.60 gallons**

NOTES:

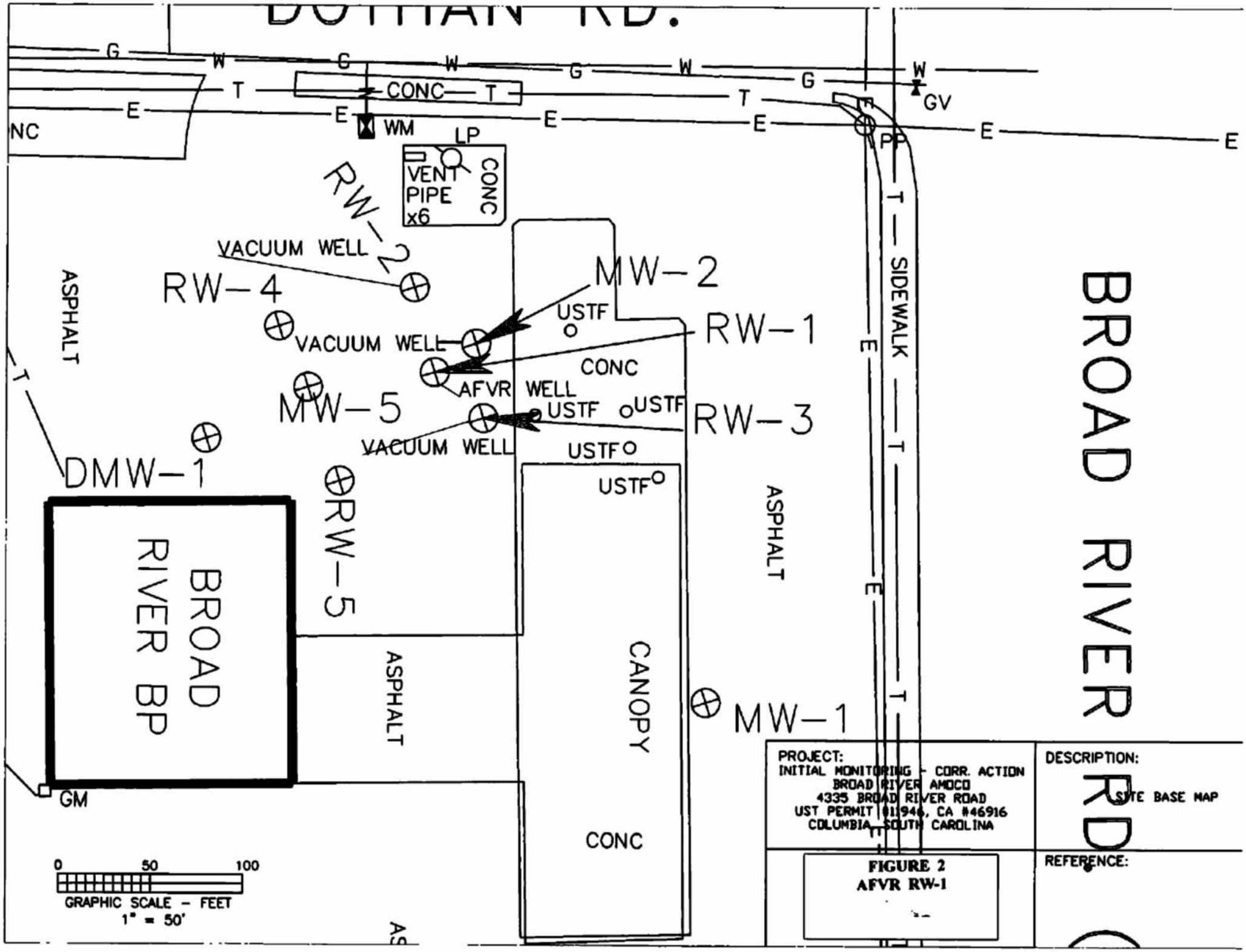
PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

