

### C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

DEC 17 2008

MR MARTY EASLER 196 RICHBURG ROAD GREELEYVILLE SC 29056

Re:

Groundwater Sampling Directive
Tisdales Quick Stop, 1989 Thurgood Marshall Blvd, Kingstree, SC
UST Permit # 18686, CA # 34256
Release reported March 30, 2001
Report received April 21, 2006
Williamsburg County

### Dear Mr. Easier:

The Underground Storage Tank (UST) Program of the South Carolina Department of Health and Environmental Control (SCDHEC) recognizes your commitment to continue work at this site utilizing Geological Resources, Inc. The Program has reviewed the referenced report and determined the next necessary scope of work to be a comprehensive groundwater sampling event.

Cost Agreement # 34256 has been approved in the amount shown on the enclosed cost agreement for a comprehensive sampling event. The Program requests that all existing monitoring wells associated with the release as well as WSW-1, WSW-3, MW-1A, MW-2A, MW-3A, and MW-4A (located on adjacent site # 09017) be sampled for BTEX, Naphthalene, MTBE, and 1,2-DCA using EPA method 8260B and EDB using EPA method 8011. Please note that wells in which the screen brackets the water table may be sampled without purging.

Please have Geological Resources, Inc. submit groundwater sampling results to the Program in a monitoring report containing the following items:

- A narrative portion documenting current site conditions and noting the names of field personnel, date, time, ambient air temperature, and general weather conditions during the sampling event. The report shall also contain well purging data, pH, specific conductivity, water temperature, PID readings (where applicable) and turbidity comments.
- Groundwater elevations, depth to groundwater, measurable free product thickness (where applicable), total well depth and screened interval for all monitoring wells associated with the site, unless otherwise directed by the Program, shall be presented in tabular form. Groundwater laboratory analytical data for all monitoring wells shall be presented in tabular format.
- Should any monitoring wells or water supply wells not be sampled, note the reason for which the sampling was not conducted on such wells.
- A groundwater elevation contour map of the site based on current groundwater potentiometric data.
- A CoC map based on current groundwater laboratory analytical data. The groundwater data should be adjacent to the relevant monitoring well.
- Manifests for any contaminated soil and/or groundwater removed from the site for treatment and/or disposal.
- Signature and seal by a professional geologist or engineer registered in the State of South Carolina.

  UST DOC

Geological Resources, Inc. can submit an invoice for direct billing from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. Please note that all applicable South Carolina certification requirements apply to the laboratory services, well installation, and report preparation. All site

rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

A Report of Findings and the invoice is due within 60 days from the date of this letter and with in 45 days from the sampling date. Interim invoices may not be submitted for this scope of work. If the invoice is 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 from the Department is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the Department for the cost to be paid. The SCDHEC 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, SCDHEC reserves the right to question and/or reject costs if deemed unreasonable and to audit project records at any time during the project or after completion of work.

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 and/or groundwater with concentrations below RBSLs.

On all correspondence or inquiries regarding this project, please reference UST Permit # 18686. If you have any questions, please feel free to contact me by phone at (803) 896-4085, by fax at (803) 896-6245, or by email at jacksosm@dhec.sc.gov.

Sincerely,

CC:

Stephanie M. Jackson, Hydrogeologist

Corrective Action Section

Assessment and Corrective Action Division

Stephen M Jack

Underground Storage Tank Program

Bureau of Land and Waste Management

enc: Approved Cost Agreement

Geological Resources, Inc., 2301 Crown Point Executive Drive, Suite F, Charlotte, NC 28227 (w/enc)

Technical file (w/o enc)

### Approved Cost Agreement 34256

Facility: 18686 TISDALES QUICK STOP

JACKSOSM PO Number:

Task / Description Categories Item Description Qty / Pct **Unit Price Amount** 04 MOB/DEMOB **B PERSONNEL** 2.0000 290.00 580,00 10 SAMPLE COLLECTION A GROUND WATER 2.0000 55.00 110.00 C WATER SUPPLY 2.0000 25.00 50.00 D GROUNDWATER NO-PURGE 34.0000 35.00 1,190.00 11 ANALYSES GW GROUNDWATER A BTEX+NAPTH+MTBE 38.0000 100.00 3,800.00 BB 1,2-DCA 38.0000 10.75 408.50 F EDB 38.0000 55.00 2,090.00 17 DISPOSAL A1 WASTEWATER - PURGING/SAMPLING 1.0000 90.00 90.00 19 RPT/PROJECT MNGT & COORDINATIO PCT PERCENT 0.1500 8,318.50 1,247.78 **Total Amount** 

9,566.28





### Geological Resources, Inc.

February 16, 2009

Stephanie M. Jackson, Hydrogeologist Assessment and Corrective Action Division Underground Storage Tank Program Bureau of Land and Waste Management 2600 Bull Street Columbia, South Carolina 29201-1708

Re:

**Ground Water Sampling Report** 

Tisdales Quick Stop

Kingstree, Williamsburg County

UST Permit #: 18686

CA#: 34256

### Dear Ms. Jackson:

The purpose of this report is to present the results of assessment activities conducted between January 7 and 8, 2009 at the above referenced site (**Figure 1**). Site activities were conducted in general accordance with the requirements outlined in correspondence from the SCDHEC dated December 17, 2008 and addressed to Mr. Marty Easler. The following Figures, Tables and Appendices have been included:

Figure 1: Site Location Map

Figure 2: Site Map

Figure 3: Water Table Surface Map Figure 4: Ground Water Quality Map

Table 1: Summary of Ground Water Elevation Data

Table 2: Summary of Historical Ground Water Elevation Data

Table 3: Summary of Laboratory Analyses - Ground Water Samples - Chemicals of Concern

Table 4: Summary of Historical Laboratory Analyses - Ground Water Samples - Chemicals of Concern

Appendix A: Ground Water Sampling Data Sheets

Appendix B: Disposal Manifest Appendix C: Laboratory Report

All of the existing monitoring wells associated with the Tisdales Quick Stop petroleum release were sampled on January 7 and 8, 2009. Please note that only telescoping wells TW-1 and TW-2 were purged prior to sampling. Based on the January 2009 gauging data, depths to ground water in the monitoring wells ranged from 12.44 to 17.89 feet. Ground water elevations at the site ranged from 79.56 to 83.81 feet relative to a temporary benchmark with an assumed datum of 100.00 feet. Based on this data, ground water flow was generally toward the west across

2301 Crown Point Executive Drive Suite F Charlotte, NC 28227 Phone: (704) 845-4010 / (888) 870-4133 Fax: (704) 845-4012

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Tisdales Quick Stop Ground Water Sampling Report Page 2 of 2

the site and consistent with historical data.

Each of the ground water samples from the monitoring wells were submitted to a South Carolina certified laboratory for the analyses of BTEX, MTBE, naphthalene and 1,2-DCA by EPA Method 8260B and EDB by EPA Method 8011. In addition, one water supply well (WSW-1) was sampled for BTEX, MTBE, naphthalene and 1,2-DCA by EPA Method 8260B and EDB by EPA Method 8011. Please note, water supply well WSW-2 was destroyed and could not be sampled. Free product was measured in monitoring wells MW-2, MW-3, MW-2A, MW-3A and MW-4A at thicknesses that ranged from 0.02 feet to 1.00 feet. Therefore, these five wells were not sampled. Concentrations of one or more BTEX constituents, MTBE, naphthalene and/or EDB that exceeded the RBSLs were reported in MW-1, MW-4, MW-8, MW-16, MW-23 and MW-1A. No detectable concentrations of COCs were detected in MW-5 through MW-7, MW-9, MW-10, MW-13 through MW-15, MW-18, MW-22, MW-24 through MW-27, MW-29 through MW-31, TW-1, TW-2 and WSW-1.

Based on this data, the vertical and horizontal extent of the contaminant plume has been adequately defined at the site. Continued ground water monitoring is recommended. In addition, free product recovery activities should be conducted to reduce free product levels in monitoring wells MW-2, MW-3, MW-3A and MW-4A. Please do not hesitate to contact the undersigned at (704) 845-4010 if you have any questions or comments concerning this project.

Sincerely,

Scott Ball

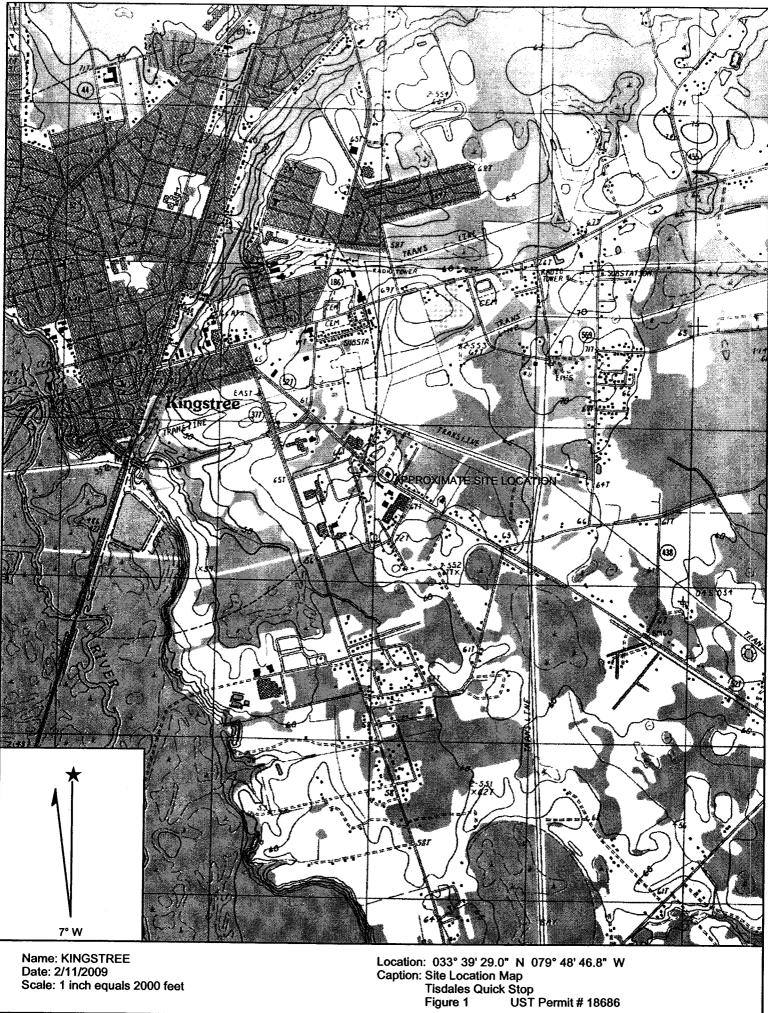
Senior Project Manager

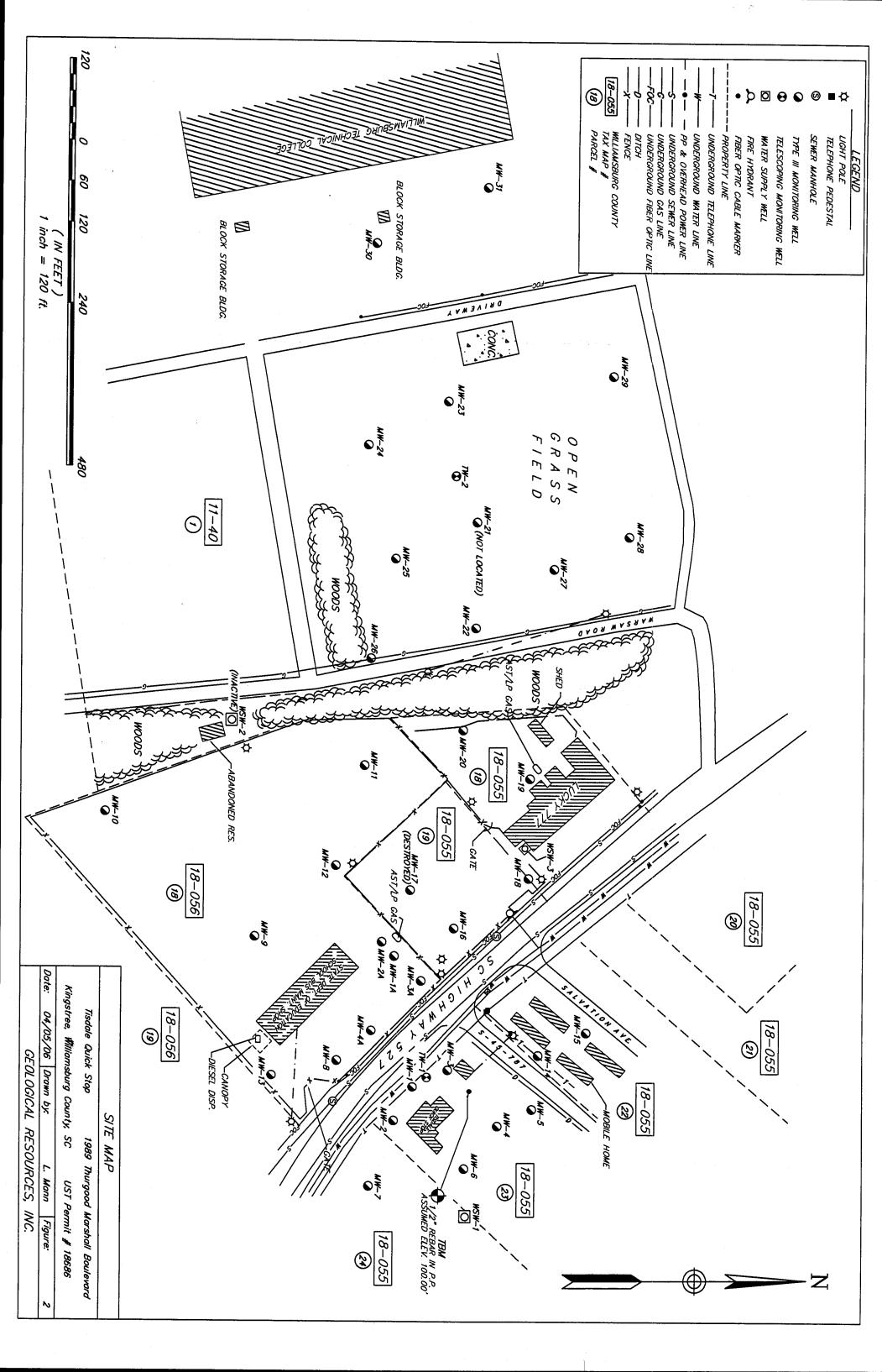
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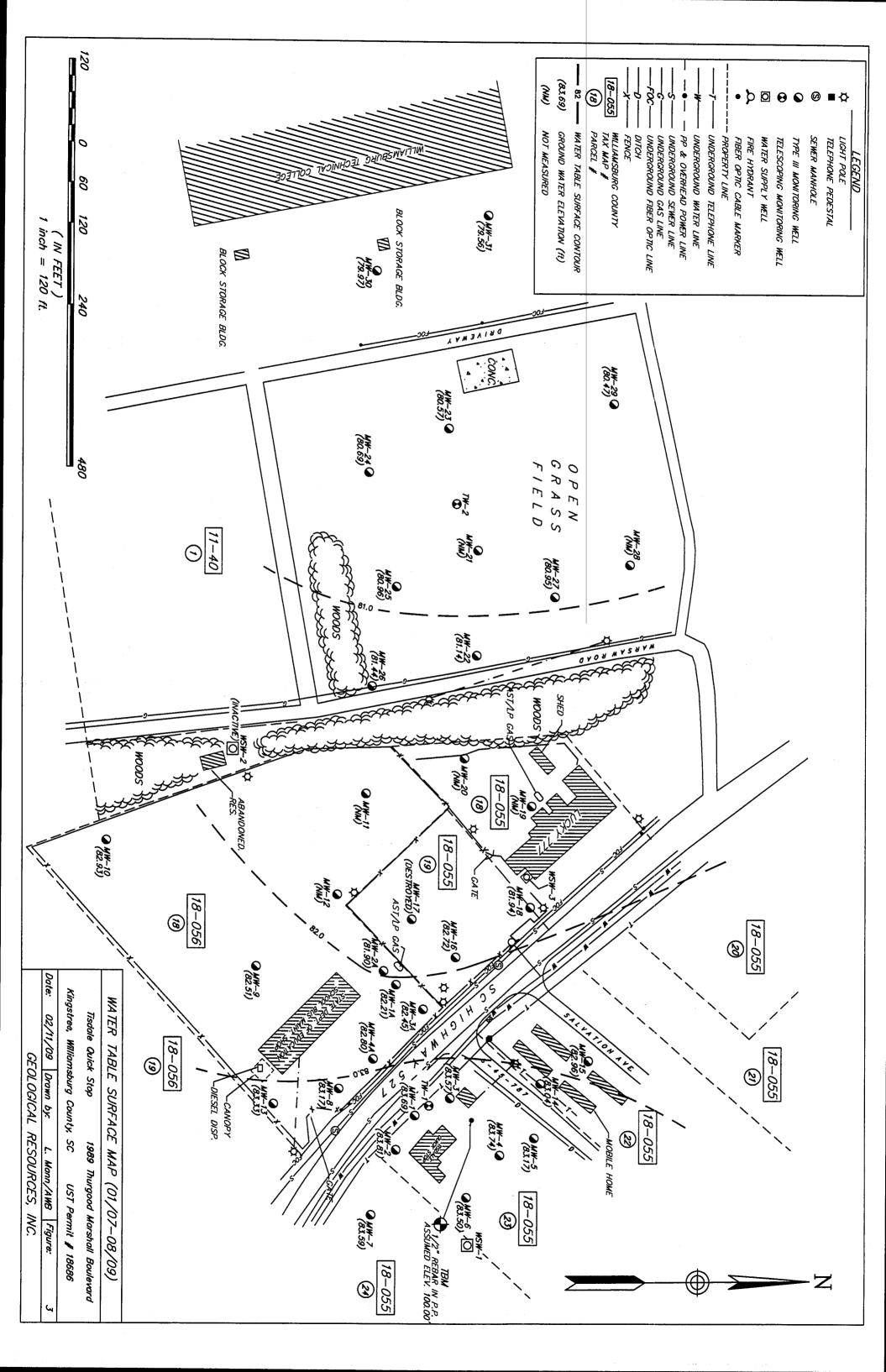
cc: Mr. Marty Easler

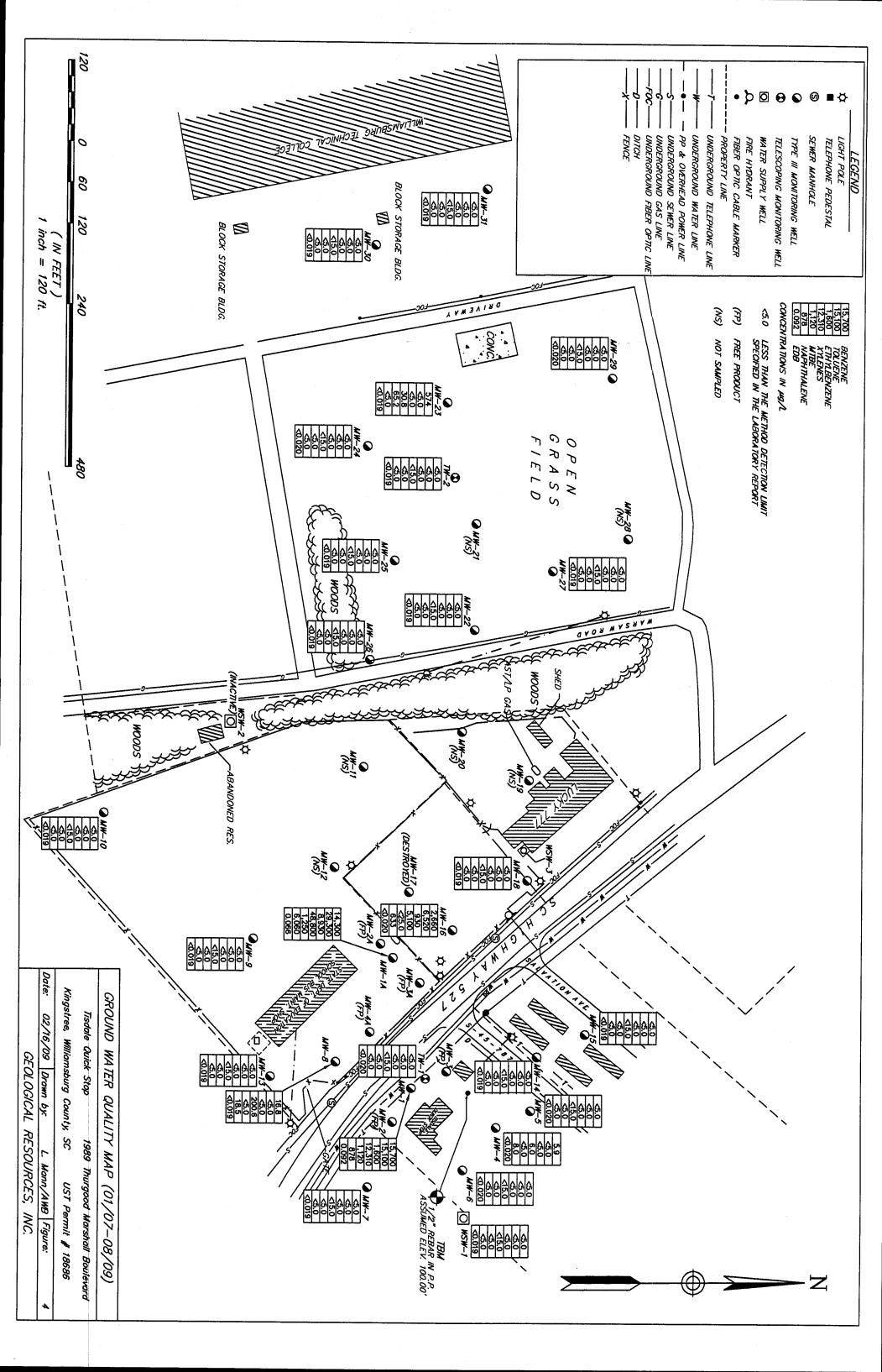
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**FIGURES** 









**TABLES** 

### TABLE 1 SUMMARY OF GROUND WATER ELEVATION DATA JANUARY 7 AND 8, 2009 TISDALES QUICK STOP

Well No.	Top of Casing Elevation	Depth to Free Product	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
MW-1	<b>9</b> 8.81	0.00	15.12	0.00	83.69	20	10-20
MW-2	98.82	15.01	15.03	0.02	83.81	25	10-25
MW-3	98.74	15.15	15.27	0.12	83.57	25	10-25
MW-4	98.58	0.00	14.84	0.00	83.74	25	10-25
MW-5	98.13	0.00	14.96	0.00	83.17	22	12-22
MW-6	98.50	0.00	15.00	0.00	83.50	21.5	11.5-21.5
MW-7	98.19	0.00	14.60	0.00	83.59	22	12-22
MW-8	98.17	0.00	15.00	0.00	83.17	22	12-22
MW-9	98.52	0.00	16.01	0.00	82.51	22	12-22
MW-10	98.68	0.00	15.75	0.00	82.93	25	10-25
MW-11	94.65	NM	NM	NM	NM	22	7-22
MW-12	95.70	NM	NM	NM	NM	22	7-22
MW-13	99.01	0.00	15.68	0.00	83.33	25	10-25
MW-14	98.36	0.00	15.32	0.00	83.04	25	10-25
MW-15	99.59	0.00	16.63	0.00	82.96	25	10-25
MW-16	98.93	0.00	16.21	0.00	82.72	23	8-23
MW-18	99.83	0.00	17.89	0.00	81.94	25	10-25
MW-19	100.27	NM	NM	NM	NM	25	10-25
MW-20	97.21	NM	NM	NM	NM	25	10-25
MW-21	95.72	NM	NM	NM	NM	23	8-23
MW-22	96.68	0.00	15.54	0.00	81.14	25	10-25
MW-23	95.78	0.00	15.21	0.00	80.57	24	9-24
MW-24	93.86	0.00	13.17	0.00	80.69	23	8-23
MW-25	94.30	0.00	13.34	0.00	80.96	23	8-23
MW-26	93.88	0.00	12.44	0.00	81.44	21	6-21
MW-27	98.15	0.00	17.20	0.00	80.95	25	10-25
MW-28	98.45	NM	NM	NM	NM	25	10-25
MW-29	96.78	0.00	16.31	0.00	80.47	25	10-25
MW-30	95.38	0.00	15.41	0.00	79.97	22	7-22
MW-31	96.05	0.00	16.49	0.00	79.56	20	10-20
MW-1A	97.20	0.00	14.99	0.00	82.21	Unknown	Unknown
MW-2A	97.30	15.32	15.86	0.54	81.90	Unknown	Unknown
MW-3A	97.27	14.68	15.68	1.00	82.45	Unknown	Unknown
MW-4A	98.09	15.17	16.02	0.85	82.80	Unknown	Unknown
TW-1	99.01	0.00	15.97	0.00	83.04	46	41-46
TW-2	95.26	0.00	14.52	0.00	80.74	51	46-51

### Note:

- Elevations relative to a temporary benchmark with an assumed datum of 100.00 feet; data reported in feet.
- If free product is present in a well, groundwater elevation calculated by: [Top of Casing Elevation Depth to Water] + [free product thickness x 0.8581].
- NM: Not measured; well could not be located or were located within a locked, fenced area.

TABLE 2
SUMMARY OF HISTORICAL GROUND WATER ELEVATION DATA
TISDALES QUICK STOP

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		15.72	83.09		
	02/09/04		14.25	84.56		
MW-1	09/23/04	98.81	11.94	86.87		
141 44 -1	01/21/05	30.01	13.09	85.72	20	10-25
	03/23/06	]	12.43	86.38		
	01/07/09		15.12	83.69		
	01/16/03		15.08	83.74		
	02/09/04		14.18	84.64	·	
MW-2	09/23/04	98.82	12.07	86.75		
141 44 -2	01/21/05	90.82	13.24	85.58	25	10-25
	03/23/06		12.43	86.39		
	01/07/09		15.01	83.83		
	01/16/03		15.34	83.40		
	02/09/04		14.18	84.56		
MW-3	09/23/04	98.74	11.95	86.79		
141 44 -2	01/21/05	98.74	13.36	85.38	25	10-25
	03/23/06		12.37	86.37		
	01/07/09		15.17	83.67		
	01/16/03		15.06	83.52		
	02/09/04	,	14.01	84.57		
MW-4	09/23/04	00.50	11.96	86.62		
IAT AA4	01/21/05	98.58	13.13	85.45	25	10-25
:	03/23/06		12.24	86.34		
	01/07/09		14.84	83.74		
	01/16/03		14.77	83.36		
	02/09/04		13.77	84.36		
MW-5	09/23/04	00.12	11.71	86.42		40.00
141 44 -2	01/21/05	98.13	13.14	84.99	22	12-22
	03/23/06		12.80	85.33		
	01/07/09	ļ	14.96	83.17		

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TISDALES QUICK STOP

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		14.64	83.86		
	02/09/04		13.86	84.64		
MW-6	09/23/04	98.50	11.86	86.64		
101 00 -0	01/21/05	98.30	13.38	85.12	21.5	11.5-21.5
	03/23/06		12.81	85.69		
	01/07/09		15.00	83.50		
	01/16/03		14.69	83.50		
	02/09/04		13.56	84.63		
MW-7	09/23/04	98.19	11.56	86.63		
141 44 - /	01/21/05	96.19	12.78	85.41	22	12-22
	03/23/06		11.73	86.46		
	01/07/09		14.60	83.59		
	01/16/03		14.85	83.32		
	02/09/04		13.98	84.19		
MW-8	09/23/04	98.17	12.07	86.10		
1A1 AA -O	01/21/05	98.17	13.33	84.84	22	12-22
	03/23/06		12.14	86.03		
	01/08/09		15.00	83.17		
	01/16/03		15.79	82.73		
	02/09/04		15.00	83.52		'
MW-9	09/23/04	09.52	13.12	85.40		
1 <b>V1 VV -</b> 3	01/21/05	98.52	14.64	83.88	22	12-22
	03/23/06		13.29	85.23		•
	01/08/09		16.01	82.51		
	01/16/03		16.52	82.16		·
	02/09/04		15.79	82.89		
MW-10	09/23/04	00.60	13.97	84.71	-	40
TAT AA -1 O	01/21/05	98.68	15.35	83.33	25	10-25
	03/23/06		14.18	84.50		
	01/08/09		15.75	82.93	•	

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TISDALES QUICK STOP

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		12.89	81.76		
	02/09/04		12.10	82.55		
MW-11	09/23/04	94.65	10.51	84.14		7.00
101 00 -1 1	01/21/05	94.03	11.68	82.97	22	7-22
	03/23/06		10.55	84.10		
	01/08/09		NM	NM		
	01/16/03		13.13	82.57		-
	02/09/04		12.35	83.35		i.
MW-12	09/23/04	05.70	12.67	83.03	20	<b>7.00</b>
1V1 VV -1 Z	01/21/05	95.70	12.06	83.64	22	7-22
	03/23/06		10.80	84.90		
·	01/08/09		NM	NM		
	01/16/03		15.65	83.36		11-11111
	02/09/04		14.70	84.31		
MW-13	09/23/04	00.01	12.90	86.11	9.5	10.05
INI AA -12	01/21/05	99.01	14.05	84.96	25	10-25
	03/23/06		12.82	86.19		
	01/08/09		15.68	83.33		
	01/16/03		15.12	83.24		
	02/09/04		14.24	84.12		
MW-14	09/23/04	09.26	12.03	86.33	0.5	10.05
W W-14	01/21/05	98.36	13.78	84.58	25	10-25
	03/23/06		12.75	85.61		
	01/08/09		15.32	83.04		
	01/16/03		16.40	83.19		
	02/09/04		15.55	84.04		
MW-15	09/23/04	00.50	13.50	86.09	0.5	10.05
INT AA-12	01/21/05	99.59	14.89	84.70	25	10-25
	03/23/06		13.92	85.67		
	01/08/09		16.63	82.96		

TABLE 2 SUMMARY OF HISTORICAL GROUND WATER ELEVATION DATA TISDALES QUICK STOP

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		16.18	82.75		
	02/09/04		15.21	83.72		
MW-16	09/23/04	98.93	13.55	85.38	]	0.00
141 44 - 10	01/21/05	96.93	14.79	84.14	23	8-23
	03/23/06		13.60	85.33		
	01/08/09		16.21	82.72		
-	01/16/03		15.94	82.31		
	02/09/04		14.55	83.70		
MW-17	09/23/04	98.25	12.82	85.43	23	8-23
	01/21/05		13.78	84.47		
	03/23/06		NM	NM		
	01/16/03		17.70	82.13		
	02/09/04		16.91	82.92		
MW-18	09/23/04	99.83	15.06	84.77	0.5	40.05
1/1 // -10	01/21/05	79.03	16.45	83.38	25	10-25
	03/23/06		15.31	84.52		
	01/08/09		17.89	81.94		
	01/16/03		18.54	81.73		
Į.	02/09/04		17.63	82.64		
MW-19	09/23/04	100.27	16.00	84.27	0.5	40.00
14144-19	01/21/05	100.27	17.21	83.06	25	10-25
	03/23/06		16.15	84.12		
	01/08/09		NM	NM		
	01/16/03		15.59	81.62		
[	02/09/04		14.74	82.47		
MW-20	09/23/04	97.21	13.15	84.06	25	10.55
141 44 -70	01/21/05	97.21	14.33	82.88	25	10-25
	03/23/06		13.21	84.00		
	01/08/09	Ī	NM	NM		

TABLE 2 SUMMARY OF HISTORICAL GROUND WATER ELEVATION DATA TISDALES QUICK STOP

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		14.70	81.02		
	02/09/04		13.85	81.87		
MW-21	09/23/04	95.72	12.27	83.45	1 ,,	0.22
101 00 -21	01/21/05	93.72	13.42	82.30	23	8-23
<u> </u>	03/23/06		NM	NM		
	01/08/09		NM	NM		
	01/16/03		15.40	81.28		
	02/09/04		14.61	82.07		
MW-22	09/23/04	96.68	12.92	83.76	1	10.05
141 44 -22	01/21/05	90.08	14.15	82.53	25	10-25
	03/23/06		13.21	83.47		
	01/08/09		15.54	81.14		
	01/16/03		15.08	80.70		
· ·	02/09/04		14.30	81.48		
MW-23	09/23/04	95.78	12.72	83.06	24	0.04
IVI VV -23	01/20/05	93.78	13.82	81.96	24	9-24
	03/23/06		13.09	82.69		
	01/08/09		15.21	80.57		
	01/16/03		13.00	80.86		
	02/09/04		12.19	81.67		
MW-24	09/23/04	02.96	10.58	83.28	22	0.00
IVI VV -24	01/20/05	93.86	11.71	82.15	23	8-23
	03/23/06		10.87	82.99		
	01/08/09		13.17	80.69		
	01/16/03		13.20	81.10		
	02/09/04		12.37	81.93		
MW-25	09/23/04	04.20	10.74	83.56		0.00
IVI VV -23	01/20/05	94.30	11.99	82.31	23	8-23
	03/23/06		11.00	83.30		
<u> </u>	01/08/09	ļ	13.34	80.96		

TABLE 2
SUMMARY OF HISTORICAL GROUND WATER ELEVATION DATA
TISDALES QUICK STOP

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		12.38	81.50		
	02/09/04		11.62	82.26	1	
MW-26	09/23/04	93.88	10.03	83.85	1	
IVI VV -20	01/20/05	93.88	11.18	82.70	21	6-21
	03/23/06		10.58	83.30	1	
	01/08/09	]	12.44	81.44		
	01/16/03		16.99	81.16		
	02/09/04		16.20	81.95	-	
MW-27	09/23/04	00.15	14.61	83.54	2.5	10.00
IVI VV -2 /	01/21/05	98.15	15.81	82.34	25	10-25
	03/23/06		14.84	83.31		
	01/08/09		17.20	80.95		
	01/16/03		17.46	80.99		
	02/09/04		16.55	81.90		
MW-28	09/23/04	98.45	15.00	83.45	9.5	10.05
IVI VV -20	01/21/05	98.45	16.17	82.28	25	10-25
	03/23/06		15.21	83.24		
	01/08/09		NM	NM		
	01/16/03		16.17	80.61		
	02/09/04		15.30	81.48		
MW-29	09/23/04	06.70	13.74	83.04	25	10.05
IVI VV -29	01/20/05	96.78	14.69	82.09	25	10-25
ĺ	03/23/06		14.12	82.66		
	01/08/09		16.31	80.47		•
	01/16/03		15.18	80.20		
	02/09/04		14.36	81.02		
MW-30	09/23/04	05.20	12.85	82.53		7.65
IVI W - 3U	01/20/05	95.38	13.72	81.66	22	7-22
	03/23/06		13.04	82.34		:
	01/08/09		15.41	79.97		

TABLE 2
SUMMARY OF HISTORICAL GROUND WATER ELEVATION DATA
TISDALES QUICK STOP

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Ground Water Elevation	Constructed Well Depth	Screened Interval
	09/23/04		13.88	82.17		
MW-31	01/20/05	96.05	14.73	81.32	20	10.20
141 44 -21	03/23/06	90.03	14.22	81.83	20	10-20
	01/08/09	<u>.                                    </u>	16.49	79.56		
	01/21/05		13.38	83.82		
MW-1A	03/23/06	97.20	12.11	85.09	Unknown	Unknown
·	01/08/09		14.99	82.21		
	01/21/05		13.39	83.91		
MW-2A	03/23/06	97.30	12.27	85.03	Unknown	Unknown
	01/08/09		15.40	82.36		
	01/21/05		13.27	84.00		
MW-3A	03/23/06	97.27	12.19	85.08	Unknown	Unknown
	01/08/09		14.82	83.31		
	01/21/05		14.04	84.05		
MW-4A	03/23/06	98.09	12.43	85.66	Unknown	Unknown
	01/08/09		15.29	83.53		
	01/16/03		15.14	83.87		
	02/09/04		14.81	84.20	1	
TW-1	09/23/04	99.01	13.16	85.85	45	41.46
1 44-1	01/21/05	99.01	14.39	84.62	46	41-46
	03/23/06		13.35	85.66		
	01/08/09		15.97	83.04		

TABLE 2
SUMMARY OF HISTORICAL GROUND WATER ELEVATION DATA
TISDALES QUICK STOP

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		14.33	80.93		
	02/09/04		13.58	81.68		
TW-2	09/23/04	95.26	11.98	83.28	· .	4 6 6 9
1 ***-2	01/21/05	93.20	13.07	82.19	51	46-51
	03/23/06		12.10	83.16	1	
	01/08/09	<u> </u>	14.52	80.74		

### Notes:

- Elevations relative to a temporary benchmark with an assumed datum of 100.00 feet; data reported in feet.
- \*\*: If free product is present in a well, groundwater elevation calculated by: [Top of Casing Elevation Depth to Water] + [free product thickness x 0.8581].
- NM: Not measured; monitoring well is destroyed, covered or could not be located.
- Monitoring wells MW-1A through MW-4A were installed by S&ME Consultants in January 2000.
- Depths to ground water in MW-2, MW-3, MW-16, MW-17 and MW-1A through MW-4A were corrected for free product, if present, with an assumed density of 0.8581.
- Monitoring wells MW-16 and MW-17 were completed above grade with stand up covers; depths to ground
  water were measured from the tops of casing; well depths and screened intervals were measured from the
  ground surface.

### TABLE 3 SUMMARY OF LABORATORY ANALYSES GROUND WATER SAMPLES CHEMICALS OF CONCERN JANUARY 7 AND 8, 2009 TISDALES QUICK STOP

Well No.	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB	Comments
RBSL	5	1,000	700	10,000	40	25	2	50.0	
MW-1	15,700	15,100	1,600	12,310	1,120	878	<500	0.092	
MW-2	FP	FP	FP	FP	FP	FP	FP	FP	
MW-3	FP	FP	FP	FP	FP	FP	FP	FP	
MW-4	5.9	<5.0	<5.0	6.0	<5.0	8.0	<5.0	<0.020	
MW-5	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.020	
MW-6	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.020	
MW-7	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019	
MW-8	16.8	<5.0	<5.0	200.6	<5.0	18.5	<5.0	<0.019	
MW-9	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019	
MW-10	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019	
MW-11	NS	NS	NS	SN	NS	SN	SN	NS	Not found
MW-12	NS	NS	NS	NS	SN	SN	SN	NS	Not found
MW-13	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019	
MW-14	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019	
MW-15	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019	
MW-16	2,660	6,520	930	5,100	<25.0	633	<25.0	<0.020	
MW-18	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019	

### TABLE 3 SUMMARY OF LABORATORY ANALYSES GROUND WATER SAMPLES CHEMICALS OF CONCERN JANUARY 7 AND 8, 2009 TISDALES QUICK STOP

RBSL	TO THE CHIE	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB	Comments
	5	1,000	700	10,000	40	25	5	0.05	
MW-19	NS	NS	NS	SN	NS	SN	NS	NS	Locked gate
MW-20	NS	NS	SN	SN	NS	SN	NS	NS	Locked gate
MW-21	NS	SN	NS	NS	NS	NS	SN	NS	Not found
MW-22	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019	
MW-23	574	<5.0	<5.0	30.8	65.2	<5.0	<5.0	<0.019	
MW-24	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.020	
MW-25	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019	
MW-26	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019	
MW-27	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019	
MW-28	NS	NS	SN	NS	NS	NS	SN	SN	Not found
MW-29	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.020	
MW-30	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019	
MW-31	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019	
MW-1A	14,300	29,300	8,930	48,800	1,250	6,060	<500	0.066	
MW-2A	FP	FP	FP	FP	FP	FP	FP	FP	
MW-3A	FP	FP	FP	FP	FP	FP	КР	FP	
MW-4A	FP	FP	FP	FP	FP	FP	ΗP	FP	

### TABLE 3 SUMMARY OF LABORATORY ANALYSES GROUND WATER SAMPLES CHEMICALS OF CONCERN JANUARY 7 AND 8, 2009 TISDALES QUICK STOP

No.	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB	Comments
RBSL	5	1,000	700	10,000	40	25	S	0.05	
TW-1	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.020	
TW-2	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019	
WSW-1	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019	
WSW-2	NS	NS	NS	SN	SN	NS	SN	NS	Destroyed

### Notes.

- Analyses for selected volatile organic compounds by EPA Method 8260B and EDB by EPA Method 8011; results reported in µg/l (micrograms per liter).
  - RBSL: May 2001 Risk Based Screening Level.
- Concentrations in bold face type exceeded the RBSL.
- <: Less than the report limit specified in the laboratory report.</li>
  - J: Estimated value.
- NR: Not requested.
- NS: Not sampled.

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		2	1,000	700	10,000	40	25	S	0.05
	01/17/03	173,002	31,000	2,220	12,800	495	515		0.13
	02/09/04	11,400	19,600	1,010	12,000	395	525		NR.
MW-1	10/07/04	4,160	7,500	504	4,400	348	290	1	0.03
T_	01/21/05	8,150	13,500	260	7,170	260	<500	1	NR.
	03/24/06	7,800	11,800	552	6,640	833	<100	1	A.
	01/02/09	15,700	15,100	1,600	12,310	1,120	878	<500	0.092
	01/17/03	FP	FP	FP	FP	FP	FP	FP	FP
	02/09/04	FP	FP	FP	FP	FP	FP	FP	FP
C_XXIA	10/07/04	FP	FP	FP	FP	FP	FP .	FP	FP
7- 11 11	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
	03/24/06	14,600	17,900	2,240	12,000	164	495	FP	X.
	01/07/09	FP	FP	FP	FP	FP	FP	FP	FP
	01/17/03	FP	FP	FP	FP	FP	FP	FP	FP
	02/09/04	FP	FP	FP	FP	FP	FP	FP	FP
MW-3	10/07/04	FP	FP	FP	FP	FP	FP	FP	FP
- 1. TAT	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
	03/24/06	54.6	44.4	17.1	999	2.04	8	FP	NR
	01/02/09	FP	FP	FP	FP	FP	FP	FP	FP
	01/17/03	3.7	<1.0	1.8	7.2	<1.0	7.4	FP	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	FP	NR
MW.4	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	FP	<0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	FP	NR
	03/24/06	0.200J	<1.00	<1.00	1.44	0.340J	<1.00	FP	NR
	01/07/09	5.9	<5.0	<5.0	6.0	<5.0	8.0	0.5>	<0.020

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
-	01/11/03	<1.0	<1.0	1.7	3.4	<1.0	7.1	-	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR.
MW-5	10/02/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		<0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		NR.
	03/24/06	<1.00	<1.00	<1.00	0.350J	<1.00	<1.00	•	NR
	01/07/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.020
	01/17/03	<1.0	<1.0	1.9	3.8	<1.0	7	٠	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	R
- MM	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	<0.02
2	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	•	NR.
<b>-</b>	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	,	R
	01/02/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.020
	01/17/03	70.3	145	24.3	308	1.8	25.7	,	<0.02
	02/09/04	<1.0	11.4	60.2	441	<1.0	40.7	-	NR.
MW-7	10/07/04	<1.0	1.1	2.4	25	<1.0	5.8		<0.02
-	01/21/05	<1.0	<1.0	4.5	26.9	<1.0	17.5	ı	R.
	03/24/06	<1.00	<1.00	<1.00	23.3	0.260J	9.62	ſ	NR.
	01/02/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	01/17/03	1,480	11,800	1,930	9,930	6.3	<500		<0.02
	02/09/04	59	1,700	424	2,380	<5.0	96	1	Ä
MW-8	10/07/04	<1.0	3.2	7.4	71.1	<1.0	6	•	<0.02
2	01/21/05	12	161	55.6	1,100	<1.0	52.2	1	NR.
	03/24/06	4.19	24.1	118	1,070	<1.00	102	•	NR
	01/08/09	16.8	<5.0	<5.0	200.6	<5.0	18.5	<5.0	<0.019

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	3	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	34	<5.00		<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	11.1	<5.00		NR.
MW-9	10/07/04	<1.0	<1.0	<1.0	1.2	<1.0	<5.00		<0.02
- 11 11	01/21/05	<1.0	<1.0	<1.0	<1.0	12.5	<5.00		R
	03/24/06	<1.00	<1.00	0.270	2.49	1.5	<1.00		Ŗ
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	01/17/03	<1.0	<1.0	<1.0	<1.0	1.5	<5.00	٠	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	•	Ŗ
MW-10	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	•	<0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	,	R
- <b></b>	03/24/06	<1.00	<1.00	<1.00	0.490J	<1.00	<1.00	-	R
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	01/17/03	<1.0	<1.0	<1.0	<1.0	1.6	<5.00	•	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	23.7	<5.00		R
MW-11	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	•	<0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	5.1	<5.00		Ŗ
	03/24/06	<1.00	<1.00	<1.00	<1.00	0.250J	<1.00	1	Æ
	01/08/09	NS	NS	NS	NS	NS	SN	NS	NS
	01/17/03	<1.0	<1.0	<1.0	<1.0	2	<5.00	,	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	r	Ř
MW-12	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	<0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	R.
	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	3	NR
	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	S	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	42.5	<5.00		<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	145	<5.00		RA
MW-13	10/02/04	<1.0	<1.0	<1.0	<1.0	6.3	<5.00		<0.02
C1-14 TAT	01/21/05	<1.0	<1.0	<1.0	<1.0	40.8	<5.00	٠	R
	03/24/06	<1.00	<1.00	<1.00	<1.00	11	<1.00	•	Ŗ
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	01/17/03	3.4	<1.0	<1.0	4.5	<1.0	10.9	·	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	•	Æ
MXX/_14	10/02/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	•	<0.02
1 1 1 1 1 1 1	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	•	Ŗ
	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1	R.
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	'	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		R
MW-15	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	•	<0.02
CT - 44 TAT	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	t	R.
	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	•	NR
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	01/17/03	FP	FP	FP	FP	FP	FP	ı	FP
	02/09/04	FP	FP	FP	FP	FP	FP	•	FP
MW-16	10/07/04	FP	FP	FP	FP	FP	FP	•	FP
01-44-47	01/21/05	FP	FP	FP	FP	FP	FP	•	FP
	03/24/06	14,600	20,300	2,080	11,800	536	1,080	1	NR
	01/08/09	2,660	6,520	930	5,100	<25.0	633	<25.0	<0.020

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	FP	FP	FP	FP	FP	FP	1	FP
	02/09/04	<1.0	13.2	12.5	74.2	19	10.1	-	R
MW-17	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		<0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ı	R
	03/24/06	NS	NS	NS	SN	SN	NS	NS	NS
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		<0.02
	02/09/04	15.4	5.5	<1.0	9.6	<1.0	<5.00	•	R.
MW-18	10/07/04	1.5	<1.0	<1.0	<1.0	<1.0	<5.00		<0.02
	01/21/05	19.2	1.1	<1.0	7.1	<1.0	<5.00	1	Ä
	03/24/06	36.2	1.27	<1.00	6.16	<1.00	<1.00	,	R.
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	•	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		R.
MW-10	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		<0.02
77	01/21/05	3.1	<1.0	<1.0	<1.0	<1.0	<5.00	•	R.
	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1	N.
	01/08/09	NS	NS	NS	NS	SN	NS	SN	NS
	01/17/03	1,520	314	108	298	80.4	26.3	4	<0.02
-	02/09/04	3,220	530	15.2	830	78	61.2		NR
MW-20	10/07/04	90.2	9.9	<1.0	19.8	94.4	<5.00	ŧ	<0.02
	01/21/05	1,120	43.1	5.8	95.1	73	36.9	1	R.
	03/24/06	44.9	0.300J	0.310J	3.54	9.14	<1.00	•	NR
	01/08/09	NS	NS	NS	NS	NS	NS	SN	SN

Date         5         1,000         700         10,000         40         25         5         6           01/17/03         269         27.5         1,2         118         42.6         12.6         -           01/17/03         269         27.5         1,0         <1,0         <1,0         <5.00         -           01/07/04         <1,0         <1,0         <1,0         <1,0         <5.00         -            01/21/05         <1,0         <1,0         <1,0         <1,0         <5.00         -            01/21/05         <1,0         <1,0         <1,0         <1,0         <5.00         -            01/08/09         <1,0         <1,0         <1,0         <1,0         <5.00         -            01/08/09         <1,0         <1,0         <1,0         <1,0         <1,0         <5.0         <-           01/17/03         <1,0         <1,0         <1,0         <1,0         <1,0         <1,0         <-         <-         <-         <-         <-         <-         <-         <-         <-         <-         <-         <-         <-         <-         <-         <	N IIOW		Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
5         1,000         700         11,000         4.2.6         1.2.6	W CH 140.	Date				0000	ę	25	2	0.05
01/17/03         269         27.5         12         118         42.6         12.0           02/09/04         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0           02/09/04         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0           01/21/05         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0           01/21/05         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0           01/21/05         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0           01/21/05         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0           01/21/05         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0           01/21/05         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0	RBSL		\$	1,000	700	10,000	A.	201		<0.02
QUIZING         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         < 1.0         <		01/17/03	269	27.5	12	118	47.0	12.0		E S
U2/05/04         4.10         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0		70/00/20	21 O	<1.0	<1.0	<1.0	<1.0	<5.00	•	200
10007/04   \$\( \cdot \)   \$\(\cdot \)   \$\( \cdot \)   \$\( \cdot \)   \$\( \cdot \)   \$\( \cdot		02/09/04	71:0	7	<	<1.0	<1.0	<5.00	•	70:05
01/21/05         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0	MW-21	10/07/04	0.15	0.17		V 1.0	<1.0	<5.00	-	ž
03/23/06         NS         <	17 M 141	01/21/05	VI.0	0.12	NIO NIO	SN	SN	SN	•	NS
01/08/09         NS         NS         NS         135         279         257         67.9  <		03/23/06	SZ	SN	CAL	NS	SN	SN	NS	NS
01/17/03         2,080         281         279         370         237         15.8            02/09/04         782         49.2         41.4         77.5         93.4         15.8            02/09/04         782         49.2         41.4         77.5         19.5         71.4         <5.00		01/08/09	NS	NS	SS	SNI	25.7	6.7.9		<0.02
02/09/04         782         49.2         41.4         77.3         75.4         6.00         7.0         7.0         7.1         6.0         7.1         6.0         7.1         7.1         6.0         7.1         7.1         6.0         7.0         7.0         7.1         7.1         6.0         7.0         <		01/17/03	2,080	281	6/7	27.5	03.4	15.8		NR.
10/07/04         109         11.3         3.2         19.5         //14         67         11.2         -           01/21/05         3,980         300         197         454         67         11.2         -           01/21/05         3,980         300         197         454         67         11.2         -           01/23/306         0.3401         <1.00		02/09/04	782	49.2	41.4	5.6.	11.7	00 \$>	-	<0.02
01/21/05         3,980         300         197         454         67/1         454         67/1         454         67/1         454         67/1         454         67/1         454         67/1         450         -		10/07/04		11.3	3.2	19.5	57/	112	,	R
03/23/06         0.340J         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00	MW-22	01/21/05	_	300	197	424	١,٥	377		ž
01/08/09         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0		03/23/06	0.3401	<1.00	<1.00	<1.00	8.11	VI.00		010
01/08/09         27.6         <1.0         <1.0         3.7         27.2         10.5         -           02/09/04         1,760         72         <1.0		03/23/00	20.5	050	<5.0	<15.0	<5.0	<5.0	0.00	\$0.013 60.05
01/17/03         27.6         <1.0         <1.0         592         372         17.2         -           02/09/04         1,760         72         <1.0		01/08/09		107	7 0	3.7	27.2	10.5	-	<0.02
02/09/04         1,760         72         < 1.0         51.0         598         286         46         -           10/07/04         1,620         103         < 1.0	ļ	01/17/03		0.17	71.0	505	372	17.2	•	ğ
10/07/04         1,620         103         <1.0         590         200         150            01/20/05         1,670         111         <1.0		02/09/04	$\perp$	7/2	0.17	2005	286	46	•	<0.02
01/20/05         1,670         111         <1.0         578         1/4         13.9         - 1.3         - 1.		10/07/04		103	VI.0	330		10.0	,	NR.
03/23/06         1,290         44.1         <1.00         266         168         38.4            03/23/06         1,290         44.1         <1.00	MW-23	01/20/05	_	111	<1.0	578	7/1	13.5		¥,
01/08/09         574         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.00         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0         <5.0		03/23/06	<u> </u>	44.1	<1.00	266	168	30.4	0 %	<0.00
01/17/03         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0		01/08/09	<del> </del>	<5.0	<5.0	30.8	65.2	0.00	? } -	<0.02 0.02
01/1/103         41.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0		01/17/03	-	-    -  -	<1.0	<1.0	0.1>	2.00		E P
02/09/04         <1.0         <1.0         <1.0         <1.0         <5.00         -           10/07/04         <1.0		01/1/03	$\perp$	V 10	<1.0	<1.0	<1.0	<5.00	-	N. C
10/07/04         <1.0         <1.0         <1.0         <1.0         <1.0         <2.00         -           01/20/05         <1.0		02/09/04	$\downarrow$	7	V 10	<1.0	<1.0	<5.00	•	70:0×
01/20/05         <1.0         <1.0         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00         <1.00 <t< td=""><td>4.WW</td><td>10/07/04</td><td><b>⊽</b> `</td><td>7 7</td><td></td><td>&lt;1.0</td><td>&lt;1.0</td><td>&lt;5.00</td><td></td><td>XX</td></t<>	4.WW	10/07/04	<b>⊽</b>  `	7 7		<1.0	<1.0	<5.00		XX
<1.00 <1.00 <1.00 <1.00 <1.00 <5.0 <5.0 <5.0 <5.0 <5.0 <5.0 <5.0 <	7 1 W	01/20/05	<b>⊽</b>	0.14	-	<1.00	<1.00		•	X X
<5.0   <5.0   <5.0		03/23/06	<b>√</b> \	N.1.>		<150	\$5.0		<5.0	<0.020
		01/08/05	\$	<5.0	2.62	2:21				

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Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	4.9	<5.00	ı	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		NR.
MW-25	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	<0.02
77 111	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		R
	03/23/06	0.330J	<1.00	<1.00	<1.00	<1.00	<1.00		R
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	01/17/03	1.3	<1.0	<1.0	<1.0	4.7	<5.00	-	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		R
9C-MM	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	,	<0.02
27	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		Ŗ
	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	•	R
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	,	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	,	R
70-WM	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		<0.02
, i	01/21/05	<1.0	<1.0	<1.0	<1.0	1.7	<5.00	1	Ř
	03/23/06	0.320J	<1.00	<1.00	<1.00	3.95	<1.00	•	R
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	01/17/03	<1.0	<1.0	<1.0	<1.0	1.4	<5.00	•	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	•	R.
WW-28	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	•	<0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	AR.
1	03/23/06	<1.00	<1.00	<1.00	<1.00	0.340J	<1.00	•	A.
	01/08/09	NS	NS	NS	NS	SN	SN	SN	NS

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	w	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	R
MW-29	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	<0.02
	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		R
	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	,	R
	01/08/09	<5.0	<5.0	<5.0	<15.0	0.2>	<5.0	<5.0	<0.020
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	•	R
MW-30	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	<0.02
	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	•	R
	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR.
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	,	<0.02
MW-31	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		NR.
	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	•	R
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
MW-1A	03/24/06	20,700	30,600	3,310	17,600	1,880	891	•	NR.
	01/08/09	14,300	29,300	8,930	48,800	1,250	6,060	<500	0.066
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
MW-2A	03/23/06	FP	FP	FP	FP	FP	FP	FP	FP
	01/08/09	FP	FP	FP	FP	FP	FP	FP	FP

Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
	5	1,000	700	10,000	40	25	5	0.05
01/21/05	FP	FP	FP	FP	FP	FP	FP	F.P
03/23/06	FP	FP	FP	FP	FP	FP	ЯP	T.P
01/08/09	FP	FP	FP	FP	FP	ЯĀ	T.D	ED T
01/21/05	FP	FP	FP	FP	FP	FP	FP	1 dE
03/24/06	19,600	34,800	3,900	21,500	247	952	FP	ž
01/08/09	FP	FP	FP	FP	F	FP	F.P	T.P
01/17/03	25.5	46.6	6.9	19.8	<1.0	9.3		<0.02
02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		ž
10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		<0.0>
01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		E E
03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	ž
01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.020
01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		<0.02
02/09/04	<1.0	<1.0	<1.0	<1.0	11.7	<5.00	-	Z.
10/07/04	0.1∠	<1.0	<1.0	<1.0	<1.0	<5.00		<0.02
01/21/05	4.0	<1.0	<1.0	<1.0	<1.0	<5.00		Z.
03/24/06	7.22	<1.00	<1.00	<1.00	1.7	<1.00	-	N.
01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		Z.
02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	<b> </b>	N.
10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		<0.02
01/21/05	0.[>	<1.0	<1.0	<1.0	<1.0	<5.00		Ŗ
03/24/06	<1.00	×1.00	<1.00	<1.00	<1.00	<1.00		Ř
01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019

TABLE 4
SUMMARY OF HISTORICAL LABORATORY ANALYSES
GROUND WATER SAMPLES
CHEMICALS OF CONCERN
TISDALES QUICK STOP

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene 1,2-DCA	1,2-DCA	EDB
RBSL		5	1,000	200	10,000	40	25	5	0.05
WSW-2	01/08/09	SN	SN	SN	SN	NS	SN	NS	NS
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	٠	<0.02
WSW-3	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	•	RA
	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1	R

### Notes.

- Analyses for selected volatile organic compounds by EPA Method 8260B; lead by EPA Method 6010B or 200.7; and EDB by Method 8011; results reported in  $\mu$ g/1.
  - RBSL: May 2001 Risk Based Screening Level.
- · Concentrations in bold face type exceeded the RBSL.
- < Less than the report limit specified in the laboratory report.</li>
  - NS: Not sampled.
- NR: Analysis not requested.
  - I or J: Estimated value.
- FP: Free product.

**APPENDICES** 

APPENDIX A
Ground Water Sampling Data Sheets

Field Data information Sheet for Ground-Water Sampling South Carolina Department of Health and Environmental Control Bureau of Underground Storage Tank Management

Date (mm/dd/yy): // 9/09			- 1			
· X			lame:	Tisdulds Quick Stop	2	
General Weather Conditions:			# 01 8250		Monitoring Well #	1-5-41
Ambient Air Temperature			Well Diameter (D):		0.167 feet	
Quality Assurance	<u>.</u> J		Conversion factor	Conversion factor (C): 3.14 X (D/2)2 for a 2 inch well C = 0,163 for a 4 inch well C = 0,852	vell C = 0,163 ell C = 0,652	
pH Meter Conductivity Meter serial no.			* Free Product Thickness: Depth to Ground Water (DGW)	kness: /ater (DGW)	4.6.3	feet
			Total Well Depth (TWD) Length of the water col	Total Well Depth (TWD) Length of the water column (LWC = TWD-DGW)	45.34 59.3 F	feet
pH=10.0 Standard Chain of Custody			1 casing volume (CV = LWC X C) = 3 casing volume 3 X CV =	14.36	24.32×./63 = 4,25 gals (standard purge volume)	ne)
		-	Total volume of Wa	Total volume of Water Purged Before Sampling		gais
Relinquished by Date/Time Received by	Date/Time			odal voluire of vester Purged for Post Sampling		gals Total Purged
		<b></b>	ir iree product is t	in ree product is present over 1/8 inch, sampling will not be required.	will not be required.	
	initial	1st Vol.	2nd Vol.	3rd Vol	177.743	
Cumulative Volume Purged (gallons)	125	5,25	10,25	· · · · · · · · · · · · · · · · · · ·	our vol. Post sampling	Sample
Time (military)	七九元/	12,57	13,02			13.09
pH (s.u.)	9.6	5.0	2,0			, , ,
Specific Cond. (umhos/cm)	118	60'	80'			
Water Temperature (degrees C)	18,8	18.4	19.9.			
Turbidity (subjective: clear, slightly cloudy, cloudy)	CÍC	10	Clr			
Dissolved Oxygen (mgil)	8'8	9.8	8,3.			
PID readings, if required						
Remarks:						

Field Data Information Sheet for Ground-Water Sampling South Carolina Department of Health and Environmental Control Bureau of Underground Storage Tank Management

ġ

Facility Name: Tradales Chuick 5700	Site ID # Monitoring Well # 74.2	Conversion factor (C): 3.14 X (D/2)2 for a 2 inch well C = 0.163  for a 4 inch well C = 0.852	* Free Product Thickness: Depth to Ground Water (DGW) Total Well Depth (TWD)  Length of the water column (LWC = TWD-DGW)  **Solution**  **Teet*  **	1 casing volume (CV = LWC X C) = $\frac{3582x/63 = 585}{358000000000000000000000000000000000000$	Total volume of Water Purged Before Sampling	"If free product is present over 1/6 free	And the control of th
		ш.				Date/Time	
105 1X	Same	Quality Assurance	Conductivity Meter serial no. Standard Standard	Standard lody		Received by	
1/8	Conditions:	perature: Quality		Chain of Custody		Date/Time	
Date (mm/dd/yy): Field Personnel:	General Weather Conditions:	Amblent Air Temperature:	pH Meter serial no. pH=4.0 pH=7.0	PH#10.0	·	Relinquished by	

	Initial	1st Vol.	2nd Vol.	and Vol	14th 1/21			1
Cumulative Volume Purged (gallons)	X	727	`	10.	100	am voi:	au voi ou voi. Post sampling	Sample
			100					•
Time (military)	13.35	35 13.45	13,55					25,21
pH (s.u.)	2,7	5'5	6.0					
Specific Cond. (umhos/cm)	411	<i>tI</i> "	4)					
Water Temperature (degrees C)	661.	4.61	~					
Turbidity (subjective: clear, slightly cloudy, cloudy)	- CI	Cle	clr					
Dissolved Oxygen (mg/l)	931	949	948 974	<b>.</b>				
PID readings, if required		•						
Remarks:								

APPENDIX B Disposal Manifest



# HAZ~MAT

TRANSPORTATION AND DISPOSAL P.O. BOX 37392 • CHARLOTTE, N.C. 28237 (704) 332-5600 FAX (704) 375-7183

Manifest	No	40	1	4	9	_

Charlotte, N.C. 28237

# **NON-HAZARDOUS SPECIAL WASTE**

Section 1. GENERATOR (Gener	ator complete all of Section I)	Target Berling	
GENERATOR LOCATION	WORK CONTRACTED BY Bill To (If different from information	on at left)	
NAME 1. Solate Chick Stof 878 Co	nu.	7	
ORIGINATING ADDRESS	NAME	af fresunc	S, Lnc
MAILING ADDRESS	ADDRESS 301 F	Train /hi	· GOC
CITY STATE STATE ZIP	CITY Charling	STATE	zip <u></u>
PHONE NO.	PHONE NO. 70, 805	9010	
CONTACT NAME SCOLL COLL	CONTACT NAME 500	a <i>II</i>	
DES. OF WASTE: Pot down Contail / rate			
		No. Type U	Inits Quantity
Section II. INVOICE INFORMATION	GALLONS	DRUMS	
DESCRIPTION	QUAI	YTITY	LINE TOTAL
1. PETROLEUM CONTACT WATER PUMPED FROM TANKS, DRUMS OR AFVR			
2. OFF-SPEC LIGHT OIL, DIESEL OR GAS PUMPED FROM TANKS OR DRUMS			
3. SOLUBLE OILS OR COOLANTS PUMPED FROM STORAGE			
4. SEDIMENT OR SOLIDS VACUUMED FROM CONTAINMENT AREA	*'		
5. 55-GALLON DRUM REMOVED - SOLID OR EMPTY			
6. 55-GALLON DRUM REMOVED - LIQUID	15		15
7.			
8.			
9.			
10. ARRIVALTIME: DEPARTURETIME:			
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardod described, classified and packaged, and is in proper condition for transportation according to an hazardous waste subject to the Land Disposal Restrictions, I certify and warrant that the waste has a hazardous waste as defined by 40 CFR Part 261.	plicable regulations; AND, if the was	ste is a treatment residu	ue of a previously restricted
Generator Authonzed Agent Name	Signature		Shipment Date
Section III. TRANSPORTER TRANSPORTER Transporter II com	Generator completé a de Transporter I complete e 😕 . plete h/n)		
HAZ~MAT		NSPORTER II	
	Name Continued Re	2 Say (25) Ir	
DO DOVIGOOD CLASS OTTE NO COOR	Address 230 TF Crock	Point Sx	00
	Charlott 1	7822	<del>)</del>
a. Driver Name/Title	Driver Name/Title	ne Fatell	
b. Phone No c. Truck No	Phone No. 704-8-15-4016	: Touck No	
Hazardous Waste Transporter Permits	Transporter II Permit Nos.	i. Truck No. —	
d		7 T	
Driver Signature Shipment Date	Drives-Signature /	_ L	Shipment Date
Section IV. FACILITY INFORMATION AND CE	RITHER (SATERIO) HED IN HEO	SAL	
Site Name: Haz-Mat Transportation & Disposal, Inc.	a. Phone No.	704-332-5600	
Physical Address: 210 Dalton Avenue	b. Mailing Address:	P.O. Box 37392	
r ny oroan r taanooo.	maming / mail 000.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	

e: Discrepancy Indication Space\_

Charlotte, N.C. 28206

This is to certify that all non-hazardous material removed from above location has been received and will be disposed of in accordance with applicable local, state and federal regulations in the following manner: (1) Petroleum products are blended into a beneficial reusable fuel for use in large industrial burners. (2) Waste waters are to be treated with polymers, pH adjusters, and a floculant, then flows through a dissolved air flotation system for pretreatment separation, then into the CMUD sanitation sewer system under permit IUP#5012. (3) Sludges from treatment systems are hauled to E.P.A. approved facilities for proper disposal. Manifest and certificate of disposal are on file. (4) Our treatment system operates on a first in, first out basis and product should be processed within seven days.

SIGNATURE OF FACILITY AGENT DATE MONTH DAY YEAR OF

APPENDIX C Laboratory Report



Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

January 20, 2009

Scott Ball Geological Resources, Inc 2301 Crown Point Executive Dr. Suite F Charlotte, NC 28227

RE: Project: TISDALE'S QUICK STOP

Pace Project No.: 9235808

### **Dear Scott Ball:**

Enclosed are the analytical results for sample(s) received by the laboratory on January 09, 2009. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Inorganic Wet Chemistry and Metals analyses were performed at our Pace Asheville laboratory and Organic testing was performed at our Pace Huntersville laboratory unless otherwise footnoted. All Microbiological analyses were performed at the laboratory where the samples were received.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

**Erin Waters** 

erin.waters@pacelabs.com Project Manager

Gun & Waters

**Enclosures** 

cc: Mrs. Carrie Kennedy, Geological Resources, Inc



Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

### **CERTIFICATIONS**

Project:

TISDALE'S QUICK STOP

Pace Project No.:

9235808

**Charlotte Certification IDs** 

West Virginia Certification #: 357 Virginia Certification #: 00213

Virginia Certification #: 00213
Tennessee Certification #: 04010
South Carolina Drinking Water Cert. #: 990060003
South Carolina Certification #: 990060001

Pennsylvania Certification #: 68-00784 North Carolina Wastewater Certification #: 12

Asheville Certification IDs

West Virginia Certification #: 356 Virginia Certification #: 00072

Tennessee Certification #: 2980

South Carolina Certification #: 99030001 South Carolina Bioassay Certification #: 99030002

Pennsylvania Certification #: 68-03578

North Carolina Wastewater Certification #: 40

**Eden Certification IDs** 

Virginia Drinking Water Certification #: 00424

North Carolina Wastewater Certification #: 633

North Carolina Field Services Certification #: 5342

North Carolina Drinking Water Certification #: 37706

New Jersey Certification #: NC012

Louisiana/LELAP Certification #: 04034

Kentucky UST Certification #: 84 Florida/NELAP Certification #: E87627

Connecticut Certification #: PH-0104

North Carolina Drinking Water Certification #: 37712

North Carolina Bioassay Certification #: 9

New Jersey Certification #: NC011

Massachusetts Certification #: M-NC030

Louisiana/LELAP Certification #: 03095

Florida/NELAP Certification #: E87648

Connecticut Certification #: PH-0106

North Carolina Drinking Water Certification #: 37738





# CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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	bHe AL 2927		Address:	NPDES T	GROUND WATER	L	DRINKING WATER
ត		Purchase Order No.:	Pace Quote Reference:	L	\$	. L	R
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å			Pace Profile #:	Sydne			
L			Februaria	STREET STREET			
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		SIGNATURE of SAMPLER:	LER: How Here (MMDD/Y):	12/09		eol 	dwes
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# CHAIN-OF-CUSTODY / Analytical Request Document The Chein-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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Requested Due Data/TAT:	Project Number:	Pace Profile #:			

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important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1,5% per month for any invo

F-ALL-Q-020rev.07, 15-May-2007



# CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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													Requeste	Requested Analysis Filters		(NUA) PI				
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Drinking Water Water Waste Wester Product SoulSolid		see valid codes t	20=0 8AA9=	COMPOSITE	COMPOSITE							1					(V/V)		500	J.
Sample IDs MUST BE UNIQUE Tissue Other	9₹ <b>&amp;</b> ₽	<del></del>	SAMPLE TYPE (G	1 E	,	TA 9MET ELMAS	# OF CONTAINER	hereserved	100° 100° 100°	HOH HCI	48 <sub>2</sub> S <sub>2</sub> O <sub>3</sub> Aethanol Other	rest alsylanA	110g D'HZ				sesidual Chlorine	·8	2	
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# **SAMPLE ANALYTE COUNT**

Project:

TISDALE'S QUICK STOP

Pace Project No.: 9235808

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
9235808001	MW1	EPA 8011	CAH	2	PASI-C
		EPA 8260	DLK, MCK	12	PASI-C
235808002	MW4	EPA 8011	CAH	2	PASI-C
		EPA 8260	DLK	12	PASI-C
235808003	MW5	EPA 8011	CAH	2	PASI-C
		EPA 8260	DLK	12	PASI-C
235808004	MW6	EPA 8011	CAH	2	PASI-C
		EPA 8260	MCK	12	PASI-C
235808005	MW7	EPA 8011	CAH	2	PASI-C
		EPA 8260	MCK	12	PASI-C
235808006	MW8	EPA 8011	CAH	2	PASI-C
		EPA 8260	MCK	12	PASI-C
235808007	MW9	EPA 8011	CAH	2	PASI-C
		EPA 8260	MCK	12	PASI-C
35808008	MW10	EPA 8011	CAH	2	PASI-C
		EPA 8260	MCK	12	PASI-C
35808009	MW13	EPA 8011	CAH	2	PASI-C
		EPA 8260	MCK	12	PASI-C
35808010	MW14	EPA 8011	CAH	2	PASI-C
		EPA 8260	MCK	12	PASI-C
35808011	MW15	EPA 8011	CAH	2	PASI-C
		EPA 8260	MCK	12	PASI-C
35808012	MW16	EPA 8011	CAH	2	PASI-C
		EPA 8260	MCK	12	PASI-C
35808013	MW18	EPA 8011	CAH	2	PASI-C
		EPA 8260	MCK	12	PASI-C
35808014	MW22	EPA 8011	CAH	2	PASI-C
		EPA 8260	MCK	12	PASI-C
35808015	MW23	EPA 8011	CAH	2	PASI-C
		EPA 8260	MCK	12	PASI-C
5808016	MW24	EPA 8011	CAH	2	PASI-C
		EPA 8260	MCK	12	PASI-C
35808017	MW25	EPA 8011	CAH	2	PASI-C
		EPA 8260	MCK	12	PASI-C
35808018	MW26	EPA 8011	CAH	2	PASI-C
		EPA 8260	MCK	12	PASI-C
5808019	MW27	EPA 8011	CAH	2	PASI-C

# REPORT OF LABORATORY ANALYSIS

Page 3 of 26

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# **SAMPLE ANALYTE COUNT**

Project:

TISDALE'S QUICK STOP

Pace Project No.:

9235808

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8260	MCK	12	PASI-C
9235808020	MW29	EPA 8011	CAH	2	PASI-C
		EPA 8260	MCK	12	PASI-C
235808021	MW30	EPA 8011	CAH	2	PASI-C
		EPA 8260	MCK	12	PASI-C
235808022	MW31	EPA 8011	CAH	2	PASI-C
		EPA 8260	MCK	12	PASI-C
235808023	MW1A	EPA 8011	CAH	2	PASI-C
		EPA 8260	DLK, MCK	12	PASI-C
235808024	TW2	EPA 8011	CAH	2	PASI-C
		EPA 8260	DLK	12	PASI-C
235808025	WSW1	EPA 8011	CAH	2	PASI-C
		EPA 8260	DLK	12	PASI-C
235808026	TW-1	EPA 8011	CAH	2	PASI-C
		EPA 8260	DLK	12	PASI-C





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# ANALYTICAL RESULTS

Project:

TISDALE'S QUICK STOP

Pace Project No.: 9235808	Lab ID: 92358	08001	Collected:	01/07/09	15:44	Received: 01/	09/09 14:16 N	Matrix: Water	
ample: MW1		Units	Report	Limit	DF	Prepared	Analyzed	CAS No.	Qual
Parameters	Results								
011 GCS EDB and DBCP	Analytical Metho	d: EPA 80	11 Preparat	ion Metho	od: EPA	8011		400.02.4	
	0.092 ug/L			0.019	1	01/14/09 16:05	01/18/09 18:10	100-93-4	
,2-Dibromoethane (EDB)	85 %		(	60-140	1	01/14/09 16:05	01/18/09 18:10	301-79-50	
-Chloro-2-bromopropane (S)									
260 MSV	Analytical Metho	d: EPA 82	60				01/15/09 07:0	71_43-2	
	15700 ug/L	•		500	100		01/15/09 07:09	5 107-06-2	•
Benzene	ND ug/L	_		500	100		01/15/09 07:0	5 100-41-4	
1,2-Dichloroethane	1600 ug/l	_		500	100		01/15/09 07:0	5 1634-04-4	
Ethylbenzene	1120 ug/l			500	100		01/15/09 07:0	5 01-20-3	
Methyl-tert-butyl ether	878 ug/l			500	100		01/15/09 07:0	5 108-88-3	
Naphthalene	15100 ug/l			1000	200		01/15/09 09:0	5 1330-20-7	
Toluene	7920 ug/			1000	100		01/15/09 07:0	5 1550-20-7 E 05_47_6	
m&p-Xylene	4390 ug/			500	100		01/15/09 07:0	5 95-47-0	
o-Xylene	97 %	_		87-109	100		01/15/09 07:0	5 400-00-7	
4-Bromofluorobenzene (S)	98 %			85-115	100		01/15/09 07:0	5 1000-33-7	
Dibromofluoromethane (S)	99 %			79-120	100		01/15/09 07:0	5 17060-07-0	
1,2-Dichloroethane-d4 (S)	98 %			70-120	100		01/15/09 07:0	5 2037-26-5	
Toluene-d8 (S)	30 70								
		_						Matrix: Water	
				04/07/	AA 46.0	no Received (	)1/09/09 14:16	Matrix: Water	
Sample: MW4	Lab ID: 923	5808002	Collected	i: 01/07/			01/09/09 14:16		Qua
Sample: MW4 Parameters	Lab ID: 923	5808002 Units		i: 01/07/ ort Limit	09 16:0 	Prepared	01/09/09 14:16 Analyzed	CAS No.	Qu
Parameters	Results	Units	Repo	ort Limit	DF	Prepared			Qu
		Units	Repo	ort Limit ation Me	DF thod: E	Prepared PA 8011	Analyzed	CAS No.	Qu_
Parameters 8011 GCS EDB and DBCP	Results	Units nod: EPA 8	Repo	ation Me	DF thod: E	Prepared PA 8011	Analyzed	CAS No.	Qu
Parameters  8011 GCS EDB and DBCP  1.2-Dibromoethane (EDB)	Results Analytical Meth	Units nod: EPA 8	Repo	ort Limit ation Me	DF thod: E	Prepared PA 8011	Analyzed	CAS No.	Qu_
Parameters 8011 GCS EDB and DBCP	Results  Analytical Method  ND ug  78 %	Units nod: EPA 8	Repo 3011 Prepar	ation Me	DF thod: E	Prepared PA 8011	Analyzed	CAS No.	Qu
Parameters  8011 GCS EDB and DBCP  1.2-Dibromoethane (EDB)	Results  Analytical Methods  ND ug	Units nod: EPA 8	Repo 3011 Prepar	ation Me 0.020 60-140	DF thod: E	Prepared PA 8011	Analyzed 5 01/18/09 18: 5 01/18/09 18:	CAS No. 22 106-93-4 22 301-79-56	Qu
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV	Results  Analytical Method  ND ug  78 %	Units nod: EPA 8 //L hod: EPA 8	Repo 3011 Prepar	ort Limit ation Me 0.020 60-140	DF thod: E	Prepared PA 8011	Analyzed 5 01/18/09 18: 5 01/18/09 18: 01/13/09 09	CAS No. 22 106-93-4 22 301-79-56	Qu
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene	Analytical Methodology ND ug 78 % Analytical Methodology	Units nod: EPA 8 //L hod: EPA 8	Repo 3011 Prepar	ation Me 0.020 60-140	DF thod: E	Prepared PA 8011	Analyzed  5 01/18/09 18: 5 01/18/09 18: 01/13/09 09 01/13/09 09	CAS No.  22 106-93-4 22 301-79-56  209 71-43-2 209 107-06-2	Qu
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane	Analytical Methodology Analytical Methodology Analytical Methodology 5.9 ug ND ug	Units nod: EPA 8 I/L hod: EPA 8 I/L I/L	Repo 3011 Prepar	ort Limit ation Me 0.020 60-140	DF thod: E	Prepared PA 8011	Analyzed  5 01/18/09 18: 5 01/18/09 18: 01/13/09 09 01/13/09 09 01/13/09 09	CAS No.  22 106-93-4 22 301-79-56  209 71-43-2 209 107-06-2 209 100-41-4	Qu
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene	Analytical Method ND ug 78 % Analytical Method ND ug 78 ND ug ND ug ND ug ND ug ND ug	Units nod: EPA 8 hod: EPA 8 g/L g/L g/L	Repo 3011 Prepar	ort Limit ation Me 0.020 60-140 5.0 5.0	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared PA 8011	Analyzed  5 01/18/09 18: 5 01/18/09 18: 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09	CAS No.  22 106-93-4 22 301-79-56  209 71-43-2 209 107-06-2 209 100-41-4 209 1634-04-4	Qu
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether	Results  Analytical Method ND ug 78 %  Analytical Method ND ug ND	Units nod: EPA 8 hod: EPA 8 g/L g/L g/L	Repo 3011 Prepar	0.020 60-140 5.0 5.0	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared PA 8011	Analyzed  5 01/18/09 18: 5 01/18/09 18: 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09	CAS No.  22 106-93-4 22 301-79-56  209 71-43-2 209 107-06-2 209 100-41-4 209 1634-04-4 209 91-20-3	Qu
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene	Analytical Method ND ug 78 % Analytical Method ND ug 78 % Analytical Method ND ug ND ug ND ug 8.0 ug 8.0 ug	Units nod: EPA 8 p/L g/L g/L g/L g/L	Repo 3011 Prepar	ation Me 0.020 60-140 5.0 5.0 5.0	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared PA 8011	Analyzed  5 01/18/09 18: 5 01/18/09 18: 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09	CAS No.  22 106-93-4 22 301-79-56  209 71-43-2 209 107-06-2 209 100-41-4 209 1634-04-4 209 91-20-3 209 108-88-3	Qu
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene	Analytical Meti ND ug 78 % Analytical Meti 5.9 ug ND ug ND ug ND ug ND ug ND ug ND ug ND ug	Units nod: EPA 8 g/L g/L g/L g/L g/L g/L g/L	Repo 3011 Prepar	ation Me 0.020 60-140 5.0 5.0 5.0	DF thod: E  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared PA 8011	Analyzed  5 01/18/09 18: 5 01/18/09 18: 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09	CAS No.  22 106-93-4 22 301-79-56  209 71-43-2 209 107-06-2 209 100-41-4 209 1634-04-4 209 91-20-3 209 108-88-3 209 1330-20-7	Qu
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene	Analytical Meti ND ug 78 % Analytical Meti 5.9 ug ND ug	Units nod: EPA 8 g/L g/L g/L g/L g/L g/L g/L g/L g/L	Repo 3011 Prepar	5.0 5.0 5.0 5.0 5.0 5.0	DF thod: E  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared PA 8011	Analyzed  5 01/18/09 18: 5 01/18/09 18: 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09	CAS No.  22 106-93-4 22 301-79-56  29 71-43-2 209 107-06-2 209 100-41-4 209 1634-04-4 209 91-20-3 209 108-88-3 209 1330-20-7 209 95-47-6	Qu
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene o-Xylene	Results  Analytical Method ND ug 78 %  Analytical Method ND ug 6.0 ug ND ug 6.0 ug	Units nod: EPA 8 g/L	Repo 3011 Prepar	5.0 5.0 5.0 5.0 5.0 5.0 5.0	DF thod: E  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared PA 8011	Analyzed  5 01/18/09 18: 5 01/18/09 18: 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09	CAS No.  22 106-93-4 22 301-79-56  29 71-43-2 209 107-06-2 209 100-41-4 209 1634-04-4 209 91-20-3 209 108-88-3 209 1330-20-7 209 95-47-6 209 460-00-4	Qu
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene o-Xylene 4-Bromofluorobenzene (S)	Results  Analytical Method ND ug 78 %  Analytical Method ND ug 97 %	Units nod: EPA 8 g/L	Repo 3011 Prepar	5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	DF thod: E  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared PA 8011 01/14/09 16:0 01/14/09 16:0	Analyzed  5 01/18/09 18: 5 01/18/09 18: 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09	CAS No.  22 106-93-4 22 301-79-56  29 71-43-2 20 107-06-2 20 100-41-4 20 91-20-3 20 91-20-3 20 108-88-3 20 1330-20-7 20 95-47-6 20 460-00-4 20 91868-53-7	
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene o-Xylene 4-Bromofluorobenzene (S) Dibromofluoromethane (S)	Results  Analytical Method ND ug 78 %  Analytical Method ND ug 97 % 97 %	Units nod: EPA 8 g/L	Repo 3011 Prepar	5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	DF thod: E  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared PA 8011 01/14/09 16:0 01/14/09 16:0	Analyzed  5 01/18/09 18: 5 01/18/09 18: 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09	CAS No.  22 106-93-4 22 301-79-56  29 71-43-2 20 107-06-2 20 100-41-4 20 91-20-3 20 108-88-3 20 1330-20-7 20 95-47-6 20 460-00-4 20 1868-53-7 20 17060-07-6	
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene o-Xylene 4-Bromofluorobenzene (S)	Results  Analytical Method ND ug 78 %  Analytical Method ND ug 97 %	Units nod: EPA 8 g/L	Repo 3011 Prepar	5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	DF thod: E  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared PA 8011 01/14/09 16:0 01/14/09 16:0	Analyzed  5 01/18/09 18: 5 01/18/09 18: 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09 01/13/09 09	CAS No.  22 106-93-4 22 301-79-56  29 71-43-2 20 107-06-2 20 100-41-4 20 91-20-3 20 91-20-3 20 108-88-3 20 1330-20-7 20 95-47-6 20 460-00-4 20 91868-53-7	

Date: 01/20/2009 11:48 AM

REPORT OF LABORATORY ANALYSIS

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# **ANALYTICAL RESULTS**

Project:

**TISDALE'S QUICK STOP** 

Pace Project No.:

9235808

Sample: MW5	Lab ID: 92358	08003	Collected: 01/07/	09 16:11	Received: 0	1/09/09 14:16	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
8011 GCS EDB and DBCP	Analytical Metho	d: EPA 8(	011 Preparation Met	hod: EP	A 8011			·
1,2-Dibromoethane (EDB)	ND ug/L		0.020	1	01/14/09 16:05	01/18/09 18:34	1 106-03-4	
1-Chloro-2-bromopropane (S)	65 %		60-140	1		01/18/09 18:34		
8260 MSV	Analytical Method	d: EPA 82	260					
Benzene	ND ug/L	,	5.0	1		01/13/09 09:28	R 71_//3_2	
1,2-Dichloroethane	ND ug/L		5.0	1		01/13/09 09:28		
Ethylbenzene	ND ug/L		5.0	1		01/13/09 09:28		
Methyl-tert-butyl ether	ND ug/L		5.0	1				
Naphthalene	ND ug/L		5.0	1		01/13/09 09:28		
Toluene	ND ug/L		5.0	1		01/13/09 09:28		
m&p-Xylene	ND ug/L		10.0	1		01/13/09 09:28		
o-Xylene	ND ug/L		5.0			01/13/09 09:28		
4-Bromofluorobenzene (S)	92 %		<del>-</del>	1		01/13/09 09:28		
Dibromofluoromethane (S)	99 %		87-109	1		01/13/09 09:28		
I,2-Dichloroethane-d4 (S)	99 %		85-115	1		01/13/09 09:28		
Foluene-d8 (S)	98 %		79-120 70-120	1		01/13/09 09:28	_	
			70-120	1		01/13/09 09:28	2037-26-3	
Sample: MW6	Lab ID: 923580	08004	Collected: 01/07/0	9 16:20	Received: 01	/09/09 14:16 M	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method	: EPA 80	11 Preparation Meth	od: EPA	8011			
I,2-Dibromoethane (EDB)	ND ug/L		0.020	1	01/14/09 16:05	01/18/09 18:46	106 02 4	
-Chloro-2-bromopropane (S)	87 %		60-140	1		01/18/09 18:46		
260 MSV				•	01/14/09 16:05	01/10/09 10:46	301-79-56	
200 M34	Analytical Method	: EPA 820	60					
Вепzепе	ND ug/L		5.0	1		01/14/09 23:44	71-43-2	
,2-Dichloroethane	ND ug/L		5.0	1		01/14/09 23:44		
thylbenzene	ND ug/L		5.0	1		01/14/09 23:44		
fethyl-tert-butyl ether	ND ug/L		5.0	1		01/14/09 23:44		
laphthalene	ND ug/L		5.0	1		01/14/09 23:44		
oluene	ND ug/L		5.0	1				
n&p-Xylene	ND ug/L		10.0	1		01/14/09 23:44		
-Xylene	ND ug/L		5.0			01/14/09 23:44		
-Bromofluorobenzene (S)	101 %			1		01/14/09 23:44		
Pibromofluoromethane (S)	107 %		87-109	1		01/14/09 23:44		
,2-Dichloroethane-d4 (S)	107 %		85-115	1		01/14/09 23:44		
oluene-d8 (S)			79-120	1		01/14/09 23:44		
0100110-00 (0)	100 %		70-120	1		01/14/09 23:44	2037-26-5	

Date: 01/20/2009 11:48 AM

**REPORT OF LABORATORY ANALYSIS** 

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### **ANALYTICAL RESULTS**

Project:

**TISDALE'S QUICK STOP** 

Pace Project No.: 9235808

Sample: MW7	Lab ID: 9235	B08005	Collected: 01/07/	09 16:29	Received: 0	1/09/09 14:16	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
8011 GCS EDB and DBCP	Analytical Metho	od: EPA 80	011 Preparation Met	hod: EP/	A 8011			
1,2-Dibromoethane (EDB)	ND ug/i	-	0.019	1	01/14/09 16:05	01/18/09 18:58	3 106-93-4	
1-Chloro-2-bromopropane (S)	74 %		60-140	1	01/14/09 16:05	01/18/09 18:58	301-79-56	
8260 MSV	Analytical Metho	d: EPA 82	260					
Benzene	ND ug/L	_	5.0	1		01/15/09 00:01	71-43-2	
1,2-Dichloroethane	ND ug/L	_	5.0	1		01/15/09 00:01	107-06-2	
Ethylbenzen <del>e</del>	ND ug/L	_	5.0	1		01/15/09 00:01	100-41-4	
Methyl-tert-butyl ether	ND ug/L		5.0	1		01/15/09 00:01	1634-04-4	
Naphthalene	ND ug/L	_	5.0	1		01/15/09 00:01	91-20-3	
Toluene	ND ug/L	_	5.0	-1		01/15/09 00:01		
m&p-Xylene	ND ug/L		10.0	1		01/15/09 00:01	1330-20-7	
o-Xylene	ND ug/L		5.0	1		01/15/09 00:01		
4-Bromofluorobenzene (S)	103 %		87-109	1		01/15/09 00:01		
Dibromofluoromethane (S)	111 %		85-115	1		01/15/09 00:01		
1,2-Dichloroethane-d4 (S)	107 %		79-120	1		01/15/09 00:01		
Toluene-d8 (S)	99 %		70-120	1		01/15/09 00:01		
Sample: MW8 Parameters	Lab ID: 92350	Units	Collected: 01/08/				Matrix: Water	0
1 diameters	results	Offics	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
			Report Limit  O11 Preparation Met		•	Analyzed	CAS No.	Qua
8011 GCS EDB and DBCP	Analytical Metho	d: EPA 80	11 Preparation Met	hod: EPA	8011			Qua
8011 GCS EDB and DBCP		d: EPA 80	11 Preparation Met 0.019	hod: EPA	\ 8011 01/14/09 16:05	01/18/09 19:10	106-93-4	Qua
8011 GCS EDB and DBCP 1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)	Analytical Metho	d: EPA 80	0.019 60-140	hod: EPA	\ 8011 01/14/09 16:05		106-93-4	Qual
3011 GCS EDB and DBCP 1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 3260 MSV	Analytical Metho ND ug/L 82 % Analytical Metho	d: EPA 80 d: EPA 82	0.019 60-140	hod: EPA 1 1	\ 8011 01/14/09 16:05	01/18/09 19:10 01/18/09 19:10	106-93-4 301-79-56	- Qual
3011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)  3260 MSV  Benzene	Analytical Metho ND ug/L 82 % Analytical Metho 16.8 ug/L	d: EPA 80	0.019 60-140 5.0	1 1 1	\ 8011 01/14/09 16:05	01/18/09 19:10 01/18/09 19:10 01/15/09 00:18	106-93-4 301-79-56 71-43-2	Qua
3011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)  3260 MSV  Benzene  1,2-Dichloroethane	Analytical Metho ND ug/L 82 % Analytical Metho 16.8 ug/L ND ug/L	d: EPA 80	0.019 60-140 5.0 5.0	1 1 1	\ 8011 01/14/09 16:05	01/18/09 19:10 01/18/09 19:10 01/15/09 00:18 01/15/09 00:18	71-43-2 107-06-2	Qua
3011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 3260 MSV 3enzene 1,2-Dichloroethane Ethylbenzene	Analytical Metho ND ug/L 82 % Analytical Metho 16.8 ug/L ND ug/L	d: EPA 80 d: EPA 82	0.019 60-140 5.0 5.0 5.0	1 1 1 1	\ 8011 01/14/09 16:05	01/18/09 19:10 01/18/09 19:10 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18	71-43-2 100-41-4	Qua
3011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)  3260 MSV  3enzene  1,2-Dichloroethane  Ethylbenzene  Methyl-tert-butyl ether	Analytical Metho ND ug/L 82 % Analytical Metho 16.8 ug/L ND ug/L ND ug/L ND ug/L	d: EPA 80	0.019 60-140 5.0 5.0 5.0 5.0	1 1 1 1 1 1 1	\ 8011 01/14/09 16:05	01/18/09 19:10 01/18/09 19:10 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18	71-43-2 100-41-4 1634-04-4	Qua
3011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene	Analytical Metho ND ug/L 82 % Analytical Metho 16.8 ug/L ND ug/L ND ug/L ND ug/L ND ug/L	d: EPA 80	0.019 60-140 5.0 5.0 5.0 5.0 5.0	hod: EPA  1  1  1  1  1  1  1  1  1  1  1  1  1	\ 8011 01/14/09 16:05	01/18/09 19:10 01/18/09 19:10 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18	71-43-2 100-41-4 1634-04-4 101-06-2	Qua
3011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 3260 MSV 3enzene 1,2-Dichloroethane 5thylbenzene Wethyl-tert-butyl ether Naphthalene Toluene	Analytical Metho ND ug/L 82 % Analytical Metho 16.8 ug/L ND ug/L	d: EPA 80	0.019 60-140 5.0 5.0 5.0 5.0 5.0 5.0	1 1 1 1 1 1 1 1	\ 8011 01/14/09 16:05	01/18/09 19:10 01/18/09 19:10 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18	71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3	Qua
B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) B260 MSV Benzene 1,2-Dichloroethane Ethylbenzene Wethyl-tert-butyl ether Naphthalene Foluene m&p-Xylene	Analytical Metho ND ug/L 82 % Analytical Metho 16.8 ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L 18.5 ug/L ND ug/L	d: EPA 80	0.019 60-140 600 5.0 5.0 5.0 5.0 5.0 5.0	hod: EPA  1  1  1  1  1  1  1  1  1  1  1  1  1	\ 8011 01/14/09 16:05	01/18/09 19:10 01/18/09 19:10 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18	71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7	Qua
B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) B260 MSV Benzene 1,2-Dichloroethane Ethylbenzene Wethyl-tert-butyl ether Naphthalene Foluene m&p-Xylene D-Xylene	Analytical Metho ND ug/L 82 % Analytical Metho 16.8 ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L 18.5 ug/L ND ug/L 149 ug/L	d: EPA 80	0.019 60-140 600 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	hod: EPA  1  1  1  1  1  1  1  1  1  1  1  1  1	\ 8011 01/14/09 16:05	01/18/09 19:10 01/18/09 19:10 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18	71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7 95-47-6	Qua
B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) B260 MSV Benzene 1,2-Dichloroethane Ethylbenzene Wethyl-tert-butyl ether Naphthalene Foluene m&p-Xylene >-Xylene 1-Bromofluorobenzene (S)	Analytical Metho ND ug/L 82 % Analytical Metho 16.8 ug/L ND ug/L ND ug/L ND ug/L ND ug/L 18.5 ug/L ND ug/L 149 ug/L 51.6 ug/L	d: EPA 80	0.019 60-140 600 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	hod: EPA  1  1  1  1  1  1  1  1  1  1  1  1  1	\ 8011 01/14/09 16:05	01/18/09 19:10 01/18/09 19:10 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18	71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7 95-47-6 460-00-4	Qua
B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) B260 MSV Benzene 1,2-Dichloroethane Ethylbenzene Wethyl-tert-butyl ether Naphthalene Foluene m&p-Xylene D-Xylene	Analytical Metho ND ug/L 82 % Analytical Metho 16.8 ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L 18.5 ug/L ND ug/L 149 ug/L	d: EPA 80	0.019 60-140 600 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	hod: EPA  1  1  1  1  1  1  1  1  1  1  1  1  1	\ 8011 01/14/09 16:05	01/18/09 19:10 01/18/09 19:10 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18 01/15/09 00:18	71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7 95-47-6 460-00-4 1868-53-7	Qua

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**REPORT OF LABORATORY ANALYSIS** 

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### **ANALYTICAL RESULTS**

Project:

TISDALE'S QUICK STOP

Pace Project No.: 9235808

Sample: MW9	Lab ID:	9235808007	Collected: 0	01/08/0	9 10:15	Received: 0	1/09/09 14:16	Matrix: Water	
Parameters	Results	Units	Report L	_imit	DF	Prepared	Analyzed	CAS No.	Qua
8011 GCS EDB and DBCP	Analytical	Method: EPA 80	011 Preparatio	n Meth	od: EPA	8011			
1,2-Dibromoethane (EDB)	NE	ug/L	0	0.019	1	01/14/09 16:05	01/18/09 19:22	106-93-4	
1-Chloro-2-bromopropane (S)	93	3 %	60	-140	1		01/18/09 19:22		
8260 MSV	Analytical	Method: EPA 82	260						
Benzene	NE	ug/L		5.0	1		01/15/09 00:36	71-43-2	
1,2-Dichloroethane	ND	ug/L		5.0	1		01/15/09 00:36		
Ethylbenzene		ug/L		5.0	1		01/15/09 00:36		
Methyl-tert-butyl ether		ug/L		5.0	1		01/15/09 00:36		
Naphthalene		ug/L		5.0	1		01/15/09 00:36		
Toluene		ug/L		5.0	1		01/15/09 00:36		
m&p-Xylene		ug/L		10.0	1		01/15/09 00:36	· · · · · · ·	
o-Xylene		ug/L		5.0	1		01/15/09 00:36		
4-Bromofluorobenzene (S)	101	•	07	-109	1				
Dibromofluoromethane (S)	106			-109 -115	1		01/15/09 00:36		
1,2-Dichloroethane-d4 (S)	103			-120			01/15/09 00:36		
Toluene-d8 (S)		· %		-120 -120	1 1		01/15/09 00:36 01/15/09 00:36		
Sample: MW10	Lab ID:	235808008	Collected: 0	1/08/09	10:26	Received: 0°	1/09/09 14:16	Matrix: Water	
Sample: MW10 Parameters	Lab ID:	9235808008 Units	Collected: 0 Report L		0 10:26 DF	Received: 0°	1/09/09 14:16 I	Matrix: Water CAS No.	Qual
Parameters	Results		Report L	imit	DF	Prepared			Qual
Parameters 8011 GCS EDB and DBCP	Results Analytical M	Units	Report L	imit	DF od: EPA	Prepared 8011	Analyzed	CAS No.	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)	Results Analytical M	Units  Method: EPA 80  ug/L	Report L	imit n Metho	DF od: EPA	Prepared 8011 01/14/09 16:05	Analyzed 01/18/09 19:34	CAS No.	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)	Analytical ND	Units  Method: EPA 80  ug/L	Report L 11 Preparation 0.	imit ————— n Metho	DF od: EPA	Prepared 8011 01/14/09 16:05	Analyzed	CAS No.	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)  8260 MSV	Analytical M ND 111 Analytical M	Units  Method: EPA 80 ug/L %  Method: EPA 82	Report L 11 Preparation 0.	imit 	DF od: EPA 1 1	Prepared 8011 01/14/09 16:05	Analyzed 01/18/09 19:34 01/18/09 19:34	CAS No. 106-93-4 301-79-56	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene	Analytical M ND 111 Analytical M	Units  Method: EPA 80 ug/L %  Method: EPA 82 ug/L	Report L 11 Preparation 0.	imit	DF od: EPA 1 1	Prepared 8011 01/14/09 16:05	Analyzed 01/18/09 19:34 01/18/09 19:34 01/15/09 00:53	CAS No.  106-93-4 301-79-56  71-43-2	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV  Benzene 1,2-Dichloroethane	Analytical M ND 111 Analytical M ND	Units  Method: EPA 80 ug/L %  Method: EPA 82 ug/L ug/L	Report L 11 Preparation 0.	imit	DF od: EPA	Prepared 8011 01/14/09 16:05	Analyzed  01/18/09 19:34  01/18/09 19:34  01/15/09 00:53  01/15/09 00:53	CAS No.  106-93-4 301-79-56  71-43-2 107-06-2	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene	Analytical M ND 111 Analytical M ND ND	Units  Method: EPA 80 ug/L %  Method: EPA 82 ug/L ug/L ug/L	Report L 11 Preparation 0.	.019 -140 5.0 5.0 5.0	DF od: EPA 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:05	Analyzed  01/18/09 19:34  01/18/09 19:34  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53	CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether	Analytical M ND 111 Analytical M ND ND ND	Units  Method: EPA 80 ug/L % Method: EPA 82 ug/L ug/L ug/L ug/L ug/L	Report L 11 Preparation 0.	5.0 5.0 5.0 5.0	DF od: EPA 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:05	Analyzed  01/18/09 19:34  01/18/09 19:34  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53	CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4 1634-04-4	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Wethyl-tert-butyl ether Naphthalene	Analytical M ND 111 Analytical M ND ND ND	Units  Method: EPA 80 ug/L % Method: EPA 82 ug/L ug/L ug/L ug/L ug/L ug/L	Report L 11 Preparation 0.	5.0 5.0 5.0 5.0 5.0 5.0	DF od: EPA 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:05	Analyzed  01/18/09 19:34  01/18/09 19:34  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53	CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Wethyl-tert-butyl ether Naphthalene Toluene	Analytical M ND 111 Analytical M ND ND ND ND	Units  Method: EPA 80  ug/L  wg/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	Report L 111 Preparation 0, 60-	5.0 5.0 5.0 5.0 5.0 5.0	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:05	Analyzed  01/18/09 19:34  01/18/09 19:34  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53	CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Wethyl-tert-butyl ether Naphthalene Toluene m&p-Xylene	Analytical M ND 111 Analytical M ND ND ND ND ND	Units  Method: EPA 80  ug/L  wg/L  ug/L	Report L 111 Preparation 0, 60-	5.0 5.0 5.0 5.0 5.0 5.0	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:05	Analyzed  01/18/09 19:34  01/18/09 19:34  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53	CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7	Qua
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene n&p-XyleneXylene	Results  Analytical M  ND  111  Analytical M  ND  ND  ND  ND  ND  ND  ND  ND  ND  N	Units  Method: EPA 80  ug/L  wg/L  ug/L	Report Line 111 Preparation 0, 60-	5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:05	Analyzed  01/18/09 19:34  01/18/09 19:34  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53	CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7 95-47-6	Qua
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Wethyl-tert-butyl ether Naphthalene Toluene m&p-Xylene D-Xylene I-Bromofluorobenzene (S)	Analytical M ND 111 Analytical M ND ND ND ND ND ND ND ND	Units  Method: EPA 80  ug/L  wg/L  ug/L  wg/L	Report Li 11 Preparation 0. 60-	5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:05	Analyzed  01/18/09 19:34  01/18/09 19:34  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53	CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7 95-47-6 460-00-4	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Wethyl-tert-butyl ether Naphthalene Foluene m&p-Xylene 0-Xylene 1-Bromofluorobenzene (S) Dibromofluoromethane (S)	Analytical M ND 111 Analytical M ND ND ND ND ND ND ND ND ND	Units  Vethod: EPA 80  ug/L  wg/L  ug/L  wg/L   Report Li 11 Preparation 0, 60- 60 87- 85-	5.0 5.0 5.0 5.0 5.0 5.0 5.0 10.0 5.0	DF  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:05	Analyzed  01/18/09 19:34  01/18/09 19:34  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53	CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7 95-47-6 460-00-4 1868-53-7	Qual	
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  B260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene 0-Xylene 4-Bromofluorobenzene (S) Dibromofluoromethane (S) 1,2-Dichloroethane-d4 (S) Toluene-d8 (S)	Analytical M ND 111 Analytical M ND ND ND ND ND ND ND ND	Units  Nethod: EPA 80 ug/L % Nethod: EPA 82 ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	Report Li 11 Preparation 0, 60- 60 87- 85- 79-	5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:05	Analyzed  01/18/09 19:34  01/18/09 19:34  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53  01/15/09 00:53	CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7 95-47-6 460-00-4 1868-53-7	Qual

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**REPORT OF LABORATORY ANALYSIS** 

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# **ANALYTICAL RESULTS**

Project:

**TISDALE'S QUICK STOP** 

Pace Project No.: 9235808

Sample: MW13	Lab ID: 923580	08009	Collected: 01/08/0	)9 10:40	Received: 0	1/09/09 14:16	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
8011 GCS EDB and DBCP	Analytical Method	: EPA 80	011 Preparation Met	hod: EPA	\ 8011			
1,2-Dibromoethane (EDB)	ND ug/L		0.019	1	01/14/09 16:05	5 01/18/09 19:46	6 106-93-4	
1-Chloro-2-bromopropane (S)	101 %		60-140	1	01/14/09 16:05	5 01/18/09 19:46	301-79-56	
8260 MSV	Analytical Method	: EPA 82	260					
Benzene	ND ug/L		5.0	1		01/15/09 01:10	71-43-2	
1,2-Dichloroethane	ND ug/L		5.0	1		01/15/09 01:10	107-06-2	
Ethylbenzene	ND ug/L		5.0	1		01/15/09 01:10	100-41-4	
Methyl-tert-butyl ether	ND ug/L		5.0	1		01/15/09 01:10		
Naphthalene	ND ug/L		5.0	1		01/15/09 01:10		
Toluene	ND ug/L		5.0	1		01/15/09 01:10		
m&p-Xylene	ND ug/L		10.0	1		01/15/09 01:10		
o-Xylene	ND ug/L		5.0	1		01/15/09 01:10		
4-Bromofluorobenzene (S)	102 %		87-109	1		01/15/09 01:10		
Dibromofluoromethane (S)	108 %		85-115	i		01/15/09 01:10		
1,2-Dichloroethane-d4 (S)	106 %		79-120	1		01/15/09 01:10		
Toluene-d8 (S)	100 %		79-120 70-120	1		01/15/09 01:10		
Sample: MW14 Parameters	Lab ID: 923580	8010 Units	Collected: 01/08/0	9 10:57 DF	Received: 0 Prepared	1/09/09 14:16   Analyzed	Matrix: Water CAS No.	Our
					•	Analyzeo		Qua
8011 GCS EDB and DBCP	Analytical Method	: EPA 80	11 Preparation Meth	юd: EPA	8011			
1,2-Dibromoethane (EDB)			•					
· / · · · · · · · · · · · · · · · · ·	ND ug/L		0.019	1	01/14/09 16:05	01/18/09 19:57	106-93-4	
1-Chloro-2-bromopropane (S)	ND ug/L 105 %		•	1		01/18/09 19:57 01/18/09 19:57		
1-Chloro-2-bromopropane (S)		: EPA 82	0.019 60-140					
· · · · · · · · · · · · · · · · · · ·	105 %	: EPA 82	0.019 60-140				301-79-56	
1-Chloro-2-bromopropane (S) 8260 MSV Benzene	105 % Analytical Method:	: EPA 82	0.019 60-140	1		01/18/09 19:57	7 301-79-56	
1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane	105 % Analytical Method ND ug/L	: EPA 82	0.019 60-140 60	1		01/18/09 19:57 01/15/09 01:27	7 301-79-56 7 71-43-2 7 107-06-2	
1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane  Ethylbenzene	105 % Analytical Method ND ug/L ND ug/L	: EPA 82	0.019 60-140 60 5.0 5.0	1 1 1		01/18/09 19:57 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27	7 301-79-56 7 71-43-2 7 107-06-2 7 100-41-4	
1-Chloro-2-bromopropane (S) 8260 MSV Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether	105 % Analytical Method ND ug/L ND ug/L ND ug/L	: EPA 82	0.019 60-140 60 5.0 5.0 5.0	1 1 1 1		01/18/09 19:57 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27	71-43-2 107-06-2 100-41-4 1634-04-4	
1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane  Ethylbenzene  Methyl-tert-butyl ether  Naphthalene	105 % Analytical Method ND ug/L ND ug/L ND ug/L ND ug/L	: EPA 82	0.019 60-140 60 5.0 5.0 5.0 5.0	1 1 1 1		01/18/09 19:57 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27	71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3	
1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane  Ethylbenzene  Methyl-tert-butyl ether  Naphthalene  Toluene	105 % Analytical Method: ND ug/L	: EPA 82	0.019 60-140 60 5.0 5.0 5.0 5.0 5.0	1 1 1 1 1		01/18/09 19:57 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27	71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3	
1-Chloro-2-bromopropane (S) 8260 MSV Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene	105 %  Analytical Method:  ND ug/L	: EPA 82	0.019 60-140 60 5.0 5.0 5.0 5.0 5.0 5.0	1 1 1 1 1 1		01/18/09 19:57 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27	71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7	
1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene p-Xylene	105 % Analytical Method: ND ug/L	: EPA 82	0.019 60-140 60 5.0 5.0 5.0 5.0 5.0 10.0 5.0	1 1 1 1 1 1 1 1 1 1		01/18/09 19:57 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27	71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7 95-47-6	
1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene 0-Xylene 4-Bromofluorobenzene (S)	Analytical Method:  ND ug/L   : EPA 82	0.019 60-140 60 5.0 5.0 5.0 5.0 5.0 10.0 5.0 87-109	1 1 1 1 1 1 1 1 1 1 1 1		01/18/09 19:57 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27	7 71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7 95-47-6 460-00-4		
1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene	105 % Analytical Method: ND ug/L	: EPA 82	0.019 60-140 60 5.0 5.0 5.0 5.0 5.0 10.0 5.0	1 1 1 1 1 1 1 1 1 1		01/18/09 19:57 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27 01/15/09 01:27	71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7 95-47-6 460-00-4 1868-53-7	

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**REPORT OF LABORATORY ANALYSIS** 

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Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

# **ANALYTICAL RESULTS**

Project:

**TISDALE'S QUICK STOP** 

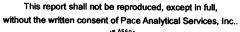
Pace Project No.: 9235808

Sample: MW15	Lab ID: 9	235808011	Collected: 01/08/	09 11:08	Received: 0	1/09/09 14:16	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
8011 GCS EDB and DBCP	Analytical M	ethod: EPA 8	011 Preparation Met	hod: EPA	A 8011			
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	1	01/14/09 16:06	01/18/09 20:0	9 106-93-4	
1-Chloro-2-bromopropane (S)	96	%	60-140	1	01/14/09 16:06	01/18/09 20:0	9 301-79-56	
8260 MSV	Analytical M	ethod: EPA 8	260					
Benzene	ND	ug/L	5.0	1		01/15/09 01:4	5 71-43-2	
1,2-Dichloroethane	ND	ug/L	5.0	1		01/15/09 01:4	5 107-06-2	
Ethylbenzene	ND	ug/L	5.0	1		01/15/09 01:4		
Methyl-tert-butyl ether	ND		5.0	1		01/15/09 01:4	- · <del>-</del> - ·	
Naphthalene	ND	•	5.0	1		01/15/09 01:4		
Toluene	ND	•	5.0	1		01/15/09 01:4		
m&p-Xylene	ND	•	10.0	1		01/15/09 01:4		
o-Xylene	ND I	•	5.0	1		01/15/09 01:4		
4-Bromofluorobenzene (S)	104	•	87-109	1		01/15/09 01:4:		
Dibromofluoromethane (S)	107		85-115	1		01/15/09 01:4:		
1,2-Dichloroethane-d4 (S)	107		79-120	1				
Toluene-d8 (S)	100		79-120 70-120	1		01/15/09 01:4: 01/15/09 01:4:		
Sample: MW16	Lab ID: 92	25000042	Callanta de Odionio	20.44.00		100/00 11 10		
		(33000012	Collected: 01/08/0	J9 11:22	Received: 01	1/09/09 14:16	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
8011 GCS EDB and DBCP	Analytical Me	ethod: EPA 80	011 Preparation Met	nod: EPA	\ 8011			
1,2-Dibromoethane (EDB)	ND t	Jg/L	0.020	1	01/14/09 16:20	01/16/09 20:54	106-93-4	
1-Chloro-2-bromopropane (S)	78 9	%	60-140	1	01/14/09 16:20	01/16/09 20:54	301-79-56	
3260 MSV	Analytical Me	ethod: EPA 82	260					
Benzene	2660 t	ıa/L	250	50		01/15/09 17:08	71-43-2	
,2-Dichloroethane	ND u	•	25.0	5		01/15/09 04:56		
Ethylbenzene	930 (	•	25.0 25.0	5		01/15/09 04:56		
Methyl-tert-butyl ether	ND t	•	25.0 25.0	5		01/15/09 04:56		
Naphthalene	<b>63</b> 3 (	•	25.0 25.0	5		01/15/09 04:56	*	
oluene	6520 u	-	25.0 250					
0.00.10	3490 t	•		50		01/15/09 17:08		
n&n-Xviene		19r L	500	50 50		01/15/09 17:08		
		.ali				01/15/09 17:08	S 95-4/-6	
-Xylene	1610 ւ	•	250					
-Xylene -Bromofluorobenzene (S)	<b>1610</b> ເ 102 9	6	87-109	5		01/15/09 04:56	460-00-4	
o-Xylene I-Bromofluorobenzene (S) Dibromofluoromethane (S)	<b>1610</b> մ 102	6 6	87-109 85-115	5 5		01/15/09 04:56 01/15/09 04:56	6 460-00-4 6 1868-53-7	
m&p-Xylene p-Xylene 1-Bromofluorobenzene (S) Dibromofluoromethane (S) 1,2-Dichloroethane-d4 (S) Foluene-d8 (S)	<b>1610</b> ເ 102 9	6 6	87-109	5		01/15/09 04:56	6 460-00-4 6 1868-53-7 6 17060-07-0	