FIGURE 2

AFVR RW-1


BOTHAN RD.
G
W
T
E
CONC
WM
LP
VENT PIPE x6
CONC
NC
RW-2
VACUUM WELL
RW-4
VACUUM WELL
MW-2
USTF
RW-1
CONC
AFVR WELL
MW-5
USTF
USTF
RW-3
VACUUM WELL
USTF
DMW-1
RW-5
USTF
ASPHALT
BROAD RIVER BP
GM
ASPHALT
CANOPY
CONC
MW-1
ASPHALT
SIDEWALK
GV
PP
BROAD RIVER RD
0
50
100
GRAPHIC SCALE - FEET
1" = 50'
PROJECT:
INITIAL MONITORING - CORR. ACTION
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
UST PERMIT 011946, CA #46916
COLUMBIA, SOUTH CAROLINA
DESCRIPTION:
SITE BASE MAP
FIGURE 2
AFVR RW-1
REFERENCE:

ATTACHMENT C

ENVIRO-TEST SERVICES

48 HOUR AFVR Pre-Treatment Vapor Concentrations

1 st Page

Site Name: Broad River Amoco | **County** Richland | October 12-14, 2017

UST Permit Number: 11946 | **Field Personnel:** Terry Teate | **Calibrate P I D :1120 Oct 12, 2017**

Well Name:RW-3 4 Inch Well | **Ambient Temp.** 83-94 deg

Exhaust Stack Diameter(inches): 3 | Before **RW-3** FP: 14.92 **GWL:** 15.47 | **GWL AFTER AFVR GWL: 40.70**

Start Time1200 Thurs End Time: 1200 Sat

Weather Conditions: Hot, Hot

TOTAL FREE PRODUCT MEASURED = 0.55 ft.
TOTAL FREE PRODUCT RECOVERED = 3.75 gal
TOTAL FLUID RECOVERED = 93.41 gallons

Dry Standard CFM Air Flow - Qstd

TOTAL EMISSIONS = 58.34 lbs.
Or = 9.47 gallons

Interval	Time	Vacuum, in. of Hg	PPM measured	Humidity Ratio,gpp	Water Vapor,%	Dry Air(1/160)	Discharge Flow Volume, CFM	Temperature, °f	Temperature Constant	Qstd cfm
0	1200 Thurs	28	27	175	0.025	0.9750	408	97	0.9479	377.09
30	1230	26	944	170	0.0243	0.9757	382	95	0.9514	354.59
60	1300	26	1450	148	0.0211	0.9789	377	91	0.9583	353.63
90	1330	28	1482	161	0.0230	0.9770	294	93	0.9548	274.25
120	1400	26	1221	156	0.0223	0.9777	249	89	0.9617	234.14
150	1430	28	1102	169	0.0241	0.9759	258	88	0.9635	242.58
180	1500	27	943	171	0.0244	0.9756	230	90	0.9600	215.41
210	1530	27	724	152	0.0217	0.9783	217	93	0.9548	202.69
240	1600	26	731	163	0.0233	0.9767	191	92	0.9565	178.44
270	1630	28	775	170	0.0243	0.9757	222	95	0.9514	206.07
300	1700	28	748	175	0.0250	0.9750	192	97	0.9479	177.45
330	1730	28	762	145	0.0207	0.9793	197	91	0.9583	184.87
360	1800	28	710	144	0.0206	0.9794	231	92	0.9565	216.41
390	1830	27	683	127	0.0181	0.9819	248	87	0.9653	235.04
420	1900	28	663	117	0.0167	0.9833	258	81	0.9760	247.59
450	1930	27	809	121	0.0173	0.9827	261	89	0.9617	246.68
480	2000	28	933	112	0.0160	0.9840	264	88	0.9635	250.30
AVERAGES		27.29	865.12	151.53	0.0216	0.9784	263.47	91 06	0.9582	246.90

NOTES:

Vacuum = Level of vacuum being applied as record from the vacuum truck tank, inches of Hg.
PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack
Humidity Ratio = Grains of moisture per pound(gpp) of dry air measured at the blower discharge stack.
Water Vapor = Pounds of water per pound of dry air as %.
Dry Air = Calculated pound of dry air,(1 - water vapor %).
Discharge Flow Volume = Measured air flow from 3" discharge stack in cubic feet per minute,cfm
Temperature = Temperature of the air exiting the discharge stack in deg Fahrenheit.
Temperature Constant = 528°R / (Temp ,°F + 460)