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**REPORT OF LABORATORY ANALYSIS** 

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Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

# **ANALYTICAL RESULTS**

Project:

**TISDALE'S QUICK STOP** 

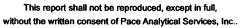
Pace Project No.: 9235808

Sample: MW18	Lab ID: 923580801	Collected: 01/08/0	9 11:33	Received: 01	/09/09 14:16	Matrix: Water	
Parameters	Results Un	its Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
8011 GCS EDB and DBCP	Analytical Method: EF	PA 8011 Preparation Meth	nod: EPA	A 8011			
1,2-Dibromoethane (EDB)	ND ug/L	0.019	1	01/14/09 16:20	01/16/09 21:30	0 106-93-4	
1-Chloro-2-bromopropane (S)	110 %	60-140	1	01/14/09 16:20	01/16/09 21:30	301-79-56	
8260 MSV	Analytical Method: EF	PA 8260					
Benzene	ND ug/L	5.0	1		01/15/09 02:0	2 71-43-2	
1,2-Dichloroethane	ND ug/L	5.0	1		01/15/09 02:0	2 107-06-2	
Ethylbenzene	ND ug/L	5.0	1		01/15/09 02:0	2 100-41-4	
Methyl-tert-butyl ether	ND ug/L	5.0	1		01/15/09 02:0	2 1634-04-4	
Naphthalene	ND ug/L	5.0	1		01/15/09 02:0	2 91-20-3	
Toluene	ND ug/L	5.0	1		01/15/09 02:0	2 108-88-3	
m&p-Xylene	ND ug/L	10.0	1		01/15/09 02:0		
o-Xylene	ND ug/L	5.0	1		01/15/09 02:0		
4-Bromofluorobenzene (S)	105 %	87-109	1		01/15/09 02:0		
Dibromofluoromethane (S)	108 %	85-115	1		01/15/09 02:0		
1,2-Dichloroethane-d4 (S)	106 %	79-120	1		01/15/09 02:0		
Toluene-d8 (S)	101 %	70-120	1		01/15/09 02:0		
Sample: MW22 Parameters	Lab ID: 923580801  Results Un		9 15:43 DF	Received: 01 Prepared	1/09/09 14:16 Analyzed	Matrix: Water CAS No.	Qua
8011 GCS EDB and DBCP	Analytical Method: EF	PA 8011 Preparation Meth	nod: EPA	•			
1,2-Dibromoethane (EDB)	, ND ug/L	0.019	1	01/14/09 16:21	01/16/09 21:5	4 106-93-4	
1-Chloro-2-bromopropane (S)	88 %	60-140	1	01/14/09 16:21	-		
8260 MSV	Analytical Method: EF		•	01/14/00 10:21	01/10/00 21.0		
Benzene	ND ug/L	5.0	1		01/15/09 02:1	71_43_2	
1,2-Dichloroethane	ND ug/L	5.0	1		01/15/09 02:19		
Ethylbenzene	ND ug/L	5.0	1		01/15/09 02:1		
Methyl-tert-butyl ether	ND ug/L	5.0	1		01/15/09 02:19		
Metry-tert-butyr etner Naphthalene	~	5.0 5.0	1		01/15/09 02:19		
Naphinalerie Toluene	ND ug/L	5.0 5.0	1		01/15/09 02:19		
i Uiuci ic	ND ug/L ND ug/L				01/15/09 02:19		
men Yulona		10.0	- 1		01/15/09 02:19		
, ,	•	F A			U 1/ 13/U9 UZ: 13	9 90 <del>-4</del> /-0	
o-Xylene	ND ug/L	5.0	1				
o-Xylene 4-Bromofluorobenzene (S)	ND ug/L 101 %	87-109	1		01/15/09 02:1	9 460-00-4	
m&p-Xylene o-Xylene 4-Bromofluorobenzene (S) Dibromofluoromethane (S)	ND ug/L 101 % 110 %	87-109 85-115	1		01/15/09 02:19 01/15/09 02:19	9 460-00-4 9 1868-53-7	
o-Xylene 4-Bromofluorobenzene (S)	ND ug/L 101 %	87-109	1		01/15/09 02:1	9 460-00-4 9 1868-53-7 9 17060-07-0	

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# **ANALYTICAL RESULTS**

Project:

TISDALE'S QUICK STOP

Pace Project No.:

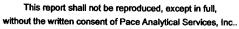
9235808

Sample: MW23	Lab ID:	9235808015	Collected: 01/08/	09 14:41	Received: 0	1/09/09 14:16	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
8011 GCS EDB and DBCP	Analytical I	Method: EPA 8	011 Preparation Met	hod: EP/	A 8011			
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	1	01/14/09 16:21	01/16/09 22:06	6 106-93-4	
1-Chloro-2-bromopropane (S)	105	%	<b>60-14</b> 0	1		01/16/09 22:06		
8260 MSV	Analytical I	Method: EPA 8	260					
Benzene	574	ug/L	25.0	5		01/15/09 14:47	7 71-43-2	
1,2-Dichloroethane	ND	ug/L	5.0	1		01/15/09 02:36	· · · <del>-</del> -	
Ethylbenzene		ug/L	5.0	1		01/15/09 02:36		
Methyl-tert-butyl ether		ug/L	5.0	1		01/15/09 02:36		
Naphthalene		ug/L	5.0	1				
Toluene		•				01/15/09 02:36		
		ug/L	5.0	1		01/15/09 02:36		
m&p-Xylene		ug/L	10.0	1		01/15/09 02:36		
o-Xylene		ug/L	5.0	1		01/15/09 02:36	95-47-6	
4-Bromofluorobenzene (S)	103	%	87-109	1		01/15/09 02:36	460-00-4	
Dibromofluoromethane (S)	107	%	85-115	1		01/15/09 02:36	1868-53-7	
1,2-Dichloroethane-d4 (S)	106	%	79-120	1		01/15/09 02:36	17060-07-0	
Toluene-d8 (S)	99	%	70-120	1		01/15/09 02:36	2037-26-5	
Sample: MW24	Lab ID: 9	235808016	Collected: 01/08/0	9 15:10	Received: 0	1/09/09 14:16	Matrix: Water	
Sample: MW24 Parameters	Lab ID: 9	9235808016 Units	Collected: 01/08/0	09 15:10 DF	Received: 0	1/09/09 14:16 I	Matrix: Water CAS No.	Qua
Sample: MW24  Parameters  8011 GCS EDB and DBCP	Results	Units	Report Limit	DF	Prepared			Qua
Parameters 8011 GCS EDB and DBCP	Results Analytical N	Units lethod: EPA 80	Report Limit	DF nod: EPA	Prepared	Analyzed	CAS No.	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)	Results Analytical M	Units  dethod: EPA 80 ug/L	Report Limit  O11 Preparation Meth	DF nod: EPA	Prepared 8011 01/14/09 16:21	Analyzed 01/16/09 22:18	CAS No.	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)	Results Analytical N	Units  dethod: EPA 80 ug/L	Report Limit	DF nod: EPA	Prepared 8011 01/14/09 16:21	Analyzed	CAS No.	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)	Analytical N ND 100	Units  dethod: EPA 80 ug/L	Report Limit  O11 Preparation Meth  0.020 60-140	DF nod: EPA	Prepared 8011 01/14/09 16:21	Analyzed 01/16/09 22:18	CAS No.	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)  8260 MSV	Analytical N ND 100 Analytical N	Units lethod: EPA 80 ug/L %	Report Limit  O11 Preparation Meth  0.020 60-140	DF nod: EPA	Prepared 8011 01/14/09 16:21	Analyzed 01/16/09 22:18	CAS No.	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  B260 MSV  Benzene	Analytical N ND 100 Analytical N	Units  Method: EPA 80  ug/L  %  Method: EPA 82	Report Limit  O11 Preparation Meth  0.020 60-140	DF nod: EPA 1 1	Prepared 8011 01/14/09 16:21	Analyzed 01/16/09 22:18 01/16/09 22:18	CAS No. 106-93-4 301-79-56	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  B260 MSV  Benzene 1,2-Dichloroethane	Analytical N ND 100 Analytical N ND	Units  Method: EPA 80  ug/L  Wethod: EPA 82  ug/L  ug/L	Report Limit  0.020 60-140 600 5.0 5.0	DF nod: EPA 1 1	Prepared 8011 01/14/09 16:21	Analyzed  01/16/09 22:18  01/16/09 22:18  01/15/09 02:53  01/15/09 02:53	CAS No. 106-93-4 301-79-56 71-43-2 107-06-2	Qua
Parameters  8011 GCS EDB and DBCP 1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV Benzene 1,2-Dichloroethane Ethylbenzene	Analytical M ND 100 Analytical M ND ND	Units  Method: EPA 80  ug/L  wg/L  ug/L  ug/L  ug/L	Report Limit  0.020 60-140 60 5.0 5.0 5.0	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:21	Analyzed  01/16/09 22:18  01/16/09 22:18  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53	CAS No. 106-93-4 301-79-56 71-43-2 107-06-2 100-41-4	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  B260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Wethyl-tert-butyl ether	Analytical M ND 100 Analytical M ND ND ND	Units  Method: EPA 80  ug/L  wg/L  ug/L  ug/L  ug/L  ug/L  ug/L	Report Limit  0.020 60-140 60 5.0 5.0 5.0 5.0	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:21	Analyzed  01/16/09 22:18  01/16/09 22:18  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53	CAS No.  106-93-4 301-79-56 71-43-2 107-06-2 100-41-4 1634-04-4	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  B260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Wethyl-tert-butyl ether Naphthalene	Analytical M ND 100 Analytical M ND ND ND ND	Units  Method: EPA 80  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	Report Limit  0.020 60-140 60 5.0 5.0 5.0 5.0 5.0 5.0	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:21	01/16/09 22:18 01/16/09 22:18 01/15/09 02:53 01/15/09 02:53 01/15/09 02:53 01/15/09 02:53 01/15/09 02:53	CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  B260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Wethyl-tert-butyl ether Naphthalene Foluene	Analytical M ND 100 Analytical M ND ND ND ND ND	Units  Method: EPA 80  ug/L	Report Limit  0.020 60-140 60 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:21	Analyzed  01/16/09 22:18  01/16/09 22:18  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53	CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  B260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Wethyl-tert-butyl ether Naphthalene Foluene m&p-Xylene	Analytical N ND 100 Analytical N ND ND ND ND ND ND	Units  Method: EPA 80  ug/L	Report Limit  0.020 60-140 60 5.0 5.0 5.0 5.0 5.0 10.0	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:21	Analyzed  01/16/09 22:18  01/16/09 22:18  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53	CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  B260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Wethyl-tert-butyl ether Naphthalene Toluene m&p-Xylene D-Xylene	Analytical M ND 100 Analytical M ND ND ND ND ND ND ND	Units  Method: EPA 80  ug/L	Report Limit  0.020 60-140 60  5.0 5.0 5.0 5.0 5.0 10.0 5.0	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:21	Analyzed  01/16/09 22:18  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53	CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7 95-47-6	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  B260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Wethyl-tert-butyl ether Naphthalene Foluene m&p-Xylene b-Xylene I-Bromofluorobenzene (S)	Analytical M ND 100 Analytical M ND ND ND ND ND ND ND ND ND ND	Units  Method: EPA 80  ug/L	Report Limit  0.020 60-140 260  5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 87-109	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:21	Analyzed  01/16/09 22:18  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53	CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7 95-47-6 460-00-4	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  B260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Wethyl-tert-butyl ether Naphthalene Foluene m&p-Xylene b-Xylene 1-Bromofluorobenzene (S) Dibromofluoromethane (S)	Analytical N ND 100 Analytical N ND	Units  Method: EPA 80  ug/L  yg/L	Report Limit  0.020 60-140 60  5.0 5.0 5.0 5.0 5.0 5.0 5.0 87-109 85-115	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:21	Analyzed  01/16/09 22:18  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53	CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7 95-47-6 460-00-4	Qua
Parameters	Analytical M ND 100 Analytical M ND ND ND ND ND ND ND ND ND ND	Units  Method: EPA 80  ug/L  yg/L   Report Limit  0.020 60-140 260  5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 87-109	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:21	Analyzed  01/16/09 22:18  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53  01/15/09 02:53	CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7 95-47-6 460-00-4 1868-53-7	Qua	

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**REPORT OF LABORATORY ANALYSIS** 

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Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

# **ANALYTICAL RESULTS**

Project:

**TISDALE'S QUICK STOP** 

Pace Project No.: 9235808

Sample: MW25	Lab ID: 92	35808017	Collected: 01/08/0	09 15:19	Received: 0	1/09/09 14:16	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
8011 GCS EDB and DBCP	Analytical Me	thod: EPA 80	011 Preparation Met	hod: EP/	N 8011			
1,2-Dibromoethane (EDB)	ND u	ıg/L	0.019	1	01/14/09 16:21	01/16/09 22:2	9 106-93-4	
1-Chloro-2-bromopropane (S)	71 %	6	60-140	1	01/14/09 16:21	01/16/09 22:29	9 301-79-56	
8260 MSV	Analytical Me	thod: EPA 82	260					
Benzene	ND u	ıg/L	5.0	1		01/15/09 03:10	0 71-43-2	
1,2-Dichloroethane	ND u	ıg/L	5.0	1		01/15/09 03:10	0 107-06-2	
Ethylbenzene	ND u	ıg/L	5.0	1		01/15/09 03:10	0 100-41-4	
Methyl-tert-butyl ether	ND u	g/L	5.0	1		01/15/09 03:10	0 1634-04-4	
Naphthalene	ND u	g/L	5.0	1		01/15/09 03:10	91-20-3	
Toluene	ND u	ıg/L	5.0	1		01/15/09 03:10	0 108-88-3	
m&p-Xylene	ND u	ıq/L	10.0	1		01/15/09 03:10		
o-Xylene	ND u	-	5.0	1		01/15/09 03:10		
4-Bromofluorobenzene (S)	102 9	•	87-109	1		01/15/09 03:10		
Dibromofluoromethane (S)	109 %		85-115	1		01/15/09 03:10		
1,2-Dichloroethane-d4 (S)	108 %	=	79-120	1		01/15/09 03:10		
Toluene-d8 (S)	100 %	-	70-120	1		01/15/09 03:10	-	
Sample: MW26	Lab ID: 92	35808018	Collected: 01/08/0	09 15:33	Received: 01	1/09/09 14:16	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared			Qua
	Results Analytical Me	Units	Report Limit	DF nod: EPA	Prepared	Analyzed	CAS No.	Qua
8011 GCS EDB and DBCP	Analytical Me	thod: EPA 80	011 Preparation Met	nod: EPA	8011	Analyzed	CAS No.	Qua
3011 GCS EDB and DBCP	Analytical Me	thod: EPA 80	011 Preparation Met	nod: EPA	\ 8011 01/14/09 16:21	Analyzed 01/16/09 22:4	CAS No.	Qua
3011 GCS EDB and DBCP 1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)	Analytical Me ND u 86 %	thod: EPA 80 g/L	0.019 60-140	nod: EPA	\ 8011 01/14/09 16:21	Analyzed	CAS No.	Qua
3011 GCS EDB and DBCP 1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 3260 MSV	Analytical Me	thod: EPA 80 g/L	0.019 60-140	nod: EPA	\ 8011 01/14/09 16:21	Analyzed 01/16/09 22:4	CAS No.	Qua
3011 GCS EDB and DBCP 1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 3260 MSV	Analytical Me ND u 86 %	thod: EPA 80 g/L 6 thod: EPA 82	0.019 60-140	nod: EPA	\ 8011 01/14/09 16:21	Analyzed 01/16/09 22:4	CAS No. 1 106-93-4 1 301-79-56	Qua
3011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)  3260 MSV  Benzene	Analytical Me ND u 86 % Analytical Me	thod: EPA 80 g/L 6 thod: EPA 82 g/L	0.019 60-140	nod: EPA 1 1	\ 8011 01/14/09 16:21	Analyzed 01/16/09 22:4 01/16/09 22:4	CAS No.  1 106-93-4 1 301-79-56 3 71-43-2	Qua
2011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)  260 MSV  Benzene  1,2-Dichloroethane	Analytical Me ND u 86 % Analytical Me ND u	thod: EPA 80 g/L 6 thod: EPA 82 g/L g/L	0.019 60-140 5.0	nod: EP# 1 1	\ 8011 01/14/09 16:21	Analyzed 01/16/09 22:4 01/16/09 22:4 01/15/09 03:28	CAS No.  1 106-93-4 1 301-79-56 3 71-43-2 3 107-06-2	Qua
3011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)  3260 MSV  Benzene  1,2-Dichloroethane  Ethylbenzene	Analytical Me ND u 86 % Analytical Me ND u ND u	thod: EPA 80 g/L 6 thod: EPA 82 g/L g/L g/L	0.019 0.019 60-140 260 5.0	1 1 1 1	\ 8011 01/14/09 16:21	Analyzed  01/16/09 22:4  01/16/09 22:4  01/15/09 03:28  01/15/09 03:28	CAS No.  1 106-93-4 1 301-79-56 3 71-43-2 3 107-06-2 3 100-41-4	Qua
3011 GCS EDB and DBCP 1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 3260 MSV Benzene 1,2-Dichloroethane Ethylbenzene Wethyl-tert-butyl ether	Analytical Me ND u 86 % Analytical Me ND u ND u	thod: EPA 80 g/L 6 thod: EPA 82 g/L g/L g/L g/L	0.019 60-140 260 5.0 5.0 5.0	1 1 1 1 1 1	01/14/09 16:21	Analyzed  01/16/09 22:4  01/16/09 22:4  01/15/09 03:28  01/15/09 03:28  01/15/09 03:28	CAS No.  1 106-93-4 1 301-79-56 3 71-43-2 3 107-06-2 3 100-41-4 3 1634-04-4	Qua
3011 GCS EDB and DBCP 1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 3260 MSV 3enzene 1,2-Dichloroethane Ethylbenzene Wethyl-tert-butyl ether Naphthalene	Analytical Me ND u 86 % Analytical Me ND u ND u ND u	thod: EPA 80 g/L 6 thod: EPA 82 g/L g/L g/L g/L g/L	0.019 60-140 60-5.0 5.0 5.0 5.0	1 1 1 1 1 1 1	01/14/09 16:21	Analyzed  01/16/09 22:4  01/16/09 22:4  01/15/09 03:28  01/15/09 03:28  01/15/09 03:28	CAS No.  1 106-93-4 1 301-79-56 3 71-43-2 3 107-06-2 3 100-41-4 3 1634-04-4 3 91-20-3	Qua
Bo11 GCS EDB and DBCP 1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) Benzene 1,2-Dichloroethane Ethylbenzene Wethyl-tert-butyl ether Naphthalene Foluene	Analytical Me ND u 86 % Analytical Me ND u ND u ND u ND u	thod: EPA 80 g/L 6 thod: EPA 82 g/L g/L g/L g/L g/L g/L	0.019 60-140 260 5.0 5.0 5.0 5.0 5.0	1 1 1 1 1 1 1 1	01/14/09 16:21	01/16/09 22:4 01/16/09 22:4 01/15/09 03:28 01/15/09 03:28 01/15/09 03:28 01/15/09 03:28	CAS No.  1 106-93-4 1 301-79-56 3 71-43-2 3 107-06-2 3 100-41-4 3 1634-04-4 3 91-20-3 3 108-88-3	Qua
3011 GCS EDB and DBCP 1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 3260 MSV 3enzene 1,2-Dichloroethane 5thylbenzene Wethyl-tert-butyl ether Naphthalene Foluene n&p-Xylene	Analytical Me ND u 86 % Analytical Me ND u ND u ND u ND u ND u	thod: EPA 80 g/L 6 thod: EPA 82 g/L g/L g/L g/L g/L g/L g/L	0.019 60-140 260 5.0 5.0 5.0 5.0 5.0 5.0	1 1 1 1 1 1 1 1	01/14/09 16:21	01/16/09 22:4 01/16/09 22:4 01/15/09 03:28 01/15/09 03:28 01/15/09 03:28 01/15/09 03:28 01/15/09 03:28	CAS No.  1 106-93-4 1 301-79-56 3 71-43-2 3 107-06-2 3 100-41-4 3 1634-04-4 3 91-20-3 3 108-88-3 3 1330-20-7	Qua
B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) B260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene p-Xylene	Analytical Me ND u 86 % Analytical Me ND u ND u ND u ND u ND u	thod: EPA 80 g/L thod: EPA 82 g/L	0.019 60-140 600 5.0 5.0 5.0 5.0 5.0 5.0	nod: EP#  1  1  1  1  1  1  1  1  1  1  1  1  1	01/14/09 16:21	01/16/09 22:4 01/16/09 22:4 01/15/09 03:28 01/15/09 03:28 01/15/09 03:28 01/15/09 03:28 01/15/09 03:28 01/15/09 03:28	CAS No.  1 106-93-4 1 301-79-56 3 71-43-2 3 107-06-2 3 100-41-4 3 1634-04-4 3 91-20-3 3 108-88-3 3 1330-20-7 3 95-47-6	Qua
Bo11 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) Benzene 1,2-Dichloroethane Ethylbenzene Wethyl-tert-butyl ether Naphthalene Foluene m&p-Xylene b-Xylene 1-Bromofluorobenzene (S)	Analytical Me ND u 86 % Analytical Me ND u ND u ND u ND u ND u ND u	thod: EPA 80 g/L thod: EPA 82 g/L	0.019 60-140 60-150 5.0 5.0 5.0 5.0 5.0 5.0 5.0	nod: EP#  1 1 1 1 1 1 1 1 1 1 1 1 1 1	01/14/09 16:21	01/16/09 22:4 01/16/09 22:4 01/15/09 03:28 01/15/09 03:28 01/15/09 03:28 01/15/09 03:28 01/15/09 03:28 01/15/09 03:28	CAS No.  1 106-93-4 1 301-79-56 3 71-43-2 3 107-06-2 3 100-41-4 3 1634-04-4 3 91-20-3 3 108-88-3 3 1330-20-7 3 95-47-6 3 460-00-4	Qua
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene 0-Xylene 4-Bromofluorobenzene (S) Dibromofluoromethane (S) 1,2-Dichloroethane-d4 (S)	Analytical Me  ND u  86 %  Analytical Me  ND u   thod: EPA 80 g/L thod: EPA 82 g/L	0.019 60-140 660 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	nod: EP#  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	01/14/09 16:21	01/16/09 22:4 01/16/09 22:4 01/15/09 03:24 01/15/09 03:24 01/15/09 03:24 01/15/09 03:24 01/15/09 03:24 01/15/09 03:24 01/15/09 03:24 01/15/09 03:24	CAS No.  1 106-93-4 1 301-79-56 3 71-43-2 3 107-06-2 3 100-41-4 3 1634-04-4 3 91-20-3 3 108-88-3 3 1330-20-7 3 95-47-6 3 460-00-4 3 1868-53-7	Qua	

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**REPORT OF LABORATORY ANALYSIS** 

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### **ANALYTICAL RESULTS**

Project:

TISDALE'S QUICK STOP

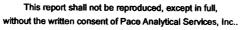
Pace Project No.: 9235808

Sample: MW27	Lab ID: 923580801	9 Collected: 01/08/0	9 15:53	Received: 0	1/09/09 14:16	Matrix: Water	
Parameters	Results Uni	its Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
8011 GCS EDB and DBCP	Analytical Method: EP	A 8011 Preparation Met	nod: EPA	\ 8011			
1,2-Dibromoethane (EDB)	ND ug/L	0.019	1	01/14/09 16:21	01/16/09 22:53	3 106-93-4	
1-Chloro-2-bromopropane (S)	99 %	60-140	1	01/14/09 16:21	01/16/09 22:53	301-79-56	
8260 MSV	Analytical Method: EP	A 8260					
Benzene	ND ug/L	5.0	1		01/15/09 03:45	5 71-43-2	
1,2-Dichloroethane	ND ug/L	5.0	1		01/15/09 03:49	5 107-06-2	
Ethylbenzene	ND ug/L	5.0	1		01/15/09 03:49		
Methyl-tert-butyl ether	ND ug/L	5.0	1		01/15/09 03:45		
Naphthalene	ND ug/L	5.0	1		01/15/09 03:45		
Toluene	ND ug/L	5.0	1		01/15/09 03:45		
m&p-Xylene	ND ug/L	10.0	1		01/15/09 03:45		
o-Xylene	ND ug/L	5.0	1		01/15/09 03:45		
4-Bromofluorobenzene (S)	102 %	87-109	1				
Dibromofluoromethane (S)	107 %		-		01/15/09 03:45		
1,2-Dichloroethane-d4 (S)	106 %	85-115	1		01/15/09 03:45		
Toluene-d8 (S)	100 %	79-120	1		01/15/09 03:45		
iolociic do (o)	102 /6	70-120	1		01/15/09 03:45	2037-20-3	
Sample: MW29	Lab ID: 923580802	0 Collected: 01/08/0	9 16:13	Received: 01	/09/09 14:16	Matrix: Water	
Parameters	Results Uni	ts Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EP	A 8011 Preparation Meth	od: EPA	8011			
1,2-Dibromoethane (EDB)	ND ug/L	0.020	1	01/14/09 16:21	01/16/09 23:05	5 106-93-4	
1-Chloro-2-bromopropane (S)	110 %	60-140	1		01/16/09 23:05		
2000 2501							
8260 MSV	Analytical Method: EP	A 8260	•				
	•				01/15/09 04:02	71_43-2	
Benzene	ND ug/L	5.0	1		01/15/09 04:02		
Benzene 1,2-Dichloroethane	ND ug/L ND ug/L	5.0 5.0	1 1		01/15/09 04:02	107-06-2	
Benzene 1,2-Dichloroethane Ethylbenzene	, ND ug/L ND ug/L ND ug/L	5.0 5.0 5.0	1 1 1		01/15/09 04:02 01/15/09 04:02	2 107-06-2 2 100-41-4	
Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether	ND ug/L ND ug/L ND ug/L ND ug/L	5.0 5.0 5.0 5.0	1 1 1 1		01/15/09 04:02 01/15/09 04:02 01/15/09 04:02	2 107-06-2 2 100-41-4 2 1634-04-4	
Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene	ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L	5.0 5.0 5.0 5.0 5.0	1 1 1 1		01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02	2 107-06-2 2 100-41-4 2 1634-04-4 2 91-20-3	
Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene	ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L	5.0 5.0 5.0 5.0 5.0 5.0	1 1 1 1 1		01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02	2 107-06-2 2 100-41-4 2 1634-04-4 2 91-20-3 3 108-88-3	
Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene	ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L	5.0 5.0 5.0 5.0 5.0 5.0	1 1 1 1 1 1		01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02	2 107-06-2 2 100-41-4 2 1634-04-4 2 91-20-3 2 108-88-3 3 1330-20-7	
Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene o-Xylene	ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L	5.0 5.0 5.0 5.0 5.0 5.0 10.0 5.0	1 1 1 1 1 1		01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02	2 107-06-2 2 100-41-4 2 1634-04-4 2 91-20-3 2 108-88-3 2 1330-20-7 2 95-47-6	
Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene o-Xylene 4-Bromofluorobenzene (S)	ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L	5.0 5.0 5.0 5.0 5.0 5.0 10.0 5.0 87-109	1 1 1 1 1 1 1		01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02	2 107-06-2 2 100-41-4 2 1634-04-4 2 91-20-3 2 108-88-3 2 1330-20-7 2 95-47-6 3 460-00-4	
Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene o-Xylene 4-Bromofluorobenzene (S) Dibromofluoromethane (S)	ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L 102 % 109 %	5.0 5.0 5.0 5.0 5.0 10.0 5.0 87-109	1 1 1 1 1 1 1 1		01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02	2 107-06-2 2 100-41-4 2 1634-04-4 2 91-20-3 2 108-88-3 2 1330-20-7 2 95-47-6 2 460-00-4 1 1868-53-7	
8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene o-Xylene 4-Bromofluorobenzene (S) Dibromofluoromethane (S) 1,2-Dichloroethane-d4 (S) Toluene-d8 (S)	ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L	5.0 5.0 5.0 5.0 5.0 5.0 10.0 5.0 87-109	1 1 1 1 1 1 1		01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02 01/15/09 04:02	2 107-06-2 2 100-41-4 2 1634-04-4 2 91-20-3 2 108-88-3 2 1330-20-7 2 95-47-6 2 460-00-4 2 1868-53-7 2 17060-07-0	

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**REPORT OF LABORATORY ANALYSIS** 

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# **ANALYTICAL RESULTS**

Project:

**TISDALE'S QUICK STOP** 

Pace Project No.: 9235808

Sample: MW30	Lab ID: 92358	08021	Collected: 01/08/	09 16:21	Received: (	1/09/09 14:16	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
8011 GCS EDB and DBCP	Analytical Method	d: EPA 80	011 Preparation Met	hod: EP/	A 8011			
1,2-Dibromoethane (EDB)	ND ug/L		0.019	1	01/14/09 16:2	1 01/16/09 23:1	7 106-93-4	
1-Chloro-2-bromopropane (S)	100 %		60-140	1	01/14/09 16:2	1 01/16/09 23:1	7 301-79-56	
8260 MSV	Analytical Method	: EPA 82	260					
Benzene	ND ug/L		5.0	1		01/15/09 04:1	9 71-43-2	
1,2-Dichloroethane	ND ug/L		5.0	1		01/15/09 04:1	9 107-06-2	
Ethylbenzene	ND ug/L		5.0	1		01/15/09 04:1		
Methyl-tert-butyl ether	ND ug/L		5.0	1		01/15/09 04:1		
Naphthalene	ND ug/L		5.0	1		01/15/09 04:1		
Toluene	ND ug/L		5.0	1		01/15/09 04:1		
m&p-Xylene	ND ug/L		10.0	1		01/15/09 04:1		
o-Xylene	ND ug/L		5.0	1		01/15/09 04:1		
4-Bromofluorobenzene (S)	103 %		87-109	1		01/15/09 04:1		
Dibromofluoromethane (S)	109 %		85-115	1		01/15/09 04:1		
1,2-Dichloroethane-d4 (S)	113 %			-				
Toluene-d8 (S)	99 %		79-120 70-120	1		01/15/09 04:1:	9 17060-07-0	
Sample: MW31	Lab ID. 00050		0.11.1.04000		<del></del>			
Sample: MVVS1	Lab ID: 923586	J8022	Collected: 01/08/	09 16:37	Received: 0	1/09/09 14:16	Matrix: Water	
Parameters	Results	Units	D	DF	Dropped			O
		Office	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
8011 GCS EDB and DBCP			11 Preparation Met		· <del>······</del>	Analyzed	CAS No.	Qua
			<del></del>		\ 8011	Analyzed		Qua
1,2-Dibromoethane (EDB)	Analytical Method		11 Preparation Met	nod: EPA	. 8011 01/14/09 16:21		9 106-93-4	
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)	Analytical Method	: EPA 80	11 Preparation Met 0.019 60-140	nod: EPA	. 8011 01/14/09 16:21	01/16/09 23:29	9 106-93-4	Qua
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV	Analytical Method ND ug/L 96 % Analytical Method	: EPA 80	0.019 60-140	nod: EPA 1 1	. 8011 01/14/09 16:21	01/16/09 23:29 01/16/09 23:29	9 106-93-4 9 301-79-56	
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV Benzene	Analytical Method ND ug/L 96 % Analytical Method ND ug/L	: EPA 80	0.019 60-140	nod: EP# 1 1	. 8011 01/14/09 16:21	01/16/09 23:29 01/16/09 23:29 01/15/09 04:30	9 106-93-4 9 301-79-56 5 71-43-2	Qua
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV Benzene 1,2-Dichloroethane	Analytical Method ND ug/L 96 % Analytical Method ND ug/L ND ug/L	: EPA 80	0.019 60-140 5.0 5.0	nod: EPA 1 1 1	. 8011 01/14/09 16:21	01/16/09 23:29 01/16/09 23:29 01/15/09 04:30 01/15/09 04:30	9 106-93-4 9 301-79-56 6 71-43-2 6 107-06-2	Qua
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 3260 MSV Benzene 1,2-Dichloroethane Ethylbenzene	Analytical Method ND ug/L 96 % Analytical Method ND ug/L ND ug/L ND ug/L	: EPA 80	0.019 60-140 60 5.0 5.0	1 1 1 1	. 8011 01/14/09 16:21	01/16/09 23:29 01/16/09 23:29 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30	9 106-93-4 9 301-79-56 6 71-43-2 6 107-06-2 6 100-41-4	Qua
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV Berizene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether	Analytical Method ND ug/L 96 % Analytical Method ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L	: EPA 80	0.019 60-140 60 5.0 5.0 5.0 5.0	1 1 1 1 1 1	. 8011 01/14/09 16:21	01/16/09 23:29 01/16/09 23:29 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30	9 106-93-4 9 301-79-56 6 71-43-2 6 107-06-2 6 100-41-4 6 1634-04-4	Qua
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV Berizene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene	Analytical Method ND ug/L 96 % Analytical Method ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L	: EPA 80	0.019 60-140 60 5.0 5.0 5.0 5.0 5.0	nod: EPA  1  1  1  1  1  1  1  1  1  1  1  1  1	. 8011 01/14/09 16:21	01/16/09 23:29 01/16/09 23:29 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30	9 106-93-4 9 301-79-56 6 71-43-2 6 107-06-2 6 100-41-4 6 1634-04-4 6 91-20-3	Qua
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV Berizene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene	Analytical Method ND ug/L 96 % Analytical Method ND ug/L	: EPA 80	0.019 60-140 60 5.0 5.0 5.0 5.0 5.0 5.0	nod: EPA  1  1  1  1  1  1  1  1  1  1  1  1  1		01/16/09 23:29 01/16/09 23:29 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30	9 106-93-4 9 301-79-56 6 71-43-2 6 107-06-2 6 100-41-4 6 1634-04-4 6 91-20-3 6 108-88-3	Qua
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene	Analytical Method ND ug/L 96 % Analytical Method ND ug/L	: EPA 80	0.019 60-140 60 5.0 5.0 5.0 5.0 5.0 5.0	nod: EPA  1  1  1  1  1  1  1  1  1  1  1  1  1		01/16/09 23:29 01/16/09 23:29 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30	9 106-93-4 9 301-79-56 6 71-43-2 6 107-06-2 6 100-41-4 6 1634-04-4 6 91-20-3 6 108-88-3 6 1330-20-7	Qua
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene p-Xylene	Analytical Method ND ug/L 96 % Analytical Method ND ug/L	: EPA 80	0.019 60-140 60 5.0 5.0 5.0 5.0 5.0 5.0 5.0	nod: EPA  1  1  1  1  1  1  1  1  1  1  1  1  1		01/16/09 23:29 01/16/09 23:29 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30	9 106-93-4 9 301-79-56 6 71-43-2 6 107-06-2 6 100-41-4 6 1634-04-4 6 91-20-3 6 108-88-3 6 1330-20-7 6 95-47-6	Qua
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene b-Xylene 4-Bromofluorobenzene (S)	Analytical Method ND ug/L 96 % Analytical Method ND ug/L	: EPA 80	0.019 60-140 60 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 87-109	nod: EPA  1  1  1  1  1  1  1  1  1  1  1  1  1		01/16/09 23:29 01/16/09 23:29 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30	9 106-93-4 9 301-79-56 6 71-43-2 6 107-06-2 6 100-41-4 6 1634-04-4 6 91-20-3 6 108-88-3 6 1330-20-7 6 95-47-6 6 460-00-4	Qua
8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene b-Xylene 4-Bromofluorobenzene (S) Dibromofluoromethane (S)	Analytical Method ND ug/L 96 % Analytical Method ND ug/L	: EPA 80	0.019 60-140 60 5.0 5.0 5.0 5.0 5.0 5.0 5.0 87-109 85-115	nod: EPA  1  1  1  1  1  1  1  1  1  1  1  1  1		01/16/09 23:29 01/16/09 23:29 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30	9 106-93-4 9 301-79-56 6 71-43-2 6 107-06-2 6 100-41-4 6 1634-04-4 6 91-20-3 6 108-88-3 6 1330-20-7 6 95-47-6 6 460-00-4 6 1868-53-7	Qua
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene b-Xylene 4-Bromofluorobenzene (S)	Analytical Method ND ug/L 96 % Analytical Method ND ug/L	: EPA 80	0.019 60-140 60 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 87-109	nod: EPA  1  1  1  1  1  1  1  1  1  1  1  1  1		01/16/09 23:29 01/16/09 23:29 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30 01/15/09 04:30	9 106-93-4 9 301-79-56 6 71-43-2 6 107-06-2 6 100-41-4 6 1634-04-4 6 91-20-3 6 108-88-3 6 1330-20-7 6 95-47-6 6 460-00-4 6 1868-53-7 6 17060-07-0	Qua

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**REPORT OF LABORATORY ANALYSIS** 

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### **ANALYTICAL RESULTS**

Project:

**TISDALE'S QUICK STOP** 

Pace Project No.: 9235808

Sample: MW1A	Lab ID: 9	235808023	Collected: 01/08/0	09 09:30	Received: 01	1/09/09 14:16	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
8011 GCS EDB and DBCP	Analytical N	Method: EPA 8	011 Preparation Met	hod: EPA	8011			
1,2-Dibromoethane (EDB)	0.066	ug/L	0.019	1	01/14/09 16:21	01/16/09 23:41	106-93-4	
1-Chloro-2-bromopropane (S)	81	%	60-140	1	01/14/09 16:21	01/16/09 23:41	301-79-56	
8260 MSV	Analytical M	Method: EPA 8	260					
Benzene	14300	ug/L	2500	500		01/16/09 09:22	71-43-2	
1,2-Dichloroethane	ND	ug/L	500	100		01/15/09 07:26	107-06-2	
Ethylbenzene	8930	ug/L	500	100		01/15/09 07:26	100-41-4	
Methyl-tert-butyl ether	1250	ug/L	500	100		01/15/09 07:26	1634-04-4	
Naphthalene	6060	ua/L	500	100		01/15/09 07:26	91-20-3	
Toluene	29300	ua/L	2500	500		01/16/09 09:22	108-88-3	
m&p-Xylene	33000	•	1000	100		01/15/09 07:26	1330-20-7	
o-Xylene	15800	•	500	100		01/15/09 07:26		
4-Bromofluorobenzene (S)	99	•	87-109	100		01/15/09 07:26		
Dibromofluoromethane (S)	98		85-115	100		01/15/09 07:26		
1,2-Dichloroethane-d4 (S)	99		79-120	100		01/15/09 07:26		
1,2-Diomoroculario di (o)		70	7 3- 120	100		0 17 10703 07 .EU	11.000-01-0	
	99		70-120	100		01/15/09 07:26		
Toluene-d8 (S)  Sample: TW2  Parameters	Lab ID: 9	235808024	Collected: 01/08/0	09 13:57		1/09/09 14:16    1	Matrix: Water	Qua
Sample: TW2 Parameters	Lab ID: 9	<b>0235808024</b> Units	Collected: 01/08/0	09 13:57 DF	Prepared			Qua
Sample: TW2 Parameters 8011 GCS EDB and DBCP	Lab ID: 9 Results Analytical M	235808024 Units Method: EPA 8	Collected: 01/08/0 Report Limit 011 Preparation Met	09 13:57 DF hod: EPA	Prepared 8011	1/09/09 14:16 I Analyzed	Matrix: Water CAS No.	Qua
Sample: TW2 Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)	Lab ID: 9 Results Analytical M	235808024 Units Method: EPA 8	Collected: 01/08/0 Report Limit 011 Preparation Meti	09 13:57 DF hod: EP#	Prepared 8011 01/14/09 16:21	1/09/09 14:16 I Analyzed 01/16/09 23:53	Matrix: Water CAS No.	Qua
Sample: TW2 Parameters 8011 GCS EDB and DBCP	Lab ID: 9 Results Analytical M	235808024 Units Method: EPA 8	Collected: 01/08/0 Report Limit 011 Preparation Met	09 13:57 DF hod: EPA	Prepared 8011 01/14/09 16:21	1/09/09 14:16 I Analyzed	Matrix: Water CAS No.	Qua
Parameters  Both GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)	Lab ID: 9 Results  Analytical M ND 103	235808024 Units Method: EPA 8	Collected: 01/08/0 Report Limit 011 Preparation Met 0.019 60-140	09 13:57 DF hod: EP#	Prepared 8011 01/14/09 16:21	1/09/09 14:16 I Analyzed 01/16/09 23:53	Matrix: Water CAS No.	Qua
Sample: TW2 Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)	Lab ID: 9 Results  Analytical N ND 103 Analytical N	Units  Hethod: EPA 8  ug/L  %	Collected: 01/08/0 Report Limit 011 Preparation Met 0.019 60-140	09 13:57 DF hod: EP#	Prepared 8011 01/14/09 16:21	1/09/09 14:16 I Analyzed 01/16/09 23:53	Matrix: Water CAS No. 106-93-4 301-79-56	Qua
Parameters  8011 GCS EDB and DBCP 1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV	Lab ID: 9 Results  Analytical N ND 103  Analytical N ND	Units  Method: EPA 8  ug/L  %  Method: EPA 8	Collected: 01/08/0 Report Limit 011 Preparation Meti 0.019 60-140	DF DF 1 1 1	Prepared 8011 01/14/09 16:21	01/16/09 23:53	Matrix: Water CAS No. 106-93-4 301-79-56	Qua
Parameters  Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  B260 MSV  Benzene 1,2-Dichloroethane	Lab ID: 9 Results  Analytical N ND 103  Analytical N ND ND	Units  Method: EPA 8  ug/L  Method: EPA 8  ug/L  ug/L	Collected: 01/08/0 Report Limit 011 Preparation Meti 0.019 60-140 260 5.0	09 13:57 DF hod: EPA 1 1	Prepared 8011 01/14/09 16:21	01/16/09 23:53 01/16/09 19:05	Matrix: Water CAS No. 106-93-4 301-79-56 71-43-2 107-06-2	Qua
Parameters  8011 GCS EDB and DBCP 1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV Benzene	Lab ID: 9 Results  Analytical N ND 103  Analytical N ND ND ND	Units  Method: EPA 8  ug/L  Method: EPA 8  ug/L  ug/L  ug/L  ug/L	Collected: 01/08/0 Report Limit 011 Preparation Meti 0.019 60-140 260 5.0	D9 13:57  DF  hod: EPA  1  1	Prepared 8011 01/14/09 16:21	01/16/09 23:53 01/16/09 23:53 01/13/09 19:05 01/13/09 19:05	Matrix: Water CAS No.  106-93-4 301-79-56 71-43-2 107-06-2 100-41-4	Qua
Parameters  8011 GCS EDB and DBCP 1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV Benzene 1,2-Dichloroethane Ethylbenzene	Lab ID: 9 Results  Analytical N ND 103  Analytical N ND ND ND ND	Units  Method: EPA 8  ug/L  wg/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	Collected: 01/08/0 Report Limit 011 Preparation Meti 0.019 60-140 260 5.0 5.0	09 13:57 DF hod: EPA 1 1 1 1	Prepared 8011 01/14/09 16:21	01/16/09 23:53 01/16/09 23:53 01/16/09 23:53 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05	Matrix: Water CAS No.  106-93-4 301-79-56 71-43-2 107-06-2 100-41-4 1634-04-4	Qua
Parameters  8011 GCS EDB and DBCP 1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether	Lab ID: 9 Results  Analytical N ND 103  Analytical N ND ND ND ND ND	Units  Method: EPA 8  ug/L  wg/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	Collected: 01/08/0 Report Limit 011 Preparation Meti 0.019 60-140 260 5.0 5.0 5.0	D9 13:57  DF  hod: EPA  1  1  1  1  1	Prepared 8011 01/14/09 16:21	01/16/09 23:53 01/16/09 23:53 01/16/09 23:53 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05	Matrix: Water CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3	Qua
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene	Lab ID: 9 Results  Analytical N ND 103  Analytical N ND ND ND ND ND ND ND ND ND	Units  Method: EPA 8  ug/L  wg/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	Collected: 01/08/0 Report Limit 011 Preparation Meti 0.019 60-140 260 5.0 5.0 5.0 5.0 5.0	D9 13:57  DF  hod: EPA  1  1  1  1  1  1	Prepared 8011 01/14/09 16:21	01/16/09 23:53 01/16/09 23:53 01/16/09 23:53 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05	Matrix: Water CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3	Qua
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene	Lab ID: 9 Results  Analytical N ND 103  Analytical N ND	Units  Method: EPA 8:  ug/L  wg/L  ug/L	Collected: 01/08/0 Report Limit 011 Preparation Meti 0.019 60-140 260 5.0 5.0 5.0 5.0 5.0 5.0	09 13:57 DF hod: EPA 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:21	01/16/09 23:53 01/16/09 23:53 01/16/09 23:53 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05	Matrix: Water CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7	Qua
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene o-Xylene	Lab ID: 9 Results  Analytical N ND 103  Analytical N ND	Units  Method: EPA 8:  ug/L	Collected: 01/08/0 Report Limit 011 Preparation Meti 0.019 60-140 260 5.0 5.0 5.0 5.0 10.0	09 13:57 DF hod: EPA 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:21	01/16/09 23:53 01/16/09 23:53 01/16/09 23:53 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05	Matrix: Water CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7 95-47-6	Qua
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene o-Xylene 4-Bromofluorobenzene (S)	Lab ID: 9 Results  Analytical N ND 103  Analytical N ND	Units  Method: EPA 8:  ug/L	Collected: 01/08/0 Report Limit 011 Preparation Meti 0.019 60-140 260 5.0 5.0 5.0 5.0 10.0 5.0	09 13:57 DF hod: EPA 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:21	01/16/09 23:53 01/16/09 23:53 01/16/09 23:53 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05	Matrix: Water CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7 95-47-6 460-00-4	Qua
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene o-Xylene	Lab ID: 9 Results  Analytical N ND 103  Analytical N ND	Units  Method: EPA 8:  ug/L   Collected: 01/08/0 Report Limit 011 Preparation Meti 0.019 60-140 260 5.0 5.0 5.0 5.0 10.0 5.0 87-109	09 13:57 DF hod: EPA 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:21	01/16/09 23:53 01/16/09 23:53 01/16/09 23:53 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05 01/13/09 19:05	Matrix: Water CAS No.  106-93-4 301-79-56  71-43-2 107-06-2 100-41-4 1634-04-4 91-20-3 108-88-3 1330-20-7 95-47-6 460-00-4 1868-53-7	Qua	

Date: 01/20/2009 11:48 AM

**REPORT OF LABORATORY ANALYSIS** 

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Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

### **ANALYTICAL RESULTS**

Project:

TISDALE'S QUICK STOP

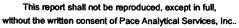
Pace Project No.: 9235808

Sample: WSW1	Lab ID: 9235	808025	Collected: 01/08/0	9 16:50	Received: 0	1/09/09 14:16	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
8011 GCS EDB and DBCP	Analytical Metho	od: EPA 8	011 Preparation Met	nod: EPA	A 8011			
1,2-Dibromoethane (EDB)	ND ug/l	_	0.019	1	01/14/09 16:21	01/17/09 00:05	5 106-93-4	
1-Chioro-2-bromopropane (S)	104 %		60-140	1	01/14/09 16:21	01/17/09 00:05	301-79-56	
8260 MSV	Analytical Metho	od: EPA 8	260					
Benzene	ND ug/l	_	5.0	1		01/13/09 19:23	3 71-43-2	
1,2-Dichloroethane	ND ug/l	,	5.0	1		01/13/09 19:23	3 107-06-2	
Ethylbenzene	ND ug/l	_	5.0	1		01/13/09 19:23	3 100-41-4	
Methyl-tert-butyl ether	ND ug/l	_	5.0	1		01/13/09 19:23	3 1634-04-4	
Naphthalene	ND ug/l	_	5.0	1		01/13/09 19:23	3 91-20-3	
Toluene	ND ug/l	_	5.0	1		01/13/09 19:23	3 108-88-3	
m&p-Xylene	ND ug/l	_	10.0	1		01/13/09 19:23	3 1330-20-7	
o-Xylene	ND ug/l	_	5.0	1		01/13/09 19:23		
4-Bromofluorobenzene (S)	92 %		87-109	1		01/13/09 19:23	3 460-00-4	
Dibromofluoromethane (S)	93 %		85-115	1		01/13/09 19:23		
1,2-Dichloroethane-d4 (S)	101 %		79-120	1		01/13/09 19:23		
Toluene-d8 (S)	99 %			1				
			70-120			01/13/09 19:23		<del>-</del>
Sample: TW-1	Lab ID: 9235		Collected: 01/08/0	9 13:09		1/09/09 14:16	Matrix: Water	Ous
	Lab ID: 9235 Results	Units	Collected: 01/08/0	09 13:09 DF	Prepared			Qua
Sample: TW-1 Parameters 8011 GCS EDB and DBCP	Lab ID: 9235 Results Analytical Metho	Units od: EPA 80	Collected: 01/08/0 Report Limit 011 Preparation Metr	09 13:09 DF nod: EPA	Prepared 8011	1/09/09 14:16 Analyzed	Matrix: Water  CAS No.	Qua
Sample: TW-1  Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)	Lab ID: 9235 Results Analytical Metho	Units od: EPA 80	Collected: 01/08/0 Report Limit 011 Preparation Meth	09 13:09 DF nod: EP#	Prepared 8011 01/14/09 16:21	1/09/09 14:16 Analyzed 01/17/09 00:17	CAS No.	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)	Lab ID: 9235  Results  Analytical Methor  ND ug/l 104 %	Units od: EPA 80	Collected: 01/08/0 Report Limit 011 Preparation Metro 0.020 60-140	09 13:09 DF nod: EPA	Prepared 8011 01/14/09 16:21	1/09/09 14:16 Analyzed	CAS No.	Qua
Sample: TW-1  Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)	Lab ID: 9235 Results Analytical Metho	Units od: EPA 80	Collected: 01/08/0 Report Limit 011 Preparation Metro 0.020 60-140	09 13:09 DF nod: EP#	Prepared 8011 01/14/09 16:21	1/09/09 14:16 Analyzed 01/17/09 00:17	CAS No.	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)	Lab ID: 9235  Results  Analytical Methor  ND ug/l 104 %	Units od: EPA 86	Collected: 01/08/0 Report Limit 011 Preparation Metro 0.020 60-140	09 13:09 DF nod: EP#	Prepared 8011 01/14/09 16:21	1/09/09 14:16 Analyzed 01/17/09 00:17	CAS No. 7 106-93-4 7 301-79-56	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)  B260 MSV	Lab ID: 9235  Results  Analytical Metho  ND ug/l  104 %  Analytical Metho	Units od: EPA 86	Collected: 01/08/0 Report Limit 011 Preparation Metr 0.020 60-140	DF	Prepared 8011 01/14/09 16:21	01/17/09 00:17	Matrix: Water CAS No. 7 106-93-4 7 301-79-56	Qua
Parameters  B011 GCS EDB and DBCP 1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) B260 MSV Benzene	Lab ID: 9235  Results  Analytical Methor  ND ug/l  104 %  Analytical Methor  ND ug/l	Units od: EPA 86	Collected: 01/08/0 Report Limit 011 Preparation Metr 0.020 60-140 260 5.0	DF DF 13:09	Prepared 8011 01/14/09 16:21	01/17/09 00:17 01/13/09 19:42	Matrix: Water CAS No. 7 106-93-4 7 301-79-56 2 71-43-2 2 107-06-2	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  B260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene	Lab ID: 9235  Results  Analytical Methor  ND ug/l  104 %  Analytical Methor  ND ug/l  ND ug/l	Units od: EPA 86	Collected: 01/08/0 Report Limit 011 Preparation Metr 0.020 60-140 260 5.0	09 13:09 DF nod: EPA 1 1	Prepared 8011 01/14/09 16:21	01/17/09 00:17 01/17/09 00:17 01/17/09 19:42 01/13/09 19:42	Matrix: Water CAS No. 7 106-93-4 7 301-79-56 2 71-43-2 2 107-06-2 2 100-41-4	Qua
Parameters  B011 GCS EDB and DBCP 1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) B260 MSV Benzene 1,2-Dichloroethane	Lab ID: 9235  Results  Analytical Methor  ND ug/l  104 %  Analytical Methor  ND ug/l  ND ug/l  ND ug/l  ND ug/l	Units  od: EPA 86  od: EPA 82	Collected: 01/08/0 Report Limit 011 Preparation Metr 0.020 60-140 260 5.0 5.0	DF 13:09 DF 1 1 1 1 1 1	Prepared 8011 01/14/09 16:21	01/17/09 00:17 01/17/09 00:17 01/17/09 19:42 01/13/09 19:42 01/13/09 19:42	Matrix: Water CAS No. 7 106-93-4 7 301-79-56 2 71-43-2 2 107-06-2 2 100-41-4 2 1634-04-4	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  B260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene	Lab ID: 9235  Results  Analytical Methor ND ug/l 104 %  Analytical Methor ND ug/l ND u	Units  od: EPA 86	Collected: 01/08/0 Report Limit 0.011 Preparation Metr 0.020 60-140 260 5.0 5.0 5.0 5.0	DF 13:09 DF 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:21	01/17/09 00:17 01/17/09 00:17 01/17/09 00:17 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42	Matrix: Water CAS No. 7 106-93-4 7 301-79-56 9 71-43-2 9 107-06-2 9 100-41-4 9 1634-04-4 9 91-20-3	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  B260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether	Lab ID: 9235  Results  Analytical Methor  ND ug/l 104 %  Analytical Methor  ND ug/l	Units  od: EPA 86  od: EPA 82	Collected: 01/08/0 Report Limit 0.011 Preparation Metr 0.020 60-140 260 5.0 5.0 5.0 5.0 5.0	DF 13:09 DF 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:21	01/17/09 00:17 01/17/09 00:17 01/17/09 00:17 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42	Matrix: Water CAS No. 7 106-93-4 7 301-79-56 9 71-43-2 9 107-06-2 9 100-41-4 9 1634-04-4 9 91-20-3 9 108-88-3	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  B260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene	Lab ID: 9235  Results  Analytical Methor ND ug/l 104 %  Analytical Methor ND ug/l ND u	Units  od: EPA 86  od: EPA 86	Collected: 01/08/0 Report Limit 0.020 60-140 260 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	DF 13:09 DF 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:21	01/17/09 00:17 01/17/09 00:17 01/17/09 00:17 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42	CAS No.  7 106-93-4 7 301-79-56  2 71-43-2 2 107-06-2 2 100-41-4 2 1634-04-4 2 91-20-3 2 108-88-3 2 1330-20-7	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  B260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene	Lab ID: 9235  Results  Analytical Methor ND ug/l 104 %  Analytical Methor ND ug/l ND u	Units  od: EPA 86  od: EPA 86	Collected: 01/08/0 Report Limit 0.020 60-140 260 5.0 5.0 5.0 5.0 5.0 10.0	DF 13:09 DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:21	01/17/09 00:17 01/17/09 00:17 01/17/09 00:17 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42	CAS No.  7 106-93-4 7 301-79-56  2 71-43-2 2 107-06-2 2 100-41-4 2 1634-04-4 2 91-20-3 2 108-88-3 2 1330-20-7 2 95-47-6	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  B260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene b-Xylene	Lab ID: 9235  Results  Analytical Methor ND ug/l 104 %  Analytical Methor ND ug/l ND u	Units  od: EPA 86  od: EPA 86	Collected: 01/08/0 Report Limit 0.020 60-140 260 5.0 5.0 5.0 5.0 5.0 10.0 5.0	DF 13:09 DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 01/14/09 16:21	01/17/09 00:17 01/17/09 00:17 01/17/09 00:17 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42	CAS No.  7 106-93-4 7 301-79-56  2 71-43-2 2 107-06-2 2 100-41-4 2 1634-04-4 2 91-20-3 2 108-88-3 2 1330-20-7 2 95-47-6 2 460-00-4	Qua
Parameters  B011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  B260 MSV  Benzene 1,2-Dichloroethane Ethylbenzene Methyl-tert-butyl ether Naphthalene Toluene m&p-Xylene 0-Xylene 4-Bromofluorobenzene (S)	Lab ID: 9235  Results  Analytical Methor ND ug/l 104 %  Analytical Methor ND ug/l	Units  od: EPA 86  od: EPA 86	Collected: 01/08/0 Report Limit 0.020 60-140 260 5.0 5.0 5.0 5.0 5.0 10.0 5.0 87-109	DF DF 13:09  DF 1  1  1  1  1  1  1  1  1  1  1  1  1	Prepared 8011 01/14/09 16:21	01/17/09 00:17 01/17/09 00:17 01/17/09 00:17 01/17/09 00:17 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42 01/13/09 19:42	Matrix: Water CAS No. 7 106-93-4 7 301-79-56 2 71-43-2 2 107-06-2 2 100-41-4 2 1634-04-4 2 91-20-3 2 108-88-3 2 1330-20-7 2 95-47-6 2 460-00-4 2 1868-53-7	Qua