EQUATION

Qstd = Dry Air x Discharge Flow x Temperature Constant

ENVIRO-TEST SERVICES

48 HOUR AFVR Pre-Treatment Vapor Concentrations

1 st Page

Site Name: Broad River Amoco | **County** Richland | October 12-14, 2017

UST Permit Number: 11946 | **Field Personnel:** Terry Teate | **Calibrate P I D** :1120 Oct 12, 2017

Well Name: RW-3 4 Inch Well | **Ambient Temp.** 83-84 deg

Exhaust Stack Diameter(Inches): 3 | Before RW-3 FP: 14.92 GWL: 15.47 | GWL AFTER AFVR GWL: 40.70

Start Time 1200 Thurs **End Time:** 1200 Sat

Weather Conditions: Hot, Hot

TOTAL FREE PRODUCT MEASURED = 0.55 ft.
TOTAL FREE PRODUCT RECOVERED = 3.75 gal

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
0	377.09	27	1	27	143.59	8.9598E-06	0.2027	0.0000
30	354.59	944	1	944	5,020.19	3.1326E-04	6.6647	3.3324
60	353.63	1450	1	1,450	7,711.10	4.8117E-04	10.2093	5.1046
90	274.25	1482	1	1,482	7,881 28	4.9179E-04	8.0925	4.0463
120	234.14	1221	1	1,221	6,493.28	4.0518E-04	5.6921	2 8461
150	242.58	943	1	943	5,014.87	3.1293E-04	4.5547	2.2773
180	215.41	724	1	724	3,850.23	2.4025E-04	3.1051	1.5526
210	202.69	731	1	731	3,887 46	2.4258E-04	2.9501	1.4750
240	178.44	775	1	775	4,121.45	2.5718E-04	2.7535	1.3767
270	206.07	748	1	748	3,977.86	2.4822E-04	3.0690	1 5345
300	177.45	762	1	762	4,052 32	2.5286E-04	2.6923	1 3462
330	184.87	762	1	762	4,052.32	2.5286E-04	2.8048	1.4024
360	216.41	710	1	710	3,775.78	2.3561E-04	3.0593	1.5297
390	235.04	683	1	683	3,632.19	2.2665E-04	3.1963	1 5982
420	247.59	663	1	663	3,525.83	2.2001E-04	3.2684	1 6342
450	246.68	809	1	809	4,302.26	2.6846E-04	3.9734	1.9867
480	250.30	933	1	933	4,961 69	3.0961E-04	4.6496	2 3248
AVERAGES		845.12		845.12	4,494.34	2.8045E-04	4.1728	2.0804

TOTAL EMISSIONS 35.3676 lbs

TOTAL AMOUNT OF FLUID RECOVERED 93.41 gallons

ESTIMATED AMOUNT OF PRODUCT RECOVERED 3.75 gallons

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES

48 HOUR AFVR Pre-Treatment Vapor Concentrations

1 st Page

Site Name: Broad River Amoco | County Richland | October 12-14, 2017

UST Permit Number: 11946 | Field Personnel: Terry Teate | Calibrate P I D :1120 Oct 12, 2017

Well Name:RW-3 4 Inch Well | Ambient Temp. 83-94 deg

Exhaust Stack Diameter(inches): 3 | Before RW-3 FP: 14.92 GWL: 15.47 | GWL AFTER AFVR GWL: 40.70

Start Time1200 Thurs End Time: 1200 Sat

TOTAL FREE PRODUCT MEASURED = 0.55 ft.
TOTAL FREE PRODUCT RECOVERED = 3.75 gal

Weather Conditions: Hot, Hot
PMRg = Cg x Qstd x 60 min/hr
PMR = PMRg x [(T2-T1) / 60], PMRg x [(T3-T2) / 60], ...