Date: 01/20/2009 11:48 AM

**REPORT OF LABORATORY ANALYSIS** 

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Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

### **QUALITY CONTROL DATA**

Project:

**TISDALE'S QUICK STOP** 

Pace Project No.:

9235808

QC Batch:

MSV/5844

Analysis Method:

EPA 8260

QC Batch Method:

EPA 8260

Analysis Description:

8260 MSV

Associated Lab Samples:

9235808002, 9235808003

METHOD BLANK: 222027

Matrix: Water

Associated Lab Samples: 9235808002, 9235808003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	01/13/09 03:01	
Benzene	ug/L	ND	5.0	01/13/09 03:01	
Ethylbenzene	ug/L	ND	5.0	01/13/09 03:01	
m&p-Xylene	ug/L	ND	10.0	01/13/09 03:01	
Methyl-tert-butyl ether	ug/L	ND	5.0	01/13/09 03:01	
Naphthalene	ug/L	ND	5.0	01/13/09 03:01	
o-Xylene	ug/L	ND	5.0	01/13/09 03:01	
Toluene	ug/L	ND	5.0	01/13/09 03:01	
1,2-Dichloroethane-d4 (S)	%	98	79-120	01/13/09 03:01	
4-Bromofluorobenzene (S)	%	95	87-109	01/13/09 03:01	
Dibromofluoromethane (S)	%	100	85-115	01/13/09 03:01	
Toluene-d8 (S)	%	98	70-120	01/13/09 03:01	

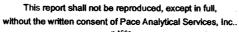
LABORATORY CONTROL SAME	PLE: 222028					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	50.6	101	72-126	
Benzene	ug/L	50	50.6	101	78-128	
Ethylbenzene	ug/L	50	52.9	106	80-127	
m&p-Xylene	ug/L	. 100	105	105	82-127	
Methyl-tert-butyl ether	ug/L	50	51.3	103	71-130	
Naphthalene	ug/L	50	59.6	119	52-136	
o-Xylene	ug/L	50	51.5	103	83-124	
Toluene	ug/L	50	50.1	100	76-126	
1,2-Dichloroethane-d4 (S)	%			99	79-120	
4-Bromofluorobenzene (S)	%			101	87-109	
Dibromofluoromethane (S)	%			99	85-115	
Toluene-d8 (S)	%			99	70-120	

MATRIX SPIKE & MATRIX SP	IKE DUPLICAT	E: 22202	9		222030						
Parameter	9: Units	235739001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Benzene	ug/L	2.2J	50	50	53.8	57.0	103	110	74-136	<del></del>	
Toluene	ug/L	ND	50	50	50.4	53.5	101	107	73-131	6	
1,2-Dichloroethane-d4 (S)	%						99	100	79-120		
4-Bromofluorobenzene (S)	%						93	99	87-109		
Dibromofluoromethane (S)	%						100	102	85-115		
Toluene-d8 (S)	%						98	99	70-120		

Date: 01/20/2009 11:48 AM

**REPORT OF LABORATORY ANALYSIS** 

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Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

### **QUALITY CONTROL DATA**

Project:

TISDALE'S QUICK STOP

Pace Project No.:

9235808

QC Batch:

MSV/5850

Analysis Method:

EPA 8260

QC Batch Method:

EPA 8260

Analysis Description:

8260 MSV

Associated Lab Samples:

9235808004, 9235808005, 9235808006, 9235808007, 9235808008, 9235808009, 9235808010, 9235808011, 9235808013, 9235808014, 9235808015

METHOD BLANK: 222224

Matrix: Water

**Associated Lab Samples:** 

9235808004, 9235808005, 9235808006, 9235808007, 9235808008, 9235808009, 9235808010, 9235808011,

9235808013, 9235808014, 9235808015

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	01/14/09 20:52	
Benzene	ug/L	ND	5.0	01/14/09 20:52	
Ethylbenzene	ug/L	ND	5.0	01/14/09 20:52	
m&p-Xylene	ug/L	ND	10.0	01/14/09 20:52	
Methyl-tert-butyl ether	ug/L	ND	5.0	01/14/09 20:52	
Naphthalene	ug/L	ND	5.0	01/14/09 20:52	
o-Xylene	ug/L	ND	5.0	01/14/09 20:52	
Toluene	ug/L	ND	5.0	01/14/09 20:52	
1,2-Dichloroethane-d4 (S)	%	111	79-120	01/14/09 20:52	
4-Bromofluorobenzene (S)	%	105	87-109	01/14/09 20:52	
Dibromofluoromethane (S)	%	109	85-115	01/14/09 20:52	
Toluene-d8 (S)	%	98	70-120	01/14/09 20:52	

LABORATORY CONTROL SAME	PLE: 222225					
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	57.7	115	72-126	
Benzene	ug/L	50	50.3	101	78-128	
Ethylbenzene	ug/L	50	48.7	97	80-127	
m&p-Xylene	ug/L	100	98.4	98	82-127	
Methyl-tert-butyl ether	ug/L	50	57.3	115	71-130	
Naphthalene	ug/L	50	67.5	135	52-136	
-Xylene	ug/L	50	48.8	98	83-124	
Toluene	ug/L	50	50.4	101	76-126	
1,2-Dichloroethane-d4 (S)	%			105	79-120	
4-Bromofluorobenzene (S)	%			103	87-109	
Dibromofluoromethane (S)	%			106	85-115	
Foluene-d8 (S)	%			99	70-120	

MATRIX SPIKE & MATRIX SP	IKE DUPLICAT	E: 22222	6		222227			-			
	92	235808015	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	Qual
Benzene	ug/L	574	50	50	509	519	-131	-111	74-136	2 P6	
Toluene	ug/L	ND	50	50	61.8	60.1	122	118	73-131	3	
1,2-Dichloroethane-d4 (S)	%						106	109	79-120		
4-Bromofluorobenzene (S)	%						101	102	87-109		
Dibromofluoromethane (S)	%						106	106	85-115		

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REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

### **QUALITY CONTROL DATA**

Project:

**TISDALE'S QUICK STOP** 

Pace Project No.:

9235808

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

222227

MSD

MS 9235808015 Spike

MS

MSD

MS

99

% Rec

Qual

Toluene-d8 (S)

Parameter

%

Units

Result

Spike Conc. Conc.

Result

Result

% Rec

MSD % Rec 100

Limits RPD 70-120

Date: 01/20/2009 11:48 AM

**REPORT OF LABORATORY ANALYSIS** 

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Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

### **QUALITY CONTROL DATA**

Project:

TISDALE'S QUICK STOP

Pace Project No.:

9235808

QC Batch:

MSV/5851

Analysis Method:

EPA 8260

QC Batch Method:

EPA 8260

Associated Lab Samples:

Analysis Description:

Matrix: Water

8260 MSV

METHOD BLANK: 222228

Associated Lab Samples:

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	01/14/09 20:35	
Benzene	ug/L	ND	5.0	01/14/09 20:35	
Ethylbenzene	ug/L	ND	5.0	01/14/09 20:35	
m&p-Xylene	ug/L	ND	10.0	01/14/09 20:35	
Methyl-tert-butyl ether	ug/L	ND	5.0	01/14/09 20:35	
Naphthalene	ug/L	ND	5.0	01/14/09 20:35	
o-Xylene	ug/L	ND	5.0	01/14/09 20:35	
Toluene	ug/L	ND	5.0	01/14/09 20:35	
1,2-Dichloroethane-d4 (S)	%	103	79-120	01/14/09 20:35	
4-Bromofluorobenzene (S)	%	105	87-109	01/14/09 20:35	
Dibromofluoromethane (S)	%	106	85-115	01/14/09 20:35	
Toluene-d8 (S)	%	100	70-120	01/14/09 20:35	

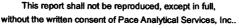
LABORATORY CONTROL SAMI	PLE: 222229					
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	57.7	115	72-126	,
Benzene	ug/L	50	50.3	101	78-128	
Ethylbenzene	ug/L	50	48.7	97	80-127	
m&p-Xylene	ug/L	100	98.4	98	82-127	
Methyl-tert-butyl ether	ug/L	50	57.3	115	71-130	
Naphthalene	ug/L	50	67.5	135	52-136	
o-Xylene	ug/L	50	48.8	98	83-124	
Toluene	ug/L	50	50.4	101	76-126	
1,2-Dichloroethane-d4 (S)	%	•		105	79-120	
4-Bromofluorobenzene (S)	%			103	87-109	
Dibromofluoromethane (S)	%			106	85-115	
Toluene-d8 (S)	%			99	70-120	

MATRIX SPIKE & MATRIX SP	IKE DUPLICAT	E: 22223	0		222231						
Parameter	92 Units	235808022 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec	RPD	Qua
Benzene	ug/L	ND .	50	50	58.4	58.5	117	117	74-136	.08	
Toluene	ug/L	ND	50	50	57.1	58.0	114	116	73-131	1	
,2-Dichloroethane-d4 (S)	%						106	111	79-120		
l-Bromofluorobenzene (S)	%						101	103	87-109		
Dibromofluoromethane (S)	%						108	111	85-115		
oluene-d8 (S)	%						98	100	70-120		

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**REPORT OF LABORATORY ANALYSIS** 

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Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

# **QUALITY CONTROL DATA**

Project:

TISDALE'S QUICK STOP

Pace Project No.:

: 9235808

QC Batch:

MSV/5855

Analysis Method:

EPA 8260

QC Batch Method:

EPA 8260

Analysis Description:

8260 MSV

**Associated Lab Samples:** 

9235808024, 9235808025, 9235808026

METHOD BLANK: 222480

Matrix: Water

Associated Lab Samples:

9235808024, 9235808025, 9235808026

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	01/13/09 15:19	
Benzene	ug/L	ND	5.0	01/13/09 15:19	
Ethylbenzene	ug/L	ND	5.0	01/13/09 15:19	
m&p-Xylene	ug/L	ND	10.0	01/13/09 15:19	
Methyl-tert-butyl ether	ug/L	ND	5.0	01/13/09 15:19	
Naphthalene	ug/L	ND	5.0	01/13/09 15:19	
o-Xylene	ug/L	ND	5.0	01/13/09 15:19	
Toluene	ug/L	ND	5.0	01/13/09 15:19	
1,2-Dichloroethane-d4 (S)	%	96	79-120	01/13/09 15:19	
4-Bromofluorobenzene (S)	%	96	87-109	01/13/09 15:19	
Dibromofluoromethane (S)	%	92	85-115	01/13/09 15:19	
Toluene-d8 (S)	%	98	70-120	01/13/09 15:19	

LABORATORY CONTROL SAME	PLE: 222481					
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	55.1	110	72-126	
Benzene	ug/L	50	56.8	114	78-128	
Ethylbenzene	ug/L	50	58.0	116	80-127	
m&p-Xylene	ug/L	100	113	113	82-127	
Methyl-tert-butyl ether	ug/L	50	52.5	105	71-130	
Naphthalene	ug/L	50	60.7	121	52-136	
o-Xylene	ug/L	50	57.2	114	83-124	
Toluene	ug/L	50	52.3	105	76-126	
1,2-Dichloroethane-d4 (S)	%			95	79-120	
4-Bromofluorobenzene (S)	%			102	87-109	
Dibromofluoromethane (S)	%			89	85-115	
Toluene-d8 (S)	%			99	70-120	

Date: 01/20/2009 11:48 AM





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### **QUALITY CONTROL DATA**

Project:

**TISDALE'S QUICK STOP** 

Pace Project No.:

9235808

QC Batch:

OEXT/5572

Analysis Method:

**EPA 8011** 

QC Batch Method:

EPA 8011

Analysis Description:

GCS 8011 EDB DBCP

Associated Lab Samples:

9235808001, 9235808002, 9235808003, 9235808004, 9235808005, 9235808006, 9235808007, 9235808008, 9235808009, 9235808010, 9235808011

METHOD BLANK: 222843

Matrix: Water

Associated Lab Samples:

9235808001, 9235808002, 9235808003, 9235808004, 9235808006, 9235808006, 9235808007, 9235808008,

9235808009, 9235808010, 9235808011

Reporting

Parameter	Units	Result	Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.019	01/18/09 15:09	
1-Chloro-2-bromopropane (S)	%	104	60-140	01/18/09 15:09	

LABORATORY CONTROL SAMPL	E & LCSD: 222844		22	22845						
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.28	0.30	0.26	106	94	60-140	14	20	
1-Chloro-2-bromopropane (S)	%				104	100	60-140			

MATRIX SPIKE & MATRIX SPIR	KE DUPLICAT	E: 22284	6		222847						
	92	235801006	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	Qual
1,2-Dibromoethane (EDB)	ug/L	ND	.28	.28	0.29	0.29	104	104	60-140	0	
1-Chloro-2-bromopropane (S)	%						107	108	60-140		

CAMDI	EDITE	TAGE	E. 2	22242

Parameter	Units	9235801007 Result	Dup Result	RPD	Qualifiers
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)	ug/L %	ND	ND 101	2	2





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### **QUALITY CONTROL DATA**

Project:

TISDALE'S QUICK STOP

Pace Project No.:

9235808

QC Batch:

OEXT/5573

Analysis Method:

EPA 8011

QC Batch Method:

**EPA 8011** 

Analysis Description:

GCS 8011 EDB DBCP

Associated Lab Samples:

9235808012, 9235808013, 9235808014, 9235808015, 9235808016, 9235808017, 9235808018, 9235808019,

9235808020, 9235808021, 9235808022, 9235808023, 9235808024, 9235808025, 9235808026

METHOD BLANK: 222850 Associated Lab Samples:

Matrix: Water

116

LCS

Result

9235808012, 9235808013, 9235808014, 9235808015, 9235808016, 9235808017, 9235808018, 9235808019,

9235808020, 9235808021, 9235808022, 9235808023, 9235808024, 9235808025, 9235808026

Blank

Reporting

Parameter Units Result Limit Analyzed 1,2-Dibromoethane (EDB) ug/L ND 0.019 01/16/09 20:19

Spike

Conc.

MS

.27

LABORATORY CONTROL SAMPLE & LCSD:

222851

222852

60-140

LCSD

Result

0.24

LCS

% Rec

88

96

01/16/09 20:19

LCSD

% Rec

% Rec

RPD

.7

Max **RPD** Qualifiers

1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)

1-Chloro-2-bromopropane (S)

uq/L %

%

0.24

86 95

60-140 60-140

Limits

Qualifiers

20

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

Parameter

222853

ND

222854

MS

MS

90

Parameter 1,2-Dibromoethane (EDB)

9235808012 Units Result

Units

Spike Spike Conc.

MSD

MSD

MSD % Rec

% Rec Limits

RPD Qual

1-Chloro-2-bromopropane (S)

ug/L %

.28 .28 Result Result 0.27 0.27 % Rec 98 114

98 60-140

0 60-140

SAMPLE DUPLICATE: 222855

9235808013 Units Result

Dup Result

**RPD** 

Qualifiers

1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)

**Parameter** 

%

ug/L

ND

ND 111

.6

*i*nelaci



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# **QUALITY CONTROL DATA**

Project:

TISDALE'S QUICK STOP

Pace Project No.:

9235808

QC Batch:

MSV/5863

Analysis Method:

**EPA 8260** 

QC Batch Method:

**EPA 8260** 

Analysis Description:

8260 MSV

1,2-Dichloroethane

Methyl-tert-butyl ether

Benzene

Ethylbenzene

m&p-Xylene

Naphthalene

o-Xylene

Toluene

METHOD BLANK: 222960

Parameter

Matrix: Water

Associated Lab Samples:

Associated Lab Samples:

9235808001, 9235808023

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

Units

9235808001, 9235808023

Blank Result	Reporting Limit	Analyzed	Qualifiers
ND	5.0	01/14/09 23:52	
ND	5.0	01/14/09 23:52	
ND	5.0	01/14/09 23:52	
ND	10.0	01/14/09 23:52	
ND	5.0	01/14/09 23:52	
ND	5.0	01/14/09 23:52	
ND	5.0	04/14/00 23:52	

5.0 01/14/09 23:52 1,2-Dichloroethane-d4 (S) % 101 01/14/09 23:52 79-120 4-Bromofluorobenzene (S) % 94 87-109 01/14/09 23:52 Dibromofluoromethane (S) % 102 85-115 01/14/09 23:52 Toluene-d8 (S) % 99 70-120 01/14/09 23:52

LABORATORY CONTROL SAMPLE:

	Spike	LCS	LCS	% Rec
Units	Conc	Recult	% Rec	Limite

ND

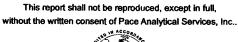
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	49.5	99	72-126	
Benzene	ug/L	50	49.0	98	78-128	
Ethylbenzene	ug/L	50	51.5	103	80-127	
m&p-Xylene	ug/L	100	103	103	82-127	
Methyl-tert-butyl ether	ug/L	50	51.4	103	71-130	
Naphthalene	ug/L	50	57.2	114	52-136	
o-Xylene	ug/L	50	52.2	104	83-124	
Toluene	ug/L	50	49.1	98	76-126	
1,2-Dichloroethane-d4 (S)	%			102	79-120	
4-Bromofluorobenzene (S)	%			99	87-109	
Dibromofluoromethane (S)	%			100	85-115	
Toluene-d8 (S)	%			99	70-120	

MATRIX SPIKE & MATRIX SP	IKE DUPLICAT	E: 22296	2		222963						
Parameter	9: Units	235817008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec	RPD	Qual
- r diamotor				COIIC.		Result	76 NEC	% Rec			- Quai
Benzene	ug/L	ND	50	50	55.8	54.4	112	109	74-136	2	
Toluene	ug/L	ND	50	50	53.6	52.7	107	105	73-131	2	
1,2-Dichloroethane-d4 (S)	%						100	103	79-120		
4-Bromofluorobenzene (S)	<b>%</b>						92	94	87-109		
Dibromofluoromethane (S)	%						102	103	85-115		
Toluene-d8 (S)	%						99	99	70-120		

Date: 01/20/2009 11:48 AM

**REPORT OF LABORATORY ANALYSIS** 

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Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

### **QUALIFIERS**

Project:

TISDALE'S QUICK STOP

Pace Project No.:

9235808

### **DEFINITIONS**

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

**DUP - Sample Duplicate** 

RPD - Relative Percent Difference

NC - Not Calculable.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

U - Indicates the compound was analyzed for, but not detected.

### **LABORATORIES**

PASI-C

Pace Analytical Services - Charlotte

### **ANALYTE QUALIFIERS**

P6

Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

Date: 01/20/2009 11:48 AM





### C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

OCT 28 2009

MR MARTY EASLER 196 RICHBURG ROAD GREELEYVILLE SC 29056

Re:

**Groundwater Sampling Directive** 

Tisdales Quick Stop, 1989 Thurgood Marshall Blvd, Kingstree, SC

UST Permit # 18686, CA # 37390 Release reported March 30, 2001 Report received February 18, 2009

Williamsburg County



Dear Mr. Easler:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (SCDHEC) recognizes your commitment to continue work at this site utilizing Geological Resources, Inc. The Division has reviewed the referenced report and determined the next necessary scope of work to be a comprehensive groundwater sampling event.

Cost Agreement # 37390 has been approved in the amount shown on the enclosed cost agreement for a comprehensive sampling event. The Division requests that all existing monitoring wells associated with the release as well as WSW-1, WSW-3, MW-1A, MW-2A, MW-3A, and MW-4A (located on adjacent site # 09017) be sampled for BTEX, Naphthalene, MTBE, and 8-Oxygenates, and 1,2-DCA using EPA method 8260B and EDB using EPA method 8011. Please note that wells in which the screen brackets the water table may be sampled without purging.

Please have Geological Resources, Inc. submit groundwater sampling results to the Division in a monitoring report containing the following items:

- A narrative portion documenting current site conditions and noting the names of field personnel, date, time, ambient air temperature, and general weather conditions during the sampling event.
   The report shall also contain well purging data, pH, specific conductivity, water temperature, PID readings (where applicable) and turbidity comments.
- Groundwater elevations, depth to groundwater, measurable free product thickness (where applicable), total well depth and screened interval for all monitoring wells associated with the site, unless otherwise directed by the Division, shall be presented in tabular form. Groundwater laboratory analytical data for all monitoring wells shall be presented in tabular format.
- Should any monitoring wells or water supply wells not be sampled, note the reason for which the sampling was not conducted on such wells.
- A groundwater elevation contour map of the site based on current groundwater potentiometric data.
- A CoC map based on current groundwater laboratory analytical data. The groundwater data should be adjacent to the relevant monitoring well.
- Manifests for any contaminated soil and/or groundwater removed from the site for treatment and/or disposal.
- Signature and seal by a professional geologist or engineer registered in the State of South Carolina.

Geological Resources, Inc. can submit an invoice for direct billing from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. Please note that all applicable South Carolina certification requirements apply to the laboratory services, well installation, and report preparation. All site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

A Report of Findings and the invoice is due within 60 days from the date of this letter and with in 45 days from the sampling date. Interim invoices may not be submitted for this scope of work. If the invoice is 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.

The Division will not pay costs for oxygenate analyses from any laboratory that is not certified for oxygenate compounds through the SCDHEC Office of Environmental Laboratory Certification. Detailed information regarding the oxygenate certification can be found on the SCDHEC website at <a href="http://www.scdhec.gov/environment/envserv/docs/OxygenateCertification.pdf">http://www.scdhec.gov/environment/envserv/docs/OxygenateCertification.pdf</a>

or <a href="http://www.scdhec.gov/environment/lwm/forms/">http://www.scdhec.gov/environment/lwm/forms/</a>. Any laboratory with questions regarding the certification requirements, should contact the Office of Environmental Laboratory Certification at (803) 896-0970.

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 from the Department is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the Department for the cost to be paid. The SCDHEC 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, SCDHEC reserves the right to question and/or reject costs if deemed unreasonable and to audit project records at any time during the project or after completion of work.

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 and/or groundwater with concentrations below RBSLs.

On all correspondence or inquiries regarding this project, please reference UST Permit # 18686. If you have any questions, please feel free to contact me by phone at (803) 896-4085, by fax at (803) 896-6245, or by email at martinim@dhec.sc.gov.

Sincerely.

Jim Martin, Hydrogeologist Corrective Action Section

**UST Management Division** 

Bureau of Land and Waste Management

enc: Approved Cost Agreement

cc: Geological Resources, Inc., 2301 Crown Point Executive Drive, Suite F, Charlotte, NC 28227 (w/enc)

Technical file (w/o enc)

Approved Cost Agreement 37390

Facility: 18686 TISDALES QUICK STOP

MARTINJM PO Number:

Task / Description Categories O4 MOB/DEMOB	Item Description		Qty / Pct	Unit Price	<u>Amoun</u>
WOS/SEIMOB					
	B PERSONNEL		2.0000	200.00	
10 SAMPLE COLLECTION		-	2.0000	290.00	580.00
	A GROUND WATER				
	C WATER SUPPLY		2.0000	55.00	110.00
	· · <del>- ·</del>		2.0000	25.00	50.00
1 ANALYSES	D GROUNDWATER NO-PURGE		34.0000	35.00	1,190.00
GW GROUNDWATER					
ON OROGINDWATER	A BTEX+NAPTH+MTBE		38.0000	100.00	2 900 00
	BB 1,2-DCA		38.0000	10.75	3,800.00
	F EDB		38.0000	55.00	408.50
7 DISPOSAL	P 8 OXYGENATES		38.0000	85.00	2,090.00 3,230.00
DISPOSAL				00.00	3,230.00
	A1 WASTEWATER - PURGING/SAMPLING				
P RPT/PROJECT MNGT & COORDINATIO	WIGHEN TENTENT ON ON O'S AWIPLING		1.0000	90.00	90.00
and a coordinatio					
	PCT PERCENT		0.1500	11,548.50	4 700 5-
			0.1000	11,040.00	1,732.28

Total Amount

13,280.78



### Geological Resources, Inc.

December 11, 2009

Jim Martin, Hydrogeologist Assessment and Corrective Action Division Underground Storage Tank Program Bureau of Land and Waste Management 2600 Bull Street Columbia, South Carolina 29201-1708

Re:

Ground Water Sampling Report

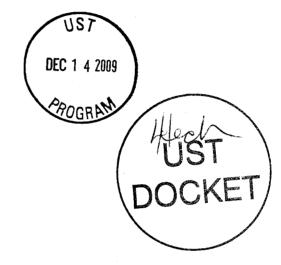
Tisdales Quick Stop

Kingstree, Williamsburg County

UST Permit #: 18686

CA#: 37390

Dear Mr. Martin:



The purpose of this report is to present the results of ground water sampling activities conducted between November 3 and 4, 2009 at the above referenced site (Figure 1). Site activities were conducted in general accordance with the requirements outlined in correspondence from the SCDHEC dated October 28, 2009 and addressed to Mr. Marty Easler. The following Figures, Tables and Appendices have been included:

Figure 1: Site Location Map

Figure 2: Site Map

Figure 3: Water Table Surface Map Figure 4: Ground Water Quality Map

Table 1: Summary of Ground Water Elevation Data

Table 2: Summary of Historical Ground Water Elevation Data

Table 3: Summary of Laboratory Analyses - Ground Water Samples - Chemicals of Concern

Table 4: Summary of Historical Laboratory Analyses - Ground Water Samples - Chemicals of Concern

Table 5: Summary of Laboratory Analyses-Oxygenates

Table 6: Summary of Historical Laboratory Analyses-Oxygenates

Appendix A: Ground Water Sampling Data Sheets

Appendix B: Laboratory Report

All of the existing monitoring wells associated with the Tisdales Quick Stop petroleum release were sampled on November 3 and 4, 2009. Please note that only telescoping wells TW-1 and TW-2 were purged prior to sampling. Based on the November 2009 gauging data, depths to ground water in the monitoring wells ranged from 13.26 to 19.22 feet. Ground water elevations at the site ranged from 79.64 to 83.27 feet relative to a temporary benchmark

Tisdales Quick Stop Ground Water Sampling Report Page 2 of 2

with an assumed datum of 100.00 feet. Based on this data, ground water flow was generally toward the west across the site and consistent with historical data.

Each of the ground water samples from the monitoring wells were submitted to a South Carolina certified laboratory for the analyses of BTEX, MTBE, naphthalene, 1,2-DCA and eight oxygenates by EPA Method 8260B and EDB by EPA Method 8011. In addition, two water supply wells (WSW-1 and WSW-3) were sampled for BTEX, MTBE, naphthalene, 1, 2-DCA and eight oxygenates by EPA Method 8260B and EDB by EPA Method 8011. Free product was measured in monitoring wells MW-2, MW-3 and MW-1A through MW-4A at thicknesses that ranged from 0.02 feet to 0.47 feet. Therefore, these six wells were not sampled. Concentrations of one or more BTEX constituents, MTBE, naphthalene and/or EDB that exceeded the RBSLs were reported in MW-1, MW-5, MW-8, MW-16, MW-20 and MW-23. No detectable concentrations of COCs were reported in MW-4, MW-6, MW-9, MW-10, MW-13 through MW-15, MW-18, MW-19, MW-21, MW-22, MW-24 through MW-29, MW-31, TW-1, TW-2, WSW-1 or WSW-3. Detectable concentrations of oxygenates were reported in MW-1, MW-7, MW-16, MW-18 and MW-23.

Based on this data, the vertical and horizontal extent of the contaminant plume has been adequately defined at the site. Continued ground water monitoring is recommended. In addition, free product recovery activities should be conducted to reduce free product levels in monitoring wells MW-2, MW-3 and MW-1A through MW-4A. Please do not hesitate to contact the undersigned at (704) 845-4010 if you have any questions or comments concerning this project.

Sincerely,

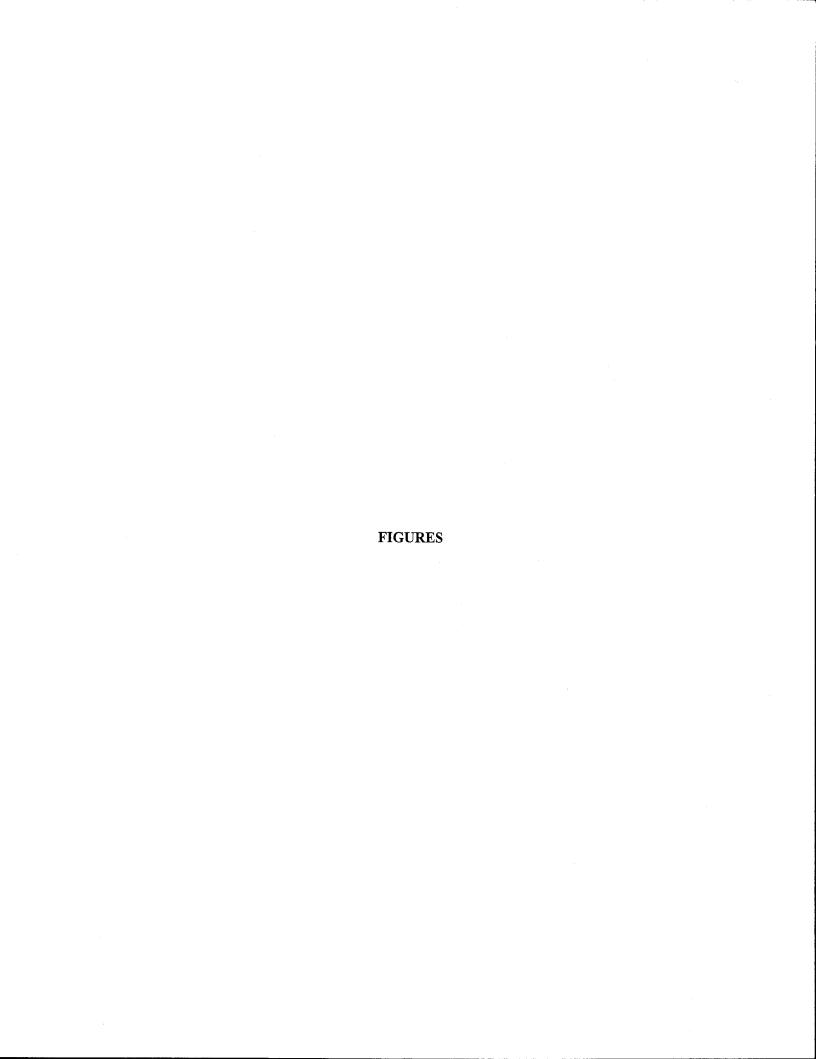
Scott Ball

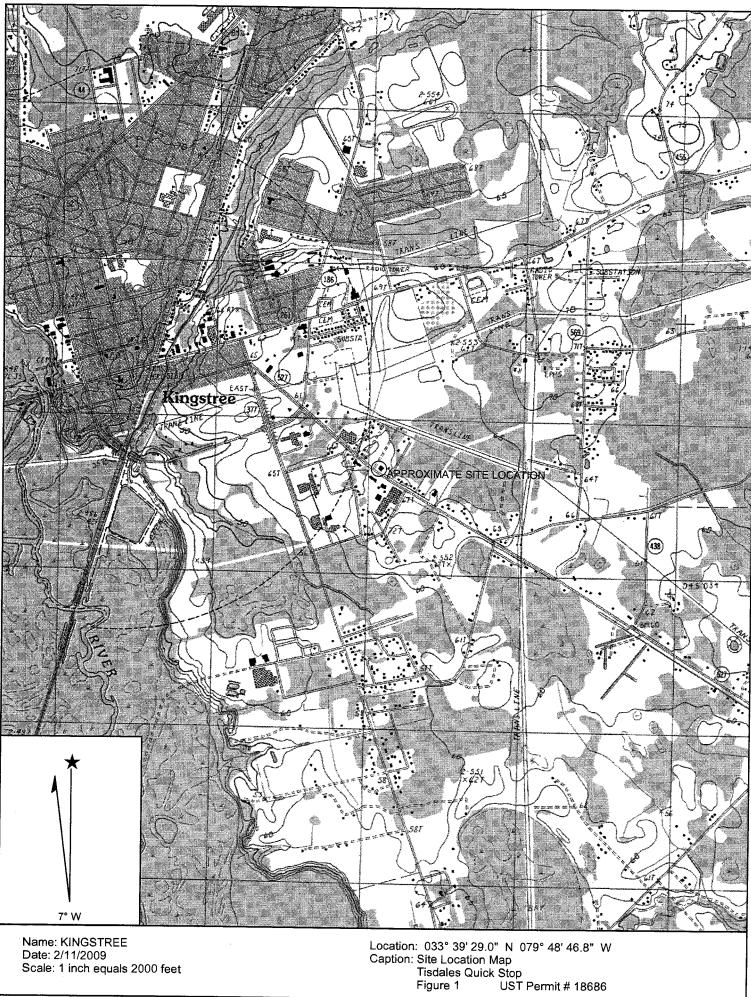
Senior Project Manager

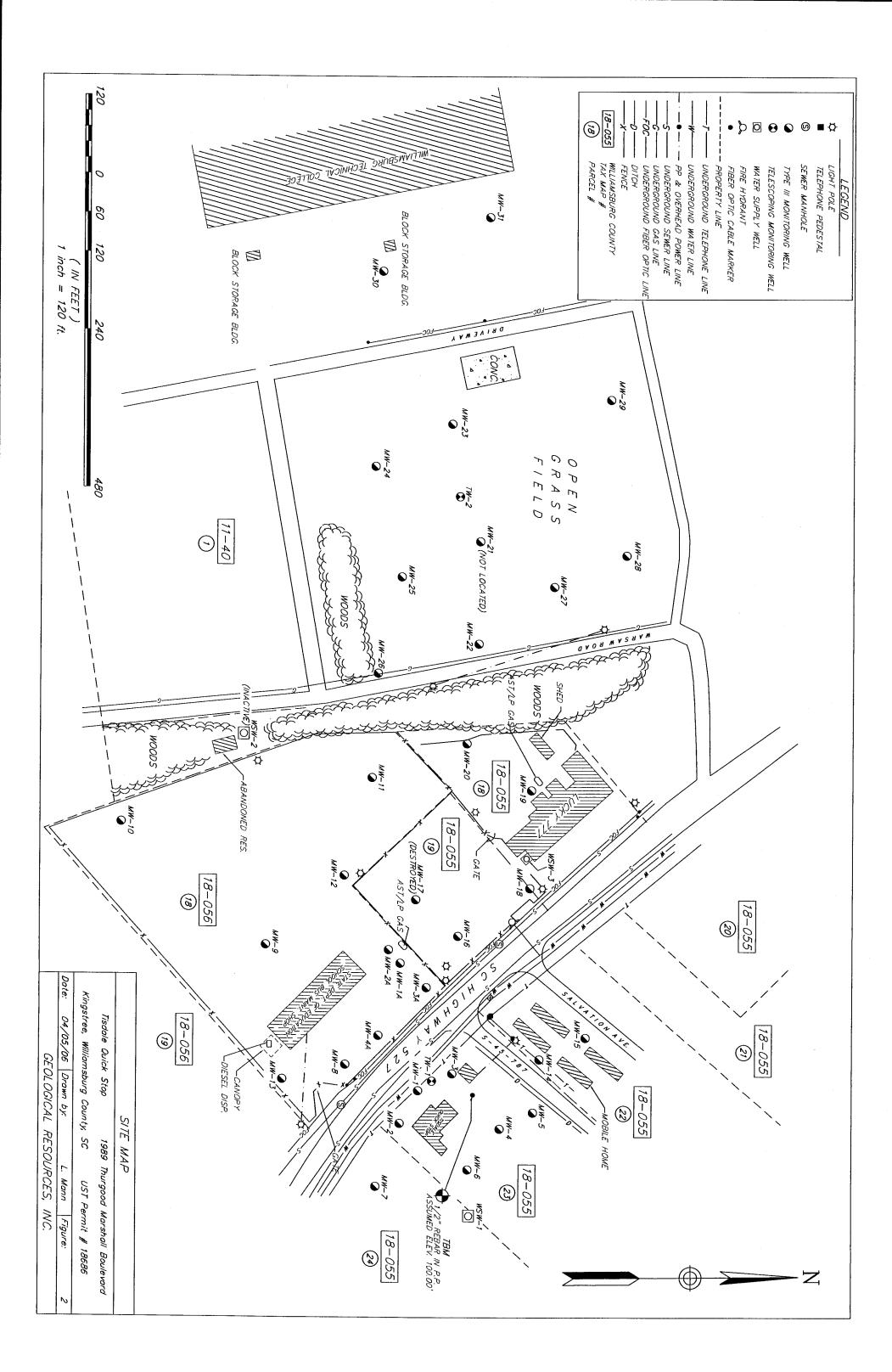
enclosure

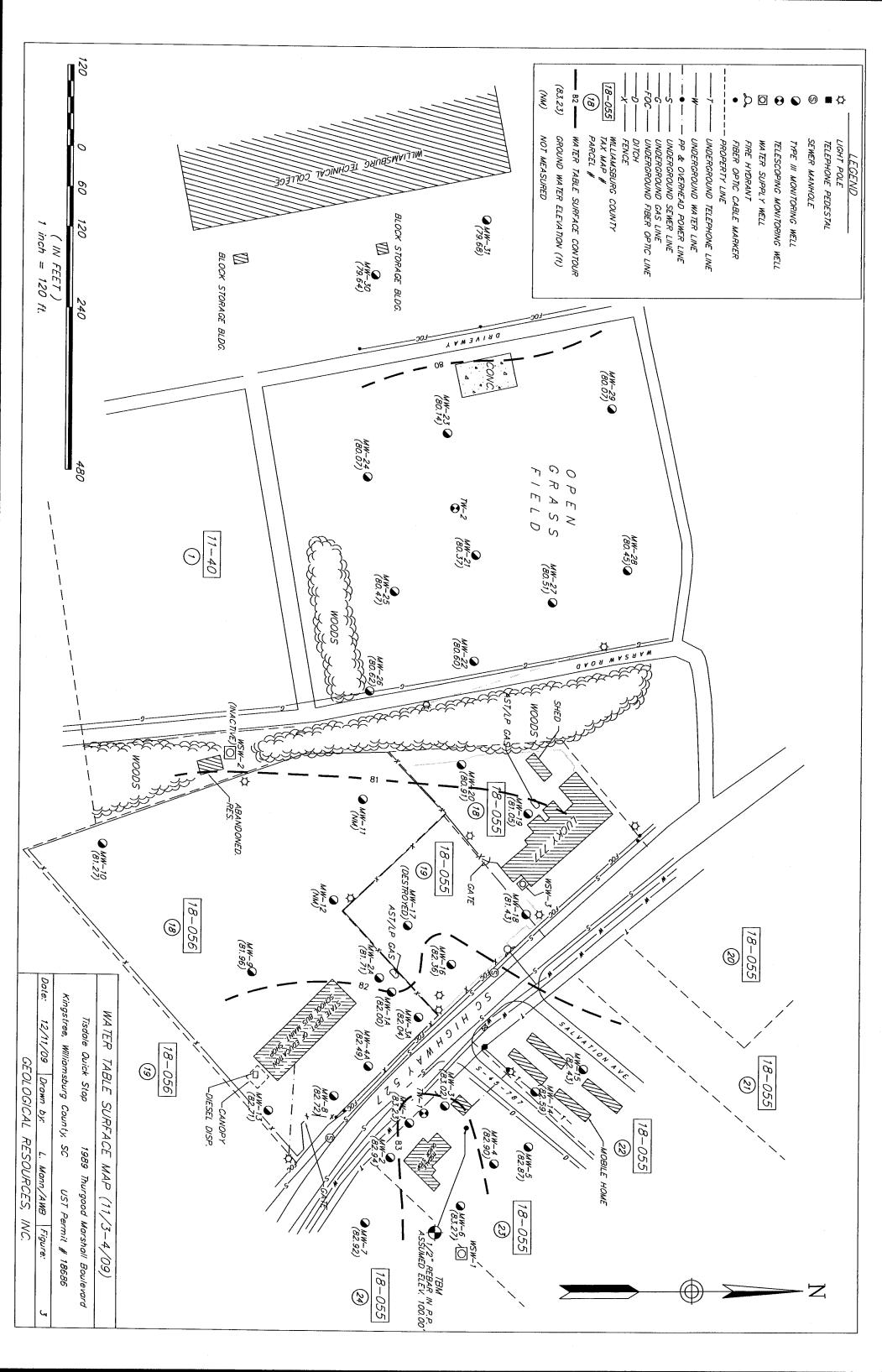
cc: Mr. Marty Easler

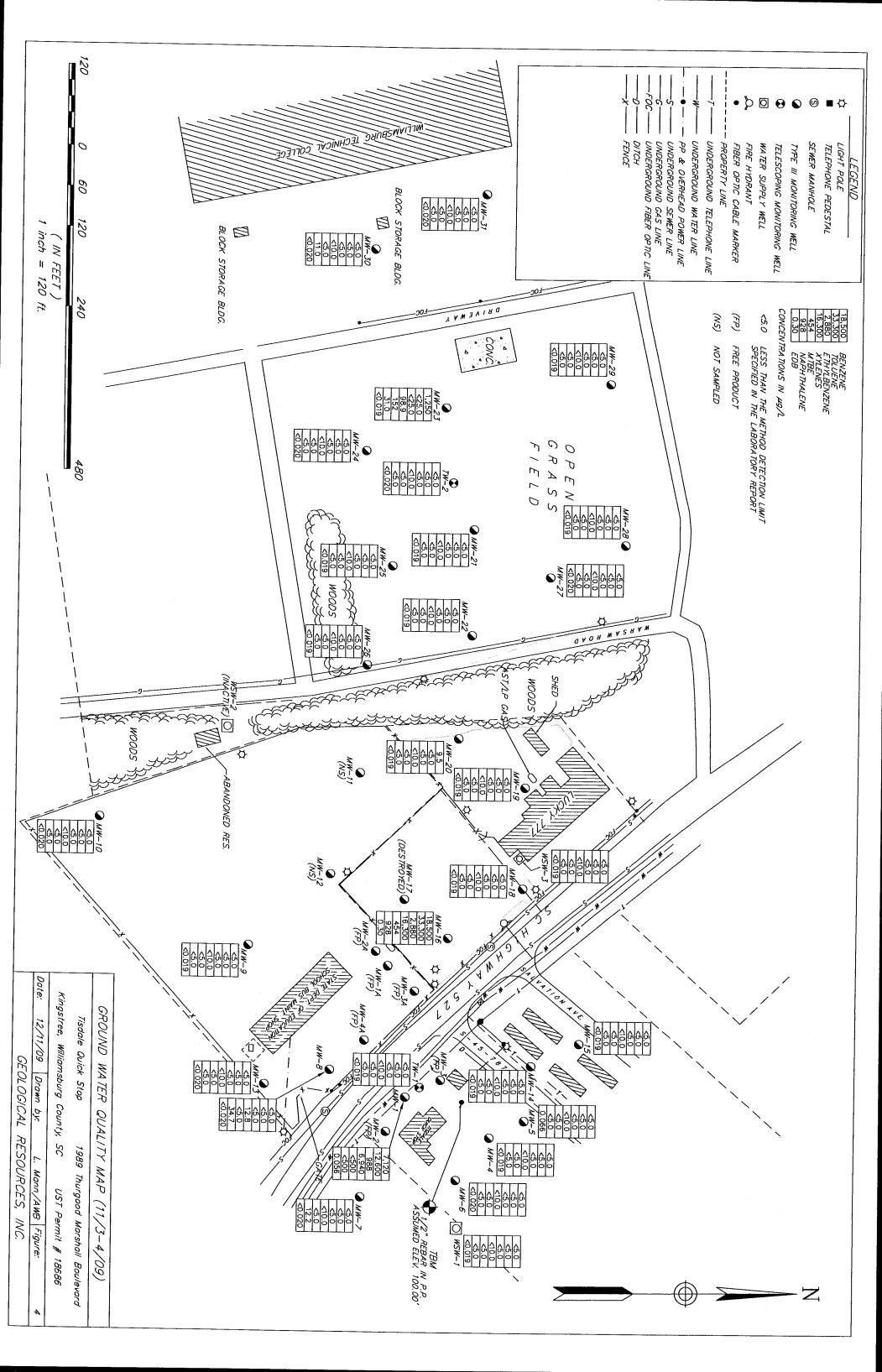
file











**TABLES** 

## TABLE 1 SUMMARY OF GROUND WATER ELEVATION DATA NOVEMBER 3 & 4, 2009 TISDALES QUICK STOP UST PERMIT # 18686

Well No.	Top of Casing Elevation	Depth to Free Product	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
MW-1	98.81		15.58	0.00	83.23	20	10-20
MW-2	98.82	15.86	15.97	0.11	82.94	25	10-25
MW-3	98.74	15.70	15.82	0.12	83.02	25	10-25
MW-4	98.58		15.68	0.00	82.90	25	10-25
MW-5	98.13		15.26	0.00	82.87	22	12-22
MW-6	98.50		15.23	0.00	83.27	21.5	11.5-21.5
MW-7	98.19		15.27	0.00	82.92	22	12-22
MW-8	98.17		15.45	0.00	82.72	22	12-22
MW-9	98.52		16.56	0.00	81.96	22	12-22
MW-10	98.68		17.41	0.00	81.27	25	10-25
MW-11	94.65	NM	NM	NM	NM	22	7-22
MW-12	95.70	NM	NM	NM	NM	22	7-22
MW-13	99.01		16.30	0.00	82.71	25	10-25
MW-14	98.36		15.77	0.00	82.59	25	10-25
MW-15	99.59		17.16	0.00	82.43	25	10-25
MW-16	98.93		16.57	0.00	82.36	23	8-23
MW-17	98.25	NM	NM	NM	NM	23	8-23
MW-18	99.83		18.40	0.00	81.43	25	10-25
MW-19	100.27		19.22	0.00	81.05	25	10-25
MW-20	97.21		16.30	0.00	80.91	25	10-25
MW-21	95.72		15.35	0.00	80.37	23	8-23
MW-22	96.68		16.08	0.00	80.60	25	10-25
MW-23	95.78		15.64	0.00	80.14	24	9-24
MW-24	93.86		13.79	0.00	80.07	23	8-23
MW-25	94.30		13.83	0.00	80.47	23	8-23
MW-26	93.88		13.26	0.00	80.62	21	6-21
MW-27	98.15		17.64	0.00	80.51	25	10-25
MW-28	98.45		18.00	0.00	80.45	25	10-25
MW-29	96.78		16.71	0.00	80.07	25	10-25
MW-30	95.38		15.74	0.00	79.64	22	7-22
MW-31	96.05		16.37	0.00	79.68	20	10-20
MW-1A	97.20	15.19	15.25	0.06	82.00	Unknown	Unknown
MW-2A	97.30	15.59	15.61	0.02	81.71	Unknown	Unknown
MW-3A	97.27	15.16	15.63	0.47	82.04	Unknown	Unknown
MW-4A	98.09	15.60	15.62	0.02	82.49	Unknown	Unknown
TW-1	99.01		16.84	0.00	82.17	46	41-46
TW-2	95.26		15.01	0.00	80.25	51	46-51

### Note:

- Elevations relative to a temporary benchmark with an assumed datum of 100.00 feet; data reported in feet.
- If free product is present in a well, groundwater elevation calculated by: [Top of Casing Elevation Depth to Water] + [free product thickness x 0.8581].
- NM: Not measured.

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		15.72	83.09		
	02/09/04		14.25	84.56		
	09/23/04		11.94	86.87		
MW-1	01/21/05	98.81	13.09	85.72	20	10-20
	03/23/06		12.43	86.38		
	01/07/09	·	15.12	83.69		
	11/04/09		15.58	83.23		
	01/16/03		15.08	83.74		
	02/09/04		14.18	84.64		
	09/23/04		12.07	86.75		
MW-2	01/21/05	98.82	13.24	85.58	25	10-25
	03/23/06		12.43	86.39		
	01/07/09		15.01	83.83		
	11/03/09	·	15.97	82.94		
	01/16/03		15.34	83.40		
	02/09/04		14.18	84.56		
	09/23/04		11.95	86.79		
MW-3	01/21/05	98.74	13.36	85.38	25	10-25
	03/23/06		12.37	86.37		
	01/07/09		15.17	83.67		
	11/03/09		15.82	83.02		
	01/16/03		15.06	83.52		
	02/09/04		14.01	84.57		
	09/23/04		11.96	86.62		
MW-4	01/21/05	98.58	13.13	85.45	25	10-25
	03/23/06		12.24	86.34		
	01/07/09		14.84	83.74		
	11/04/09		15.68	82.90		

TABLE 2
SUMMARY OF HISTORICAL GROUND WATER ELEVATION DATA
TISDALES QUICK STOP
UST PERMIT # 18686

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		14.77	83.36		
	02/09/04		13.77	84.36		
	09/23/04		11.71	86.42		
MW-5	01/21/05	98.13	13.14	84.99	22	12-22
	03/23/06		12.80	85.33		
	01/07/09		14.96	83.17		
	11/04/09		15.26	82.87		
	01/16/03	:	14.64	83.86		
	02/09/04		13.86	84.64	·	
	09/23/04		11.86	86.64		
MW-6	01/21/05	98.50	13.38	85.12	21.5	11.5-21.5
	03/23/06		12.81	85.69		
	01/07/09		15.00	83.50		
	11/03/09		15.23	83.27		
2	01/16/03		14.69	83.50		
	02/09/04		13.56	84.63		
	09/23/04		11.56	86.63		
MW-7	01/21/05	98.19	12.78	85.41	22	12-22
	03/23/06		11.73	86.46		
	01/07/09		14.60	83.59		
	11/03/09		15.27	82.92		
	01/16/03		14.85	83.32		
	02/09/04		13.98	84.19		
	09/23/04		12.07	86.10		
MW-8	01/21/05	98.17	13.33	84.84	22	12-22
	03/23/06		12.14	86.03		
	01/08/09		15.00	83.17		
	11/03/09		15.45	82.72		

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		15.79	82.73		
	02/09/04		15.00	83.52	1	
	09/23/04		13.12	85.40		
MW-9	01/21/05	98.52	14.64	83.88	22	12-22
	03/23/06	]	13.29	85.23		
	01/08/09		16.01	82.51		
	11/03/09		16.56	81.96	1	
	01/16/03		16.52	82.16		
	02/09/04		15.79	82.89		
-	09/23/04		13.97	84.71		
MW-10	01/21/05	. 98.68	15.35	83.33	25	10-25
[	03/23/06		14.18	84.50		
ş.	01/08/09		15.75	82.93		
	11/03/09		17.41	81.27		
	01/16/03		12.89	81.76		
	02/09/04		12.10	82.55		
	09/23/04		10.51	84.14		
MW-11	01/21/05	94.65	11.68	82.97	22	7-22
	03/23/06		10.55	84.10		
	01/08/09		NM	NM		
	11/03/09		NM	NM		
	01/16/03		13.13	82.57		
	02/09/04		12.35	83.35		
	09/23/04		12.67	83.03		
MW-12	01/21/05	95.70	12.06	83.64	22	7-22
	03/23/06		10.80	84.90		
	01/08/09		NM	NM		
	11/03/09		NM	NM		

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		15.65	83.36		
	02/09/04		14.70	84.31		
	09/23/04		12.90	86.11		
MW-13	01/21/05	99.01	14.05	84.96	25	10-25
	03/23/06		12.82	86.19		
	01/08/09		15.68	83.33		
	11/03/09		16.30	82.71		
	01/16/03		15.12	83.24		****
	02/09/04		14.24	84.12		
	09/23/04		12.03	86.33		
MW-14	01/21/05	98.36	13.78	84.58	25	10-25
,	03/23/06		12.75	85.61		
	01/08/09		15.32	83.04		
	11/04/09		15.77	82.59		
	01/16/03		16.40	83.19		
	02/09/04		15.55	84.04		
	09/23/04		13.50	86.09		
MW-15	01/21/05	99.59	14.89	84.70	25	10-25
	03/23/06		13.92	85.67		
	01/08/09		16.63	82.96	-	
	11/04/09		17.16	82.43		
	01/16/03		16.18	82.75		
	02/09/04		15.21	83.72		
	09/23/04		13.55	85.38		
MW-16	01/21/05	98.93	14.79	84.14	23	8-23
[	03/23/06		13.60	85.33		
	01/08/09		16.21	82.72		
	11/04/09		16.57	82.36		

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		15.94	82.31		
	02/09/04		14.55	83.70	,	
MW-17	09/23/04	98.25	12.82	85.43	22	0.00
1,1,1,1	01/21/05	90.23	13.78	84.47	23	8-23
	03/23/06		NM	NM		
	11/03/09		NM	NM	1	
	01/16/03		17.70	82.13		
	02/09/04		16.91	82.92		
	09/23/04		15.06	84.77	·	
MW-18	01/21/05	99.83	16.45	83.38	25	10-25
	03/23/06		15.31	84.52		
	01/08/09		17.89	81.94		
	11/04/09		18.40	81.43		
	01/16/03		18.54	81.73		
	02/09/04		17.63	82.64		
	09/23/04		16.00	84.27		
MW-19	01/21/05	100.27	17.21	83.06	25	10-25
	03/23/06		16.15	84.12		
	01/08/09		NM	NM		
	11/04/09		19.22	81.05		
	01/16/03		15.59	81.62		***************************************
	02/09/04		14.74	82.47		
	09/23/04		13.15	84.06		
MW-20	01/21/05	97.21	14.33	82.88	25	10-25
	03/23/06		13.21	84.00		
	01/08/09		NM	NM		
	11/04/09		16.30	80.91		:

TABLE 2
SUMMARY OF HISTORICAL GROUND WATER ELEVATION DATA
TISDALES QUICK STOP
UST PERMIT # 18686

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		14.70	81.02		
	02/09/04		13.85	81.87		
	09/23/04		12.27	83.45		
MW-21	01/21/05	95.72	13.42	82.30	23	8-23
,	03/23/06		NM	NM		
	01/08/09		NM	NM		
	11/04/09		15.35	80.37		
	01/16/03		15.40	81.28		
	02/09/04		14.61	82.07		
	09/23/04		12.92	83.76		
MW-22	01/21/05	96.68	14.15	82.53	25	10-25
	03/23/06		13.21	83.47		
	01/08/09		15.54	81.14		
	11/04/09		16.08	80.60		
	01/16/03		15.08	80.70		
	02/09/04		14.30	81.48		
	09/23/04		12.72	83.06		
MW-23	01/20/05	95.78	13.82	81.96	24	9-24
	03/23/06		13.09	82.69		
	01/08/09		15.21	80.57		
	11/04/09		15.64	80.14		
	01/16/03		13.00	80.86		
	02/09/04		12.19	81.67		
	09/23/04		10.58	83.28		
MW-24	01/20/05	93.86	11.71	82.15	23	8-23
	03/23/06		10.87	82.99		
	01/08/09		13.17	80.69		
	11/04/09		13.79	80.07		

TABLE 2
SUMMARY OF HISTORICAL GROUND WATER ELEVATION DATA
TISDALES QUICK STOP
UST PERMIT # 18686

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		13.20	81.10		
	02/09/04		12.37	81.93		
	09/23/04		10.74	83.56		
MW-25	01/20/05	94.30	11.99	82.31	23	8-23
	03/23/06		11.00	83.30		
	01/08/09		13.34	80.96		
	11/04/09		13.83	80.47		,
	01/16/03		12.38	81.50		
	02/09/04		11.62	82.26		
	09/23/04		10.03	83.85		
MW-26	01/20/05	93.88	11.18	82.70	21	6-21
	03/23/06		10.58	83.30		
	01/08/09		12.44	81.44		
	11/04/09		13.26	80.62		
	01/16/03		16.99	81.16		
	02/09/04		16.20	81.95		
	09/23/04		14.61	83.54		
MW-27	01/21/05	98.15	15.81	82.34	25	10-25
	03/23/06		14.84	83.31		
	01/08/09		17.20	80.95		
	11/04/09		17.64	80.51		
	01/16/03		17.46	80.99		
	02/09/04		16.55	81.90		
	09/23/04		15.00	83.45		
MW-28	01/21/05	98.45	16.17	82.28	25	10-25
	03/23/06		15.21	83.24		
	01/08/09		NM	NM		
	11/04/09		18.00	80.45		

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		16.17	80.61		
	02/09/04		15.30	81.48		
	09/23/04		13.74	83.04		
MW-29	01/20/05	96.78	14.69	82.09	25	10-25
	03/23/06		14.12	82.66	1	
	01/08/09		16.31	80.47		
	11/04/09		16.71	80.07		
	01/16/03		15.18	80.20		
	02/09/04		14.36	81.02	1	
	09/23/04		12.85	82.53		
MW-30	01/20/05	95.38	13.72	81.66	22	7-22
	03/23/06		13.04	82.34		
	01/08/09		15.41	79.97		
	11/04/09		15.74	79.64		
	09/23/04		13.88	82.17		
	01/20/05		14.73	81.32		
MW-31	03/23/06	96.05	14.22	81.83	20	10-20
	01/08/09		16.49	79.56		
	11/04/09		16.37	79.68		
	01/21/05		13.38	83.82		
MW-1A	03/23/06	97.20	12.11	85.09	T. 1	<b>T</b> T <b>1</b>
WIW-IA [	01/08/09	97.20	14.99	82.21	Unknown	Unknown
	11/03/09		15.25	82.00		
	01/21/05		13.39	83.91		
MW-2A	03/23/06	97.30	12.27	85.03	T.T., 1	TT1
141 44 -271	01/08/09	97.30	15.40	82.36	Unknown	Unknown
	11/03/09		15.61	81.71		

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/21/05		13.27	84.00		
MW-3A	03/23/06	97.27	12.19	85.08	77.1	77.1
MW-SA	01/08/09	97.27	14.82	83.31	Unknown	Unknown
	11/03/09		15.63	82.04		
	01/21/05		14.04	84.05		
MW-4A	03/23/06	98.09	12.43	85.66	TTT	77.1
MW-7A	01/08/09	96.09	15.29	83.53	Unknown	Unknown
	11/03/09		15.62	82.49	<b>.</b>	
	01/16/03		15.14	83.87		
	02/09/04		14.81	84.20		
	09/23/04		13.16	85.85		
TW-1	01/21/05	99.01	14.39	84.62	46	41-46
	03/23/06		13.35	85.66		
	01/08/09		15.97	83.04		
	11/04/09		16.84	82.17		
	01/16/03		14.33	80.93	-	
	02/09/04		13.58	81.68		
	09/23/04		11.98	83.28		
TW-2	01/21/05	95.26	13.07	82.19	51	46-51
	03/23/06		12.10	83.16		
	01/08/09		14.52	80.74		
	11/04/09		15.01	80.25		

### Notes

- Elevations relative to a temporary benchmark with an assumed datum of 100.00 feet; data reported in feet.
- \*\* : If free product is present in a well, groundwater elevation calculated by: [Top of Casing Elevation Depth to Water] + [free product thickness x 0.8581].
- NM: Not measured; monitoring well is destroyed, covered or could not be located.
- Monitoring wells MW-1A through MW-4A were installed by S&ME Consultants in January 2000.
- Depths to ground water in MW-2, MW-3, MW-16, MW-17 and MW-1A through MW-4A were corrected for free product, if present, with an assumed density of 0.8581.
- Monitoring wells MW-16 and MW-17 were completed above grade with stand up covers; depths to ground water were measured from the tops of casing; well depths and screened intervals were measured from the ground surface.

SUMMARY OF LABORATORY ANALYSES - GROUND WATER SAMPLES - CHEMICALS OF CONCERN **NOVEMBER 3 & 4, 2009** TABLE 3

Well No.	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB	Comments
RBSL	5	1,000	700	10,000	40	25	5	0.05	
MW-1	7,120	12,600	886	6,940	<500	<500	<500	0.056	
MW-2	FP	FP	FP	FP	FP	FP	FP	FP	
MW-3	FP	FP	FP	III	FP	FP	FP	FP	
MW-4	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	
MW-5	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	0.066	
MW-6	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	
MW-7	<5.0	<5.0	<5.0	<10.0	<5.0	12.2	<5.0	<0.020	
MW-8	<5.0	<5.0	<5.0	12.8	<5.0	34.7	<5.0	<0.020	
MW-9	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	
MW-10	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	
MW-11	NS	NS	SN	SN	NS	NS	NS	NS	Covered with Bus
MW-12	NS	NS	SN	SN	NS	NS	NS	NS	Covered with Bus
MW-13	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	
MW-14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	
MW-15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	
MW-16	18,500	33,300	2,880	16,300	454	928	<250	0.30	

# SUMMARY OF LABORATORY ANALYSES - GROUND WATER SAMPLES - CHEMICALS OF CONCERN **NOVEMBER 3 & 4, 2009** TABLE 3

Well No.	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB	Comments
RBSL	5	1,000	700	10,000	40	25	5	0.05	
MW-17	SN	SN	SN	SN	NS	SN	NS	SN	Not found
MW-18	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	in the second se
MW-19	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	
MW-20	9.5	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	
MW-21	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	
MW-22	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	
MW-23	1,250	<25.0	<25.0	6.86	152	31.0	<25.0	<0.019	
MW-24	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	
MW-25	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	
MW-26	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	
MW-27	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	
MW-28	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	
MW-29	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	
MW-30	<5.0	<5.0	<5.0	<10.0	<5.0	11.0	<5.0	<0.020	
MW-31	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	
MW-1A	FP	FP	FP	FP	FP	FP	FP	FP	
MW-2A	FP	FP	FP	FP	FP	FP	FP	FP	

SUMMARY OF LABORATORY ANALYSES - GROUND WATER SAMPLES - CHEMICALS OF CONCERN **NOVEMBER 3 & 4, 2009** TABLE 3

# TISDALES QUICK STOP UST PERMIT # 18686

Comments							
EDB	0.05	FP	FP	<0.019	<0.020	<0.019	<0.019
1,2-DCA	5	FP	FP	<5.0	<5.0	<5.0	<5.0
Naphthalene	25	FP	FP	<5.0	<5.0	<5.0	<5.0
MTBE	40	FP	FP	<5.0	<5.0	<5.0	<5.0
Xylenes	10,000	FP	FP	<10.0	<10.0	<10.0	<10.0
Ethylbenzene	700	FP	FP	<5.0	<5.0	<5.0	<5.0
Toluene	1,000	FP	FP	<5.0	<5.0	<5.0	<5.0
Benzene	5	FP	FP	<5.0	<5.0	<5.0	<5.0
Well No.	RBSL	MW-3A	MW-4A	TW-1	TW-2	WSW-1	WSW-3

### Jotes.

- Analyses for selected volatile organic compounds by EPA Method 8260B and EDB by EPA Method 8011; results reported in µg/l (micrograms per liter).
  - RBSL: May 2001 Risk Based Screening Level.
- · Concentrations in bold face type exceeded the RBSL.
- <: Less than the report limit specified in the laboratory report.
  </p>
  - J: Estimated value.
- NR: Not requested.
  - NS: Not sampled.

SUMMARY OF HISTORICAL LABORATORY ANALYSES - GROUND WATER SAMPLES CHEMICALS OF CONCERN TABLE 4

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	17,300	31,000	2,220	12,800	495	515		0.13
	02/09/04	11,400	19,600	1,010	12,000	395	525	1	NR
	10/07/04	4,160	7,500	504	4,400	348	290	ı	0.03
MW-1	01/21/05	8,150	13,500	790	7,170	260	<500	1	NR
	03/24/06	7,800	11,800	552	6,640	833	<100	ı	NR
	01/07/09	15,700	15,100	1,600	12,310	1,120	878	<500	0.092
	11/04/09	7,120	12,600	886	6,940	<500	<500	<500	0.056
	01/17/03	FP	FP	FP	FP	FP	FP	FP	FP
	02/09/04	FP	FP	FP	FP	FP	FP	FP	FP
	10/07/04	FP	FP	FP	FP	FP	FP	FP	FP
MW-2	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
	03/24/06	14,600	17,900	2,240	12,000	164	495	FP	K K
	01/02/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	01/17/03	FP	FP	FP	FP	FP	FP	FP	FP
	02/09/04	FP	FP	FP	FP	FP	FP	FP	FP
	10/07/04	FP	FP	FP	FP	FP	FP	FP	FP
MW-3	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
-	03/24/06	54.6	44.4	17.1	099	2.04	8	FP	NR
	01/07/09	FP	FP	FP	FP	FP	FP	НЪ	FP
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP

# SUMMARY OF HISTORICAL LABORATORY ANALYSES - GROUND WATER SAMPLES CHEMICALS OF CONCERN TISDALES QUICK STOP **UST PERMIT # 18686** TABLE 4

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	2	0.05
	01/17/03	3.7	<1.0	1.8	7.2	<1.0	7.4	FP	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	FP	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	FP	<0.02
MW-4	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	FP	NR
	03/24/06	0.200J	<1.00	<1.00	1.44	0.340J	<1.00	FP	NR
	01/02/09	5.9	<5.0	<5.0	0.9	<5.0	8.0	<5.0	<0.020
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019
	01/17/03	<1.0	<1.0	1.7	3.4	<1.0	7.1	1	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ı	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	t	<0.02
MW-5	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	,	NR
	03/24/06	<1.00	<1.00	<1.00	0.350J	<1.00	<1.00	-	NR
	01/02/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.020
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	0.066
	01/17/03	<1.0	<1.0	1.9	3.8	<1.0	7	1	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ŀ	<0.02
9-MW	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ı	NR
	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00		NR
	01/02/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.020
	11/03/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020

# SUMMARY OF HISTORICAL LABORATORY ANALYSES - GROUND WATER SAMPLES CHEMICALS OF CONCERN TISDALES QUICK STOP **UST PERMIT # 18686** TABLE 4

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	20.3	145	24.3	308	1.8	25.7	ı	<0.02
	02/09/04	<1.0	11.4	60.2	441	<1.0	40.7	ı	NR
	10/07/04	<1.0	1.1	2.4	25	<1.0	5.8	t	<0.02
MW-7	01/21/05	<1.0	<1.0	4.5	26.9	<1.0	17.5	,	NR
	03/24/06	<1.00	<1.00	<1.00	23.3	0.260J	9.62	1	NR
	01/02/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	11/03/09	<5.0	<5.0	<5.0	<10.0	<5.0	12.2	<5.0	<0.020
	01/11/03	1,480	11,800	1,930	9,930	6.3	<500		<0.02
	02/09/04	59	1,700	424	2,380	<5.0	96	1	NR
	10/07/04	<1.0	3.2	7.4	71.1	<1.0	6	1	<0.02
MW-8	01/21/05	12	161	55.6	1,100	<1.0	52.2	-	NR
	03/24/06	4.19	24.1	118	1,070	<1.00	102	ı	NR
	01/08/09	16.8	<5.0	<5.0	200.6	<5.0	18.5	<5.0	<0.019
	11/03/09	<5.0	<5.0	<5.0	12.8	<5.0	34.7	<5.0	<0.020
	01/17/03	<1.0	<1.0	<1.0	<1.0	34	<5.00	-	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	11.1	<5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	1.2	<1.0	<5.00	î	<0.02
6-MM	01/21/05	<1.0	<1.0	<1.0	<1.0	12.5	<5.00	-	NR
	03/24/06	<1.00	<1.00	0.270J	2.49	1.5	<1.00	ı	NR
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	11/03/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019

# SUMMARY OF HISTORICAL LABORATORY ANALYSES - GROUND WATER SAMPLES CHEMICALS OF CONCERN

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	1.5	<5.00	-	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		K
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	<0.02
MW-10	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	,	NR.
	03/24/06	<1.00	<1.00	<1.00	0.490J	<1.00	<1.00	ı	N.
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	11/03/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
	01/17/03	<1.0	<1.0	<1.0	<1.0	1.6	<5.00	,	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	23.7	<5.00	,	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	<0.02
MW-11	01/21/05	<1.0	<1.0	<1.0	<1.0	5.1	<5.00	ı	NR
	03/24/06	<1.00	<1.00	<1.00	<1.00	0.250J	<1.00	-	N. N.
	01/08/09	NS	NS	SN	SN	NS	NS	NS	NS
	11/03/09	NS	NS	SN	NS	NS	NS	NS	NS
	01/17/03	<1.0	<1.0	<1.0	<1.0	2	<5.00	-	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	NK.
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		<0.02
MW-12	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR
	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00		N.
	01/08/09	NS	NS	NS	NS	SN	NS	NS	NS
	11/03/09	NS	NS	NS	NS	NS	NS	NS	NS

SUMMARY OF HISTORICAL LABORATORY ANALYSES - GROUND WATER SAMPLES CHEMICALS OF CONCERN TISDALES QUICK STOP

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	42.5	<5.00	ı	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	145	<5.00	1	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	6.3	<5.00	-	<0.02
MW-13	01/21/05	<1.0	<1.0	<1.0	<1.0	40.8	<5.00	1	NR
	03/24/06	<1.00	<1.00	<1.00	<1.00	11	<1.00	1	NR.
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	11/03/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
	01/17/03	3.4	<1.0	<1.0	4.5	<1.0	10.9	,	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	N.
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	<0.02
MW-14	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ı	NR
	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ı	NK NK
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ı	NR.
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ı	<0.02
MW-15	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	¥
	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ı	NK.
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019

# SUMMARY OF HISTORICAL LABORATORY ANALYSES - GROUND WATER SAMPLES CHEMICALS OF CONCERN TISDALES QUICK STOP TABLE 4

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	FP	FP	FP	FP	FP	FP	ı	FP
	02/09/04	FP	FP	FP	FP	FP	FP	ŀ	FP
	10/07/04	FP	FP	FP	FP	FP	FP	ı	FP
MW-16	01/21/05	FP	FP	FP	FP	FP	FP	1	FP
	03/24/06	14,600	20,300	2,080	11,800	536	1,080	ı	NR
	01/08/09	2,660	6,520	930	5,100	<25.0	633	<25.0	<0.020
	11/04/09	18,500	33,300	2,880	16,300	454	928	<250	0.30
	01/17/03	FP	FP	FP	FP	FP	FP		FP
	02/09/04	<1.0	13.2	12.5	74.2	19	10.1	1	NR
MW-17	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ı	<0.02
/ 1 1	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	,	NR
	03/24/06	SN	NS	NS	SN	NS	SN	NS	SN
	11/03/09	NS	NS	NS	SN	SN	NS	NS	NS
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	,	<0.02
	02/09/04	15.4	5.5	<1.0	5.6	<1.0	<5.00	1	NR
	10/07/04	1.5	<1.0	<1.0	<1.0	<1.0	<5.00	1	<0.02
MW-18	01/21/05	19.2	1.1	<1.0	7.1	<1.0	<5.00	t	NR
	03/24/06	36.2	1.27	<1.00	6.16	<1.00	<1.00	-	NR
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019

SUMMARY OF HISTORICAL LABORATORY ANALYSES - GROUND WATER SAMPLES CHEMICALS OF CONCERN TISDALES QUICK STOP TABLE 4

Well No.		Benzene	Toluene	Ethylbenzene	Xvlenes	MTBE	Naphthalene	1.2-DCA	EDB
	Date			•	•		J.	16-	
RBSL		5	1,000	700	10,000	40	25	S	0.05
	01/11/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ı	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		R
	10/02/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	'	<0.02
MW-19	01/21/05	3.1	<1.0	<1.0	<1.0	<1.0	<5.00	ı	NR.
	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ı	NR
	01/08/09	NS	NS	SN	NS	SN	NS	NS	NS
	11/03/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019
	01/17/03	1,520	314	108	298	80.4	26.3	ı	<0.02
	02/09/04	3,220	530	15.2	830	78	61.2	1	NR
	10/07/04	90.2	9.9	<1.0	19.8	94.4	<5.00	F	<0.02
MW-20	01/21/05	1,120	43.1	5.8	95.1	73	36.9	1	NR.
	03/24/06	44.9	0.300J	0.310J	3.54	9.14	<1.00	1	NR
	01/08/09	NS	NS	NS	NS	SN	NS	SN	NS
	11/03/09	9.5	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019
	01/17/03	269	27.5	12	118	42.6	12.6	-	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ı	R
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ı	<0.02
MW-21	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ı	NR
	03/23/06	SN	NS	NS	NS	SN	NS	1	NS
	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019

# SUMMARY OF HISTORICAL LABORATORY ANALYSES - GROUND WATER SAMPLES CHEMICALS OF CONCERN TISDALES QUICK STOP **UST PERMIT # 18686** TABLE 4

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	2,080	281	279	576	257	6.7.9	,	<0.02
	02/09/04	782	49.2	41.4	77.5	93.4	15.8	,	NR
	10/07/04	109	11.3	3.2	19.5	71.4	<5.00	1	<0.02
MW-22	01/21/05	3,980	300	197	454	29	112	-	NK NK
	03/23/06	0.340J	<1.00	<1.00	<1.00	8.11	<1.00	ı	NK NK
	01/08/06	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019
	01/17/03	27.6	<1.0	<1.0	3.7	27.2	10.5		<0.02
	02/09/04	1,760	72	<1.0	592	372	17.2	1	NK.
	10/07/04	1,620	103	<1.0	865	286	46	ı	<0.02
MW-23	01/20/05	1,670	111	<1.0	878	172	19.9	ı	NK.
	03/23/06	1,290	44.1	<1.00	266	168	38.4	ı	NR
	01/08/09	574	<5.0	<5.0	30.8	65.2	<5.0	<5.0	<0.019
	11/04/09	1,250	<25.0	<25.0	6.86	152	31.0	<25.0	<0.019
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	,	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		<0.02
MW-24	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	NR
	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	. 1	NK NK
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.020
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020

# SUMMARY OF HISTORICAL LABORATORY ANALYSES - GROUND WATER SAMPLES CHEMICALS OF CONCERN TISDALES QUICK STOP UST PERMIT # 18686 TABLE 4

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	ď	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	4.9	<5.00	i	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ı	<0.02
MW-25	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	NR
	03/23/06	0.330J	<1.00	<1.00	<1.00	<1.00	<1.00	ı	Æ
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019
	01/17/03	1.3	<1.0	<1.0	<1.0	4.7	<5.00	1	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ı	NR.
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	<0.02
MW-26	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	R
	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ı	NR.
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	NR.
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ı	<0.02
MW-27	01/21/05	<1.0	<1.0	<1.0	<1.0	1.7	<5.00	1	NR
	03/23/06	0.320J	<1.00	<1.00	<1.00	3.95	<1.00	1	NR
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020

# SUMMARY OF HISTORICAL LABORATORY ANALYSES - GROUND WATER SAMPLES CHEMICALS OF CONCERN TABLE 4

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	S.	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	1.4	<5.00	1	<0.02
-	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ı	NK NK
···	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ı	<0.02
MW-28	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	N.
	03/23/06	<1.00	<1.00	<1.00	<1.00	0.340J	<1.00	1	NR.
	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ŀ	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	<0.02
MW-29	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	NR.
	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.020
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	,	NR.
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ı	<0.02
MW-30	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ı	NR NR
	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00		N.
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	11.0	<5.0	<0.020

SUMMARY OF HISTORICAL LABORATORY ANALYSES - GROUND WATER SAMPLES CHEMICALS OF CONCERN TABLE 4

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		2	1,000	700	10,000	40	25	5	0.05
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	<0.02
	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		NR.
MW-31	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1	R
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
MW-1 A	03/24/06	20,700	30,600	3,310	17,600	1,880	891	,	N.
171 - W 141	01/08/09	14,300	29,300	8,930	48,800	1,250	090'9	<500	990.0
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
MW-2 A	03/23/06	FP	FP	FP	FP	FP	FP	FP	FP
	01/08/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/03/09	FP	FP	FP	FP	FP	FP	FF	FP
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
MW-3A	03/23/06	FP	FP	FP	FP	FP	FP	FP	FP
	01/08/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
MW-4A	03/24/06	19,600	34,800	3,900	21,500	247	952	FP	NR
	01/08/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP

# SUMMARY OF HISTORICAL LABORATORY ANALYSES - GROUND WATER SAMPLES CHEMICALS OF CONCERN TISDALES QUICK STOP **UST PERMIT # 18686** TABLE 4

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	ß	0.05
	01/11/03	25.5	46.6	6.9	19.8	<1.0	9.3	ı	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ı	K
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	,	<0.02
TW-1	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	¥
	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ı	N.
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.020
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	,	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	11.7	<5.00	r	NR.
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	<0.02
TW-2	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR
	03/24/06	7.22	<1.00	<1.00	<1.00	1.7	<1.00	1	NR
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	•	NR
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ı	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	<0.02
WSW-1	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	NR
	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1	NR
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019

SUMMARY OF HISTORICAL LABORATORY ANALYSES - GROUND WATER SAMPLES CHEMICALS OF CONCERN TISDALES QUICK STOP **UST PERMIT # 18686** TABLE 4

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	004	10,000	40	25	w	0.05
C-MSM	01/08/09	SN	SN	SN	SN	NS	NS	NS	NS
7-11011	11/03/09	NS	SN	SN	SN	SN	SN	SN	NS
	10/01/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	ı	<0.02
WCW 2	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	1	NR
	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1	NR
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019

### Motor.

- Analyses for selected volatile organic compounds by EPA Method 8260B; lead by EPA Method 6010B or 200.7; and EDB by Method 8011; results reported in  $\mu$ g/l.
  - RBSL: May 2001 Risk Based Screening Level.
- · Concentrations in bold face type exceeded the RBSL.
- · <: Less than the report limit specified in the laboratory report.
  - NS: Not sampled.
- NR: Analysis not requested.
  - I or J: Estimated value.
- FP: Free product.

## TABLE 5 SUMMARY OF LABORATORY ANALYSES OXYGENATES NOVEMBER 3 & 4, 2009 TISDALE'S QUICK SHOP

Well No.	Ethanol	ЕТВА	ETBE	TAME	DIPE	TBF	TBA	TAA
MW-1	<20,000	<10,000	<1,000	<1,000	< 500	<5,000	<10,000	10,200
MW-2	FP	FP	FP	FP	FP	FP	FP	FP
MW-3	FP	FP	FP	FP	FP	FP	FP	FP
MW-4	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-5	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-6	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-7	<200	115	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-8	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-9	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-10	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-11	NS	NS	NS	NS	NS	NS	NS	NS
MW-12	NS	NS	NS	NS	NS	NS	NS	NS
MW-13	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-14	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-15	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-16	<10,000	<5,000	< 500	< 500	<250	<2,500	<5,000	45,400
MW-17	NS	NS	NS	NS	NS	NS	NS	NS
MW-18	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	143
MW-19	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-20	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-21	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-22	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-23	<1,000	< 500	<50.0	<50.0	<25.0	<250	< 500	1,490
MW-24	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-25	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-26	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-27	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-28	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-29	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-30	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-31	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100

### TABLE 5 SUMMARY OF LABORATORY ANALYSES **OXYGENATES**

### **NOVEMBER 3 & 4, 2009** TISDALE'S QUICK SHOP

**UST PERMIT # 18686** 

Well No.	Ethanol	ETBA	ETBE	TAME	DIPE	TBF	TBA	TAA
MW-1A	FP	FP	FP	FP	FP	FP	FP	FP
MW-2A	FP	FP	FP	FP	FP	FP	FP	FP
MW-3A	FP	FP	FP	FP	FP	FP	FP	FP
MW-4A	FP	FP	FP	FP	FP	FP	FP	FP
TW-1	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
TW-2	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100

<10.0

<10.0

<5.0

<5.0

<50.0

<50.0

<100

<100

<100

<100

### Notes:

WSW-1

WSW-3

<200

< 200

• Analyses for oxygenates by Method 8260B; results reported in  $\mu g/l$ .
• <: Less than the report limit specified in the laboratory report.

<10.0

<10.0

<100

<100

# TABLE 6 SUMMARY OF HISTORICAL LABORATORY ANALYSES OXYGENATES TISDALE'S QUICK SHOP UST PERMIT # 18686

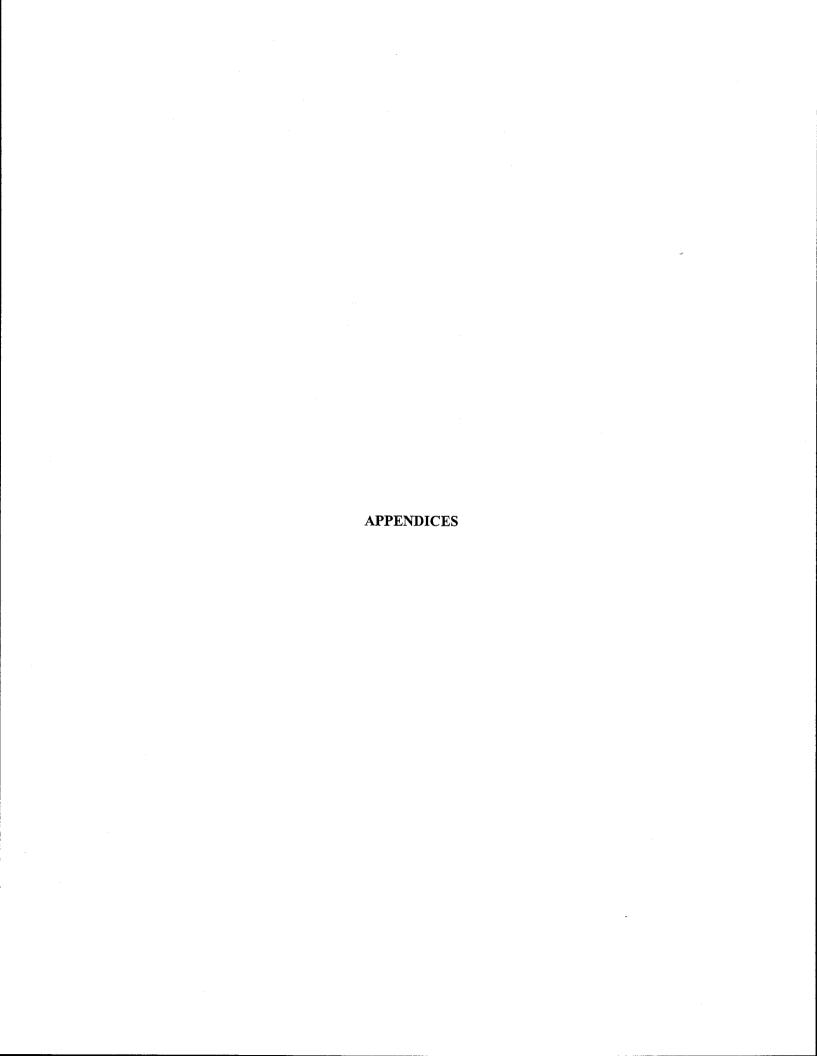
Well No.	Date	Ethanol	ETBA	ETBE	TAME	DIPE	TBF	TBA	TAA
MW-1	03/24/06	<5,000	5,030	<50.0	<50.0	<50.0	<1,000	1,280	35,000
101 00 -1	11/04/09	<20,000	<10,000	<1,000	<1,000	<500	<5,000	<10,000	10,200
MW-2	03/24/06	<5,000	4,620	<50.0	54	<50.0	<1,000	1,020	25,700
101 00 -2	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
MW-3	03/24/06	<100	99.1	<1.00	<1.00	<1.00	<20.0	26.7	223
101 00 -3	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
MW-4	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-5	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-6	11/03/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-7	11/03/09	<200	115	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-8	11/03/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-9	11/03/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-10	11/03/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-11	11/03/09	NS	NS	NS	NS	NS	NS	NS	NS
MW-12	11/03/09	NS	NS	NS	NS	NS	NS	NS	NS
MW-13	11/03/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-14	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-15	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-16	03/24/06	<5,000	5,140	<50.0	72.5	<50.0	<1,000	1,560	34,600
1V1 VV -1 O	11/03/09	<10,000	<5,000	<500	< 500	<250	<2,500	<5,000	45,400
MW-17	11/04/09	NS	NS	NS	NS	NS	NS	NS	NS
MW-18	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	143
MW-19	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-20	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-21	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-22	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-23	11/04/09	<1,000	< 500	<50.0	<50.0	<25.0	<250	< 500	1,490
MW-24	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-25	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-26	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-27	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-28	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-29	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-30	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-31	11/03/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100

# TABLE 6 SUMMARY OF HISTORICAL LABORATORY ANALYSES OXYGENATES TISDALE'S QUICK SHOP UST PERMIT # 18686

Well No.	Date	Ethanol	ETBA	ETBE	TAME	DIPE	TBF	TBA	TAA
MW-1A	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
MW-2A	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
MW-3A	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
MW-4A	11/04/09	FP	FP	FP	FP	FP	FP	FP	FP
TW-1	03/24/06	<100	<10.0	<1.00	<1.00	<1.00	<20.0	<20.0	<20.0
1 44 -1	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
TW-2	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
WSW-1	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
WSW-3	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100

# Notes:

- Analyses for oxygenates by Method 8260B; results reported in  $\mu g/l$ .
- <: Less than the report limit specified in the laboratory report.



APPENDIX A
Ground Water Sampling Data Sheets

Field Data Information Sheet for Ground-Water Sampling South Carolina Department of Health and Environmental Control Bureau of Underground Storage Tank Management

TISSACE OSICE	for (D):	(C): 3.14 X (D/2)2 for a 2 inch well for a 4 inch well or	* Free Product Thickness: Depth to Ground Water (DGW) Total Well Depth (TWD) Length of the water column (LWC = TWD-DGW)	4.75 gals (standard purge volun	Total volume of Water Purged for Post Sampling    Cotal volume of Water Purged for Post Sampling   Cotal Purged   If free product is present over 1/8 inch, sampling will not be required.		3rd Vol. 4th Vol. 5th Vol. Post Sampling Sample	T5h1						
Facility Name:	Well Dlamotor (D):	Conversion	* Free Product Thickne. Depth to Ground Water Total Well Depth (TVVD) Length of the water col	1 casing vol 3 casing vol	Total volume		Sind vol.	1453	و	0.19	92	CLR	ر ا	
<del></del>	<del>, ,</del>						200	1436	67	0.17	20	217	2.1.	
		<del>и.</del> .			Date/Time	1 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	5.6	1422	<u>≪</u> ف	41.0	.20	550	1.8	
Date (mm/dd/yy): ///4/09 Field Personnel:	General Weather Conditions: CLR WARM	Amblent Air Temperature;  Quality Assurance	SOGIOPI	PH=10.0 Standard Chain of Custody	Relinquished by Date/Time Received by		Cumulative Volume Purged (gallons)	lime (military)	oH (s.u.)	Specific Cond. (umhos/cm)	Water Temperature (degrees C)	Turbidity (subjective; clear, slightly cloudy, cloudy)	Dissolved Oxygen (mg/l)	PID readings, if required

Field Data Information Sheet for Ground-Water Sampling South Carolina Department of Health and Environmental Control Bureau of Underground Storage Tank Management

Date (mm/dd/yy):	60/6/11		<del></del>	Facility Name:	TISHE BUICK STOP	ek sr	Ø>	
rieid Personnel:	2			Site ID #	18081	Mc	Monitoring Well #	720-7
General Weather Conditions:	ditions: Cel WARM			Well Dlameter (D):	:(0		0.167 feet	) -
Ambient Air Temperature:	iure: 64	tı.		Conversion factor	(C): 3.14 X (D/2)2	r a 2 Inch well	C = 0.163	
	Quality Assurance				for	for a 4 Inch well C = 0.652	C = 0.652	
pH Meter serial no. pH≈4,0 pH≈7,0	Conductivity Meter Standard Standard			* Free Product Thickness: Depth to Ground Water (DGW) Total Well Depth (TWD) Length of the water column (LN	* Free Product Thickness: Depth to Ground Water (DGW) Total Well Depth (TWD) Length of the water column (LWC = TWD-DGW)		10.21 80.02 10.25	feet feet feet
pH≈10.0	Standard		<del></del>	1 casing volume	1 casing volume (CV = LWC X C) =	1,3	145	
ਹ -	Chain of Custody			s casing volume 3 X CV = Total volume of Water Dire	3.X.C.V.# Lt.		gals (standard purge volume)	rge volume)
				Total volume of	Total volume of Water Purged Before Sampling	Sampling	111	gals
Relinquished by Da	Date/Time Received by	Date/Time		*if free product is	*if free product is present over 4/8 lock sensition will		7.17	Total Purged
		·	1			walinding t	ii ilot De reduited.	
		Initial	1st Vol.	2nd Vol.	3rd Vol. 4t	4th Vol.   5ti	5th Vol.   Post Sampling	Samole
Cumulative Volume Purged (gallons)	ırged (gallons)	0.25	0.0	11.75			1	
Time (military)		1109	1127	1139				1140
рН (s.u.)		2.8	60	<u>-</u> ف				
Specific Cond. (umhos/cm)	ı/cm)	<u>か.の</u>	٦١.٥	ナバク				
Water Temperature (degrees C)	agrees C)	97	22	2				

Ġ

Turbidity (subjective: clear, slightly cloudy, cloudy)

PID readings, if required Remarks:

Dissolved Oxygen (mg/l)

APPENDIX B Laboratory Report



Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

November 17, 2009

Scott Ball Geological Resources, Inc 2301 Crown Point Executive Dr. Suite F Charlotte, NC 28227

RE: Project: TISDALE QUICK STOP

Pace Project No.: 9256839

#### Dear Scott Ball:

Enclosed are the analytical results for sample(s) received by the laboratory on November 05, 2009. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Inorganic Wet Chemistry and Metals analyses were performed at our Pace Asheville laboratory and Organic testing was performed at our Pace Huntersville laboratory unless otherwise footnoted. All Microbiological analyses were performed at the laboratory where the samples were received.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Herring

Kein Lung

kevin.herring@pacelabs.com Project Manager

Enclosures

cc: Mrs. Carrie Kennedy, Geological Resources, Inc.





Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

#### **CERTIFICATIONS**

Project:

TISDALE QUICK STOP

Pace Project No.:

9256839

**Charlotte Certification IDs** 

West Virginia Certification #: 357 Virginia Certification #: 00213 Tennessee Certification #: 04010 South Carolina Drinking Water Cert. #: 990060003 South Carolina Certification #: 990060001 Pennsylvania Certification #: 68-00784 Connecticut Certification #: PH-0104 North Carolina Field Services Certification #: 5342 North Carolina Drinking Water Certification #: 37706 New Jersey Certification #: NC012 Louisiana/LELAP Certification #: 04034 Kentucky UST Certification #: 84 Florida/NELAP Certification #: E87627 North Carolina Wastewater Certification #: 12



Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

# **SAMPLE ANALYTE COUNT**

Project:

TISDALE QUICK STOP

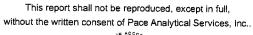
Pace Project No.:

9256839

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
9256839001	MW-13	EPA 8011	RES	2	PASI-C
		EPA 8260	MCK	21	PASI-C
256839002	MW-9	EPA 8011	RES	2	PASI-C
		EPA 8260	MCK	21	PASI-C
256839003	MW-10	EPA 8011	RES	2	PASI-C
		EPA 8260	MCK	21	PASI-C
256839004	MW-8	EPA 8011	RES	2	PASI-C
		EPA 8260	мск	21	PASI-C
256839005	MW-7	EPA 8011	RES	2	PASI-C
		EPA 8260	MCK	21	PASI-C
256839006	MW-6	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
256839007	MW31	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
256839008	MW-30	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
256839009	MW-24	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
256839010	MW-23	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
256839011	MW-29	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
256839012	MW-21	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
256839013	TW-2	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
256839014	MW-25	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
256839015	MW-27	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
256839016	MW-28	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
256839017	MW-22	. EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
256839018	MW-26	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
256839019	MW-20	EPA 8011	RES	2	PASI-C

REPORT OF LABORATORY ANALYSIS

Page 3 of 34







# **SAMPLE ANALYTE COUNT**

Project:

TISDALE QUICK STOP

Pace Project No.:

9256839

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8260	MCK	21	PASI-C
9256839020	MW-19	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
9256839021	MW-18	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
9256839022	MW-16	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
9256839023	MW-15	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
9256839024	MW-14	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
9256839025	MW-5	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
9256839026	MW-4	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
9256839027	MW-1	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
9256839028	TW-1	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
9256839029	WSW-1	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	21	PASI-C
9256839030	WSW-3	EPA 8011	RES	2	PASI-C
		EPA 8260	MCK	21	PASI-C

nelac

Received: 11/05/09 09:30

Analyzed

Prepared

Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

Matrix: Water

CAS No.

Qual

# **ANALYTICAL RESULTS**

Collected: 11/03/09 13:34

DF

Report Limit

Project:

Sample: MW-13

TISDALE QUICK STOP

Lab ID: 9256839001

Units

Results

Pace Project No.: 9256839

0044 000 EDD --- I DDOD

Parameters

8011 GCS EDB and DBCP	Analytical Method: EPA 80	11 Preparation Met	hod: EP	A 8011			
1,2-Dibromoethane (EDB)	ND ug/L	0.020	1	11/11/09 12:39	11/11/09 16:34	106-93-4	
1-Chloro-2-bromopropane (S)	91 %	60-140	1		11/11/09 16:34		
8260 MSV Oxygenates	Analytical Method: EPA 82	60					
tert-Amyl Alcohol	ND ug/L	100	1		11/11/09 22:41	75-85-4	
tert-Amylmethyl ether	ND ug/L	10.0	1		11/11/09 22:41	994-05-8	
Benzene	ND ug/L	5.0	1		11/11/09 22:41	71-43-2	
3,3-Dimethyl-1-Butanol	ND ug/L	100	1		11/11/09 22:41	624-95-3	
tert-Butyl Alcohol	ND ug/L	100	1		11/11/09 22:41		
tert-Butyl Formate	ND ug/L	50.0	1		11/11/09 22:41	762-75-4	
1,2-Dichloroethane	ND ug/L	5.0	1		11/11/09 22:41		
Diisopropyl ether	ND ug/L	5.0	1		11/11/09 22:41		
Ethanol	ND ug/L	200	1		11/11/09 22:41		
Ethylbenzene	ND ug/L	5.0	1		11/11/09 22:41		
Ethyl-tert-butyl ether	ND ug/L	10.0	1		11/11/09 22:41		
Methyl-tert-butyl ether	ND ug/L	5.0	1		11/11/09 22:41		
Naphthalene	ND ug/L	5.0	1				
Toluene	ND ug/L	5.0	1		11/11/09 22:41		
Xylene (Total)	ND ug/L		1		11/11/09 22:41	108-88-3	
m&p-Xylene	ND ug/L	10.0			11/11/09 22:41	1330-20-7	
o-Xylene		10.0	1		11/11/09 22:41		
•	ND ug/L	5.0	1		11/11/09 22:41		
Dibromofluoromethane (S)	101 %	85-115	1		11/11/09 22:41		
Toluene-d8 (S)	94 %	70-120	1		11/11/09 22:41	2037-26-5	
4-Bromofluorobenzene (S)	100 %	87-109	1		11/11/09 22:41	460-00-4	
1,2-Dichloroethane-d4 (S)	99 %	79-120	1		11/11/09 22:41	17060-07-0	
Sample: MW-9	Lab ID: 9256839002	Collected: 11/03/0	9 13:46	Received: 11	/05/09 09:30 N	latrix: Water	
Parameters	Results Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 801	I1 Preparation Meth	nod: EPA	A 8011			
1,2-Dibromoethane (EDB)	ND ug/L	0.019	1	11/11/09 12:39	11/11/09 16:53	106-93-4	
1-Chloro-2-bromopropane (S)	100 %	60-140	1		11/11/09 16:53		
8260 MSV Oxygenates	Analytical Method: EPA 826	60					
tert-Amyl Aicohol	ND ug/L	100	1		11/11/09 23:05	75-85-4	
tert-Amylmethyl ether	ND ug/L	10.0	1		11/11/09 23:05		
Benzene	ND ug/L	5.0	1		11/11/09 23:05		
3,3-Dimethyl-1-Butanol	ND ug/L	100	1		11/11/09 23:05		
tert-Butyl Alcohol	ND ug/L	100	1		11/11/09 23:05		
tert-Butyl Formate	ND ug/L	50.0	1				
1,2-Dichloroethane	ND ug/L	5.0	1		11/11/09 23:05		
Diisopropyl ether	ND ug/L	5.0	1		11/11/09 23:05		
There!	ND ug/L	5.0	ı		11/11/09 23:05	108-20-3	

Date: 11/17/2009 04:00 PM

Ethanol

Ethylbenzene

REPORT OF LABORATORY ANALYSIS

ND ug/L

ND ug/L

200

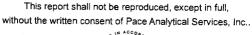
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11/11/09 23:05 64-17-5

11/11/09 23:05 100-41-4





Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

# **ANALYTICAL RESULTS**

Project:

TISDALE QUICK STOP

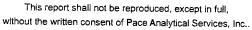
Pace Project No.: 9256839

Sample: MW-9	Lab ID: 925683	39002	Collected: 11/03/0	9 13:46	Received:	11/05/09 09:30	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
8260 MSV Oxygenates	Analytical Method	d: EPA 82	260					-
Ethyl-tert-butyl ether	ND ug/L		10.0	1		11/11/09 23:0	5 637-92-3	
Methyl-tert-butyl ether	ND ug/L		5.0	1		11/11/09 23:0		
Naphthalene	ND ug/L		5.0	1		11/11/09 23:0		
Toluene	ND ug/L		5.0	1		11/11/09 23:0		
Xylene (Total)	ND ug/L		10.0	1		11/11/09 23:0		
m&p-Xylene	ND ug/L		10.0	1		11/11/09 23:0		
o-Xylene	ND ug/L		5.0	1		11/11/09 23:0		
Dibromofluoromethane (S)	103 %		85-115	1		11/11/09 23:0		
Toluene-d8 (S)	93 %		70-120	1		11/11/09 23:0		
4-Bromofluorobenzene (S)	100 %		87-109	1		11/11/09 23:0		
1,2-Dichloroethane-d4 (S)	101 %		79-120	1			5 4 <del>60-00-4</del> 5 17060-07-0	
,	, , ,		13 120	'		11/11/09 23.0	5 17060-07-0	
Sample: MW-10	Lab ID: 925683	39003	Collected: 11/03/0	9 14:32	Received:	11/05/09 09:30	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
8011 GCS EDB and DBCP	Analytical Method	: EPA 80	11 Preparation Meth	nod: EPA	\ 8011			
1,2-Dibromoethane (EDB)	ND ug/L		0.020	1	11/11/09 12:3	9 11/11/09 17:13	3 106-03-4	
1-Chloro-2-bromopropane (S)	101 %		60-140	1	_	9 11/11/09 17:13		
3260 MSV Oxygenates	Analytical Method	: EPA 82	60					
tert-Amyl Alcohol	ND ug/L		100	1		11/11/09 23:29	75 05 4	
tert-Amylmethyl ether	ND ug/L		10.0	1		11/11/09 23:29		
Benzene	ND ug/L		5.0	1		11/11/09 23:29		
3,3-Dimethyl-1-Butanol	ND ug/L		100	1		11/11/09 23:29		
ert-Butyl Alcohol	ND ug/L		100	1				
ert-Butyl Formate	ND ug/L		50.0	1		11/11/09 23:29		
1,2-Dichloroethane	ND ug/L		5.0	1		11/11/09 23:29		
Diisopropyl ether	ND ug/L		5.0	1		11/11/09 23:29		
Ethanol	ND ug/L		200	1		11/11/09 23:29		
Ethylbenzene	ND ug/L		5.0			11/11/09 23:29		
Ethyl-tert-butyl ether	ND ug/L			1 1		11/11/09 23:29		
Methyl-tert-butyl ether	ND ug/L		10.0 5.0	1		11/11/09 23:29		
Naphthalene	ND ug/L			1		11/11/09 23:29		
Toluene	ND ug/L		5.0 5.0	1		11/11/09 23:29		
(ylene (Total)	ND ug/L		5.0	1		11/11/09 23:29		
n&p-Xylene	ND ug/L		10.0	1		11/11/09 23:29		
			10.0	1		11/11/09 23:29		
The state of the s	NID um/		5.0	1		11/11/09 23:29		
o-Xylene	ND ug/L			4				
o-Xylene Dibromofluoromethane (S)	100 %		85-115	1		11/11/09 23:29		
o-Xylene Dibromofluoromethane (S) Foluene-d8 (S)	100 % 94 %		85-115 70-120	1		11/11/09 23:29	2037-26-5	
o-Xylene Dibromofluoromethane (S)	100 %		85-115				2037-26-5 460-00-4	

Date: 11/17/2009 04:00 PM

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Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

# **ANALYTICAL RESULTS**

Project:

TISDALE QUICK STOP

Pace Project No.: 9256839

Sample: MW-8	Lab ID: 9256839004	Collected: 11/03/09	15:20	Received: 11	/05/09 09:30	Matrix: Water	
Parameters	Results Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA	8011 Preparation Meth	od: EPA	8011			
1,2-Dibromoethane (EDB)	ND ug/L	0.020	1	11/11/09 12:39	11/11/09 17:32	106-93-4	
1-Chloro-2-bromopropane (S)	95 %	60-140	1		11/11/09 17:32		
8260 MSV Oxygenates	Analytical Method: EPA	8260					
tert-Amyl Alcohol	ND ug/L	100	1		11/11/09 23:53	75-85-4	
tert-Amylmethyl ether	ND ug/L	10.0	1		11/11/09 23:53	<del>-</del> -	
Benzene	ND ug/L	5.0	1		11/11/09 23:53		
3,3-Dimethyl-1-Butanol	ND ug/L	100	1		11/11/09 23:53		
tert-Butyl Alcohol	ND ug/L	100	1		11/11/09 23:53		
tert-Butyl Formate	ND ug/L	50.0	1		11/11/09 23:53		
1,2-Dichloroethane	ND ug/L	5.0	1		11/11/09 23:53		
Diisopropyl ether	ND ug/L	5.0	1		11/11/09 23:53		
Ethanol	ND ug/L	200	1				
Ethylbenzene	ND ug/L				11/11/09 23:53		
Ethyl-tert-butyl ether		5.0	1		11/11/09 23:53		
· · · · · · · · · · · · · · · · · · ·	ND ug/L	10.0	1		11/11/09 23:53		
Methyl-tert-butyl ether	ND ug/L	5.0	1		11/11/09 23:53		
Naphthalene Talvara	34.7 ug/L	5.0	1		11/11/09 23:53		
Toluene	ND ug/L	5.0	1		11/11/09 23:53	108-88-3	
Xylene (Total)	<b>12.8</b> ug/L	10.0	1		11/11/09 23:53	1330-20-7	
m&p-Xylene	ND ug/L	10.0	1		11/11/09 23:53	1330-20-7	
o-Xylene	ND ug/L	5.0	1		11/11/09 23:53	95-47-6	
Dibromofluoromethane (S)	101 %	85-115	1		11/11/09 23:53	1868-53-7	
Toluene-d8 (S)	94 %	70-120	1		11/11/09 23:53	2037-26-5	
4-Bromofluorobenzene (S)	98 %	87-109	1		11/11/09 23:53	460-00-4	
1,2-Dichloroethane-d4 (S)	99 %	79-120	1		11/11/09 23:53	17060-07-0	
Sample: MW-7	Lab ID: 9256839005	Collected: 11/03/09	16:11	Received: 11	/05/09 09:30 N	Matrix: Water	***
Sample: MW-7 Parameters	Lab ID: 9256839005 Results Units	Collected: 11/03/09	16:11 DF	Received: 11	/05/09 09:30 N Analyzed	Matrix: Water CAS No.	Qual
Parameters	_	Report Limit	DF	Prepared			Qual
Parameters 8011 GCS EDB and DBCP	Results Units  Analytical Method: EPA 8	Report Limit	DF od: EPA	Prepared 8011	Analyzed	CAS No.	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)	Results Units  Analytical Method: EPA & ND ug/L	Report Limit  8011 Preparation Metho  0.020	DF od: EPA	Prepared 8011 11/11/09 12:39	Analyzed 11/11/09 17:53	CAS No. 106-93-4	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)	Results Units  Analytical Method: EPA 8  ND ug/L  96 %	Report Limit  8011 Preparation Metho  0.020 60-140	DF od: EPA	Prepared 8011	Analyzed 11/11/09 17:53	CAS No.	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)	Results Units  Analytical Method: EPA & ND ug/L	Report Limit  8011 Preparation Metho  0.020 60-140	DF od: EPA	Prepared 8011 11/11/09 12:39	Analyzed 11/11/09 17:53	CAS No.	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates	Results Units  Analytical Method: EPA 8  ND ug/L  96 %	Report Limit  8011 Preparation Metho  0.020 60-140	DF od: EPA	Prepared 8011 11/11/09 12:39	Analyzed 11/11/09 17:53	CAS No. 106-93-4 301-79-56	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates tert-Amyl Alcohol	Results Units  Analytical Method: EPA 8  ND ug/L  96 %  Analytical Method: EPA 8	Report Limit  O.020 60-140	DF od: EPA 1 1	Prepared 8011 11/11/09 12:39	Analyzed 11/11/09 17:53 11/11/09 17:53	CAS No.  106-93-4 301-79-56	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether	Results Units  Analytical Method: EPA 8  ND ug/L  96 %  Analytical Method: EPA 8  ND ug/L	Report Limit  3011 Preparation Metho 0.020 60-140 3260	DF d: EPA 1 1	Prepared 8011 11/11/09 12:39	Analyzed  11/11/09 17:53 11/11/09 17:53	CAS No.  106-93-4 301-79-56  75-85-4 994-05-8	Qua
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether Benzene	Results Units  Analytical Method: EPA 8  ND ug/L  96 %  Analytical Method: EPA 8  ND ug/L  ND ug/L	Report Limit  0.020 60-140  100 10.0	DF od: EPA 1 1 1	Prepared 8011 11/11/09 12:39	Analyzed  11/11/09 17:53 11/11/09 17:53  11/12/09 00:17 11/12/09 00:17	CAS No.  106-93-4 301-79-56  75-85-4 994-05-8 71-43-2	Quai
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether Benzene  3,3-Dimethyl-1-Butanol	Results Units  Analytical Method: EPA 8  ND ug/L  96 %  Analytical Method: EPA 8  ND ug/L  ND ug/L  ND ug/L  ND ug/L	Report Limit  0.020 60-140  2260  100 10.0 5.0	DF d: EPA 1 1 1 1 1 1 1 1	Prepared 8011 11/11/09 12:39	Analyzed  11/11/09 17:53 11/11/09 17:53  11/12/09 00:17 11/12/09 00:17 11/12/09 00:17	CAS No.  106-93-4 301-79-56  75-85-4 994-05-8 71-43-2 624-95-3	Qua
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether Benzene 3,3-Dimethyl-1-Butanol tert-Butyl Alcohol	Results Units  Analytical Method: EPA & ND ug/L 96 %  Analytical Method: EPA & ND ug/L ND ug/L ND ug/L 115 ug/L ND ug/L ND ug/L ND ug/L	Report Limit  0.020 60-140  3260  100 10.0 5.0 100	DF d: EPA 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 11/11/09 12:39	Analyzed  11/11/09 17:53 11/11/09 17:53  11/12/09 00:17 11/12/09 00:17 11/12/09 00:17 11/12/09 00:17 11/12/09 00:17	CAS No.  106-93-4 301-79-56  75-85-4 994-05-8 71-43-2 624-95-3 75-65-0	Qua
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether Benzene 3,3-Dimethyl-1-Butanol tert-Butyl Alcohol tert-Butyl Formate	Results Units  Analytical Method: EPA & ND ug/L 96 %  Analytical Method: EPA & ND ug/L ND ug/L ND ug/L 115 ug/L ND ug/L	Report Limit  0.020 60-140  2260  100 10.0 5.0 100 100 50.0	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 11/11/09 12:39	Analyzed  11/11/09 17:53 11/11/09 17:53  11/12/09 00:17 11/12/09 00:17 11/12/09 00:17 11/12/09 00:17 11/12/09 00:17 11/12/09 00:17	CAS No.  106-93-4 301-79-56  75-85-4 994-05-8 71-43-2 624-95-3 75-65-0 762-75-4	Qua
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether Benzene 3,3-Dimethyl-1-Butanol tert-Butyl Alcohol tert-Butyl Formate 1,2-Dichloroethane	Results Units  Analytical Method: EPA & ND ug/L 96 %  Analytical Method: EPA & ND ug/L	Report Limit  0.020 60-140  3260  100 10.0 5.0 100 100 50.0 5.0 5.0	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 11/11/09 12:39	Analyzed  11/11/09 17:53 11/11/09 17:53  11/12/09 00:17 11/12/09 00:17 11/12/09 00:17 11/12/09 00:17 11/12/09 00:17 11/12/09 00:17 11/12/09 00:17 11/12/09 00:17	75-85-4 994-05-8 71-43-2 624-95-3 75-65-0 762-75-4 107-06-2	Quai
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether Benzene 3,3-Dimethyl-1-Butanol tert-Butyl Alcohol tert-Butyl Formate	Results Units  Analytical Method: EPA & ND ug/L 96 %  Analytical Method: EPA & ND ug/L ND ug/L ND ug/L 115 ug/L ND ug/L	Report Limit  0.020 60-140  2260  100 10.0 5.0 100 100 50.0	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared 8011 11/11/09 12:39	Analyzed  11/11/09 17:53 11/11/09 17:53  11/12/09 00:17 11/12/09 00:17 11/12/09 00:17 11/12/09 00:17 11/12/09 00:17 11/12/09 00:17	75-85-4 994-05-8 71-43-2 624-95-3 75-65-0 762-75-4 107-06-2 108-20-3	Qual