VACUUM GAUGE MEASUREMENTS

STINGER DEPTHS

Interval	Time	Vacuum of Hg in Inches RW-3	RW-1	RW-5	MW-2	Stinger Depth in ft. RW-3
0	1200 Fri	28.0	0.0	0.0	0.0	15.0
30	1230	18.0	0.0	0.0	0.0	15.5
60	1300	20.0	0.0	0.0	0.0	16.0
90	1330	20.0	0.0	0.0	0.0	16.5
120	1400	22.0	0.0	0.0	0.0	17.0
150	1430	22.0	0.0	0.0	0.0	17.5
180	1500	20.0	0.0	0.0	0.0	18.0
210	1530	20.0	0.0	0.0	0.0	18.5
240	1600	18.0	0.0	0.0	0.0	19.0
270	1630	18.0	0.0	0.0	0.0	19.5
300	1700	16.0	0.0	0.0	0.0	20.0
330	1730	18.0	0.0	0.0	0.0	20.5
360	1800	18.0	0.0	0.0	0.0	21.0
390	1830	20.0	0.0	0.0	0.0	21.5
420	1900	22.0	0.0	0.0	0.0	22.0
450	1930	22.0	0.0	0.0	0.0	22.5
480	2000	20.0	0.0	0.0	0.0	23.0

ENVIRO-TEST SERVICES **48 HOUR AFVR Post-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

October 12-14, 2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate**

Calibrate P I D :1120 Oct 12, 2017

Well Name:RW-3 4 Inch Well **Ambient Temp. 83-94 deg**

		Before		GWL AFTER AFVR
Exhaust Stack Diameter(inches): 3	**RW-3**	**FP: 14.92**	**GWL: 15.47**	**GWL: 40.70**

Start Time 1200 Thurs End Time: 1200 Sat

TOTAL FREE PRODUCT MEASURED = 0.65 ft.

Weather Conditions: Hot, Hot **TOTAL FREE PRODUCT RECOVERED = 3.75 gal**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
0	377.09	0	1	0	0.00	0.0000E+00	0.0000	0.0000
30	354.59	0	1	0	0.00	0.0000E+00	0.0000	0.0000
60	353.63	0	1	0	0.00	0.0000E+00	0.0000	0.0000
90	274.25	0	1	0	0.00	0.0000E+00	0.0000	0.0000
120	234.14	0	1	0	0.00	0.0000E+00	0.0000	0.0000
150	242.58	0	1	0	0.00	0.0000E+00	0.0000	0.0000
180	215.41	0	1	0	0.00	0.0000E+00	0.0000	0.0000
210	202.69	0	1	0	0.00	0.0000E+00	0.0000	0.0000
240	178.44	0	1	0	0.00	0.0000E+00	0.0000	0.0000
270	206.07	0	1	0	0.00	0.0000E+00	0.0000	0.0000
300	177.45	0	1	0	0.00	0.0000E+00	0.0000	0.0000
330	184.87	0	1	0	0.00	0.0000E+00	0.0000	0.0000
360	216.41	0	1	0	0.00	0.0000E+00	0.0000	0.0000
390	235.04	0	1	0	0.00	0.0000E+00	0.0000	0.0000
420	247.59	0	1	0	0.00	0.0000E+00	0.0000	0.0000
450	246.68	0	1	0	0.00	0.0000E+00	0.0000	0.0000
480	250.30	0	1	0	0.00	0.0000E+00	0.0000	0.0000
AVERAGES		0.00		0.00	0.00	0.0000E+00	0.0000	0.0000

TOTAL EMISSIONS **0.0000 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **93.41 gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **3.75 gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcaf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES **48 HOUR AFVR Pre-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

October 12-14,2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate** **Calibrate PID: 0712 Oct 13, 2017**

Calibrate PID: 0705 Oct 14, 2017

Well Name:RW-3 4 Inch Well **Ambient Temp. 83-94 deg**

Before **GWL AFTER AFVR**

Exhaust Stack Diameter(inches): 3 **RW-3** **FP: 14.92** **GWL: 16.47** **GWL: 40.70 ft.**

Start Time 1200 Thurs End Time: 1200 Sat

TOTAL FREE PRODUCT MEASURED = 0.55 ft.

Weather Conditions: Hot, Hot

TOTAL FREE PRODUCT RECOVERED = 3.75 gal

TOTAL FLUID RECOVERED = 93.41 gallons

Dry Standard CFM Air Flow - Qstd

TOTAL EMISSIONS = 58.34 lbs.

Or = 9.47 gallons

Interval	Time	Vacuum, in. of Hg	PPM measured	Humidity Ratio,gpp	Water Vapor,%	Dry Air(1/100)	Discharge Flow Volume, CFM	Temperature, °f	Temperature Constant	Qstd cfm
540	**2100**	**28**	**1127**	112	0.016	0.9840	171	83	0.9724	163.62
600	**2200**	**27**	**1020**	118	0.0169	0.9831	140	87	0.9653	132.86
660	**2300**	**27**	**1031**	123	0.0176	0 9824	149	84	0.9706	142.08
720	**2400**	**26**	**987**	112	0.0160	0.9840	152	82	0.9742	145.70
1200	**0900 Fri**	**28**	**705**	80	0.0114	0.9886	96	75	0.9869	93.66
1260	**900**	**29**	**815**	78	0.0111	0.9889	90	73	0.9906	88.16
1320	**1000**	**28**	**1109**	92	0.0131	0.9869	102	77	0.9832	98.97
1380	**1100**	**28**	**1088**	90	0.0129	0.9871	112	75	0.9869	109.11
1440	**1200**	**26**	**1094**	84	0.0120	0.9880	144	74	0.9888	140.67
1560	**1400**	**27**	**1059**	91	0.0130	0.9870	181	77	0.9832	175.65
1680	**1600**	**28**	**1036**	129	0.0184	0.9816	172	85	0.9688	163.56
1800	**1800**	**28**	**865**	114	0.0163	0 9837	190	82	0.9742	182.08
1920	**2000**	**26**	**1019**	92	0.0131	0.9869	202	75	0.9869	196.74
2040	**2200**	**26**	**991**	110	0.0157	0.9843	184	79	0.9796	177.41
2160	**2400**	**28**	**884**	104	0.0149	0.9851	173	78	0 9814	167.26
2640	**0800 Sat**	**26**	**956**	80	0.0114	0.9886	165	70	0.9962	162.50
2760	**1000**	**26**	**893**	87	0.0124	0.9876	208	73	0 9906	203.49
AVERAGES		27.18	981.12	99.76	0 0143	0.9857	154 76	78.18	0.9812	149.62

NOTES:

Vacuum = Level of vacuum being applied as record from the vacuum truck tank, inches of Hg.
PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
Humidity Ratio = Grains of moisture per pound(gpp) of dry air measured at the blower discharge stack.
Water Vapor = Pounds of water per pound of dry air as %.
Dry Air = Calculated pound of dry air,(1 - water vapor %).
Discharge Flow Volume = Measured air flow from 3" discharge stack in cubic feet per minute,cfm.
Temperature = Temperature of the air exiting the discharge stack in deg. Fahrenheit.
Temperature Constant = 528°R / (Temp.,°F + 460)

EQUATION

Qstd = Dry Air x Discharge Flow x Temperature Constant

ENVIRO-TEST SERVICES **48 HOUR AFVR Pre-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

October 12-14,2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate** **Calibrate PID: 0712 Oct 13, 2017**

Calibrate PID: 0705 Oct 14, 2017

Well Name:RW-3 4 inch Well **Ambient Temp. 83-94 deg**

		Before		GWL AFTER AFVR
Exhaust Stack Diameter(inches): 3	**RW-3**	**FP: 14.92**	**GWL: 15.47**	**GWL: 40.70 ft.**

Start Time 1200 Thurs End Time: 1200 Sat

TOTAL FREE PRODUCT MEASURED = 0.65 ft.