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REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

# **ANALYTICAL RESULTS**

Project:

TISDALE QUICK STOP

Pace Project No.: 9256839

Sample: MW-7	Lab ID: 9256839005	Collected: 11/03/0	9 16:11	Received: 11	1/05/09 09:30	Matrix: Water	
Parameters	Results Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Oxygenates	Analytical Method: EPA	8260					
Ethyl-tert-butyl ether	ND ug/L	10.0	1		11/12/09 00:17	7 637-92-3	
Methyl-tert-butyl ether	ND ug/L	5.0	1		11/12/09 00:17	7 1634-04-4	
Naphthalene	<b>12.2</b> ug/L	5.0	1		11/12/09 00:17	91-20-3	
Toluene	ND ug/L	5.0	1		11/12/09 00:17		
Xylene (Total)	ND ug/L	10.0	1		11/12/09 00:17		
m&p-Xylene	ND ug/L	10.0	1		11/12/09 00:17		
o-Xylene	ND ug/L	5.0	1		11/12/09 00:17		
Dibromofluoromethane (S)	102 %	85-115	1		11/12/09 00:17		
Toluene-d8 (S)	95 %	70-120	1		11/12/09 00:17		
4-Bromofluorobenzene (S)	99 %	87-109	1		11/12/09 00:17		
1,2-Dichloroethane-d4 (S)	101 %	79-120	1		11/12/09 00:17		
Sample: MW-6	Lab ID: 9256839006	Collected: 11/03/0	9 16:27	Received: 11	/05/09 09:30	Matrix: Water	
Parameters	Results Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Quai
8011 GCS EDB and DBCP	Analytical Method: EPA	8011 Preparation Meth	nod: EPA	A 8011			
1,2-Dibromoethane (EDB)	ND ug/L	0.020	1	11/11/09 12:39	11/11/09 18:12	106-93-4	
1-Chloro-2-bromopropane (S)	99 %	60-140	1	11/11/09 12:39			
8260 MSV Oxygenates	Analytical Method: EPA	8260					
tert-Amyl Alcohol	ND ug/L	100	1		11/12/09 17:33	3 75-85-4	
tert-Amylmethyl ether	ND ug/L	10.0	1		11/12/09 17:33	994-05-8	
Benzene	ND ug/L	5.0	1		11/12/09 17:33		
3,3-Dimethyl-1-Butanol	ND ug/L	100	1		11/12/09 17:33		
tert-Butyl Alcohol	ND ug/L	100	1		11/12/09 17:33		
tert-Butyl Formate	ND ug/L	50.0	1		11/12/09 17:33		
1,2-Dichloroethane	ND ug/L	5.0	1		11/12/09 17:33		
Diisopropyl ether	ND ug/L	5.0	1		11/12/09 17:33		
Ethanol	ND ug/L	200	1		11/12/09 17:33		
Ethylbenzene	ND ug/L	5.0	1		11/12/09 17:33		
Ethyl-tert-butyl ether	ND ug/L	10.0	1		11/12/09 17:33		
Methyl-tert-butyl ether	ND ug/L	5.0	1				
Naphthalene	ND ug/L	5.0			11/12/09 17:33		
Toluene			1		11/12/09 17:33		
Xylene (Total)	ND ug/L	5.0	1		11/12/09 17:33		
m&p-Xylene	ND ug/L	10.0	1		11/12/09 17:33		
• •	ND ug/L	10.0	1		11/12/09 17:33		
o-Xylene	ND ug/L	5.0	1		11/12/09 17:33		
Dibromofluoromethane (S)	100 %	85-115	1		11/12/09 17:33		
Toluene-d8 (S)	100 %	70-120	1		11/12/09 17:33		
4-Bromofluorobenzene (S) 1,2-Dichloroethane-d4 (S)	107 %	87-109	1		11/12/09 17:33	460-00-4	
	103 %	79-120					

Date: 11/17/2009 04:00 PM

REPORT OF LABORATORY ANALYSIS

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Received: 11/05/09 09:30

Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

Matrix: Water

#### **ANALYTICAL RESULTS**

Collected: 11/04/09 09:30

Project:

Sample: MW31

TISDALE QUICK STOP

Lab ID: 9256839007

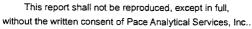
Pace Project No.: 9256839

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Meth	nod: EPA 80	)11 Preparation Meth	nod: EP	A 8011			
1,2-Dibromoethane (EDB)	ND ug	/L	0.020	1	11/11/09 12:39	11/11/09 19:09	106-93-4	
1-Chloro-2-bromopropane (S)	91 %		60-140	1		11/11/09 19:09		
8260 MSV Oxygenates	Analytical Meth	nod: EPA 82	260					
tert-Amyl Alcohol	ND ug	/L	100	1		11/12/09 17:51	75-85-4	
tert-Amylmethyl ether	ND ug	/L	10.0	1		11/12/09 17:51	994-05-8	
Benzene	ND ug	/L	5.0	1		11/12/09 17:51	71-43-2	
3,3-Dimethyl-1-Butanol	ND ug	/L	100	1		11/12/09 17:51	624-95-3	
tert-Butyl Alcohol	ND ug	/L	100	1		11/12/09 17:51	75-65-0	
tert-Butyl Formate	ND ug	/L	50.0	1		11/12/09 17:51	762-75-4	
1,2-Dichloroethane	ND ug	/L	5.0	1		11/12/09 17:51	107-06-2	
Diisopropyl ether	ND ug	/L¹	5.0	1		11/12/09 17:51	108-20-3	
Ethanol	ND ug	/L	200	1		11/12/09 17:51	64-17-5	
Ethylbenzene	ND ug	/L	5.0	1		11/12/09 17:51	100-41-4	
Ethyl-tert-butyl ether	ND ug	/L	10.0	1		11/12/09 17:51	637-92-3	
Methyl-tert-butyl ether	ND ug	/L	5.0	1		11/12/09 17:51		
Naphthalene	ND ug	/L	5.0	1		11/12/09 17:51		
Toluene	ND ug		5.0	1		11/12/09 17:51		
Xylene (Total)	ND ug		10.0	1		11/12/09 17:51		
m&p-Xylene	ND ug		10.0	1		11/12/09 17:51		
o-Xylene	ND ug		5.0	1		11/12/09 17:51		
Dibromofluoromethane (S)	101 %	_	85-115	1		11/12/09 17:51		
Toluene-d8 (S)	101 %		70-120	1		11/12/09 17:51		
4-Bromofluorobenzene (S)	103 %		87-109	1		11/12/09 17:51		
1,2-Dichloroethane-d4 (S)	111 %		79-120	1		11/12/09 17:51		
Sample: MW-30	Lab ID: 9250	839008	Collected: 11/04/0	9 09:44	Received: 11	/05/09 09:30 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Meth	od: EPA 80	011 Preparation Meth	od: EP	A 8011			
1,2-Dibromoethane (EDB)	ND ug		0.020	1		11/11/09 19:28	100 03 4	
1-Chloro-2-bromopropane (S)	104 %	_	60-140	1		11/11/09 19:28		
8260 MSV Oxygenates	Analytical Meth	od: EPA 82	:60					
tert-Amyl Alcohol	ND ug	L.	100	1		11/12/09 18:10	75-85-4	
tert-Amylmethyl ether	ND ug,		10.0	1		11/12/09 18:10		
Benzene	ND ug		5.0	1		11/12/09 18:10		
3,3-Dimethyl-1-Butanol	ND ug		100	1		11/12/09 18:10		
tert-Butyl Alcohol	ND ug		100	1		11/12/09 18:10		
tert-Butyl Formate	ND ug/		50.0	1		11/12/09 18:10		
1,2-Dichloroethane	ND ug/		5.0	1		11/12/09 18:10		
Diisopropyl ether	ND ug/		5.0	1		11/12/09 18:10		
Ethanol	ND ug/		200	1		11/12/09 18:10		
Ethylbenzene	ND ug/		5.0	1		11/12/09 18:10		
	145 ug/	_	5.0	'		11/12/09 10.10	100-41-4	

Date: 11/17/2009 04:00 PM

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# **ANALYTICAL RESULTS**

Project:

TISDALE QUICK STOP

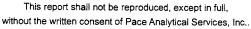
Pace Project No.: 9256839

Sample: MW-30	Lab ID: 925683900	8 Collected: 11/04	/09 09:44	Received: 1	1/05/09 09:30	Matrix: Water	
Parameters	Results Un	its Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Oxygenates	Analytical Method: EP	A 8260					
Ethyl-tert-butyl ether	ND ug/L	10.0	1		11/12/09 18:10	0 637-92-3	
Methyl-tert-butyl ether	ND ug/L	5.0			11/12/09 18:10		
Naphthalene	11.0 ug/L	5.0	1		11/12/09 18:10		
Toluene	ND ug/L	5.0	1		11/12/09 18:10		
Xylene (Total)	ND ug/L	10.0	1		11/12/09 18:10		
m&p-Xylene	ND ug/L	10.0	1		11/12/09 18:10		
o-Xylene	ND ug/L	5.0	1		11/12/09 18:10		
Dibromofluoromethane (S)	103 %	85-115	1	/	11/12/09 18:10		
Toluene-d8 (S)	100 %	70-120	1		11/12/09 18:10		
4-Bromofluorobenzene (S)	105 %	87-109			11/12/09 18:10		
1,2-Dichloroethane-d4 (S)	98 %	79-120	1		11/12/09 18:10		
Sample: MW-24	Lab ID: 925683900	9 Collected: 11/04	/09 10·15	Received: 1	1/05/09 09:30	Matrix: Water	
Parameters	Results Uni						0 1
1 diamoters	- Tresuits Offi	ts Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EP	A 8011 Preparation Me	thod: EPA	X 8011			
1,2-Dibromoethane (EDB)	ND ug/L	0.020	1	11/11/09 12:39	11/11/09 19:48	3 106-93-4	
1-Chloro-2-bromopropane (S)	95 %	60-140	1	11/11/09 12:39	11/11/09 19:48	301-79-56	
3260 MSV Oxygenates	Analytical Method: EP	A 8260					
tert-Amyl Aicohol	ND ug/L	100	1		11/12/09 18:28	3 75-85-4	
tert-Amylmethyl ether	ND ug/L	10.0	1		11/12/09 18:28	3 994-05-8	
Benzene	ND ug/L	5.0	1		11/12/09 18:28		
3,3-Dimethyl-1-Butanol	ND ug/L	100	1		11/12/09 18:28	3 624-95 <b>-</b> 3	
tert-Butyl Alcohol	ND ug/L	100	1		11/12/09 18:28	3 75-65-0	
tert-Butyl Formate	ND ug/L	50.0	1		11/12/09 18:28	3 762-75-4	
1,2-Dichloroethane	ND ug/L	5.0	1		11/12/09 18:28	3 107-06-2	
Diisopropyl ether	ND ug/L	5.0	. 1		11/12/09 18:28	3 108-20-3	
Ethanol	ND ug/L	200	1		11/12/09 18:28		
Ethylbenzene	ND ug/L	5.0	1		11/12/09 18:28	3 100-41-4	
Ethyl-tert-butyl ether	ND ug/L	10.0	1		11/12/09 18:28	8 637-92-3	
Methyl-tert-butyl ether	ND ug/L	5.0	1		11/12/09 18:28	3 1634-04-4	
Vaphthalene	ND ug/L	5.0	1		11/12/09 18:28	91-20-3	
Toluene	ND ug/L	5.0	1		11/12/09 18:28		
Xylene (Total)	ND ug/L	10.0	1		11/12/09 18:28		
n&p-Xylene	ND ug/L	10.0	1		11/12/09 18:28		
o-Xylene	ND ug/L	5.0	1		11/12/09 18:28		
Dibromofluoromethane (S)	98 %	85-115	1		11/12/09 18:28		
Toluene-d8 (S)	100 %	70-120	1		11/12/09 18:28		
( D (0)	400.0/						
4-Bromofluorobenzene (S)	103 %	87-109	1		11/12/09 18:28	3 460-00-4	

Date: 11/17/2009 04:00 PM

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Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

# **ANALYTICAL RESULTS**

Project:

TISDALE QUICK STOP

Pace Project No.:

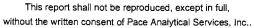
9256839

Sample: MW-23	Lab ID: 9256839010	Collected: 11/04/0	9 10:26	Received: 11	/05/09 09:30 N	//atrix: Water	
Parameters	Results Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8	011 Preparation Meth	od: EPA	\ 8011			
1,2-Dibromoethane (EDB)	ND ug/L	0.019	1	11/11/09 12:39	11/11/09 20:07	106-93-4	
1-Chloro-2-bromopropane (S)	97 %	60-140	1	11/11/09 12:39	11/11/09 20:07	301-79-56	
8260 MSV Oxygenates	Analytical Method: EPA 8	260					
tert-Amyl Alcohol	<b>1490</b> ug/L	500	5		11/12/09 14:45	75-85-4	
tert-Amylmethyl ether	ND ug/L	50.0	5		11/12/09 14:45		
Benzene	<b>1250</b> ug/L	100	20		11/13/09 11:16		
3,3-Dimethyl-1-Butanol	ND ug/L	500	5		11/12/09 14:45	· · · · <del>-</del> -	
tert-Butyl Alcohol	ND ug/L	500	5		11/12/09 14:45		
tert-Butyl Formate	ND ug/L	250	5		11/12/09 14:45		
1,2-Dichloroethane	ND ug/L	25.0	5		11/12/09 14:45		
Diisopropyl ether							
Ethanol	ND ug/L	25.0	5		11/12/09 14:45		
	ND ug/L	1000	5		11/12/09 14:45		
Ethylbenzene	ND ug/L	25.0	5		11/12/09 14:45		
Ethyl-tert-butyl ether	ND ug/L	, 50.0	5		11/12/09 14:45		
Methyl-tert-butyl ether	<b>152</b> ug/L	25.0	5		11/12/09 14:45		
Naphthalene	<b>31.0</b> ug/L	25.0	5		11/12/09 14:45	91-20-3	
Toluene	ND ug/L	25.0	5		11/12/09 14:45	108-88-3	
Xylene (Total)	<b>98.9</b> ug/L	50.0	5		11/12/09 14:45	1330-20-7	
m&p-Xylene	ND ug/L	50.0	5		11/12/09 14:45	1330-20-7	
o-Xylene	<b>93.0</b> ug/L	25.0	5		11/12/09 14:45	95-47-6	
Dibromofluoromethane (S)	101 %	85-115	5		11/12/09 14:45	1868-53-7	
Toluene-d8 (S)	94 %	70-120	5		11/12/09 14:45		
4-Bromofluorobenzene (S)	99 %	87-109	5		11/12/09 14:45		
1,2-Dichloroethane-d4 (S)	98 %	79-120	5		11/12/09 14:45		
Sample: MW-29	Lab ID: 9256839011	Collected: 11/04/0	9 10:34	Received: 11	/05/09 09·30 N	Matrix: Water	
Parameters	Results Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
				· · · · · · · · · · · · · · · · · · ·	Allalyzed		
8011 GCS EDB and DBCP	Analytical Method: EPA 8	011 Preparation Meth	od: EPA	X 8011			
1,2-Dibromoethane (EDB)	ND ug/L	0.019	1	11/11/09 12:40	11/11/09 20:26	106-93-4	
1-Chloro-2-bromopropane (S)	96 %	60-140	1	11/11/09 12:40	11/11/09 20:26	301-79-56	
8260 MSV Oxygenates	Analytical Method: EPA 8	260					
tert-Amyl Alcohol	ND ug/L	100	1		11/12/09 18:46	75-85-4	
tert-Amylmethyl ether	ND ug/L	10.0	1		11/12/09 18:46		
Benzene	ND ug/L	5.0	1		11/12/09 18:46		
3,3-Dimethyl-1-Butanol	ND ug/L	100	1		11/12/09 18:46		
tert-Butyl Alcohol	ND ug/L	100	1		11/12/09 18:46		
tert-Butyl Formate	ND ug/L	50.0	1		11/12/09 18:46		
1.2-Dichloroethane	ND ug/L	5.0	1		11/12/09 18:46		
Diisopropyl ether	ND ug/L	5.0	1		11/12/09 18:46		
Ethanol	ND ug/L	200	1				
	-				11/12/09 18:46		
Ethylbenzene	ND ug/L	5.0	1		11/12/09 18:46	100-41-4	

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Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

# **ANALYTICAL RESULTS**

Project:

TISDALE QUICK STOP

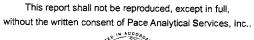
Pace Project No.: 9256839

Sample: MW-29	Lab ID: 9256839	0011 Collecte	d: 11/04/0	9 10:34	Received: 1	1/05/09 09:30	Matrix: Water	P
Parameters	Results	Units Rep	ort Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Oxygenates	Analytical Method:	EPA 8260						
Ethyl-tert-butyl ether	ND ug/L		10.0	1		11/12/09 18:4	6 637-92-3	
Methyl-tert-butyl ether	ND ug/L		5.0	1		11/12/09 18:4		
Naphthalene	ND ug/L		5.0	1		11/12/09 18:4		
Toluene	ND ug/L		5.0	1		11/12/09 18:4	<del>-</del>	
Xylene (Total)	ND ug/L		10.0	1		11/12/09 18:4		
m&p-Xylene	ND ug/L		10.0	1		11/12/09 18:4		
o-Xylene	ND ug/L		5.0	1		11/12/09 18:4		
Dibromofluoromethane (S)	104 %		85-115	1		11/12/09 18:4		
Toluene-d8 (S)	99 %		70-120	1		11/12/09 18:4		
4-Bromofluorobenzene (S)	106 %		87-109	1		11/12/09 18:4		
1,2-Dichloroethane-d4 (S)	100 %		79-120	1			6 17060-07-0	
Sample: MW-21	Lab ID. 0050000	0.40						
•	Lab ID: 9256839	0012 Collecte	d: 11/04/0	9 10:47	Received: 1	1/05/09 09:30	Matrix: Water	
Parameters	Results	Units Rep	ort Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method:	EPA 8011 Prepai	ation Meth	nod: EPA	A 8011			
1,2-Dibromoethane (EDB)	ND ug/L		0.019	1	11/11/09 12:40	11/11/09 20:45	5 106-93-4	
1-Chloro-2-bromopropane (S)	93 %		60-140	1	11/11/09 12:40	11/11/09 20:45	301-79-56	
8260 MSV Oxygenates	Analytical Method:	EPA 8260						
tert-Amyl Alcohol	ND ug/L		100	1		11/12/09 19:04	1 75-85-4	
tert-Amylmethyl ether	ND ug/L		10.0	1		11/12/09 19:04		
Benzene	ND ug/L		5.0	1		11/12/09 19:04		
3,3-Dimethyl-1-Butanol	ND ug/L		100	1		11/12/09 19:04		
tert-Butyl Alcohol	ND ug/L		100	1		11/12/09 19:04		
tert-Butyl Formate	ND ug/L		50.0	1		11/12/09 19:04		
1,2-Dichloroethane	ND ug/L		5.0	1		11/12/09 19:04		
Diisopropyl ether	ND ug/L		5.0	1		11/12/09 19:04		
Ethanol	ND ug/L		200	1		11/12/09 19:04		
Ethyl <b>b</b> enzene	ND ug/L		5.0	1		11/12/09 19:04		
Ethyl-tert-butyl ether	ND ug/L		10.0	1		11/12/09 19:04		
Methyl-tert-butyl ether	ND ug/L		5.0	1		11/12/09 19:04		
Naphthalene	ND ug/L		5.0	1		11/12/09 19:04		
Toluene	ND ug/L		5.0	1		11/12/09 19:04		
Kylene (Total)	ND ug/L		10.0	1		11/12/09 19:04		
m&p-Xylene	ND ug/L		10.0	1		11/12/09 19:04		
	ND ug/L		5.0	1		11/12/09 19:04		
· · · · ·	IND DU/		0.0	1		11/12/09 19.04	33-41-0	
o-Xylene				1		11/12/00 10:04	1969 52 7	
o-Xylene Dibromofluoromethane (S)	101 %		85-115	1	•	11/12/09 19:04		
o-Xylene				1 1 1		11/12/09 19:04 11/12/09 19:04 11/12/09 19:04	2037-26-5	

Date: 11/17/2009 04:00 PM

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Received: 11/05/09 09:30



Matrix: Water



# **ANALYTICAL RESULTS**

Collected: 11/04/09 11:40

Project:

Sample: TW-2

TISDALE QUICK STOP

Lab ID: 9256839013

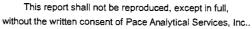
Pace Project No.: 9256839

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Meth	od: EPA 8011	Preparation Meth	nod: EP	A 8011			
1,2-Dibromoethane (EDB)	ND ug/	L	0.020	1	11/11/09 12:40	11/11/09 21:23	106-93-4	
1-Chloro-2-bromopropane (S)	104 %		60-140	1		11/11/09 21:23		
8260 MSV Oxygenates	Analytical Meth	od: EPA 8260	1					
tert-Amyl Alcohol	ND ug/	L	100	1		11/12/09 19:22	75-85-4	
tert-Amylmethyl ether	ND ug/	L	10.0	1		11/12/09 19:22	994-05-8	
Benzene	ND ug/	L	5.0	1		11/12/09 19:22	71-43-2	
3,3-Dimethyl-1-Butanol	ND ug/	L	100	1		11/12/09 19:22	624-95-3	
tert-Butyl Alcohol	ND ug/	L	100	1		11/12/09 19:22		
tert-Butyl Formate	ND ug/		50.0	1		11/12/09 19:22		
1,2-Dichloroethane	ND ug/	L	5.0	1		11/12/09 19:22		
Diisopropyl ether	ND ug/		5.0	1		11/12/09 19:22		
Ethanol	ND ug/		200	1		11/12/09 19:22		
Ethylbenzene	ND ug/		5.0	1		11/12/09 19:22		
Ethyl-tert-butyl ether	ND ug/		10.0	1		11/12/09 19:22		
Methyl-tert-butyl ether	ND ug/		5.0	1		11/12/09 19:22		
Naphthalene	ND ug/		5.0	1		11/12/09 19:22		
Toluene	ND ug/		5.0	1		11/12/09 19:22		
Xylene (Total)	ND ug/		10.0	1		11/12/09 19:22		
m&p-Xylene	ND ug/		10.0					
o-Xylene	ND ug/l		5.0	1		11/12/09 19:22		
Dibromofluoromethane (S)	103 %	-		1		11/12/09 19:22		
Toluene-d8 (S)	101 %		85-115	1		11/12/09 19:22		
4-Bromofluorobenzene (S)	104 %		70-120	1		11/12/09 19:22		
1,2-Dichloroethane-d4 (S)			87-109	1		11/12/09 19:22		
1,2-Dicilioroethane-u4 (3)	96 %		79-120	1		11/12/09 19:22	17060-07-0	
Sample: MW-25	Lab ID: 9256	839014 (	Collected: 11/04/0	9 11:49	Received: 11	/05/09 09:30 N	latrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
	Results					Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Results Analytical Metho	od: EPA 8011	Preparation Meth	od: EP/	A 8011	-		Qual
8011 GCS EDB and DBCP 1,2-Dibromoethane (EDB)	Results  Analytical Metho	od: EPA 8011	Preparation Meth	od: EP/	A 8011 11/11/09 12:40	11/11/09 21:42	106-93-4	Qual
8011 GCS EDB and DBCP 1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)	Analytical Metho ND ug/l 97 %	od: EPA 8011	Preparation Meth 0.019 60-140	od: EP/	A 8011 11/11/09 12:40	-	106-93-4	Qual
8011 GCS EDB and DBCP 1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV Oxygenates	Analytical Methors  ND ug/l 97 %  Analytical Methors	od: EPA 8011 - od: EPA 8260	Preparation Meth 0.019 60-140	od: EP/	A 8011 11/11/09 12:40	11/11/09 21:42 11/11/09 21:42	106-93-4 301-79-56	Qual
8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol	Analytical Methor ND ug/l 97 % Analytical Methor ND ug/l	od: EPA 8011 - od: EPA 8260	Preparation Meth 0.019 60-140	od: EP/	A 8011 11/11/09 12:40	11/11/09 21:42	106-93-4 301-79-56	Qual
8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether	Analytical Methology 97 % Analytical Methology ND ug/l	od: EPA 8011 - od: EPA 8260 -	Preparation Meth 0.019 60-140 100 10.0	od: EP/ 1 1 1	A 8011 11/11/09 12:40	11/11/09 21:42 11/11/09 21:42 11/12/09 19:41 11/12/09 19:41	106-93-4 301-79-56 75-85-4 994-05-8	Qual
8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether Benzene	Analytical Methor ND ug/l 97 % Analytical Methor ND ug/l ND ug/l ND ug/l	od: EPA 8011 - od: EPA 8260 - -	Preparation Meth 0.019 60-140 100 10.0 5.0	od: EP#  1  1  1  1  1  1	A 8011 11/11/09 12:40	11/11/09 21:42 11/11/09 21:42 11/12/09 19:41	106-93-4 301-79-56 75-85-4 994-05-8	Qual
8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether Benzene 3,3-Dimethyl-1-Butanol	Analytical Methor ND ug/l 97 % Analytical Methor ND ug/l ND ug/l ND ug/l ND ug/l ND ug/l	od: EPA 8011 - od: EPA 8260 - -	Preparation Meth 0.019 60-140 100 10.0	od: EP/ 1 1 1	A 8011 11/11/09 12:40	11/11/09 21:42 11/11/09 21:42 11/12/09 19:41 11/12/09 19:41	106-93-4 301-79-56 75-85-4 994-05-8 71-43-2	Qual
8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether Benzene 3,3-Dimethyl-1-Butanol tert-Butyl Alcohol	Analytical Methor ND ug/l 97 % Analytical Methor ND ug/l ND ug/l ND ug/l	od: EPA 8011 - od: EPA 8260 - -	Preparation Meth 0.019 60-140 100 10.0 5.0	od: EP#  1  1  1  1  1  1	A 8011 11/11/09 12:40	11/11/09 21:42 11/11/09 21:42 11/12/09 19:41 11/12/09 19:41 11/12/09 19:41	106-93-4 301-79-56 75-85-4 994-05-8 71-43-2 624-95-3	Qual
8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether Benzene 3,3-Dimethyl-1-Butanol tert-Butyl Alcohol tert-Butyl Alcohol tert-Butyl Formate	Analytical Methor ND ug/l 97 % Analytical Methor ND ug/l ND ug/l ND ug/l ND ug/l ND ug/l	od: EPA 8011 	Preparation Meth 0.019 60-140 100 10.0 5.0 100	1 1 1 1 1 1 1	A 8011 11/11/09 12:40	11/11/09 21:42 11/11/09 21:42 11/12/09 19:41 11/12/09 19:41 11/12/09 19:41 11/12/09 19:41	106-93-4 301-79-56 75-85-4 994-05-8 71-43-2 624-95-3 75-65-0	Qual
8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether Benzene 3,3-Dimethyl-1-Butanol tert-Butyl Alcohol tert-Butyl Alcohol tert-Butyl Formate	Analytical Methor ND ug/l 97 % Analytical Methor ND ug/l	od: EPA 8011 	Preparation Meth 0.019 60-140 100 10.0 5.0 100 100	1 1 1 1 1 1 1 1	A 8011 11/11/09 12:40	11/11/09 21:42 11/11/09 21:42 11/12/09 19:41 11/12/09 19:41 11/12/09 19:41 11/12/09 19:41 11/12/09 19:41	106-93-4 301-79-56 75-85-4 994-05-8 71-43-2 624-95-3 75-65-0 762-75-4	Qual
8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether Benzene 3,3-Dimethyl-1-Butanol tert-Butyl Alcohol tert-Butyl Formate 1,2-Dichloroethane	Results  Analytical Methors 97 %  Analytical Methors ND ug/l	od: EPA 8011 	Preparation Meth 0.019 60-140 100 10.0 5.0 100 100 50.0	od: EP/ 1 1 1 1 1 1 1 1	A 8011 11/11/09 12:40	11/11/09 21:42 11/11/09 21:42 11/12/09 19:41 11/12/09 19:41 11/12/09 19:41 11/12/09 19:41 11/12/09 19:41 11/12/09 19:41	106-93-4 301-79-56 75-85-4 994-05-8 71-43-2 624-95-3 75-65-0 762-75-4 107-06-2	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether Benzene 3,3-Dimethyl-1-Butanol tert-Butyl Alcohol tert-Butyl Formate 1,2-Dichloroethane Diisopropyl ether Ethanol	Results  Analytical Methors ND ug/l 97 %  Analytical Methors ND ug/l	od: EPA 8011 	Preparation Meth 0.019 60-140 100 10.0 5.0 100 100 50.0 5.0	od: EP/ 1 1 1 1 1 1 1 1	A 8011 11/11/09 12:40	11/11/09 21:42 11/11/09 21:42 11/12/09 19:41 11/12/09 19:41 11/12/09 19:41 11/12/09 19:41 11/12/09 19:41 11/12/09 19:41 11/12/09 19:41	106-93-4 301-79-56 75-85-4 994-05-8 71-43-2 624-95-3 75-65-0 762-75-4 107-06-2 108-20-3	Qual

Date: 11/17/2009 04:00 PM

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

# **ANALYTICAL RESULTS**

Project:

TISDALE QUICK STOP

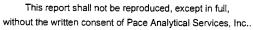
Pace Project No.: 9256839

Sample: MW-25	Lab ID: 9256839014	Collected: 11/04/0	9 11:49	Received: 11	1/05/09 09:30	Matrix: Water	
Parameters	Results Unit	s Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Oxygenates	Analytical Method: EPA	8260					
Ethyl-tert-butyl ether	ND ug/L	10.0	1		11/12/09 19:4	1 637-92-3	
Methyl-tert-butyl ether	ND ug/L	5.0	1		11/12/09 19:4	1 1634-04-4	
Naphthalene	ND ug/L	5.0	1		11/12/09 19:4	1 91-20-3	
Toluene	ND ug/L	5.0	1		11/12/09 19:4	1 108-88-3	
Xylene (Total)	ND ug/L	10.0	1		11/12/09 19:4	1 1330-20-7	
m&p-Xylene	ND ug/L	10.0	1		11/12/09 19:4	1 1330-20-7	
o-Xylene	ND ug/L	5.0	1		11/12/09 19:4	1 95-47-6	
Dibromofluoromethane (S)	103 %	85-115	1		11/12/09 19:4		
Toluene-d8 (S)	101 %	70-120	1		11/12/09 19:4		
4-Bromofluorobenzene (S)	103 %	87-109	1		11/12/09 19:4		
1,2-Dichloroethane-d4 (S)	102 %	79-120	1			1 17060-07-0	
Sample: MW-27	Lab ID: 9256839015	Collected: 11/04/0	9 12:06	Received: 11	1/05/09 09:30	Matrix: Water	
Parameters	Results Unit		DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA	8011 Preparation Meth	nod: EPA	. 8011	<u> </u>		
1,2-Dibromoethane (EDB)	ND ug/L	0.020	1		11/11/00 22:0:	1 106 03 4	
1-Chloro-2-bromopropane (S)	101 %	60-140		11/11/09 12:40			
1-Ciliolo-2-bioinopiopane (3)	101 %	00-140	1	11/11/09 12:40	11/11/09 22:0	1 301-79-56	
8260 MSV Oxygenates	Analytical Method: EPA	8260					
tert-Amyl Alcohol	ND ug/L	100	1		11/12/09 19:5	9 75-85-4	
tert-Amylmethyl ether	ND ug/L	10.0	1		11/12/09 19:5	9 994-05-8	
Benzene	ND ug/L	5.0	1		11/12/09 19:5	9 71-43-2	
3,3-Dimethyl-1-Butanol	ND ug/L	100	1		11/12/09 19:59	9 624-95-3	
tert-Butyl Alcohol	ND ug/L	100	1		11/12/09 19:5	75-65-0	
tert-Butyl Formate	ND ug/L	50.0	1		11/12/09 19:59	762-75-4	
1,2-Dichloroethane	ND ug/L	5.0	1		11/12/09 19:59	9 107-06-2	
Diisopropyl ether	ND ug/L	5.0	1		11/12/09 19:5	9 108-20-3	
Ethanol	ND ug/L	200	1		11/12/09 19:59		
Ethylbenzene	ND ug/L	5.0	1		11/12/09 19:59	9 100-41-4	
Ethyl-tert-butyl ether	ND ug/L	10.0	1		11/12/09 19:59		
Methyl-tert-butyl ether	ND ug/L	5.0	1		11/12/09 19:59		
Naphthalene	ND ug/L	5.0	1		11/12/09 19:59		
Toluene	ND ug/L	5.0	1		11/12/09 19:59		
Xylene (Total)	ND ug/L	10.0	1		11/12/09 19:59		
m&p-Xylene	ND ug/L	10.0	1		11/12/09 19:59		
o-Xylene	ND ug/L	5.0	1		11/12/09 19:59		
	107 %	85-115	1		11/12/09 19:59		
Dibromofluoromethane (S)	101 /0						
		70-120	1		11/12/09 19:59	2037-26-5	
Dibromofluoromethane (S) Toluene-d8 (S) 4-Bromofluorobenzene (S)	99 % 105 %	70-120 87-109	1 1		11/12/09 19:59 11/12/09 19:59		

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REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

#### **ANALYTICAL RESULTS**

Project:

TISDALE QUICK STOP

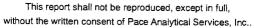
Pace Project No.: 9256839

	Collected: 11/04/0	9 12:18	Received: 11	/05/09 09:30	Matrix: Water	
Results Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Analytical Method: EPA 8	011 Preparation Meth	nod: EPA	\ 8011			
ND ug/L	0.019	1	11/11/09 12:40	11/11/09 22:21	106-93-4	
97 %	60-140	1	11/11/09 12:40			
Analytical Method: EPA 8	260					
ND ug/L	100	1		11/12/09 20:17	7 75-85-4	
_						
<del>-</del>						
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_						
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<del>-</del>						
_						
_						
_						
_				11/12/09 20:17	' 91-20-3	
=	5.0	1		11/12/09 20:17	' 108-88-3	
ND ug/L	10.0	1		11/12/09 20:17	1330-20-7	
ND ug/L	10.0	1		11/12/09 20:17	1330-20-7	
ND ug/L	5.0	1		11/12/09 20:17	95-47-6	
104 %	85-115	1		11/12/09 20:17	1868-53-7	
101 %	70-120	1		11/12/09 20:17	2037-26-5	
107 %	87-109	1		11/12/09 20:17	460-00-4	
99 %	<b>79-120</b>	1				
Lab ID: 9256839017	Collected: 11/04/09	9 12:31	Received: 11	/05/09 09:30	Matrix: Water	
Results Units						Qual
Analytical Method: EPA 8	<del></del>		·			
					=	
94 %	60-140	1	11/11/09 12:40	11/11/09 22:40	301 <b>-</b> 79-56	
Analytical Method: EPA 82	260					
ND ug/L	100	1		11/12/09 20:35	75-85-4	
ND ug/L	10.0	1		11/12/09 20:35		
ND ug/L	5.0	1		11/12/09 20:35		
<del>-</del>	100	1		11/12/09 20:35		
ND ug/L					JE 1 00 0	
ND ug/L ND ug/L		1		11/12/09 20:35	75-65-0	
ND ug/L	100	1 1		11/12/09 20:35		
ND ug/L ND ug/L	100 50.0	1		11/12/09 20:35	762-75-4	
ND ug/L ND ug/L ND ug/L	100 50.0 5.0	1 1		11/12/09 20:35 11/12/09 20:35	762-75-4 107-06-2	
ND ug/L ND ug/L	100 50.0	1		11/12/09 20:35	762-75-4 107-06-2 108-20-3	
_	ND ug/L 97 %  Analytical Method: EPA 8  ND ug/L 104 % 101 % 107 % 99 %  Lab ID: 9256839017  Results Units  Analytical Method: EPA 86  ND ug/L 94 %  Analytical Method: EPA 86	ND ug/L 97 % 60-140  Analytical Method: EPA 8260  ND ug/L ND u	ND ug/L 97 % 60-140 1  Analytical Method: EPA 8260  ND ug/L 100 1 ND ug/L 10.0 1 ND ug/L 100 1 ND ug/L 100 1 ND ug/L 100 1 ND ug/L 100 1 ND ug/L 5.0 1 ND ug/L 50.0 1 ND ug/L 5.0 1 ND u	Analytical Method: EPA 8260  ND ug/L 100 1 ND ug/L 10.0 1 ND ug/L 10.0 1 ND ug/L 100 1 ND ug/L 50.0	ND ug/L 0.019 1 11/11/09 12:40 11/11/09 22:21 97 % 60-140 1 11/11/09 12:40 11/11/09 22:21  Analytical Method: EPA 8260  ND ug/L 100 1 11/12/09 20:17 ND ug/L 10.0 1 11/12/09 20:17 ND ug/L 100 1 11/12/09 20:17 ND ug/L 100 1 11/12/09 20:17 ND ug/L 100 1 11/12/09 20:17 ND ug/L 5.0 1 11/12/09 20:17	ND ug/L 0.019 1 11/11/09 12:40 11/11/09 22:21 106-93-4 97 % 60-140 1 11/11/09 12:40 11/11/09 22:21 106-93-4 97 % 60-140 1 11/11/09 12:40 11/11/09 22:21 106-93-4 11/11/09 22:21 301-79-56 Analytical Method: EPA 8260  ND ug/L 100 1 11/12/09 20:17 75-85-4 ND ug/L 10.0 1 11/12/09 20:17 71-43-2 ND ug/L 10.0 1 11/12/09 20:17 76-49-53 ND ug/L 10.0 1 11/12/09 20:17 75-65-0 ND ug/L 50.0 1 11/12/09 20:17 76-65-0 ND ug/L 50.0 1 11/12/09 20:17 76-65-0 ND ug/L 50.0 1 11/12/09 20:17 76-65-0 ND ug/L 50.0 1 11/12/09 20:17 107-66-2 ND ug/L 50.0 1 11/12/09 20:17 108-20-3 ND ug/L 50.0 1 11/12/09 20:17 100-41-4 ND ug/L 50.0 1 11/12/09 20:17 108-20-3 ND ug/L 50.0 1 11/12/09 20:17 1634-04-4 ND ug/L 50.0 1 11/12/09 20:17 1634-04-4 ND ug/L 50.0 1 11/12/09 20:17 108-88-3 ND ug/L 50.0 1 10/12/09 20:17 108-90-10 ND

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**REPORT OF LABORATORY ANALYSIS** 

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# **ANALYTICAL RESULTS**

Project:

TISDALE QUICK STOP

Pace Project No.: 9256839

Sample: MW-22	Lab ID: 9256839	017 Collected: 11/04	/09 12:31	Received: 11	/05/09 09:30	Matrix: Water	
Parameters	Results U	Jnits Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
8260 MSV Oxygenates	Analytical Method: E	EPA 8260					
Ethyl-tert-butyl ether	ND ug/L	10.0	) 1		11/12/09 20:35	637-92 <b>-</b> 3	
Methyl-tert-butyl ether	ND ug/L	5.0	) 1		11/12/09 20:35	1634-04-4	
Naphthalene	ND ug/L	5.0	) 1		11/12/09 20:35	91-20-3	
Toluene	ND ug/L	5.0	1 -		11/12/09 20:35	108-88-3	
Xylene (Total)	ND ug/L	10.0	) 1		11/12/09 20:35		
m&p-Xylene	ND ug/L	10.0			11/12/09 20:35		
o-Xylene	ND ug/L	5.0			11/12/09 20:35		
Dibromofluoromethane (S)	104 %	85-115			11/12/09 20:35		
Toluene-d8 (S)	101 %	70-120			11/12/09 20:35		
4-Bromofluorobenzene (S)	105 %	87-109			11/12/09 20:35		
1,2-Dichloroethane-d4 (S)	109 %	79-120			11/12/09 20:35		
. , ,			•		11, 12,00 20.00	11000 01 0	
Sample: MW-26	Lab ID: 9256839	018 Collected: 11/04	/09 12:40	Received: 11	/05/09 09:30 N	Matrix: Water	<u>-</u> .
Parameters	Results L	Onits Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
8011 GCS EDB and DBCP	Analytical Method: E	EPA 8011 Preparation Me	thod: EPA	\ 8011			
1,2-Dibromoethane (EDB)	ND ug/L	0.019	) 1	11/11/09 12:40	11/11/09 22:59	106-93-4	
1-Chloro-2-bromopropane (S)	98 %	60-140			11/11/09 22:59		
3260 MSV Oxygenates	Analytical Method: E	EPA 8260					
tert-Amyl Alcohol	ND ug/L	100	1		11/12/09 20:53	75-85-4	
tert-Amylmethyl ether	ND ug/L	10.0			11/12/09 20:53		
Benzene	ND ug/L	5.0			11/12/09 20:53		
3,3-Dimethyl-1-Butanol	ND ug/L	100			11/12/09 20:53		
tert-Butyl Alcohol	ND ug/L	100			11/12/09 20:53		
tert-Butyl Formate	ND ug/L	50.0			11/12/09 20:53		
1,2-Dichloroethane	ND ug/L	5.0			11/12/09 20:53		
Diisopropyl ether	ND ug/L	5.0			11/12/09 20:53		
Ethanol	ND ug/L	200					
Ethylbenzene	ND ug/L	200 5.0			11/12/09 20:53		
Ethyl-tert-butyl ether	ND ug/L				11/12/09 20:53		
Methyl-tert-butyl ether		10.0			11/12/09 20:53		
Naphthalene	ND ug/L	5.0			11/12/09 20:53		
'	ND ug/L	5.0			11/12/09 20:53		
Toluene Yulono (Total)	ND ug/L	5.0			11/12/09 20:53		
Xylene (Total)	ND ug/L	10.0			11/12/09 20:53		
m&p-Xylene	ND ug/L	10.0			11/12/09 20:53		
o-Xylene	ND ug/L	5.0			11/12/09 20:53		
Dibromofluoromethane (S)	105 %	85-115			11/12/09 20:53		
Toluene-d8 (S)	101 %	70-120			11/12/09 20:53		
4-Bromofluorobenzene (S)	103 %	87-109			11/12/09 20:53		
1,2-Dichloroethane-d4 (S)	108 %	79-120	1		11/12/09 20:53	47000 07 0	

Date: 11/17/2009 04:00 PM



Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

# **ANALYTICAL RESULTS**

Project:

TISDALE QUICK STOP

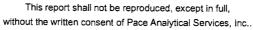
Pace Project No.: 9256839

Sample: MW-20	Lab ID: 925683901	9 Collected: 11/04/0	9 12:53	Received: 11	/05/09 09:30	Matrix: Water	
Parameters	Results Un	its Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EF	'A 8011 Preparation Met	nod: EPA	\ 8011		•	
1,2-Dibromoethane (EDB)	ND ug/L	0.019	1	11/11/09 12:40	11/11/09 23:18	3 106-93-4	
1-Chloro-2-bromopropane (S)	97 %	60-140	1	11/11/09 12:40	11/11/09 23:18		
8260 MSV Oxygenates	Analytical Method: EF	A 8260					
tert-Amyl Alcohol	ND ug/L	100	1		11/14/09 07:44	1 75-85-4	
tert-Amylmethyl ether	ND ug/L	10.0	1		11/14/09 07:44	1 994-05-8	
Benzene	<b>9.5</b> ug/L	5.0	1		11/14/09 07:44	1 71-43-2	
3,3-Dimethyl-1-Butanol	ND ug/L	100	1		11/14/09 07:44	4 624-95-3	
tert-Butyl Alcohol	ND ug/L	100	1		11/14/09 07:44		
tert-Butyl Formate	ND ug/L	50.0	1		11/14/09 07:44		
1,2-Dichloroethane	ND ug/L	5.0	1		11/14/09 07:44		
Diisopropyl ether	ND ug/L	5.0	1		11/14/09 07:44		
Ethanol	ND ug/L	200	1		11/14/09 07:44		
Ethylbenzene	_						
•	ND ug/L	5.0	1		11/14/09 07:44		
Ethyl-tert-butyl ether	ND ug/L	10.0	1		11/14/09 07:44		
Methyl-tert-butyl ether	ND ug/L	5.0	1		11/14/09 07:44		
Naphthalene 	ND ug/L	5.0	1		11/14/09 07:44		
Toluene	ND ug/L	5.0	1		11/14/09 07:44	108-88-3	
Xylene (Total)	ND ug/L	10.0	1		11/14/09 07:44	1330-20-7	
m&p-Xylene	ND ug/L	10.0	1		11/14/09 07:44	1330-20-7	
o-Xylene	ND ug/L	5.0	1		11/14/09 07:44	95-47-6	
Dibromofluoromethane (S)	104 %	85-115	1		11/14/09 07:44	1868-53-7	
Toluene-d8 (S)	100 %	70-120	1		11/14/09 07:44	2037-26-5	
4-Bromofluorobenzene (S)	95 %	87-109	1		11/14/09 07:44		
1,2-Dichloroethane-d4 (S)	103 %	79-120	1		11/14/09 07:44	17060-07-0	
Sample: MW-19	Lab ID: 925683902	0 Collected: 11/04/0	9 13:03	Received: 11	/05/09 09:30	Matrix: Water	
Parameters	Results Uni		DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP					Allalyzed	<u> </u>	- Quai
		A 8011 Preparation Metr					
1,2-Dibromoethane (EDB)	ND ug/L	0.019	1	11/11/09 12:40	11/11/09 23:37		
1-Chloro-2-bromopropane (S)	100 %	60-140	1	11/11/09 12:40	11/11/09 23:37	301-79-56	
8260 MSV Oxygenates	Analytical Method: EP	A 8260					
tert-Amyl Alcohol	ND ug/L	100	1		11/12/09 19:38	75-85-4	
tert-Amylmethyl ether	ND ug/L	10.0	1		11/12/09 19:38		
Benzene	ND ug/L	5.0	1		11/12/09 19:38		
3,3-Dimethyl-1-Butanol	ND ug/L	100	1		11/12/09 19:38		
tert-Butyl Alcohol	ND ug/L	100	1		11/12/09 19:38		
tert-Butyl Formate	ND ug/L	50.0	1				
1,2-Dichloroethane					11/12/09 19:38		
1,2 DIGITOTOGUIANE	ND ug/L	5.0	1		11/12/09 19:38		
Discorropyl other					ココノコンバルロ オロ・クロ	400 00 0	
Diisopropyl ether	ND ug/L	5.0	1		11/12/09 19:38		
Diisopropyl ether Ethanol Ethylbenzene	ND ug/L ND ug/L ND ug/L	5.0 200 5.0	1 1 1		11/12/09 19:38 11/12/09 19:38 11/12/09 19:38	64-17-5	

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REPORT OF LABORATORY ANALYSIS

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# **ANALYTICAL RESULTS**

Project:

TISDALE QUICK STOP

Pace Project No.: 9256839

Sample: MW-19	Lab ID: 925683902	0 Collected: 11/04/0	9 13:03	Received:	11/05/09 09:30	Matrix: Water	
Parameters	Results Uni	ts Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Oxygenates	Analytical Method: EP	A 8260	-				
Ethyl-tert-butyl ether	ND ug/L	10.0	1		11/12/09 19:3	8 637-92-3	
Methyl-tert-butyl ether	ND ug/L	5.0	1		11/12/09 19:3		
Naphthalene	ND ug/L	5.0	1		11/12/09 19:3		
Toluene	ND ug/L	5.0	1		11/12/09 19:3		
Xylene (Total)	ND ug/L	10.0	1		11/12/09 19:3		
m&p-Xylene	ND ug/L	10.0	1		11/12/09 19:3		
o-Xylene	ND ug/L	5.0	1		11/12/09 19:3	-	
Dibromofluoromethane (S)	102 %	85-115	1		11/12/09 19:3		
Toluene-d8 (S)	95 %	70-120	1		11/12/09 19:3		
4-Bromofluorobenzene (S)	97 %	87-109	1				
1,2-Dichloroethane-d4 (S)	102 %	79-120	1		11/12/09 19:38		
(-,	102 //	79-120	,		11/12/09 19:38	3 17060-07-0	
Sample: MW-18	Lab ID: 925683902	1 Collected: 11/04/0	9 13:14	Received: 1	11/05/09 09:30	Matrix: Water	
Parameters	Results Unit	ts Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA	A 8011 Preparation Meth	od: EPA	\ 8011			
1,2-Dibromoethane (EDB)	ND ug/L	0.019	1		2 11/12/09 01:13	100 02 4	
1-Chloro-2-bromopropane (S)	95 %	60-140	1		2 11/12/09 01:13		
3260 MSV Oxygenates	Analytical Method: EPA	A 8260			- 17/12/00 01/10	, 661 76 66	
ert-Amyl Alcohol	<b>143</b> ug/L	100	1		11/12/00 20:00	75.05.4	
ert-Amylmethyl ether	ND ug/L	10.0	1		11/12/09 20:02		
Benzene	ND ug/L	5.0	1		11/12/09 20:02		
3,3-Dimethyl-1-Butanol	ND ug/L	100	1		11/12/09 20:02	_	
ert-Butyl Alcohol	ND ug/L	100	1		11/12/09 20:02		
ert-Butyl Formate	ND ug/L	50.0	1		11/12/09 20:02 11/12/09 20:02		
,2-Dichloroethane	110 ag/L				- 11/12/0 <b>u</b> 2000	/62-/5-4	
,	ND ua/l						
Diisopropyl ether	ND ug/L ND ug/l	5.0	1		11/12/09 20:02	107-06-2	
	ND ug/L	5.0 5.0	1 1		11/12/09 20:02 11/12/09 20:02	107-06-2 108-20-3	
Ethanol	ND ug/L ND ug/L	5.0 5.0 200	1 1 1		11/12/09 20:02 11/12/09 20:02 11/12/09 20:02	107-06-2 108-20-3 64-17-5	
Ethanol Ethylbenzene	ND ug/L ND ug/L ND ug/L	5.0 5.0 200 5.0	1 1 1		11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02	107-06-2 108-20-3 64-17-5 100-41-4	
Ethanol Ethylbenzene Ethyl-tert-butyl ether	ND ug/L ND ug/L ND ug/L ND ug/L	5.0 5.0 200 5.0 10.0	1 1 1 1		11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02	107-06-2 108-20-3 64-17-5 100-41-4 637-92-3	
Ethanol Ethylbenzene Ethyl-tert-butyl ether Methyl-tert-butyl ether	ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L	5.0 5.0 200 5.0 10.0 5.0	1 1 1 1 1		11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02	107-06-2 108-20-3 64-17-5 100-41-4 637-92-3 1634-04-4	
Ethanol Ethylbenzene Ethyl-tert-butyl ether Methyl-tert-butyl ether Naphthalene	ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L	5.0 5.0 200 5.0 10.0 5.0 5.0	1 1 1 1 1 1		11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02	107-06-2 108-20-3 64-17-5 100-41-4 637-92-3 1634-04-4 91-20-3	
Ethanol Ethylbenzene Ethyl-tert-butyl ether Methyl-tert-butyl ether Naphthalene Toluene	ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L	5.0 5.0 200 5.0 10.0 5.0 5.0	1 1 1 1 1 1 1		11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02	107-06-2 108-20-3 64-17-5 100-41-4 637-92-3 1634-04-4 91-20-3	
Ethanol Ethylbenzene Ethyl-tert-butyl ether Methyl-tert-butyl ether Japhthalene Oluene (yiene (Total)	ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L	5.0 5.0 200 5.0 10.0 5.0 5.0 5.0	1 1 1 1 1 1		11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02	107-06-2 108-20-3 64-17-5 100-41-4 637-92-3 1634-04-4 91-20-3 108-88-3	
Diisopropyl ether Ethanol Ethylbenzene Ethyl-tert-butyl ether Methyl-tert-butyl ether Naphthalene Toluene (yiene (Total)	ND ug/L	5.0 5.0 200 5.0 10.0 5.0 5.0 5.0 10.0	1 1 1 1 1 1 1		11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02	107-06-2 108-20-3 64-17-5 100-41-4 637-92-3 1634-04-4 91-20-3 108-88-3 1330-20-7	
Ethanol Ethylbenzene Ethyl-tert-butyl ether Methyl-tert-butyl ether Naphthalene Toluene (Sylene (Total) n&p-Xylene	ND ug/L	5.0 5.0 200 5.0 10.0 5.0 5.0 5.0	1 1 1 1 1 1 1 1		11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02 11/12/09 20:02	107-06-2 108-20-3 64-17-5 100-41-4 637-92-3 1634-04-4 91-20-3 108-88-3 1330-20-7	
Ethanol Ethylbenzene Ethyl-tert-butyl ether Methyl-tert-butyl ether Naphthalene Toluene Kylene (Total) n&p-Xylene -Xylene Dibromofluoromethane (S)	ND ug/L	5.0 5.0 200 5.0 10.0 5.0 5.0 5.0 10.0	1 1 1 1 1 1 1 1 1		11/12/09 20:02 11/12/09 20:02	107-06-2 108-20-3 64-17-5 100-41-4 637-92-3 1634-04-4 91-20-3 108-88-3 1330-20-7 1330-20-7 95-47-6	
Ethanol Ethylbenzene Ethyl-tert-butyl ether Methyl-tert-butyl ether Naphthalene Toluene Kylene (Total) n&p-Xylene n-Xylene Dibromofluoromethane (S)	ND ug/L	5.0 5.0 200 5.0 10.0 5.0 5.0 10.0 10.0	1 1 1 1 1 1 1 1 1 1 1 1		11/12/09 20:02 11/12/09 20:02	107-06-2 108-20-3 64-17-5 100-41-4 637-92-3 1634-04-4 91-20-3 108-88-3 1330-20-7 1330-20-7 95-47-6 1868-53-7	
Ethanol Ethylbenzene Ethyl-tert-butyl ether Methyl-tert-butyl ether Naphthalene Toluene Kylene (Total) n&p-Xylene -Xylene Dibromofluoromethane (S)	ND ug/L	5.0 5.0 200 5.0 10.0 5.0 5.0 10.0 10.0 5.0 85-115	1 1 1 1 1 1 1 1 1 1 1 1 1 1		11/12/09 20:02 11/12/09 20:02	107-06-2 108-20-3 64-17-5 100-41-4 637-92-3 1634-04-4 91-20-3 108-88-3 1330-20-7 1330-20-7 95-47-6 1868-53-7 2037-26-5	