Weather Conditions: Hot, Hot **TOTAL FREE PRODUCT RECOVERED = 3.75 gal**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
540	163.62	1127	1	1127	5,993.39	3.7399E-04	3.6714	0.0000
600	132.86	1020	1	1,020	5,424.36	3.3848E-04	2.6982	1.3491
660	142.08	1031	1	1,031	5,482.86	3.4213E-04	2.9165	1.4583
720	145.70	987	1	987	5,248.87	3.2753E-04	2.8634	1.4317
1200	93.66	705	1	705	3,749.19	2.3395E-04	1.3147	0.6574
1260	88.16	1109	1	1,109	5,897.66	3.6801E-04	1.9467	0.9733
1320	98.97	1088	1	1,088	5,785.96	3.6105E-04	2.1440	1.0720
1380	109.11	1094	1	1,094	5,817.89	3.6304E-04	2.3767	1.1884
1440	140.67	1059	1	1,059	5,631.76	3.5142E-04	2.9661	1.4831
1560	175.65	1036	1	1,036	5,509.45	3.4379E-04	3.6233	1.8116
1680	163.56	865	1	865	4,600.07	2.8704E-04	2.8170	1.4085
1800	182.08	865	1	865	4,600.07	2.8704E-04	3.1359	1.5679
1920	196.74	1019	1	1,019	5,419.04	3.3815E-04	3.9916	1.9958
2040	177.41	991	1	991	5,270.14	3.2886E-04	3.5006	1.7503
2160	167.26	884	1	884	4,701.11	2.9335E-04	2.9440	1.4720
2640	162.50	956	1	956	5,084.01	3.1724E-04	3.0931	1.5465
2760	203.49	893	1	893	4,748.97	2.9634E-04	3 6180	1.8090
AVERAGES		984.06		984.06	5,233.22	3.2655E-04	2.9189	1.3515

TOTAL EMISSIONS **22.9749 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **93.41 gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **3.75 gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES

48 HOUR AFVR Pre-Treatment Vapor Concentrations

Site Name: Broad River Amoco | **County** Richland

UST Permit Number: 11948 | **Field Personnel:** Terry Teate | October 12-14,2017

Calibrate PID: 0712 Oct 13, 2017

Calibrate PID: 0705 Oct 14, 2017

Well Name:RW-3 4 Inch Well | **Ambient Temp.** 83-94 deg

Exhaust Stack Diameter(inches): 3 | **RW-3** | **Before FP: 14.92** | **GWL: 15.47** | **GWL AFTER AFVR GWL: 40.70 ft.**

Start Time1200 Thurs End Time: 1200 Sat

TOTAL FREE PRODUCT MEASURED = 0.55 ft.
TOTAL FREE PRODUCT RECOVERED = 3.75 gal

Weather Conditions: Hot, Hot
PMRg = Cg x Qstd x 60 min/hr
PMR = PMRg x [(T2-T1) / 60], PMRg x [(T3-T2) / 60], ...

VACUUM GAUGE MEASUREMENTS

Interval	Time	Vacuum of Hg in Inches RW-3	RW-1	RW-5	MW-2
540	2100	20.0	0.0	0.0	0.0
600	2200	18.0	0.0	0.0	0.0
660	2300	20.0	0.0	0.0	0.0
720	2400	22.0	0.0	0.0	0.0
1200	0600 Sat	20.0	0.0	0.0	0.0
1260	900	20.0	0.0	0.0	0.0
1320	1000	21.0	0.0	0.0	0.0
1380	1100	22.0	0.0	0.0	0.0
1440	1200	22.0	0.0	0.0	0.0
1500	1400	21.0	0.0	0.0	0.0
1680	1600	22.0	0.0	0.0	0.0
1800	1800	20.0	0.0	0.0	0.0
1920	2000	20.0	0.0	0.0	0.0
2040	2200	22.0	0.0	0.0	0.0
2160	2400	22.0	0.0	0.0	0.0
2640	0800 Sun	23.0	0.0	0.0	0.0
2760	1000	21.0	0.0	0.0	0.0

STINGER DEPTHS

Stinger Depth in ft. RW-3
24.0
25.0
26.0
16.0
18.0
18.0
20.0
22.0
25.0
28.0
30.0
34.0
38.0
41.0
15.0
17.0
20.0

ENVIRO-TEST SERVICES **48 HOUR AFVR Post-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

October 12-14,2017

UST Permit Number: 11948 **Field Personnel:** **Terry Teate** **Calibrate PID: 0712 Oct 13, 2017**

Calibrate PID: 0705 Oct 14, 2017

Well Name: RW-3 4 Inch Well **Ambient Temp. 83-94 deg**

Before **GWL AFTER AFVR**

Exhaust Stack Diameter(inches): 3 **RW-3** **FP: 14.92** **GWL: 15.47** **GWL: 40.70 ft.**

Start Time 1200 Thurs End Time: 1200 Sat

TOTAL FREE PRODUCT MEASURED = 0.66 ft.

Weather Conditions: Hot, Hot **TOTAL FREE PRODUCT RECOVERED = 3.75 gal**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
540	163.62	0	1	0	0.00	0.0000E+00	0.0000	0.0000
600	132.86	0	1	0	0.00	0.0000E+00	0.0000	0.0000
660	142.06	0	1	0	0.00	0.0000E+00	0.0000	0.0000
720	145.70	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1200	93.66	130	1	130	691.34	4.3140E-05	0.2424	0.1212
1260	88.16	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1320	98.97	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1380	109.11	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1440	140.67	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1560	175.65	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1680	163.56	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1800	182.06	0	1	0	0.00	0.0000E+00	0.0000	0.0000
1920	196.74	0	1	0	0.00	0.0000E+00	0.0000	0.0000
2040	177.41	0	1	0	0.00	0.0000E+00	0.0000	0.0000
2160	167.26	0	1	0	0.00	0.0000E+00	0.0000	0.0000
2640	162.50	0	1	0	0.00	0.0000E+00	0.0000	0.0000
2760	203.49	0	1	0	0.00	0.0000E+00	0.0000	0.0000
AVERAGES		7.65		7.65	40.67	2.5376E-06	0.0143	0.0071

TOTAL EMISSIONS **0.1212 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **93.41 gallons**

32 **ESTIMATED AMOUNT OF PRODUCT RECOVERED** **3.76 gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES

48 HOUR AFVR Pre-Treatment Vapor Concentrations

Site Name: Broad River Amoco | **County** Richland | October 12-14, 2017

UST Permit Number: 11946 | **Field Personnel:** Terry Teate | Calibrate PID: 0705 Oct 14, 2017

Well Name RW-3 | **Ambient Temp.** 83-94 deg

Exhaust Stack Diameter(inches): 3 | Before RW-3 FP: 14.92 | GWL: 15.47 | GWL AFTER AFVR GWL : 40.70

Start Time 1200 Thurs **End Time:** 1200 Sat

Weather Conditions: Hot, Hot

TOTAL FREE PRODUCT MEASURED = 0.66 ft.
TOTAL FREE PRODUCT RECOVERED = 3.75 gal
TOTAL FLUID RECOVERED = 93.41 gal

Dry Standard CFM Air Flow - Qstd

TOTAL EMISSIONS = 58.34 lbs.
Or = 9.47 gallons

Interval	Time	Vacuum, in. of Hg	PPM measured	Humidity Ratio,gpp	Water Vapor,%	Dry Air(1/100)	Discharge Flow Volume, CFM	Temperature, °f	Temperature Constant	Qstd cfm
2880	1200 Sat	27	749	187	0.02671429	0.9733	248	94	0.9531	230.05
AVERAGES		27.00	749.00	187 00	0.0267	0.9733	248.00	94.00	0.9531	230.05

NOTES:

Vacuum = Level of vacuum being applied as record from the vacuum truck tank, inches of Hg.
PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
Humidity Ratio = Grains of moisture per pound(gpp) of dry air measured at the blower discharge stack.
Water Vapor = Pounds of water per pound of dry air as %.
Dry Air = Calculated pound of dry air,(1 - water vapor %).
Discharge Flow Volume = Measured air flow from 3" discharge stack in cubic feet per minute,cfm.
Temperature = Temperature of the air exiting the discharge stack in deg. Fahrenheit.
Temperature Constant = 528°R / (Temp.,°F + 460)

EQUATION

Qstd = Dry Air x Discharge Flow x Temperature Constant

ENVIRO-TEST SERVICES **48 HOUR AFVR Pre-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County Richland**

October 12-14, 2017

UST Permit Number: 11946 **Field Personnel: Terry Teate**

Calibrate PID: 0705 Oct 14, 2017

Well Name: RW-3 **Ambient Temp. 83-94 deg**

Exhaust Stack Diameter(inches): 3 **RW-3** **Before FP: 14.92** **GWL: 15.47** **GWL AFTER AFVR GWL : 40.70**

Start Time 1200 Thurs End Time: 1200 Sat

TOTAL FREE PRODUCT MEASURED = 0.55 ft.