Date: 11/17/2009 04:00 PM

REPORT OF LABORATORY ANALYSIS



Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

# **ANALYTICAL RESULTS**

Project:

TISDALE QUICK STOP

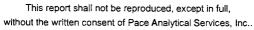
Pace Project No.: 9256839

Sample: MW-16	Lab ID: 9256839022	2 Collected: 11/04/0	9 13:22	Received: 11	/05/09 09:30 N	/latrix: Water	
Parameters	Results Unit	ts Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA	A 8011 Preparation Metr	nod: EP/	A 8011			
1,2-Dibromoethane (EDB)	<b>0.30</b> ug/L	0.019	1	11/11/09 12:42	11/12/09 02:11	106-93-4	
1-Chloro-2-bromopropane (S)	95 %	60-140	1	11/11/09 12:42	11/12/09 02:11	301-79-56	
8260 MSV Oxygenates	Analytical Method: EPA	A 8260					
tert-Amyl Alcohol	<b>45400</b> ug/L	5000	50		11/12/09 15:38	75-85-4	
tert-Amylmethyl ether	ND ug/L	500	50		11/12/09 15:38	994-05-8	
Benzene	<b>18500</b> ug/L	2500	500		11/13/09 12:04	71-43-2	
3,3-Dimethyl-1-Butanol	ND ug/L	5000	50		11/12/09 15:38	624-95-3	
tert-Butyl Alcohol	ND ug/L	5000	50		11/12/09 15:38	75-65-0	
tert-Butyl Formate	ND ug/L	2500	50		11/12/09 15:38	762-75-4	
1,2-Dichloroethane	ND ug/L	250	50		11/12/09 15:38	107-06-2	
Diisopropyl ether	ND ug/L	250	50		11/12/09 15:38	108-20-3	
Ethanol	ND ug/L	10000	50		11/12/09 15:38		
Ethylbenzene	<b>2880</b> ug/L	250	50		11/12/09 15:38		
Ethyl-tert-butyl ether	ND ug/L	500	50		11/12/09 15:38		
Methyl-tert-butyl ether	<b>454</b> ug/L	250	50		11/12/09 15:38		
Naphthalene	<b>928</b> ug/L	250	50		11/12/09 15:38		
Toluene	33300 ug/L	2500	500		11/13/09 12:04		
Xylene (Total)	16300 ug/L	500	50		11/12/09 15:38		
m&p-Xylene	10600 ug/L	500	50		11/12/09 15:38		
o-Xylene	5710 ug/L	250	50		11/12/09 15:38		
Dibromofluoromethane (S)	99 %	85-115	50		11/12/09 15:38		
Toluene-d8 (S)	95 %	70-120	50		11/12/09 15:38		
4-Bromofluorobenzene (S)	100 %	87-109			11/12/09 15:38		
1,2-Dichloroethane-d4 (S)	97 %		50 50				
1,2-DIG11010eti1a11e-04 (3)	91 76	79-120	50		11/12/09 15:38	17060-07-0	
Sample: MW-15							
•	Lab ID: 9256839023	3 Collected: 11/04/0	9 13:32	Received: 11	/05/09 09:30 N	latrix: Water	
Parameters	Lab ID: 9256839023  Results Unit		9 13:32 DF	Received: 11  Prepared	/05/09 09:30 M Analyzed	Matrix: Water CAS No.	Qual
	Results Unit		DF	Prepared			Qual
Parameters 8011 GCS EDB and DBCP	Results Unit  Analytical Method: EPA	Report Limit A 8011 Preparation Metr	DF nod: EPA	Prepared	Analyzed	CAS No.	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)	Results Unit  Analytical Method: EPA  ND ug/L	Report Limit A 8011 Preparation Metr 0.019	DF nod: EPA	Prepared A 8011 11/11/09 12:42	Analyzed 11/12/09 02:49	CAS No.	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)	Results Unit  Analytical Method: EPA	Report Limit A 8011 Preparation Metr	DF nod: EPA	Prepared A 8011 11/11/09 12:42	Analyzed	CAS No.	Qual
Parameters	Results Unit  Analytical Method: EPA  ND ug/L	Report Limit  A 8011 Preparation Metr  0.019 60-140	DF nod: EPA	Prepared A 8011 11/11/09 12:42	Analyzed 11/12/09 02:49	CAS No.	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)	Results Unit  Analytical Method: EPA  ND ug/L  101 %	Report Limit  A 8011 Preparation Metr  0.019 60-140	DF nod: EPA	Prepared A 8011 11/11/09 12:42	Analyzed 11/12/09 02:49	CAS No. 106-93-4 301-79-56	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB)  1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates	Results Unit  Analytical Method: EPA  ND ug/L  101 %  Analytical Method: EPA	Report Limit  A 8011 Preparation Metr  0.019 60-140	DF nod: EPA 1 1	Prepared A 8011 11/11/09 12:42	Analyzed  11/12/09 02:49 11/12/09 02:49	CAS No.  106-93-4 301-79-56	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol	Results Unit  Analytical Method: EPA  ND ug/L  101 %  Analytical Method: EPA  ND ug/L	A 8011 Preparation Metr 0.019 60-140 A 8260	DF nod: EP# 1 1	Prepared A 8011 11/11/09 12:42	Analyzed  11/12/09 02:49 11/12/09 02:49 11/12/09 20:26	CAS No.  106-93-4 301-79-56  75-85-4 994-05-8	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether Benzene	Results Unit  Analytical Method: EPA  ND ug/L  101 %  Analytical Method: EPA  ND ug/L  ND ug/L	Report Limit  0.019 60-140 4 8260 100 10.0	DF	Prepared A 8011 11/11/09 12:42	Analyzed  11/12/09 02:49 11/12/09 02:49  11/12/09 20:26 11/12/09 20:26	CAS No.  106-93-4 301-79-56  75-85-4 994-05-8 71-43-2	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether	Results Unit  Analytical Method: EPA  ND ug/L  101 %  Analytical Method: EPA  ND ug/L  ND ug/L  ND ug/L  ND ug/L  ND ug/L	Report Limit  0.019 60-140  4.8260  100 10.0 5.0	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared A 8011 11/11/09 12:42	Analyzed  11/12/09 02:49 11/12/09 02:49  11/12/09 20:26 11/12/09 20:26 11/12/09 20:26	CAS No.  106-93-4 301-79-56  75-85-4 994-05-8 71-43-2 624-95-3	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether Benzene 3,3-Dimethyl-1-Butanol	Results Unit  Analytical Method: EPA  ND ug/L  101 %  Analytical Method: EPA  ND ug/L	A 8011 Preparation Metr 0.019 60-140 A 8260 100 10.0 5.0 100	DF	Prepared A 8011 11/11/09 12:42	Analyzed  11/12/09 02:49 11/12/09 02:49  11/12/09 20:26 11/12/09 20:26 11/12/09 20:26 11/12/09 20:26	CAS No.  106-93-4 301-79-56  75-85-4 994-05-8 71-43-2 624-95-3 75-65-0	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether Benzene 3,3-Dimethyl-1-Butanol tert-Butyl Alcohol	Results Unit  Analytical Method: EPA  ND ug/L  101 %  Analytical Method: EPA  ND ug/L	A 8011 Preparation Metron   0.019 60-140 A 8260 100 10.0 5.0 100 100	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared A 8011 11/11/09 12:42	Analyzed  11/12/09 02:49 11/12/09 02:49  11/12/09 20:26 11/12/09 20:26 11/12/09 20:26 11/12/09 20:26 11/12/09 20:26	CAS No.  106-93-4 301-79-56  75-85-4 994-05-8 71-43-2 624-95-3 75-65-0 762-75-4	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether Benzene 3,3-Dimethyl-1-Butanol tert-Butyl Alcohol tert-Butyl Formate	Results Unit  Analytical Method: EPA  ND ug/L  101 %  Analytical Method: EPA  ND ug/L	A 8011 Preparation Metr 0.019 60-140 A 8260 100 10.0 5.0 100 100 50.0	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared A 8011 11/11/09 12:42	Analyzed  11/12/09 02:49 11/12/09 02:49  11/12/09 20:26 11/12/09 20:26 11/12/09 20:26 11/12/09 20:26 11/12/09 20:26 11/12/09 20:26	CAS No.  106-93-4 301-79-56  75-85-4 994-05-8 71-43-2 624-95-3 75-65-0 762-75-4 107-06-2	Qual
Parameters  8011 GCS EDB and DBCP  1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether Benzene 3,3-Dimethyl-1-Butanol tert-Butyl Alcohol tert-Butyl Formate 1,2-Dichloroethane	Results Unit  Analytical Method: EPA  ND ug/L  101 %  Analytical Method: EPA  ND ug/L   A 8011 Preparation Metr 0.019 60-140 A 8260 100 10.0 5.0 100 100 5.0 5.0 5.0 5.0	DF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Prepared A 8011 11/11/09 12:42	Analyzed  11/12/09 02:49 11/12/09 02:49  11/12/09 20:26 11/12/09 20:26 11/12/09 20:26 11/12/09 20:26 11/12/09 20:26 11/12/09 20:26 11/12/09 20:26	75-85-4 994-05-8 71-43-2 624-95-3 75-65-0 762-75-4 107-06-2 108-20-3	Qual	

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**REPORT OF LABORATORY ANALYSIS** 

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Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

# **ANALYTICAL RESULTS**

Project:

TISDALE QUICK STOP

Pace Project No.:

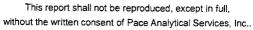
9256839

Sample: MW-15	Lab ID: 925683902	3 Collected: 11/04/0	9 13:32	Received: 11	1/05/09 09:30	Matrix: Water	
Parameters	Results Un	its Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Oxygenates	Analytical Method: EF	A 8260					
Ethyl-tert-butyl ether	ND ug/L	10.0	1		11/12/09 20:20	6 637-92-3	
Methyl-tert-butyl ether	ND ug/L	5.0	1		11/12/09 20:20	6 1634-04-4	
Naphthalene	ND ug/L	5.0	1		11/12/09 20:20		
Toluene	ND ug/L	5.0	1		11/12/09 20:26		
Xylene (Total)	ND ug/L	10.0	1		11/12/09 20:26		
m&p-Xylene	ND ug/L	10.0	1		11/12/09 20:26		
o-Xylene	ND ug/L	5.0	1		11/12/09 20:26		
Dibromofluoromethane (S)	102 %	85-115	1		11/12/09 20:20		
Toluene-d8 (S)	95 %	70-120	1		11/12/09 20:20		
4-Bromofluorobenzene (S)	100 %	87-109	1		11/12/09 20:20		
1,2-Dichloroethane-d4 (S)	101 %	79-120	1			3 400-00-4 3 17060-07-0	
	101 70	19-120	'		11/12/09 20:20	5 17060-07-0	
Sample: MW-14	Lab ID: 925683902	4 Collected: 11/04/0	9 13:41	Received: 11	/05/09 09:30	Matrix: Water	
Parameters	Results Uni	ts Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EP	A 8011 Preparation Meth	nod: EP/	\ 8011			
1,2-Dibromoethane (EDB)	ND ug/L	0.019	1	11/11/09 12:42	11/12/09 03:07	7 106-93-4	
1-Chloro-2-bromopropane (S)	97 %	60-140	1		11/12/09 03:07		
8260 MSV Oxygenates	Analytical Method: EP	A 8260					
tert-Amyi Alcohoi	ND ug/L	100	1		11/12/09 20:50	75-85-4	
tert-Amylmethyl ether	ND ug/L	10.0	1		11/12/09 20:50		
Benzene	ND ug/L	5.0	1		11/12/09 20:50		
3,3-Dimethyl-1-Butanol	ND ug/L	100	1		11/12/09 20:50		
tert-Butyl Alcohol	ND ug/L	100	1		11/12/09 20:50		
ert-Butyl Formate	ND ug/L	50.0	1		11/12/09 20:50		
1,2-Dichloroethane	ND ug/L	5.0	1				
Diisopropyl ether	ND ug/L	5.0	1		11/12/09 20:50		
Ethanol	ND ug/L	200	1		11/12/09 20:50		
Ethylbenzene	ND ug/L				11/12/09 20:50		
Ethyl-tert-butyl ether	_	5.0	1		11/12/09 20:50		
Methyl-tert-butyl ether	ND ug/L	10.0	1		11/12/09 20:50		
Naphthalene	ND ug/L	5.0	1		11/12/09 20:50		
Toluene	ND ug/L	5.0	1		11/12/09 20:50		
	ND ug/L	5.0	1		11/12/09 20:50		
Xylene (Total)	ND ug/L	10.0	1		11/12/09 20:50		
m&p-Xylene	ND ug/L	10.0	1		11/12/09 20:50		
• •			1		11/12/09 20:50	95-47-6	
o-Xylene	ND ug/L	5.0	•				
o-Xylene Dibromofluoromethane (S)	101 %	85-115	1		11/12/09 20:50	1868-53-7	
o-Xylene Dibromofluoromethane (S) Toluene-d8 (S)	101 % 95 %		•		11/12/09 20:50 11/12/09 20:50		
o-Xylene Dibromofluoromethane (S) Toluene-d8 (S) 4-Bromofluorobenzene (S) 1,2-Dichloroethane-d4 (S)	101 %	85-115	1			2037-26-5	

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REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

# **ANALYTICAL RESULTS**

Project:

TISDALE QUICK STOP

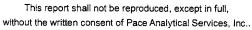
Pace Project No.: 9256839

Sample: MW-5	Lab ID: 9256839025	Collected: 11/04/0	9 14:02	Received: 11	/05/09 09:30 I	Matrix: Water	
Parameters	Results Unit	s Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA	8011 Preparation Met	nod: EP/	A 8011			
1,2-Dibromoethane (EDB)	<b>0.066</b> ug/L	0.019	1	11/11/09 12:42	11/12/09 03:26	106-93-4	
1-Chloro-2-bromopropane (S)	117 %	60-140	1	11/11/09 12:42	11/12/09 03:26	301-79-56	
8260 MSV Oxygenates	Analytical Method: EPA	8260					
tert-Amyl Alcohol	ND ug/L	100	1		11/12/09 21:14	75-85-4	
tert-Amylmethyl ether	ND ug/L	10.0	1		11/12/09 21:14	994-05-8	
Benzene	ND ug/L	5.0	1		11/12/09 21:14	71-43-2	
3,3-Dimethyl-1-Butanol	ND ug/L	100	1		11/12/09 21:14	624-95-3	
tert-Butyl Alcohol	ND ug/L	100	1		11/12/09 21:14	75-65-0	
tert-Butyl Formate	ND ug/L	50.0	1		11/12/09 21:14		
1,2-Dichloroethane	ND ug/L	5.0	1		11/12/09 21:14		
Diisopropyl ether	ND ug/L	5.0	1		11/12/09 21:14		
Ethanol	ND ug/L	200	1		11/12/09 21:14		
Ethylbenzene	ND ug/L	5.0	1		11/12/09 21:14		
Ethyl-tert-butyl ether	ND ug/L	10.0	1		11/12/09 21:14		
Methyl-tert-butyl ether	ND ug/L	5.0	1		11/12/09 21:14		
Naphthalene	ND ug/L	5.0	1		11/12/09 21:14		
Toluene	_						
	ND ug/L	5.0	1		11/12/09 21:14		
Xylene (Total)	ND ug/L	10.0	1		11/12/09 21:14		
m&p-Xylene	ND ug/L	10.0	1		11/12/09 21:14		
o-Xylene	ND ug/L	5.0	1		11/12/09 21:14		
Dibromofluoromethane (S)	102 %	85-115	1		11/12/09 21:14		
Toluene-d8 (S)	95 %	70-120	1		11/12/09 21:14		
4-Bromofluorobenzene (S)	98 %	87-109	1		11/12/09 21:14		
1,2-Dichloroethane-d4 (S)	102 %	79-120	1		11/12/09 21:14	17060-07-0	
Sample: MW-4	Lab ID: 9256839026	Collected: 11/04/0	9 14:08	Received: 11	/05/09 09:30 M	Matrix: Water	
Parameters	Results Unit	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
9044 CCS EDB and DBCB							
8011 GCS EDB and DBCP	Analytical Method: EPA	8011 Preparation Meth	nod: EPA	X 8011			
					11/12/09 03:45	106-93-4	
1,2-Dibromoethane (EDB)	ND ug/L	0.019	1	11/11/09 12:42	11/12/09 03:45 11/12/09 03:45		
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)	ND ug/L 94 %	0.019 60-140		11/11/09 12:42	11/12/09 03:45 11/12/09 03:45		
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)	ND ug/L	0.019 60-140	1	11/11/09 12:42			
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV Oxygenates	ND ug/L 94 %	0.019 60-140	1	11/11/09 12:42		301-79-56	
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV Oxygenates tert-Amyl Alcohol	ND ug/L 94 % Analytical Method: EPA	0.019 60-140 8260	1	11/11/09 12:42	11/12/09 03:45	301-79-56 75-85-4	
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV Oxygenates tert-Amyl Alcohol tert-Amylmethyl ether	ND ug/L 94 % Analytical Method: EPA ND ug/L	0.019 60-140 8260	1 1	11/11/09 12:42	11/12/09 03:45 11/12/09 21:38	301-79-56 75-85-4 994-05-8	
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV Oxygenates tert-Amyl Alcohol tert-Amylmethyl ether Benzene	ND ug/L 94 % Analytical Method: EPA ND ug/L ND ug/L	0.019 60-140 8260 100 10.0	1 1 1	11/11/09 12:42	11/12/09 03:45 11/12/09 21:38 11/12/09 21:38	301-79-56 75-85-4 994-05-8 71-43-2	
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV Oxygenates tert-Amyl Alcohol tert-Amylmethyl ether Benzene 3,3-Dimethyl-1-Butanol	ND ug/L 94 % Analytical Method: EPA ND ug/L ND ug/L ND ug/L	0.019 60-140 .8260 100 10.0 5.0	1 1 1 1	11/11/09 12:42	11/12/09 03:45 11/12/09 21:38 11/12/09 21:38 11/12/09 21:38	301-79-56 75-85-4 994-05-8 71-43-2 624-95-3	
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether Benzene 3,3-Dimethyl-1-Butanol tert-Butyl Alcohol	ND ug/L 94 % Analytical Method: EPA ND ug/L ND ug/L ND ug/L ND ug/L	0.019 60-140 .8260 100 10.0 5.0 100	1 1 1 1 1	11/11/09 12:42	11/12/09 03:45 11/12/09 21:38 11/12/09 21:38 11/12/09 21:38 11/12/09 21:38	301-79-56 75-85-4 994-05-8 71-43-2 624-95-3 75-65-0	
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S) 8260 MSV Oxygenates tert-Amyl Alcohol tert-Amylmethyl ether	ND ug/L 94 % Analytical Method: EPA ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L	0.019 60-140 .8260 100 10.0 5.0 100 100	1 1 1 1 1 1	11/11/09 12:42	11/12/09 03:45 11/12/09 21:38 11/12/09 21:38 11/12/09 21:38 11/12/09 21:38 11/12/09 21:38	75-85-4 994-05-8 71-43-2 624-95-3 75-65-0 762-75-4	
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether Benzene 3,3-Dimethyl-1-Butanol tert-Butyl Alcohol tert-Butyl Formate	ND ug/L 94 % Analytical Method: EPA ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L	0.019 60-140 .8260 100 10.0 5.0 100 100 50.0	1 1 1 1 1 1 1	11/11/09 12:42	11/12/09 03:45 11/12/09 21:38 11/12/09 21:38 11/12/09 21:38 11/12/09 21:38 11/12/09 21:38 11/12/09 21:38	75-85-4 994-05-8 71-43-2 624-95-3 75-65-0 762-75-4 107-06-2	
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)  8260 MSV Oxygenates  tert-Amyl Alcohol tert-Amylmethyl ether Benzene 3,3-Dimethyl-1-Butanol tert-Butyl Alcohol tert-Butyl Formate 1,2-Dichloroethane	ND ug/L 94 % Analytical Method: EPA ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L ND ug/L	0.019 60-140 .8260 100 10.0 5.0 100 50.0 5.0	1 1 1 1 1 1 1 1	11/11/09 12:42	11/12/09 03:45 11/12/09 21:38 11/12/09 21:38 11/12/09 21:38 11/12/09 21:38 11/12/09 21:38	75-85-4 994-05-8 71-43-2 624-95-3 75-65-0 762-75-4 107-06-2 108-20-3	

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REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

# **ANALYTICAL RESULTS**

Project:

TISDALE QUICK STOP

Pace Project No.: 9256839

Sample: MW-4	Lab ID: 925683	9026	Collected: 11/04/0	9 14:08	Received: 1	1/05/09 09:30	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
8260 MSV Oxygenates	Analytical Method	EPA 82	260					
Ethyl-tert-butyl ether	ND ug/L		10.0	1		11/12/09 21:3	3 637-92-3	
Methyl-tert-butyl ether	ND ug/L		5.0	1		11/12/09 21:3	3 1634-04-4	
Naphthalene	ND ug/L		5.0	1		11/12/09 21:3		
Toluene	ND ug/L		5.0	1		11/12/09 21:3		
Xylene (Total)	ND ug/L		10.0	1		11/12/09 21:3		
m&p-Xylene	ND ug/L		10.0	1		11/12/09 21:3		
o-Xylene	ND ug/L		5.0	1		11/12/09 21:38		
Dibromofluoromethane (S)	101 %		85-115	1		11/12/09 21:38		
Toluene-d8 (S)	95 %		70-120	1				
4-Bromofluorobenzene (S)	100 %		87-109			11/12/09 21:38		
1,2-Dichloroethane-d4 (S)	102 %			1		11/12/09 21:38		
	102 %		79-120	1		11/12/09 21:38	3 17060-07-0	
Sample: MW-1	Lab ID: 925683	9027	Collected: 11/04/0	9 14:20	Received: 1	1/05/09 09:30	Matrix: Water	.,
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
3011 GCS EDB and DBCP	Analytical Method:	EPA 80	011 Preparation Met	nod: EPA	\ 8011	•		
1,2-Dibromoethane (EDB)	<b>0.056</b> ug/L		0.020	1	11/11/09 12:42	2 11/12/09 04:04	1 106-93-4	1g
1-Chloro-2-bromopropane (S)	94 %		60-140	1		2 11/12/09 04:04		.9
3260 MSV Oxygenates	Analytical Method:	EPA 82	260					
ert-Amyl Alcohol	<b>10200</b> ug/L		10000	100		11/13/09 12:28	R 75-85-4	
ert-Amylmethyl ether	ND ug/L		1000	100		11/13/09 12:28		
Benzene	7120 ug/L		500	100		11/13/09 12:28		
3,3-Dimethyl-1-Butanol	ND ug/L		10000	100		11/13/09 12:28		
ert-Butyl Alcohol	ND ug/L		10000	100				
ert-Butyl Formate	ND ug/L		5000	100		11/13/09 12:28		
1,2-Dichloroethane	ND ug/L					11/13/09 12:28		
Diisopropyl ether	-		500	100		11/13/09 12:28		
Ethanol	ND ug/L		500	100		11/13/09 12:28		
	ND ug/L		20000	100		11/13/09 12:28		
Ethylbenzene	988 ug/L		500	100		11/13/09 12:28		
Ethyl-tert-butyl ether	ND ug/L		1000	100		11/13/09 12:28		
Methyl-tert-butyl ether	ND ug/L		500	100		11/13/09 12:28	1634-04-4	
laphthalene	ND ug/L		500	100		11/13/09 12:28	91-20-3	
oluene	<b>12600</b> ug/L		500	100		11/13/09 12:28	108-88-3	
(ylene (Total)	<b>6940</b> ug/L		1000	100		11/13/09 12:28	1330-20-7	
n&p-Xylene	<b>4390</b> ug/L		1000	100		11/13/09 12:28	1330-20-7	
o-Xylene	<b>2550</b> ug/L		500	100		11/13/09 12:28	95-47-6	
Dibromofluoromethane (S)	104 %		85-115	100		11/13/09 12:28	1868-53-7	
oluene-d8 (S)	96 %		70-120	100		11/13/09 12:28		
I-Bromofluorobenzene (S)	102 %		87-109	100		11/13/09 12:28		

Date: 11/17/2009 04:00 PM

**REPORT OF LABORATORY ANALYSIS** 

Collected: 11/04/09 14:57 Received: 11/05/09 09:30 Matrix: Water





# **ANALYTICAL RESULTS**

Project:

Sample: TW-1

TISDALE QUICK STOP

Lab ID: 9256839028

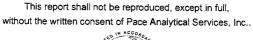
Pace Project No.: 9256839

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method:	EPA 8011	Preparation Meth	nod: EP	A 8011			
1,2-Dibromoethane (EDB)	ND ug/L		0.019	1	11/11/09 12:42	11/12/09 04:24	106-93-4	
1-Chloro-2-bromopropane (S)	96 %		60-140	1		11/12/09 04:24		
8260 MSV Oxygenates	Analytical Method:	EPA 8260						
tert-Amyl Alcohol	ND ug/L		100	1		11/12/09 22:26	75-85-4	
tert-Amylmethyl ether	ND ug/L		10.0	1		11/12/09 22:26		
Benzene	ND ug/L		5.0	1		11/12/09 22:26	71-43-2	
3,3-Dimethyl-1-Butanol	ND ug/L		100	1		11/12/09 22:26	624-95-3	
tert-Butyl Alcohol	ND ug/L		100	1		11/12/09 22:26	75-65-0	
tert-Butyl Formate	ND ug/L		50.0	1		11/12/09 22:26		
1,2-Dichloroethane	ND ug/L		5.0	1		11/12/09 22:26	107-06-2	
Diisopropyl ether	ND ug/L		5.0	1		11/12/09 22:26	108-20-3	
Ethanol	ND ug/L		200	1		11/12/09 22:26		
Ethylbenzene	ND ug/L		5.0	1		11/12/09 22:26	100-41-4	
Ethyl-tert-butyl ether	ND ug/L		10.0	1		11/12/09 22:26	637-92-3	
Methyl-tert-butyl ether	ND ug/L		5.0	1		11/12/09 22:26	1634-04-4	
Naphthalene	ND ug/L		5.0	1		11/12/09 22:26	91-20-3	
Toluene	ND ug/L		5.0	1		11/12/09 22:26	108-88-3	
Xylene (Total)	ND ug/L		10.0	1		11/12/09 22:26	1330-20-7	
m&p-Xylene	ND ug/L		10.0	1		11/12/09 22:26	1330-20-7	
o-Xylene	ND ug/L		5.0	1		11/12/09 22:26	95-47-6	
Dibromofluoromethane (S)	102 %		85-115	1		11/12/09 22:26	1868-53-7	
Toluene-d8 (S)	94 %		70-120	1		11/12/09 22:26	2037-26-5	
4-Bromofluorobenzene (S)	100 %		87-109	1		11/12/09 22:26	460-00-4	
1,2-Dichloroethane-d4 (S)	102 %		79-120	1		11/12/09 22:26	17060-07-0	
Sample: WSW-1	Lab ID: 9256839	<b>029</b> C	ollected: 11/04/0	9 15:06	Received: 11	/05/09 09:30 M	latrix: Water	
Parameters	Results	Jnits	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: I	EPA 8011	Preparation Meth	od: EPA	A 8011	-		
1,2-Dibromoethane (EDB)	ND ug/L		0.019			11/12/00 04:42	400.00.4	
1-Chloro-2-bromopropane (S)	91 %		60-140	1 1		11/12/09 04:43 11/12/09 04:43		
8260 MSV Oxygenates	Analytical Method: I	EPA 8260	00-140	•	11/11/09 12.42	11/12/09 04.43	301-79-30	
tert-Amyl Alcohol	-		400	4		444000000	== 0= :	
tert-Amylmethyl ether	ND ug/L		100	7		11/12/09 22:50		
Benzene	ND ug/L		10.0	1		11/12/09 22:50		
3,3-Dimethyl-1-Butanol	ND ug/L		5.0	1		11/12/09 22:50		
tert-Butyl Alcohol	ND ug/L		100	1		11/12/09 22:50		
	ND ug/L		100	1		11/12/09 22:50		
	NID			1		11/12/09 22:50	/62-75 <b>-</b> 4	
tert-Butyl Formate	ND ug/L		50.0			44 44 0 40 0 0 0 0 0 0 0 0 0 0 0 0 0 0	407.00 -	
tert-Butyl Formate 1,2-Dichloroethane	ND ug/L		5.0	1		11/12/09 22:50		
tert-Butyl Formate 1,2-Dichloroethane Diisopropyl ether	ND ug/L ND ug/L		5.0 5.0	1 1		11/12/09 22:50	108-20-3	
tert-Butyl Formate 1,2-Dichloroethane Diisopropyl ether Ethanol Ethylbenzene	ND ug/L		5.0	1			108-20-3 64-17-5	

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REPORT OF LABORATORY ANALYSIS

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# **ANALYTICAL RESULTS**

Project:

TISDALE QUICK STOP

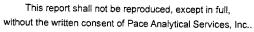
Pace Project No.: 9256839

Sample: WSW-1	Lab ID: 9256	839029	Collected: 11/04/0	9 15:06	Received:	11/05/09 09:30	Matrix: Water	·
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Oxygenates	Analytical Meth	od: EPA 8	260		- \			
Ethyl-tert-butyl ether	ND ug/	'L	10.0	1		11/12/09 22:5	0 637-92-3	
Methyl-tert-butyl ether	ND ug/	'L	5.0	1		11/12/09 22:5		
Naphthalene	ND ug/	L	5.0	1		11/12/09 22:5		
Toluene	ND ug/	L	5.0	1		11/12/09 22:5		
Xylene (Total)	ND ug/	L	10.0	1		11/12/09 22:5	· · · · ·	
m&p-Xylene	ND ug/	L	10.0	1		11/12/09 22:5		
o-Xylene	ND ug/	L	5.0	1		11/12/09 22:5		
Dibromofluoromethane (S)	101 %		85-115	1		11/12/09 22:5		
Toluene-d8 (S)	95 %		70-120	1		11/12/09 22:5		
4-Bromofluorobenzene (S)	100 %		87-109	1		11/12/09 22:5		
1,2-Dichloroethane-d4 (S)	100 %		79-120	1			0 17060-07-0	
, ,			70 120	'		11/12/09 22,3	0 17060-07-0	
Sample: WSW-3	Lab ID: 9256	839030	Collected: 11/04/0	9 15:22	Received:	11/05/09 09:30	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
3011 GCS EDB and DBCP	Analytical Metho	od: EPA 80	011 Preparation Meth	od: EPA	A 8011			
1,2-Dibromoethane (EDB)	ND ug/l	L	0.019	1	11/11/00 12:41	2 11/12/09 05:02	2 100 02 4	
1-Chloro-2-bromopropane (S)	97 %	_	60-140	1		2 11/12/09 05:02		
8260 MSV Oxygenates	Analytical Metho	od: EPA 82		•	11/11/09 12.42	2 11/12/09 03.02	2 301-79-50	
tert-Amyl Alcohol								
tert-Amylmethyl ether	ND ug/l		100	1		11/14/09 08:02		
Benzene	ND ug/l		10.0	1		11/14/09 08:02	994-05-8	
3,3-Dimethyl-1-Butanol	ND ug/l		5.0	1		11/14/09 08:02		
ert-Butyl Alcohol	ND ug/l		100	1		11/14/09 08:02		
ert-Butyl Formate	ND ug/l		100	1		11/14/09 08:02		
l,2-Dichloroethane	ND ug/l		50.0	1		11/14/09 08:02		
Diisopropyl ether	ND ug/i		5.0	1		11/14/09 08:02		
Ethanol	ND ug/L		5.0	1		11/14/09 08:02	2 108-20-3	
Ethylbenzene	ND ug/L		200	1		11/14/09 08:02		
•	ND ug/L		5.0	1		11/14/09 08:02		
Ethyl-tert-butyl ether	ND ug/L		10.0	1		11/14/09 08:02	637-92-3	
Methyl-tert-butyl ether	ND ug/L		5.0	1		11/14/09 08:02		
Naphthalene	ND ug/L		5.0	1		11/14/09 08:02	91-20-3	
oluene	ND ug/L		5.0	1		11/14/09 08:02		
(ylene (Total)	ND ug/L		10.0	1		11/14/09 08:02		
n&p-Xylene	ND ug/L		10.0	1		11/14/09 08:02	1330-20-7	
-Xylene	ND ug/L	-	5.0	1		11/14/09 08:02	95-47-6	
Dibromofluoromethane (S)	103 %		85-115	1		11/14/09 08:02	1868-53-7	
oluene-d8 (S)	101 %		70-120	1		11/14/09 08:02	2037-26-5	
	0.4.0/							
l-Bromofluorobenzene (S) ,2-Dichloroethane-d4 (S)	94 % 102 %		87-109	1		11/14/09 08:02	460-00-4	

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Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

#### **QUALITY CONTROL DATA**

Project:

TISDALE QUICK STOP

Pace Project No.:

9256839

QC Batch:

MSV/9001

Analysis Method:

EPA 8260

QC Batch Method:

EPA 8260

Analysis Description:

8260 MSV Oxygenates

Associated Lab Samples:

9256839006, 9256839007, 9256839008, 9256839009, 9256839011, 9256839012, 9256839013, 9256839014,

9256839015, 9256839016, 9256839017, 9256839018

METHOD BLANK: 365437

Matrix: Water

Associated Lab Samples:

9256839006, 9256839007, 9256839008, 9256839009, 9256839011, 9256839012, 9256839013, 9256839014,

9256839015, 9256839016, 9256839017, 9256839018

Parameter	Units	Blank Result	Reporting Limit	Analyzad	Ovelifiere
				Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	11/12/09 11:42	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	11/12/09 11:42	
Benzene	ug/L	ND	5.0	11/12/09 11:42	
Diisopropyl ether	ug/L	ND	5.0	11/12/09 11:42	
Ethanol	ug/L	ND	200	11/12/09 11:42	
Ethyl-tert-butyl ether	ug/L	ND	10.0	11/12/09 11:42	
Ethylbenzene	ug/L	ND	5.0	11/12/09 11:42	
m&p-Xylene	ug/L	ND	10.0	11/12/09 11:42	
Methyl-tert-butyl ether	ug/L	ND	5.0	11/12/09 11:42	
Naphthalene	ug/L	ND	5.0	11/12/09 11:42	
o-Xylene	ug/L	ND	5.0	11/12/09 11:42	
tert-Amyl Alcohol	ug/L	ND	100	11/12/09 11:42	
tert-Amylmethyl ether	ug/L	ND	10.0	11/12/09 11:42	
tert-Butyl Alcohol	ug/L	ND	100	11/12/09 11:42	
tert-Butyl Formate	ug/L	ND	50.0	11/12/09 11:42	
Toluene	ug/L	ND	5.0	11/12/09 11:42	
Xylene (Total)	ug/L	ND	10.0	11/12/09 11:42	
1,2-Dichloroethane-d4 (S)	%	103	79-120	11/12/09 11:42	
4-Bromofluorobenzene (S)	%	108	87-109	11/12/09 11:42	
Dibromofluoromethane (S)	%	103	85-115	11/12/09 11:42	
Toluene-d8 (S)	%	102	70-120	11/12/09 11:42	

LABORATORT	CONTROL SAMPLE:	300438

205400

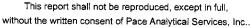
LABORATORY CONTROL CAMPLE.

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	51.4	103	72-126	
3,3-Dimethyl-1-Butanol	ug/L	1000	837	84	55-148	
Benzene	ug/L	50	58.6	117	78-128	
Diisopropyl ether	ug/L	50	56.4	113	74-131	
Ethanoi	ug/L	2000	2410	121	53-150	
Ethyl-tert-butyl ether	ug/L	100	112	112	77-136	
Ethylbenzene	ug/L	50	48.4	97	80-127	
m&p-Xylene	ug/L	100	97.1	97	82-127	
Methyl-tert-butyl ether	ug/L	50	56.6	113	71-130	
Naphthalene	ug/L	50	53.5	107	52-136	
o-Xylene	ug/L	50	48.1	96	83-124	
tert-Amyl Alcohol	ug/L	1000	1010	101	50-150	
tert-Amylmethyl ether	ug/L	100	111	111	50-150	
tert-Butyl Alcohol	ug/L	500	535	107	50-150	
tert-Butyl Formate	ug/L	400	416	104	50-150	

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REPORT OF LABORATORY ANALYSIS

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# **QUALITY CONTROL DATA**

Project:

TISDALE QUICK STOP

Pace Project No.:

9256839

LABORATORY CONTROL SAME	PLE: 365438					
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Toluene	ug/L	50	59.1	118	76-126	
Xylene (Total)	ug/L	150	145	97	83-125	
1,2-Dichloroethane-d4 (S)	%			103	79-120	
4-Bromofluorobenzene (S)	%			102	87-109	
Dibromofluoromethane (S)	%			96	85-115	
Toluene-d8 (S)	%			102	70-120	

MATRIX SPIKE & MATRIX SP	IKE DUPLICAT	E: 36543	9		365440						
Parameter	92 Units	256839007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Benzene	ug/L	ND	50	50	68.0	65.7	136	131	74-136	3	
Toluene	ug/L	ND	50	50	68.3	66.5	135	131	73-131	3 M0	
1,2-Dichloroethane-d4 (S)	%						101	105	79-120		
4-Bromofluorobenzene (S)	%						100	104	87-109		
Dibromofluoromethane (S)	%						99	104	85-115		
Toluene-d8 (S)	%						101	102	70-120		

2225 Riverside Dr. Asheville, NC 28804 (828)254-7176

Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

#### **QUALITY CONTROL DATA**

Project:

QC Batch:

TISDALE QUICK STOP

Pace Project No.:

9256839

MSV/8996

Analysis Method:

EPA 8260

QC Batch Method:

EPA 8260

Analysis Description:

8260 MSV Oxygenates

Associated Lab Samples:

9256839001, 9256839002, 9256839003, 9256839004, 9256839005

METHOD BLANK: 365015

Matrix: Water

Associated Lab Samples:

LABORATORY CONTROL SAMPLE:

365016

9256839001, 9256839002, 9256839003, 9256839004, 9256839005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	11/11/09 20:17	
Benzene	ug/L	ND	5.0	11/11/09 20:17	
Ethylbenzene	ug/L	ND	5.0	11/11/09 20:17	
m&p-Xylene	ug/L	ND	10.0	11/11/09 20:17	
Methyl-tert-butyl ether	ug/L	ND	5.0	11/11/09 20:17	
Naphthalene	ug/L	ND	5.0	11/11/09 20:17	
o-Xylene	ug/L	ND	5.0	11/11/09 20:17	
Toluene	ug/L	ND	5.0	11/11/09 20:17	
Xylene (Total)	ug/L	ND	10.0	11/11/09 20:17	
1,2-Dichloroethane-d4 (S)	%	97	79-120	11/11/09 20:17	
4-Bromofluorobenzene (S)	%	101	87-109	11/11/09 20:17	
Dibromofluoromethane (S)	%	110	85-115	11/11/09 20:17	
Toluene-d8 (S)	%	112	70-120	11/11/09 20:17	

Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
ug/L	. 50	52.3	105	72-126	
ug/L	1000	911	91		
ug/L	50	48.6	97		
ug/L	50	50.4	101		
ug/L	2000	2100			
ug/L	100	103			
ug/L	50	52.2			
ug/L	100	96.0	96		
ug/L	50	51.0	102		
ug/L	50	52.4			
ug/L	50	47.8	96		
ug/L	1000	1100	110		
ug/L	100	105			
ug/L	500	524			
ug/L	400	428			
ug/L	50	53.1			
ug/L	150	144	96		
%			98	-	
%			91		
%			107		
%					
	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	Units         Conc.           ug/L         50           ug/L         1000           ug/L         50           ug/L         2000           ug/L         100           ug/L         50           ug/L         50           ug/L         50           ug/L         50           ug/L         1000           ug/L         1000           ug/L         100           ug/L         500           ug/L         400           ug/L         50           ug/L         50           ug/L         50           ug/L         50           ug/L         50           ug/L         150           %         %           %         %	Units         Conc.         Result           ug/L         50         52.3           ug/L         1000         911           ug/L         50         48.6           ug/L         50         50.4           ug/L         2000         2100           ug/L         100         103           ug/L         50         52.2           ug/L         50         51.0           ug/L         50         52.4           ug/L         50         47.8           ug/L         1000         1100           ug/L         100         105           ug/L         500         524           ug/L         400         428           ug/L         50         53.1           ug/L         150         144           %         %	Units         Conc.         Result         % Rec           ug/L         50         52.3         105           ug/L         1000         911         91           ug/L         50         48.6         97           ug/L         50         50.4         101           ug/L         2000         2100         105           ug/L         100         103         103           ug/L         50         52.2         104           ug/L         100         96.0         96           ug/L         50         51.0         102           ug/L         50         52.4         105           ug/L         50         47.8         96           ug/L         100         1100         110           ug/L         100         105         105           ug/L         50         524         105           ug/L         400         428         107           ug/L         400         428         107           ug/L         50         53.1         106           ug/L         50         53.1         106           ug/L         150	Units         Conc.         Result         % Rec         Limits           ug/L         50         52.3         105         72-126           ug/L         1000         911         91         55-148           ug/L         50         48.6         97         78-128           ug/L         50         50.4         101         74-131           ug/L         2000         2100         105         53-150           ug/L         100         103         103         77-136           ug/L         50         52.2         104         80-127           ug/L         100         96.0         96         82-127           ug/L         50         51.0         102         71-130           ug/L         50         52.4         105         52-136           ug/L         50         47.8         96         83-124           ug/L         100         105         105         50-150           ug/L         100         105         105         50-150           ug/L         50         524         105         50-150           ug/L         400         428         107         50-150

Date: 11/17/2009 04:00 PM

REPORT OF LABORATORY ANALYSIS



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#### **QUALITY CONTROL DATA**

Project:

TISDALE QUICK STOP

Pace Project No.:

9256839

QC Batch:

OEXT/8577

Analysis Method:

EPA 8011

QC Batch Method:

EPA 8011

Analysis Description:

GCS 8011 EDB DBCP

Associated Lab Samples:

9256839029, 9256839030

METHOD BLANK: 364712

Matrix: Water

Associated Lab Samples:

9256839029, 9256839030

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.020	11/12/09 00:15	
1-Chloro-2-bromopropane (S)	%	106	60-140	11/12/09 00:15	

LABORATORY CONTROL SAMPL	E & LCSD: 364713		36	64714						
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)	ug/L %	.28	0.34	0.31	120 108	112 105	60-140 60-140	8	20	

MATRIX SPIKE & MATRIX SPIK	E DUPLICAT	E: 36471	-		364716						
Parameter	92 Units	256839021 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)	ug/L %	ND	.28	.28	0.32	0.32	116 100	116 98	60-140 60-140	_	7/ 20/03

Parameter	Units	9256839022 Result	Dup Result	RPD	Qualifiers
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)	ug/L %	0.30	0.26	15	
r-Critoro-2-bromoproparie (5)	70		89	6	

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#### **QUALITY CONTROL DATA**

Project:

TISDALE QUICK STOP

Pace Project No.:

9256839

QC Batch:

MSV/9005

Analysis Method:

EPA 8260

QC Batch Method:

EPA 8260

Analysis Description:

8260 MSV Oxygenates

Associated Lab Samples:

9256839027, 9256839028, 9256839029

METHOD BLANK: 365554

Matrix: Water

Associated Lab Samples:

9256839010, 9256839020, 9256839021, 9256839022, 9256839023, 9256839024, 9256839025, 9256839026,

9256839027, 9256839028, 9256839029

•		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	11/12/09 13:55	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	11/12/09 13:55	
Benzene	ug/L	ND	5.0	11/12/09 13:55	
Diisopropyl ether	ug/L	ND	5.0	11/12/09 13:55	
Ethanoi	ug/L	ND	200	11/12/09 13:55	
Ethyl-tert-butyl ether	ug/L	ND	10.0	11/12/09 13:55	
Ethylbenzene	ug/L	ND	5.0	11/12/09 13:55	
m&p-Xylene	ug/L	ND	10.0	11/12/09 13:55	
Methyl-tert-butyl ether	ug/L	ND	5.0	11/12/09 13:55	
Naphthalene	ug/L	ND	5.0	11/12/09 13:55	
o-Xylene	ug/L	ND	5.0	11/12/09 13:55	
tert-Amyl Alcohol	ug/L	ND	100	11/12/09 13:55	
tert-Amylmethyl ether	ug/L	ND	10.0	11/12/09 13:55	
tert-Butyl Alcohol	ug/L	ND	100	11/12/09 13:55	
tert-Butyl Formate	ug/L	ND	50.0	11/12/09 13:55	
Toluene	ug/L	ND	5.0	11/12/09 13:55	
Xylene (Total)	ug/L	ND	10.0	11/12/09 13:55	
1,2-Dichloroethane-d4 (S)	%	97	79-120	11/12/09 13:55	
4-Bromofluorobenzene (S)	%	97	87-109	11/12/09 13:55	
Dibromofluoromethane (S)	%	101	85-115	11/12/09 13:55	
Toluene-d8 (S)	%	94	70-120	11/12/09 13:55	

LABORATORY CONTROL SAMPLE:

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	52.5	105	72-126	
3,3-Dimethyl-1-Butanol	ug/L	1000	867	87	55-148	
Benzene	ug/L	50	51.1	102	78-128	
Diisopropyl ether	ug/L	50	52.1	104	74-131	
Ethanol	ug/L	2000	2260	113	53-150	
Ethyl-tert-butyl ether	ug/L	100	93.8	94	77-136	
Ethylbenzene	ug/L	50	52.9	106	80-127	
m&p-Xylene	ug/L	100	107	107	82-127	
Methyl-tert-butyl ether	ug/L	50	48.9	98	71-130	
Naphthalene	ug/L	50	50.7	101	52-136	
o-Xylene	ug/L	50	52.1	104	83-124	
tert-Amyl Alcohol	ug/L	1000	877	88	50-150	
tert-Amylmethyl ether	ug/L	100	85.4	85	50-150	
tert-Butyl Alcohol	ug/L	500	503	101	50-150	
tert-Butyl Formate	ug/L	400	381	95	50-150	

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REPORT OF LABORATORY ANALYSIS

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#### **QUALITY CONTROL DATA**

Project:

TISDALE QUICK STOP

Pace Project No.:

9256839

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Toluene	ug/L	50	48.5	97	76-126	
Xylene (Total)	ug/L	150	159	106	83-125	
1,2-Dichloroethane-d4 (S)	%			96	79-120	
4-Bromofluorobenzene (S)	%			99	87-109	
Dibromofluoromethane (S)	%			102	85-115	
Toluene-d8 (S)	%			95	70-120	

MATRIX SPIKE & MATRIX SP	IKE DUPLICAT	E: 36555	6		365557						
Parameter	9: Units	256839021 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec	RPD	Qual
Benzene	ug/L	ND	50	50	52.2	55.4	96	103	74-136		
Toluene	ug/L	ND	50	50	45.4	48.0	90	95	73-131	6	
1,2-Dichloroethane-d4 (S)	%						101	101	79-120	•	
4-Bromofluorobenzene (S)	%						99	98	87-109		
Dibromofluoromethane (S)	%						102	101	85-115		
Toluene-d8 (S)	%						95	94	70-120		



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#### **QUALITY CONTROL DATA**

Project:

QC Batch:

TISDALE QUICK STOP

Pace Project No.:

9256839

OEXT/8576

Analysis Method:

EPA 8011

QC Batch Method:

**EPA 8011** 

Analysis Description:

GCS 8011 EDB DBCP

Associated Lab Samples:

9256839001, 9256839002, 9256839003, 9256839004, 9256839005, 9256839006, 9256839007, 9256839008, 9256839009, 9256839010, 9256839011, 9256839012, 9256839013, 9256839014, 9256839015, 9256839016,

9256839017, 9256839018, 9256839019, 9256839020

METHOD BLANK: 364706

Matrix: Water

Associated Lab Samples:

9256839001, 9256839002, 9256839003, 9256839004, 9256839005, 9256839006, 9256839007, 9256839008, 9256839009, 9256839010, 9256839011, 9256839012, 9256839013, 9256839014, 9256839015, 9256839016,

9256839017, 9256839018, 9256839019, 9256839020

Blank Result

Reporting Limit

364708

Analyzed Qualifiers

1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)

Parameter

ug/L %

Units

ND 110

0.019 11/11/09 15:37 11/11/09 15:37

60-140

LABORATORY CONTROL SAMPLE & LC	SD:	364707	
			Spi

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB) 1-Chloro-2-bromopropane (S)	ug/L %	.28	0.33	0.31	118 104	110 99	60-140 60-140	5	20	

MATRIX	SPIKE	& MATRIX	SPIKE	DUP!	LICATE:

004700	
364709	

9256839006

Result

ND

MS

Spike

Conc.

.28

Result

0

0.32

MSD Spike MS

.28

Conc.

MSD Result

0.31

MS MSD % Rec % Rec

114

98

% Rec Limits

112

98

60-140

60-140

RPD Qual 2

SAMPLE DUPLICATE:

1,2-Dibromoethane (EDB)

1-Chloro-2-bromopropane (S)

364711

9256839012 Units Result

Dup

96

Qualifiers

1,2-Dibromoethane (EDB) 1-Chioro-2-bromopropane (S)

Parameter

Parameter

ug/L %

Units

ug/L

%

ND

Result

RPD ND

4

nelac

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#### **QUALITY CONTROL DATA**

Project:

QC Batch:

TISDALE QUICK STOP

Pace Project No.:

9256839

MSV/9011

Analysis Method:

EPA 8260

QC Batch Method:

EPA 8260

Analysis Description:

8260 MSV Oxygenates

Associated Lab Samples:

9256839019, 9256839030

METHOD BLANK: 365717

Matrix: Water

Associated Lab Samples:

9256839019, 9256839030

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane ug/L		ND	5.0	11/14/09 07:25	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	11/14/09 07:25	
Benzene	ug/L	ND	5.0	11/14/09 07:25	
Diisopropyl ether	ug/L	ND	5.0	11/14/09 07:25	
Ethanoi	ug/L	ND	200	11/14/09 07:25	
Ethyl-tert-butyl ether	ug/L	ND	10.0	11/14/09 07:25	
Ethylbenzene	ug/L	ND	5.0	11/14/09 07:25	
m&p-Xylene	ug/L	ND	10.0	11/14/09 07:25	
Methyl-tert-butyl ether	ug/L	ND	5.0	11/14/09 07:25	
Naphthalene	ug/L	ND	5.0	11/14/09 07:25	
o-Xylene	ug/L	ND	5.0	11/14/09 07:25	
tert-Amyl Alcohol	ug/L	ND	100	11/14/09 07:25	
tert-Amylmethyl ether	ug/L	ND	10.0	11/14/09 07:25	
tert-Butyl Alcohol	ug/L	ND	100	11/14/09 07:25	
tert-Butyl Formate	ug/L	ND	50.0	11/14/09 07:25	
Toluene	ug/L	ND	5.0	11/14/09 07:25	
Xylene (Total)	ug/L	ND	10.0	11/14/09 07:25	
1,2-Dichloroethane-d4 (S)	%	99	79-120	11/14/09 07:25	
1-Bromofluorobenzene (S)	%	97	87-109	11/14/09 07:25	
Dibromofluoromethane (S)	%	101	85-115	11/14/09 07:25	
Toluene-d8 (S)	%	103	70-120	11/14/09 07:25	

LABORATORY CONTROL SAMPL	E: 365718					
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	56.0	112	72-126	
3,3-Dimethyl-1-Butanol	ug/L	1000	1190	119	55-148	
Benzene	ug/L	50	58.2	116	78-128	
Diisopropyl ether	ug/L	50	55.5	111	74-131	
Ethanol	ug/L	2000	2300	115	53-150	
Ethyl-tert-butyl ether	ug/L	100	112	112	77-136	
Ethylbenzene	ug/L	50	58.2	116	80-127	
m&p-Xylene	ug/L	100	116	116	82-127	
Methyl-tert-butyl ether	ug/L	50	54.8	110	71-130	
Naphthalene	ug/L	50	59.4	119	52-136	
o-Xylene	ug/L	50	59.3	119	83-124	
tert-Amyl Alcohol	ug/L	1000	1220	122	50-150	
tert-Amylmethyl ether	ug/L	100	116	116	50-150	
tert-Butyi Alcohol	ug/L	500	626	125	50-150	
tert-Butyl Formate	ug/L	400	185	46	50-150 L3	}
Toluene	ug/L	50	57.2	114	76-126	•

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REPORT OF LABORATORY ANALYSIS





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#### **QUALITY CONTROL DATA**

Project:

TISDALE QUICK STOP

Pace Project No.:

9256839

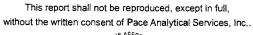
_ABORATORY CONTROL SAMPLE:	365718					
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Kylene (Total)	ug/L	150	175	117	83-125	
1,2-Dichloroethane-d4 (S)	%			97	79-120	
4-Bromofluorobenzene (S)	%			96	87-109	
Dibromofluoromethane (S)	%			98	85-115	
Toluene-d8 (S)	%			102	70-120	

MATRIX SPIKE & MATRIX SP	IKE DUPLICATI	E: 36571	9		365720						
Parameter	92 Units	256807004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Benzene	ug/L	ND	50	50	65.3	62.4	131	125	74-136		
Toluene	ug/L	ND	50	50	66.1	61.4	131	122	73-131	7	
1,2-Dichloroethane-d4 (S)	%						96	96	79-120		
4-Bromofluorobenzene (S)	%						110	99	87-109	SC	ı
Dibromofluoromethane (S)	%						101	104	85-115		
Toluene-d8 (S)	%						106	98	70-120		

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**REPORT OF LABORATORY ANALYSIS** 

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#### **QUALIFIERS**

Project:

TISDALE QUICK STOP

Pace Project No.:

9256839

#### **DEFINITIONS**

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

U - Indicates the compound was analyzed for, but not detected.

#### **LABORATORIES**

PASI-C Pace Analytical Services - Charlotte

#### **ANALYTE QUALIFIERS**

1g	Relative percent difference between results from each column was greater than 40% due to matrix interference. The
J	lower of the two results was reported.

L3 Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

S0 Surrogate recovery outside laboratory control limits.