Weather Conditions: Hot, Hot **TOTAL FREE PRODUCT RECOVERED = 3.75 gal**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dsm3	Cg	PMRg (lb/hr)	PMR lbs
2880	230.05	749	1	749	3,983.18	2.4855E-04	3.4307	0.0000
AVERAGES		749.00		749.00	3,983.18	2.4855E-04	3.4307	0.0000

TOTAL EMISSIONS **0.0000 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **93.41 gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **3.75 gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dsm3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dsm3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

ENVIRO-TEST SERVICES

48 HOUR AFVR Pre-Treatment Vapor Concentrations

Site Name: Broad River Amoco

County Richland

October 12-14, 2017

UST Permit Number: 11946

Field Personnel: Terry Teate

Calibrate PID: 0706 Oct 14, 2017

Well Name RW-3

Ambient Temp. 83-94 deg

Exhaust Stack Diameter(inches): 3

RW-3 Before FP: 14.92

GWL: 16.47

GWL AFTER AFVR
GWL : 40.70

Start Time 1200 Thurs End Time: 1200 Sat

TOTAL FREE PRODUCT MEASURED = 0.55 ft.
TOTAL FREE PRODUCT RECOVERED = 3.75 gal

Weather Conditions: Hot, Hot
PMRg = Cg x Qstd x 60 min/hr
PMR = PMRg x [(T2-T1) / 60], PMRg x [(T3-T2) / 60], ...

VACUUM GAUGE MEASUREMENTS

Interval	Time	Vacuum of Hg in Inches RW-3	RW-1	RW-6	MW-2
2880	1200 Sat	23.0	0.0	0.0	0.0

STINGER DEPTHS

Stinger Depth in ft. RW-3
41.0

	BEFORE Free Product	GWL:	AFTER Free Product	GWL:
RW-1	12.18	13.92		17.80
RW-6	11.38	11.60	18.85	19.73
MW-2	14.85	14.92		16.90

ENVIRO-TEST SERVICES **48 HOUR AFVR Post-Treatment Vapor Concentrations**

Site Name: Broad River Amoco **County** **Richland**

October 12-14, 2017

UST Permit Number: 11946 **Field Personnel:** **Terry Teate**

Calibrate PID: 0705 Oct 14, 2017

Well Name RW-3 **Ambient Temp. 83-94 deg**

Before **GWL AFTER AFVR**

Exhaust Stack Diameter(inches): 3 **RW-3** **FP: 14.92** **GWL: 15.47** **GWL : 40.70**

Start Time 1200 Thurs End Time: 1200 Sat

TOTAL FREE PRODUCT MEASURED = 0.66 ft.

Weather Conditions: Hot, Hot **TOTAL FREE PRODUCT RECOVERED = 3.75 gal**

Gasoline Emission Calculations - PMR

Measured Interval	Qstd cfm	Measured ppm	K, Calibration gas	PPMg, ppm	Cg:m mg/dem3	Cg	PMRg (lb/hr)	PMR lbs
2880	230.05	0	1	0	0.00	0.0000E+00	0.0000	0.0000
AVERAGES		0.00		0.00	0.00	0.0000E+00	0.0000	0.0000

TOTAL EMISSIONS **0.0000 lbs**

TOTAL AMOUNT OF FLUID RECOVERED **93.41 gallons**

ESTIMATED AMOUNT OF PRODUCT RECOVERED **3.75 gallons**

NOTES:

PPM, measured = Measurements taken with a OVA or TVA at the blower discharge stack.
K = Number of carbons in calibration gas. Methane K=1, Propane K=2, Hexane K=3
PPMg = Measurements taken with a OVA or TVA at the blower discharge stack.
Cg:m = Mass concentration of gasoline emission, mg/dem3.
Cg = Mass concentration of gasoline emission, lb/dcsf.
PMRg = Pollutant mass removal rate of gasoline emission, lb/hr.
PMR = Pollutant mass removal of gasoline emission over time, lbs.

EQUATIONS:

PPMg = Measured PPM x K
Cg:m = PPMg x (128 mg/mg-mole) x (1x106 mg-mole/24.07 dem3)
Cg = Cg:m x (62.43x10-9 lb-m3 / mg-ft3)

FIGURE 3

AFVR RW-3