Date: 11/17/2009 04:00 PM





# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

NAPHY 8 OXYGOURTS SOS 12 DCA, BIEZ, MTBENZ 700 200 S 409 800 912 0 500 010 WILLAMBBURG DRINKING WATER Pace Project No./ Lab I.D. (N/X) 6889526 KINGSTREE 358926 POR: SAMPLE CONDITIONS OTHER (N/J) Ś 82608 Sealed Coo Coop Custody GROUND WATER | Received on Ice (Y/N) Residual Chlorine (Y/N) 0 Page: O° ni qmeT 3 REGULATORY AGENCY RCRA H tequested Analysis Filtered (Y/N) 0830 ¥I. STATE: NPDES Site Location 1/65/65 UST DATE 人でとどのりょ BRIE DATE Signed (MM/DD/YY): 1108 902 112 1100 110 112 1100 1100 1100 ACCEPTED BY / AFFILIATION 9 Spen, KeNWSD. N/J t Analysis Test Other ACCIE Methano Preservatives 317 Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> \*Important Note: By slipning this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any imposes not paid within 3 NaOH HCI ompany Name: Reference: Pace Project Manager: Pace Profile #: <sup>⁵</sup>OS<sup>2</sup>H Section C Attention: ace Quote Address: Unpreserved TIME 9 # OF CONTAINERS PRINT Name of SAMPLER: SAMPLE TEMP AT COLLECTION SAMPLER NAME AND SIGNATURE SIGNATURE of SAMPLER: 11/4/00 1026 1034 1034 QUICK STOP 346 114105 0820 114105 0820 1432 DATE 1335 520 10/5/ 1627 101 COMPOSITE END/GRAB 113/69 COLLECTED DATE Boll ED/BY / AFFILIATION TIME COMPOSITE START DATE Section B Required Project Information: Project Name: SARE SCOT RELINQUISH urchase Order No.: (G=GRAB C=COMP) SAMPLE TYPE (see valid codes to left) MATRIX CODE Report To: Copy To: Matrix Codes MATRIX / CODE ORIGINAL Drinking Water Water Waste Water Product Soil/Soild Oil Wipe Air Tissue Other C every NC 282 equested Due Date/TAT:  $\omega$ MW. Bress ADDITIONAL COMMENTS 4 (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE MW-10 カーのど MW-3/ NW-30 Cotable TTE COMMY - COMMY 1287 1W-24 1848454016 Ex SAMPLE ID MW-23 1 m MW-1 Section A Required Client Information: Section D Required Client Information # WIEL 9 9 80 6 10 11 12

Pace Analytical"
www.pacelabs.com

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

020 623 014 WILLAMSBURG 3 679 410 720 022 910 てる DRINKING WATER Pace Project No./ Lab I.D. 720 Carret 9256839 (N/X) 358929 SAMPLE CONDITIONS 2 OTHER (N/A) Sealed Coole GROUND WATER | Received on Ice (Y/N) Residual Chlorine (Y/N) 3.0 О° ni qmөТ RÉGULATORY AGENCY RCRA Requested Analysis Filtered (Y/N) H. 11/05/01 |0530 STATE: Site Location NPDES UST DATE からいのかり DATE Signed (MM/DD/YY); 1108 903 Sandanas ACCEPTED BY / AFFILIATION D 978 Conneo, N/A taeT sisylsnA t Other Methanol Preservatives Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> HOBN НСІ SAMPLER NAME AND SIGNATURE TERE Company Name Pace Quote Reference: Pace Project Manager: Section C <sup>†</sup>OS<sup>z</sup>H Attention: Address: Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices Unpreserved # OF CONTAINERS SAMPLE TEMP AT COLLECTION SIGNATURE of SAMPLER: PRINT Name of SAMPLER: 25.5 286 DATE QUICKSTOP 14/02/1/40 2000 E 18 650 TIME COMPOSITE END/GRAB COLLECTED DATE RELINQUISINED BY / AFFILIATION TIME COMPOSITE START Project Name: TSDRE Scot DATE Required Project Information Purchase Order No.: (G≈GRAB C=COMP) SAMPLE TYPE roject Number: (see valid codes to left) MATRIX CODE Section B Report To: Copy To: 옥독종 등 2 P Matrix Codes MATRIX / CODE ORIGINAL Drinking Water Water Waste Water Product Soil/Solid Oil Wipe Air Titsue Other ddress 201-P Claus P EXE DR CHARLOTTE, NC 2822 nquested Due Date/TAT: NORMA ADDITIONAL COMMENTS (A-Z, 0-97, -) Sample IDs MUST BE UNIQUE MW-28 19454510 Fax SAMPLE ID MW -25 NW-27 MW-22 Section A Required Client Information: アラーの Required Client Information MW-18 プーのプ Section D # W31 9 ∞ 6 10

Pace Analytical"

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

020 820 030 520 620 720 DRINKING WATER Pace Project No./ Lab I.D. 6889526 willetherough Samples Intact (Y/V) 358928 OTHER \_ SAMPLE CONDITIONS 7 (N/A) 2 Sealed Coc Custody GROUND WATER | Received on Ice (Y/N) > Residual Chlorine (Y/N) ·J Page: Jemp in °C REGULATORY AGENCY RCRA Requested Analysis Filtered (Y/N) 2560 TIME STATE: NPDES Site Location 30/59/// TST TST DATE DATE Signed (MM/DD/YY): // MIE Kerker 1128 807 ACCEPTED BY / AFFILIATION BRES LAMPINES SZLO 1 N /A taeT sisylsnA t (formed) Other Methanol Preservatives Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> HOBN HCI Invoice Information Company Name HNÓ³ Pace Quote Reference: Pace Project Manager: Pace Profile #: Section C OS<sup>2</sup>H Address: Z Unpreserved TIME # OF CONTAINERS PRINT Name of SAMPLER: SAMPLE TEMP AT COLLECTION SAMPLER NAME AND SIGNATURE SIGNATURE of SAMPLER: 4/08 STOP 1420 1457 DATE 1465 1402 88 ğ COMPOSITE END/GRAB COLLECTED BUCK RULINQUISHED BY AFFILIATION TIME COMPOSITE START Project Name 1/SDALE DATE Section B Required Project Information 6 urchase Order No.: (G≈GRAB C=COMP) SAMPLE TYPE Project Number: Report To MATRIX CODE Matrix Codes ORIGINAL Drinking Water
Waster
Waste Waste Water
Product
Soil/Soild
Oil
Wipe
Air
Tissue EDI-F CLOUN IT EXCE IN くり ADDITIONAL COMMENTS (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE Requested Dug Note Exical Fax: SAMPLE ID CHARLESTE 18 E I MIN 281 Section A Required Client Information: 3 Required Client Information Section D # M3TI ~ က 4 ß 9 8 9 Ŧ 6 12

\*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices net paid within 30 days

#### Sample Condition Upon Receipt Client Name: GRI Project # 9256839 Courier: Fed Ex UPS USPS Client Commercial Pace Other Custody Seal on Cooler/Box Present: yes / no Seals intact: yes Proj Due Date Packing Material: Bubble Wrap Bubble Bags None Other Thermometer Used T060 Type of ice: (Wet) Blue None Samples on ice, cooling process has begun Cocler Temperature Biological Tissue is Frozen: Yes No N/A Date and Initials of person examining Temp should be above freezing to 6°C contents: 164 11/65/69 Comments: Chain of Custody Present: DYes ONO ON/A 1. Chain of Custody Filled Out: ØYes □No □N/A Chain of Custody Relinquished: ZYes No NA 3 Sampler Name & Signature on COC: Yes ONO ON/A 4 Samples Arrived within Hold Time: ØYes □No □N/A 5 Short Hold Time Analysis (<72hr): DYes DNO DNA 6 Rush Turn Around Time Requested: Tyes No DNA 7 Sufficient Volume: ØYes □NO □N/A 8. Correct Containers Used: ☑Yes ☐No ☐N/A 9 -Pace Containers Used: ØYes □No □N/A Containers Intact: ÁYes □NO □N/A 10. Filtered volume received for Dissolved tests □Yes □No ØN/A 11. Sample Labels match COC: ØYes □No □N/A 12. -Includes date/time/ID/Analysis JLL All containers needing preservation have been checked. ØYes □No □N/A 13. All containers needing preservation are found to be in compliance with EPA recommendation. ØYes □No □N/A exceptions: VOA, coliform, TOC, O&G, WI-DRO (water) □Yes □No Initial when completed Samples checked for dechlorination: □Yes □No ØN/A 14. Headspace in VOA Vials ( >6mm): □Yes DNo □N/A 15. Trip Blank Present: □Yes □No . □N/A 16. Trip Blank Custody Seals Present □Yes □No ØN/A Pace Trip Blank Lot # (if purchased): N/A

Client Notification/ Resolution:

Person Contacted:

Comments/ Resolution:

Date/Time:

Date: 1115 / 09



#### C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

FEB 0 3 2010

MR MARTY EASLER 196 RICHBURG ROAD GREELEYVILLE SC 29056

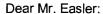
Re:

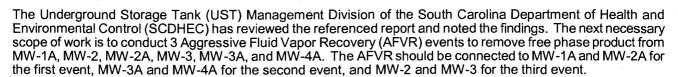
Three AFVR Events

Tisdales Quick Stop, 1989 Thurgood Marshall Blvd, Kingstree, SC

UST Permit # 18686, CA # 37959 Release reported March 30, 2001 Report received December 14, 2009

Williamsburg County





Magnehelic gauges must be installed on the extraction wells and monitoring wells immediately surrounding the extraction wells. The AFVR should be completed by establishing a vacuum on the subsurface through the existing monitoring wells. The unit must be capable of providing a minimum airflow of 250 cubic feet per minute (CPM) at 25 inches Mercury vacuum. An airtight seal must be established on the top of each extraction well. Drop tubes inserted in the well(s) should have an inside diameter of at least one (1) inch and should initially be installed six inches below the bottom of the product or the top of the well screen whichever is deeper. The drop tubes should be lowered deeper in the well only if the well exhibits slow recovery (repeatedly goes dry) or if it is deemed necessary to establish a steeper hydraulic gradient to enhance free product migration toward the well. The goal is to maximize the recovery of free product and petroleum vapors in the capillary fringe and minimize the recovery of ground water.

Cost Agreement # 37959 has been approved in the amount shown on the enclosed cost agreement form for the aforementioned scope of work. The AFVR activities may proceed immediately upon receipt of this letter. The report submitted at the completion of these activities should include the following:

- A narrative portion documenting the AFVR events noting site conditions, the name of the AFVR contractor, field personnel, date, time the AFVR events started and ended, ambient air temperature, and general weather conditions during the AFVR events.
- A brief description of the completed work scope and any relevant descriptions pertaining to the data tables.
- A table summarizing the airflow (in CFM) and volatile air emissions concentrations collected from the stack of the truck every thirty minutes through the duration of the events. The table shall also document which well(s) were being recovered from during that time interval.
- A table summarizing the magnehelic gauge measurements from all applicable wells on a thirty-minute time interval.
- The total volume of water recovered (gallons).
- The total volume of free phase product recovered (typically measured with a product/water interface device inserted into the top of the tanker at the completion of the event and then converted to an approximate volume).



- The total weight of petroleum removed as vapor. This is calculated based on the airflow rate and the concentration of vapor.
- A table documenting the free product thickness in each well before and after the recovery events.
- Scaled base map depicting the location of the extraction wells and the surrounding wells equipped with magnehelic gauges.
- Recovered free phase petroleum and groundwater must be accepted by a permitted treatment facility.
   There can be no spillage or leakage in transport. A copy of the disposal manifest from the receiving facility that clearly designates the quantity received must be included as an appendix to the final report.

Geological Resources, Inc. can submit an invoice for direct billing from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. Please note that all applicable South Carolina certification requirements apply to the laboratory services, well installation, and report preparation. All site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

An AFVR report and invoice are due within 90 days from the date of this letter. Interim invoices may not be submitted for this scope of work. If the invoice is 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 from the Division is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the Division for the cost to be paid. The SCDHEC 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, SCDHEC 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.

The Department grants pre-approval for transportation of virgin petroleum impacted 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.

On all correspondence concerning this site, please reference **UST Permit # 15059 and CA # 37959**. If there are any questions concerning this project, please contact me at (803) 896-4085 or by email at <a href="mailto:martinjm@dhec.sc.gov">martinjm@dhec.sc.gov</a>.

Sincerely,

Jim Martin, Hydrogeologist Corrective Action Section UST Management Division

Bureau of Land and Waste Management

enc:

Approved Cost Agreement

CC:

Geological Resources, Inc., 2301 Crown Point Executive Drive, Suite F, Charlotte, NC 28227 (w/enc)

Technical file (w/o enc)

#### Approved Cost Agreement 37959

Facility: 18686 TISDALES QUICK STOP

MARTINJM PO Number:

Task / Description Categories	Item Description	Qty / Pct	Unit Price	Amount
04 MOB/DEMOB	, <u>, , , , , , , , , , , , , , , , , , </u>			
	A EQUIPMENT	3.0000	575.00	1,725.00
	B PERSONNEL	3.0000	290.00	870.00
17 DISPOSAL				
	A2 WASTEWATER - PUMPING TEST	4,500.0000	0.60	2,700.00
19 RPT/PROJECT MNGT & COORDINATIO				
	PCT PERCENT	0.1500	15,135.00	2,270.25
23 EFR				
	A 8 HOUR EVENT	3.0000	3,000.00	9.000.00
	C OFF GAS TREATMENT	24.0000	35.00	840.00
		Total Amo	unt	17,405.25

Rev: 1.12 suprcait.rdf



#### Geological Resources, Inc.

March 17, 2010

Mr. Jim Martin South Carolina Department of Health and Environmental Control 2600 Bull Street Columbia, South Carolina 29201-1708

Re:

AFVR Report

Tisdales Quick Stop

Kingstree, Williamsburg County

UST Permit #: 18686

CA#: 37959

Dear Mr. Martin:



The purpose of this report is to present the results of three consecutive aggressive fluid-vapor recovery (AFVR) activities conducted on February 23, 2010, February 24, 2010 and February 25, 2010 at the above referenced site. The activities were conducted in accordance with the requirements outlined in correspondence from the SCDHEC dated February 3, 2010 and addressed to Mr. Marty Easler. The purpose of the activities was to remove free product and reduce concentrations of dissolved phase contaminants from monitoring wells MW-1A, MW-2A, MW3A, MW-4A, MW-2 and MW-3. The following Figures, Tables and Appendices have been included:

Figure 1:

Site Location Map

Figure 2:

Site Map

Table 1:

AFVR Event Chronology

Table 2:

Summary of Monitoring Well Gauging Data

Appendix A:

ARM Environmental Services, Inc. - AFVR Reports, Calculations,

Disposal Manifests

GRI personnel and the AFVR contractor (ARM Environmental Services, Inc.) arrived on-site on February 23, 2010 for the first of three consecutive AFVR events. The first event was conducted on monitoring wells MW-1A and MW-2A. General weather conditions were sunny with an ambient air temperature of approximately 45°F at the time of system start-up and increasing to approximately 60°F throughout the day. MW-1A had approximately 0.04 feet of free-phase product present prior to system startup. No free product was observed in MW-2A prior to system startup. AFVR activities using a vacuum truck with a maximum vacuum rating of 27 in./Hg and a capacity of 1,400 cubic feet per minute were conducted for 8 hours. During the course of the event, the vacuum at the truck ranged from 24 to 26 in./Hg throughout the day. Please note that the vacuum truck was equipped with a charcoal-activated filter for off-gas treatment of vapor phase hydrocarbons. A total of 2,004 gallons of petroleum contact water were removed during the event. No measurable free product was present in MW-1A or MW-2A at the conclusion of the event. Based on data collected during the AFVR event, an estimated total of 4.17 pounds (approximately 0.67 gallons) of vapor emissions were

2301 Crown Point Executive Drive Suite F Charlotte, NC 28227 Phone: (704) 845-4010 / (888) 870-4133 Fax: (704) 845-4012

Tisdale Quick Stop AFVR Report Page 2 of 2

calculated to have been removed during the event.

The AFVR contractor arrived on-site on February 24, 2010 to conduct a second AFVR event on monitoring wells MW-3A and MW-4A. General weather conditions were cloudy with an ambient air temperature of approximately 45°F at the time of system start-up and increasing to approximately 55°F throughout the day. MW-3A had approximately 0.21 feet of free-phase product present prior to system startup. No free product was detected in MW-4A prior to system startup. AFVR activities using a vacuum truck with a maximum vacuum rating of 27 in./Hg and a capacity of 1,400 cubic feet per minute were conducted for 8 hours on MW-3A and MW-4A. During the course of the event, the vacuum at the truck ranged from 23 to 25 in./Hg throughout the day. Please note that the vacuum truck was equipped with a charcoal-activated filter for off-gas treatment of vapor phase hydrocarbons. A total of 1,420 gallons of petroleum contact water were removed during the event. No measurable free product was present in MW-3A or MW-4A at the conclusion of the event. Based on data collected during the AFVR event, an estimated total of 0.07 pounds (approximately 0.01 gallons) of vapor emissions were calculated to have been removed during the event.

The AFVR contractor arrived on-site on February 25, 2010 to conduct the third AFVR event on monitoring wells MW-2 and MW-3. General weather conditions were windy with an ambient air temperature of approximately 40°F at the time of system start-up and increasing to approximately 45°F throughout the day. MW-2 had approximately 0.01 feet of free-phase product present prior to system startup. No free product was detected in MW-3 prior to system startup. AFVR activities using a vacuum truck with a maximum vacuum rating of 27 in./Hg and a capacity of 1,400 cubic feet per minute were conducted for 8 hours on MW-2 and MW-3. During the course of the event, the vacuum at the truck ranged from 23 to 25 in./Hg throughout the day. Please note that the vacuum truck was equipped with a charcoal-activated filter for off-gas treatment of vapor phase hydrocarbons. A total of 1,646 gallons of petroleum contact water were removed during the event. No measurable free product was present in MW-2 or MW-3 at the conclusion of the event. Based on data collected during the AFVR event, an estimated total of 0.08 pounds (approximately 0.01 gallons) of vapor emissions were calculated to have been removed during the event.

If you have any comments or questions concerning this project, please do not hesitate to contact the undersigned at (704) 815-0626.

Sincerely

Scott Ball

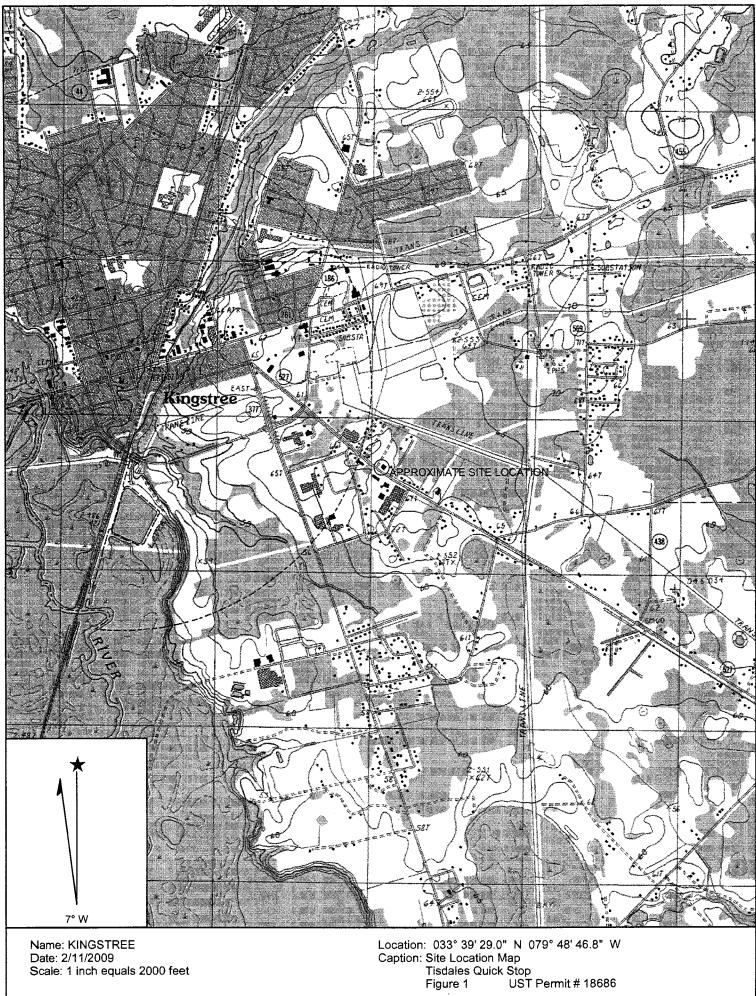
Project Manhagerin

Mr. Marty Easler

cc:

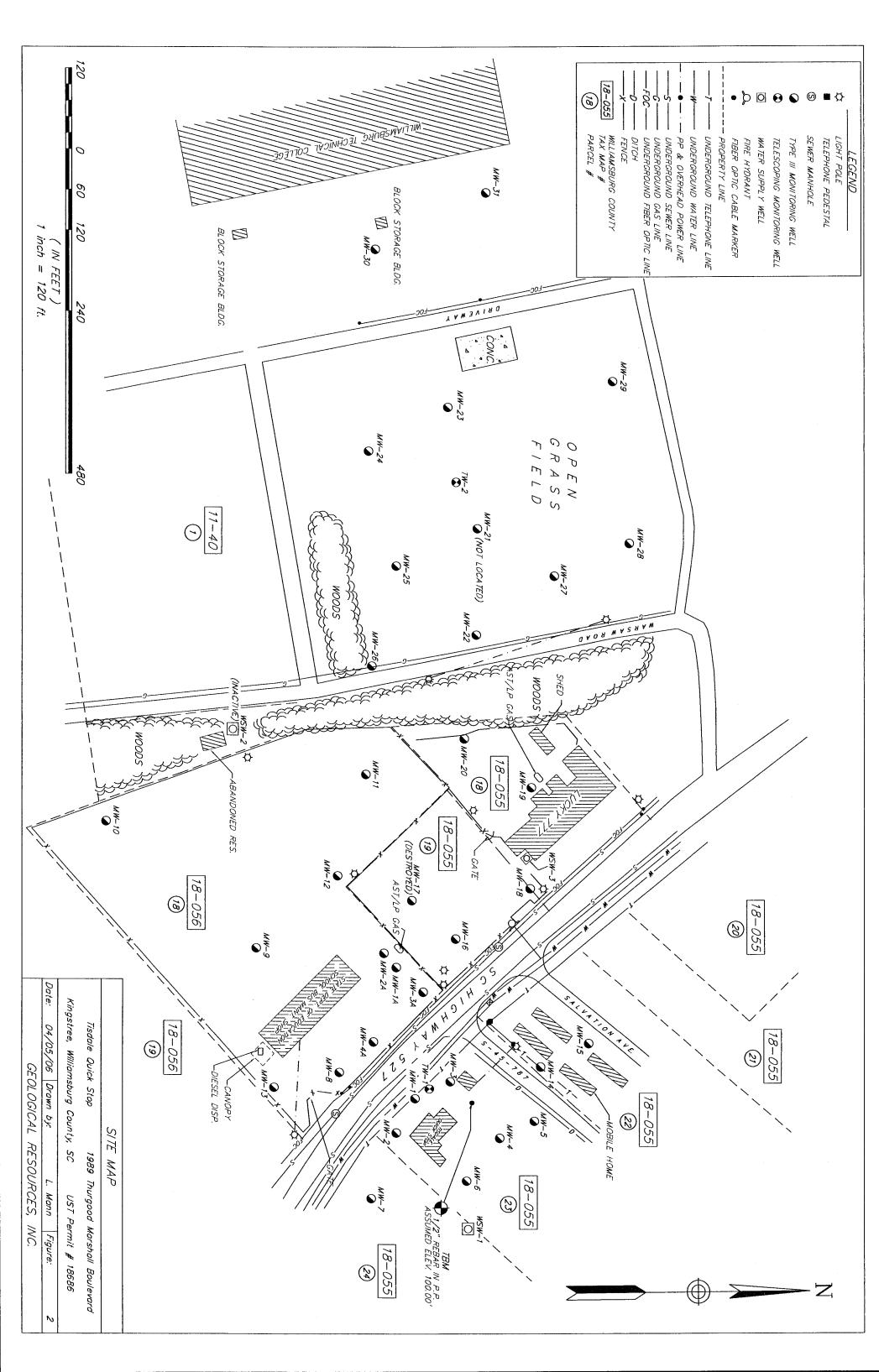
file

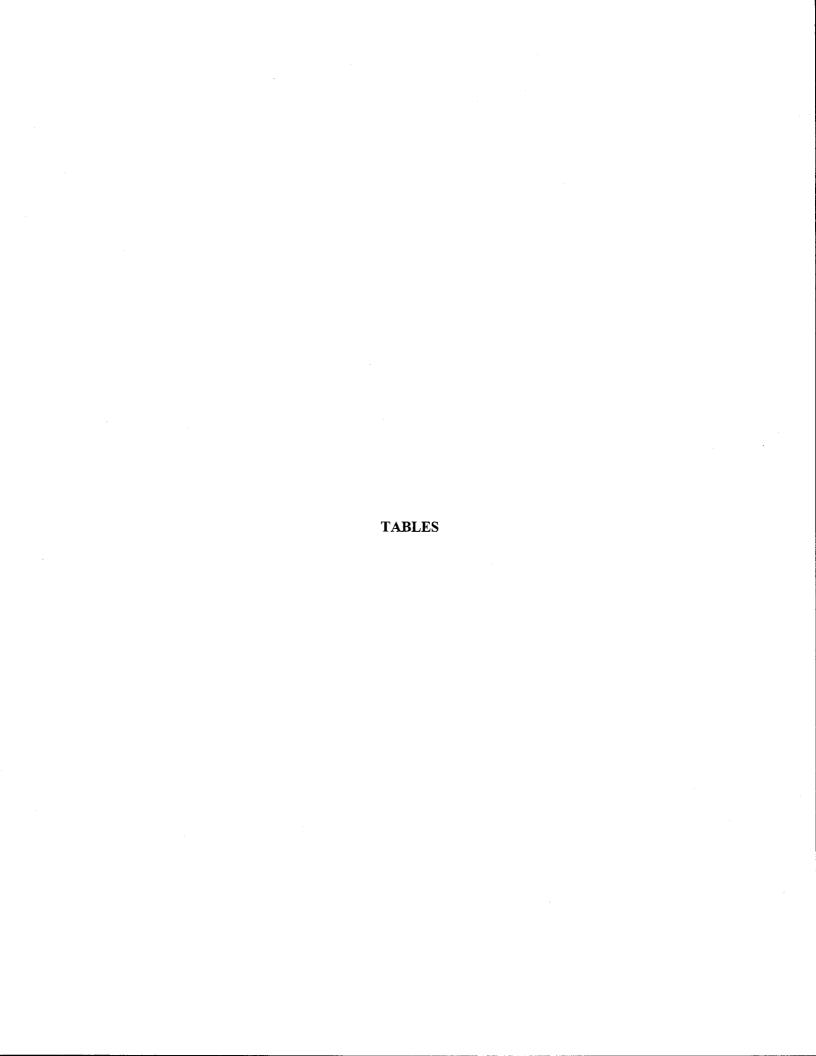
**FIGURES** 



Name: KINGSTREE Date: 2/11/2009

Scale: 1 inch equals 2000 feet





## TABLE 1 AFVR EVENT CHRONOLOGY FEBRUARY 23, 2010 TISDALE'S QUICK STOP UST PERMIT #18686

Task	Hours	Personnel	Equipment	Company
Gauge Liquid Levels in MW- 1A & MW-2A	9:50	H. Keech	Interface Probe	GRI
Vacuum Truck Setup for Fluid Removal in MW-1A & MW- 2A	9:45-10:00	Vacuum Truck Operator	Vacuum Truck	ARM Environmental
Fluid Recovery in MW-1A & MW-2A	10:00-18:00	Vacuum Truck Operator	Vacuum Truck	ARM Environmental
Gauge Liquid Level in MW- 1A & MW-2A	18:00	Vacuum Truck Operator	Interface Probe	ARM Environmental

#### AFVR EVENT CHRONOLOGY FEBRUARY 24, 2010 TISDALE'S QUICK STOP UST PERMIT #18686

Task	Hours	Personnel	Equipment	Company
Gauge Liquid Levels in MW- 3A & MW-4A	9:50	Vacuum Truck Operator	Interface Probe	ARM Environmental
Vacuum Truck Setup for Fluid Removal in MW-3A & MW- 4A	9:50-10:00	Vacuum Truck Operator	Vacuum Truck	ARM Environmental
Fluid Recovery in MW-3A & MW-4A	10:00-18:00	Vacuum Truck Operator	Vacuum Truck	ARM Environmental
Gauge Liquid Level in MW-3A & MW-4A	18:00	Vacuum Truck Operator	Interface Probe	ARM Environmental

# TABLE 1 AFVR EVENT CHRONOLOGY FEBRUARY 25, 2010 TISDALE'S QUICK STOP UST PERMIT #18686

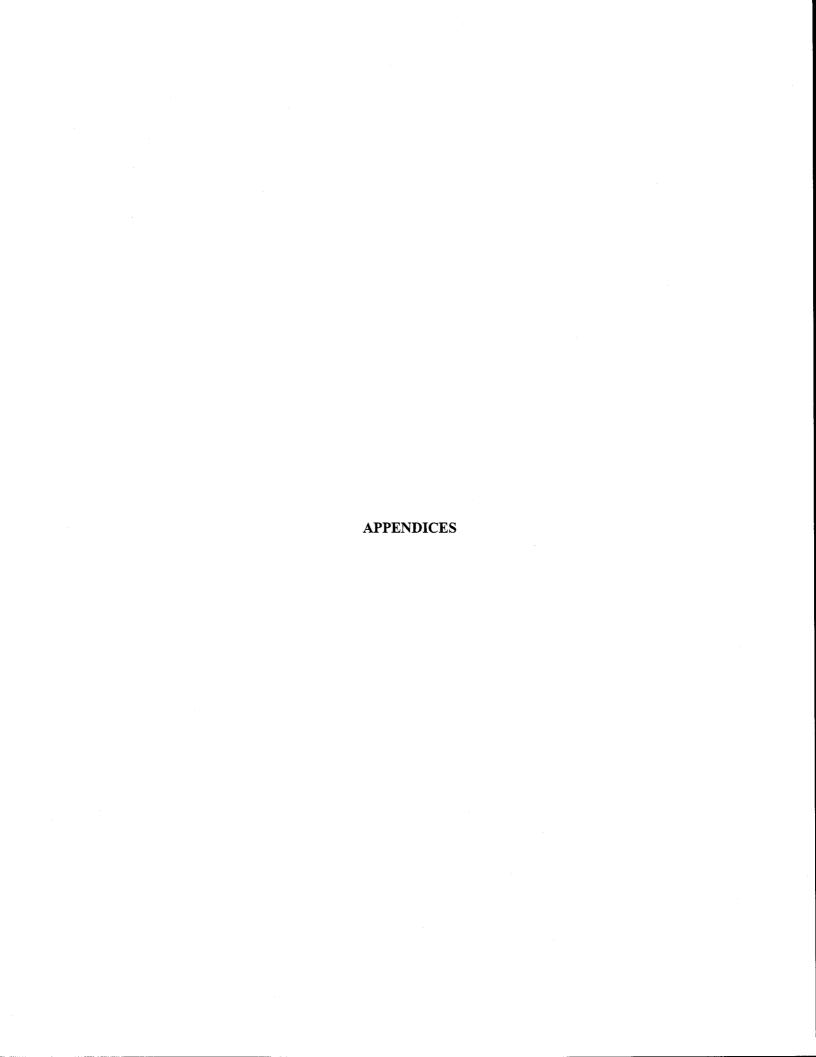
Task	Hours	Personnel	Equipment	Company
Gauge Liquid Levels in MW-2 & MW-3	10:00	Vacuum Truck Operator	Interface Probe	ARM Environmental
Vacuum Truck Setup for Fluid Removal in MW-2 & MW-3	10:00-10:10	Vacuum Truck Operator	Vacuum Truck	ARM Environmental
Fluid Recovery in MW-2 & MW-3	10:10-18:10	Vacuum Truck Operator	Vacuum Truck	ARM Environmental
Gauge Liquid Level in MW-2 & MW-3	18:10	Vacuum Truck Operator	Interface Probe	ARM Environmental

#### TABLE 2 SUMMARY OF MONITORING WELL GAUGING DATA TISDALE'S QUICK STOP UST PERMIT #18686

Well No.	Date	Time	Depth to Free Product	Depth to Ground Water	Free Product Thickness
MW-1A	02/23/10	9:50	12.22	12.26	0.04
IVI VV - I A	02/23/10	18:00		15.70	
MW.24	MW-2A 02/23/10	9:50		12.40	
IVI VV -2A		18:00		17.20	
MW-3A	02/24/10	9:50	12.55	12.76	0.21
IVI VV -SA	02/24/10	18:00		16.10	
MW-4A	02/24/10	9:50		12.50	
IVI VV -4/A	02/24/10	18:00		16.65	
MW-2	02/25/10	10:00	12.44	12.45	0.01
101 00 -2 02/23	02/23/10	18:10		16.35	
MW-3	02/25/10	10:00		12.41	
141 44 -2	02/23/10	18:10		14.40	

#### Note:

• Data reported in feet.



#### APPENDIX A

ARM Environmental Services, Inc. - AFVR Report, Calculations, Disposal Manifests



ASSESSMENT & REMEDIAL SERVICES

amenv.com

March 5, 2010

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Drive Charlotte, NC 28227

Re:

Tisdale's Quick Stop

1989 Thurgood Marshall Blvd. Kingstree, South Carolina

UST Permit #18686; CA #37959

ARM Project #25-409.1-10

Dear Mr. Ball:

ARM Environmental Services, Inc. (ARM) has completed three (3) Aggressive Fluid Vapor Recovery (AFVR) events at the above-referenced site located in Williamsburg County, South Carolina. The pertinent information regarding the AFVRs is presented on the following pages and in the appendices of this document.

The AFVR events were conducted on monitoring wells MW-1A, MW-2A, MW-3A, MW-4A, MW-2 and MW-3. Based on gauging of the fluid levels in the monitoring wells, it appears that no appreciable thickness of free-phase product remained present at the time of completion of the AFVR events.

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,

ARM Environmental Services, Inc.

Joseph A. Goings Staff Geologist

Michael L. Faris, P.G. Senior Geologist

MUNICIPAL SALES

#### Summary of Findings

#### AFVR 1 of 3

ARM personnel mobilized to the Tisdale's Quick Stop Service site on February 23, 2010. Ambient air temperature was 45° - 60° F and the general weather conditions were sunny. The depths to product and water were measured and recorded for monitoring wells MW-1A and MW-2A prior to and subsequent to the event. MW-1A had 0.04 feet of free-phase product present prior to stinger placement into the well. No product was detected in MW-2A prior to stinger placement.

The AFVR was conducted by ARM utilizing a liquid ring vacuum pump system. Vacuuming began at 10:00 am and ended at 6:00 pm. At cessation of the event, no appreciable thickness of free-phase product was present in MW-1A or MW-2A. The field notes summarizing the data collected during the event are included in Appendix A. Approximately 2,004 gallons of petroleum contact water were removed from the referenced wells during the event.

#### AFVR 2 of 3

ARM personnel mobilized to the Tisdale's Quick Stop site on February 24, 2010. Ambient air temperature was 45° - 55° F and the general weather conditions were cloudy. The depths to product and water were measured and recorded for monitoring wells MW-3A and MW-4A prior to and subsequent to the event. MW-3A had 0.21 feet of free-phase product present prior to stinger placement into the well. No product was detected in MW-4A prior to stinger placement.

The AFVR was conducted by ARM utilizing a liquid ring vacuum pump system. Vacuuming began at 10:00 am and ended at 6:00 pm. At cessation of the event, no appreciable thickness of free-phase product was present in MW-3A or MW-4A. The field notes summarizing the data collected during the event are included in Appendix A. Approximately 1,420 gallons of petroleum contact water, and a trace of free-phase product, were removed from the referenced wells during the event.

#### AFVR 3 of 3

ARM personnel mobilized to the Tisdale's Quick Stop site on February 25, 2010. Ambient air temperature was 40° - 45° F and the general weather conditions were windy. The depths to product and water were measured and recorded for monitoring wells MW-2 and MW-3 prior to and subsequent to the event. MW-2 had 0.01 feet of free-phase product present prior to stinger placement into the well. No product was detected in MW-3 prior to stinger placement.

The AFVR was conducted by ARM utilizing a liquid ring vacuum pump system. Vacuuming began at 10:10 am and ended at 6:10 pm. At cessation of the event, no appreciable thickness of free-phase product was present in MW-2 or MW-3. The field notes summarizing the data collected during the event are included in Appendix A. Approximately 1,646 gallons of petroleum contact water were removed from the referenced well during the event.

#### Pollutant Mass Removal

The total weight of petroleum as vapor (total gaseous nonmethane organic emissions) removed during the first, second, and third AFVR events were calculated at 4.17, 0.07, 0.08 pounds, respectively, based on the data collected during the event. The equations, variables, and calculations used to determine the pollutant mass removal are included in Appendix B.

#### Disposal

Approximately 5,070 gallons of petroleum contact water, and trace of free-phase product, were removed from the referenced well during the AFVR events. A disposal manifest for the petroleum contact water and product generated during the event is included in Appendix C.

#### **APPENDICES**

- A. AFVR FIELD DATA
- **B.** POLLUTANT MASS REMOVAL CALCULATIONS
- C. DISPOSAL MANIFEST(s)

#### APPENDIX A

AFVR FIELD DATA



# AFVR - Field Notes [Page 1 of 4]

Location: 1989 Thurgood Marshall Blud. Kingstnee, S.C.	Personnel: Billy Pilles oper	Ambient Air Temperature and General Weather Condition: シのかい 45~60*	; Start Time 2: Stop Time 2:	vent: 2004 gallons	Event: None	
Site Name: former Tisdale Pujck Stop	AFVR Contractor. ARM Environmental Svcs.	Date: 3-23-10 Ambient Air Temperature and Gen	Start Time 1: 10:00 Stop Time 1: 18:00	Total volume of water removed during the 8-hour AFVR Event: 300 4 gallons	Total volume of product removed during the 8-hour AFVR Event: None	Wald/Product Recovery Rate: 4.17 pallors per minute

Relevant				
Estimated volume of water removed during this event	1000 0001	1004 polyans		
Depth to water at cessation of vacuuming (ft. below TOC)	<u>L</u>	S.		
Depth to product at cessation of vacuuming (ft. below TOC)	768	Zon		
Depth to water prior to stinger placement (ft. below TOC)	٦. <u>١</u>	13.36		
Depth to product prior to stinger placement (ft. below TOC)	None	13.33		
Monitoring Well	Mw-ah	RE-13		

### Aggressive Fluid/Vapor Recovery Notes [Page 2 of 4]

vacuum conversion: (Inches of water X 0.07355 = inches of mercury)

	MW-AA	MW-1A	MW-		Stinge	er Placeme	nt
Time	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Stinger Depth	Product Depth	Water Level	Notes
10:00	æ	17		13.0	None	12.4	MW-8A
10:30				0.61	12.22	19.36	MW-1A
11:00							
11:30	***************************************						
19:00	3,000	All March 1997 and 19		-			
19:30							
13:00	V	V					
13:30	14			11.5	AIN	N A	MW-1A and 2A
14:00							
14:30							
15:00							
15:30							
16:00							
16:30							
17:00							
17:30							
18:00							
						- · · · · · · · · · · · · · · · · · · ·	

Vacuum at Pump: <u>34-36</u>

### Aggressive Fluid/Vapor Recovery Notes [Page 3 of 4]

vacuum conversion: (Inches of water X 0.07355 = inches of mercury)

					,	7		
	<i>IVI</i> 1	N-3A	M	W- 4A	IVI	IW:-	I.V.	IW-
Time	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)
10:00	Product Worker 12:35 12:44		18-58					
10:30	,	0		0				
]]:00								
11:30		·					* j	
13:00		77						
12:30				V				
00°51								
13:30								
14:00		,						
14:30								
15:00							•	
15:30								
16:00								
16:30					•			
17:00								
17:30	Product water							
18:00	12.7 8.97		12.77				·····	
				_				

## Aggressive Fluid/Vapor Recovery Notes [Page 4 of 4]

Time	PID <u>at stack</u> (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (°C)	Relative Humidity (%)	Other
10:00	∂853	18	<u> </u> β017	90.7	86.1	
10-30	4144	23	1661	36.8	88.4	
11:00	38.84	25	1712	38.0	76.7	
11:30	3821	27	1778	39.7	89.2	
19:00	a633	3(	1684	41.4	87.3	
la:30	241 <u>3</u>	35	1555	40.0	83.2	
13:00	3008	33	1686	41.8	79.4	
13:30	3126	38	1538	40.4	76.6	
H:00	2239	41	1616	38.8	72.1	
H:30	1883	44	1667	40.2	70.4	
(5:00	1912	48	1593	39.6	68.5	
(5.30	2004	49	1481	40.2	69.8	
16:00	1818	51	1613	41.4	66.5	
16:30	1767	56	1449	43.8	65.a	
17:00	1448	59	1503	45,2	67.3	
17:30	1695	56	1518	44.1	67.5	
18:00	IEB1	58	1581	44.7	65.8	
		·				
			V-1 1 1 1			



# AFVR - Field Notes [Page 1 of 4]

Location: 1989 Thygod Mashall Blvd. Knoshee, S.C.	Personnel: Billy Pillenger	Ambient Air Temperature and General Weather Condition: clood 45 55	8:00 ; Start Time 2: Stop Time 2:	ur AFVR Event: 1430 og 11 cms	the 8-hour AFVR Event: -kace  sheen	Je Je
Site Name: former Tisdale quick Stop	AFVR Contractor: ARM Environmental Svcs.	Date: 3-34-10 Ambient Air Temperature	Start Time 1: 10:00 Stop Time 1: 18:00	Total volume of water removed during the 8-hour AFVR Event: 1430 on lons	Total volume of product removed during the 8-ho	World/Product Recovery Rate: 3.95 gallors per minute

		I	r	<u> </u>	T	
Relevant						
Estimated volume of water removed during this event	TIOgallans	\$ 200		***************************************		
Depth to water at cessation of vacuuming (ft. below TOC)	<b>1</b> 0.1	16.65				
Depth to product at cessation of vacuuming (ft. below TOC)	None	Zon				
Depth to water prior to stinger placement (ft. below TOC)	12.76	0. <u>©</u>				
Depth to product prior to stinger placement (ft. below TOC)	13.55	None				
Monitoring Well	AB-UM	AH-MM				

### Aggressive Fluid/Vapor Recovery Notes [Page 2 of 4]

vacuum conversion: (Inches of water X 0.07355 = inches of mercury)

				Stinger Placement				
	IVIV-3A	MW-4A	MW-					
Time	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Stinger Depth	Product Depth	Water Level	Notes	
10:00	17-18	6-17		<u>a.5</u>	13.55	12.76	Mw-3A	
10:30				12.5	None	<u>  IQ.5</u>	Mw-4A	
11:00								
11:30								
12:00	V	4					both stingers	
12:30							set wt 10:00	
13:00								
13:30								
14:00								
14:30								
15:00								
16.30								
16:00	-							
16:30								
17:00								
17:30		· · · · · · · · · · · · · · · · · · ·						
18:00								
							-	

Vacuum at Pump: <u>23-25</u>

## Aggressive Fluid/Vapor Recovery Notes [Page 3 of 4]

vacuum conversion: (Inches of water X 0.07355 = inches of mercury)

Time Water Influence Water Influence Water Influence Level at Well Level									
Time   Water   Level   at Well   (in. Hg)		MVV-1A		MW-2A		MW-		MVV-	
10:00   13.57   13.63   13.75	1		Influence at Well	Level	Influence at Well		Influence at Well		Vacuum Influence at Well (in. Hg)
18:00 18:00 19:00 19:00 19:00 19:00 19:00 19:00 19:00 19:00 19:00 19:00 19:00 19:00 19:00 19:00 19:00	10:00	19.57		12.63 12.75					
13:00 13:00 14:00 15:00 16:00 17:00 18:00 12.65 13.60 13.65 13.60 13.65			0						
13:00  14:00  15:00  16:00  17:00  18:00  12.65  13.66  13.7	11:00		· · · · · · · · · · · · · · · · · · ·						
13:00  14:00  15:00  16:00  17:00  18:00  13.65  13.66  13.60  18:00	19:00								
15:00 16:00 17:00 18:00 12.65 12.65 13.46 13.7	13:00		V		<b>V</b>				
16:00 17:00 18:00 12.65 Reduct Water 12.65 12.65 12.65	14:00		·			,			
16:00 17:00 18:00 12.65 12.65 12.65 12.65	<u> 5:00</u>								
18:00 12.65 Reduct Water 18:00 12.65		·							
18:00 12.65 12:7	17:00								
	18:00	12.65		Product Water 12.66 12:7					
					· .				
						· · · · · · · · · · · · · · · · · · ·			

## Aggressive Fluid/Vapor Recovery Notes [Page 4 of 4]

Time	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	<b>Velocity</b> (ft. / min.)	Temperature (°C)	Relative Humidity (%)	Other
10:00	773	42	961	21.3	71.3	
10:30	1104	45	713	35.6	78.7	
11:00	1348	49	888	37.7	84.2	
11:30	1263	51	81a	39.3	82.3	
12:00	1414	54	765	40.[	83.9	1
12:30	1008	57	904	40.7	89.1	
13:00	1257	59	1049	38.5	85,4	
13:30	1224	64	965	37.3	<u>83.a</u>	
14:00	1289	62	938	40.4	82.1	
14:30	1365	66	814	41.3	81.6	
15:00	1408	69	869	41.1	83.9	
15:30	1165	71	911	39.7	78.5	
lb:∞	6101	76	845	41.7	79.3	
16:30	12/14	79	883	40.3	76.3	
17:00	1553	83	865	415	76.4	
17:30	1614	80	817	40.4	74.7	
18:00	1388	81	929	422	75.6	



# AFVR - Field Notes [Page 1 of 4]

- Stop Location: 1989 Thyrocod Marshall Boulevard Lingstree, S.C.	image Sics. Personnel: Billy Pitenac	Ambient Air Temperature and General Weather Condition: windy 40°-45°	pp Time 1: 18:10 ; Start Time 2: Stop Time 2:	ring the 8-hour AFVR Event: 1646 gallars	during the 8-hour AFVR Event: None	allons per minute	
Site Name: Former Tisdake Quick Stop	AFVR Contractor: ARM Environmental Sycs.	Date: 3-35-10 Ambient Air Temperature	Start Time 1: 10:10 Stop Time 1: 18:	Total volume of water removed during the 8-hour	Total volume of product removed during the 8-hour AFVR Event: Nove	Wate/Product Recovery Rate: 3.43 qullans per min	

Relevant Observations				
Estimated volume of water removed during this event	1000 pallons	64.0 c + 0.0 c		
Depth to water at cessation of vacuuming (ft. below TOC)	16.35	ゴニ		
Depth to product at cessation of vacuuming (ft. below TOC)	None	None		
Depth to water prior to stinger placement (ft. below TOC)	ਨ ਨੂੰ	12.41		
Depth to product prior to stinger placement (ft. below TOC)	哥也	Mona		
Monitoring Well	Mu-D	Mw-3		

# Aggressive Fluid/Vapor Recovery Notes [Page 2 of 4]

vacuum conversion: (Inches of water X 0.07355 = inches of mercury)

	MW-3	MW-3	MW-		Stinge	er Placeme	nt
Time	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Stinger Depth	Product Depth	Water Level	Notes
10:10	al	19		0.61	(a.44	12:45	Mu-2
10:40				13.0	None	12.41	Mw-3
11:10							
11:40							
12:10	V	<u> </u>					both stropers
13:40							set at
13:10							10:10
13:40							
14:10				····			
14:40				<del></del>			
15:10	,						
15:40							
16:10							
16:40							
17:10				T-1007-0-100-0-100-0-100-0-100-0-100-0-100-0-100-0-100-0-100-0-100-0-100-0-100-0-100-0-100-0-100-0-100-0-100-0			
17:40							
18:10							
		175					
				· · · · · · · · · · · · · · · · · · ·			
					<u></u>		

Vacuum at Pump: 23-85

# Aggressive Fluid/Vapor Recovery Notes [Page 3 of 4]

vacuum conversion: (Inches of water X 0.07355 = inches of mercury)

	M	W-	FV.	IW- 4	IV.	IW-6	īV	IVV-
Time	Water Level	Vacuum Influence at Well (in. Hg)						
10:10	13.23		(B.33		12.5%			
		0	,			0		
11:10								
. naturalismus na			·					
19:10								
		V		V		V		
13:10								
14:10								
							-A-2-A 14	
15:10		_						
			<b></b>					_
16:10								
17:10								
18:10								
· 								`

# Aggressive Fluid/Vapor Recovery Notes [Page 4 of 4]

Time	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (°C)	Relative Humidity (%)	Other
10:10	463	73	785	13.6	79.7	
10:40	783	75	704	95.8	6,2 <u>7</u>	
11:10	811	79	188	a9.1	77.2	
_11:40	744	823	63	28.8	74.5	
<u>la: lo</u>	905	80	716	29.6	75.3	
13:40	933	86	724	30.2	74.1	
13:10	1014	88	663	31-6	<i>7</i> 2.1	
13:40	1138	93	641	29.8	763	
14:10	947	93	612	3a.1	79.9	
14:40	916	98	675	33.3	81.3	
15:10	855	98	709	36.1	78.2	
15:40	1138	100	724	36.4	76.6	
16:10	1238	106	638	33.2	72.1	
16:40	1114	101	621	37.	75.3	
17:10	993	11)	607	36.7	78.8	
17:40	916	117	678	39.7	76.3	
18:10	846	124	713	39.9	76.0	
		*		,		
						,

# APPENDIX B

POLLUTANT MASS REMOVAL CALCULATIONS

Tisdale's Quick Stop

**UST Permit #: 18686** 

# **EQUATIONS & VARIABLES**

# Q<sub>std</sub> = Flow at Dry Standard Cubic Feet Per Minute (DSCFM)

 $Q_{std} = (60 \text{ sec/min}) (1-B_{ws}) (V) (A) (528^{\circ} \text{ R / T}_s)$ 

Bwsw = water vapor % by weight at discharge stack, from high temperature Psychrometric Chart

= water vapor % by volume at discharge stack

=  $(B_{wsw} / 18 lb-mole H<sub>2</sub>O) / [1/28.84 lb-mole dry air) + <math>(B_{wsw} / 18 lb-mole H<sub>2</sub>O)]$ 

= velocity in fl/sec at discharge stack

= cross sectional area in ft2 of discharge stack ¥ ب ≽

= stack temperature in R° (dry bulb temp.)

 $= (C^{\circ} + 273.15) \times 9/5$ 

# PMR = Pollutant Mass Removal in lb of Total Gaseous Nonmethane Organic (TGNMO) emissions

 $PMR = PMR_c$  (# of minutes / 60)

PMR<sub>c</sub> = Pollutant Mass Removal rate in Ib/hr of Total Gaseous Nonmethane Organic (TGNMO) emissions

=  $C_c$  ( $Q_{std}$ ) (60 min/hr)

=  $C_{cm}$  (62.43 x 10<sup>-9</sup> lb-m<sup>3</sup>/mg-ft<sup>3</sup>) ပိ

C<sub>cm</sub> = mg/dsm³ mass concentration of TGNMO emissions

= PPM<sub>c</sub> (M<sub>c</sub> / K<sub>4</sub>)

PPM<sub>c</sub> = PPM<sub>v</sub> - volumetric concentration of TGNMO emissions as carbon, dry basis, at standard temperature and pressure

=  $(PPM_{meas})(K) = PPM_v$ 

PPM<sub>meas</sub> = concentration in parts per million from organic vapor meter (OVM) at discharge stack

= number of carbons in OVM calibration gas; methane - K=1, propane - K=3, isobutylene - K=4, hexane - K=6

= 24.07 dsm<sup>3</sup>/10<sup>6</sup> mg-mole - mass to volume conversion factor at standard temperature and pressure

= 12.01 mg/mg-mole, molecular weight of carbon

= lb/dcsf - mass concentration of TGNMO emissions sa carbon, dry basis, at standard temperature and pressure

Site: Tisdale's Quick Stop UST Permit #: 18686

# CALCULATIONS - Flow at Dry Standard Cubic Feet Per Minute

Date	Time	Тетр	Relative Humidity	B <sub>wsw</sub>	B <sub>ws</sub>	^	A	F-,	$Q_{\mathrm{std}}$
		(၁့)	(%)	(%)	(%)	(tvsec)	(ff²)	(°R)	(dscfm)
2/23/2010	10:00	20.7	86.1	0.013	0.021	34.95	0.022	528.9	44.69
	10:30	36.8	88.4	0.036	0.054	27.68	0.022	557.9	32.42
	11:00	38.0	76.7	0.033	0.050	28.53	0.022	560.1	33.42
	11:30	39.7	89.2	0.043	0.064	29.63	0.022	563.1	34.03
	12:00	41.4	87.3	0.046	0.068	27.07	0.022	566.2	30.76
	12:30	40.0	83.2	0.040	090'0	25.92	0.022	563.7	29.83
	13:00	41.8	79.4	0.042	0.063	28.10	0.022	566.9	32.06
	13:30	40.4	76.6	0.038	0.057	25.63	0.022	564.4	29.58
	14:00	38.8	72.1	0.032	0.049	26.93	0.022	561.5	31.50
	14:30	40.2	70.4	0.034	0.052	27.78	0.022	564.0	32.26
	15:00	39.6	68.5	0.032	0.049	26.55	0.022	563.0	30.99
	15:30	40.2	69.8	0.034	0.051	24.68	0.022	564.0	28.67
	16:00	41.4	66.5	0.034	0.052	26.87	0.022	566.2	31.07
	16:30	43.8	65.2	0.038	0.058	24.15	0.022	570.5	27.54
	17:00	45.2	67.3	0.043	0.064	25.05	0.022	573.0	28.25
	17:30	44.1	67.5	0.040	0.061	25.30	0.022	571.1	28.73
	18:00	44.7	65.8	0.041	0.061	26.35	0.022	572.1	29.86

Site: Tisdale's Quick Stop UST Permit #: 18686

# CALCULATIONS - Pollutant Mass Removal in pounds

Date	Time	Elapsed	Q <sub>std</sub>	PPM <sub>meas</sub>	₽₽М <sub>с</sub>	Cc:m	ပိ	PMRc	PMR
		(min)	(dscfm)	(mdd)	(mdd)	(mg/dsm³)	(lb/dscf)	(lb/hr)	(q <sub>I</sub> )
2/23/2010	10:00	0	44.69	2853	11412	5694	1 1	1	00.00
	10:30	30	32.42	4144	16576	8271	0.00052	1.00	0.50
	11:00	30	33.42	3224	12896	6435	0.00040	0.81	0.40
	11:30	30	34.03	2821	11284	5630	0.00035	0.72	0.36
	12:00	30	30.76	2633	10532	5255	0.00033	0.61	0.30
	12:30	30	29.83	2413	9652	4816	0.00030	0.54	0.27
	13:00	30	32.06	2008	8032	4008	0.00025	0.48	0.24
	13:30	30	29.58	2126	8504	4243	0.00026	0.47	0.24
	14:00	30	31.50	2239	8956	4469	0.00028	0.53	0.26
	14:30	30	32.26	1883	7532	3758	0.00023	0.45	0.23
	15:00	30	30.99	1912	7648	3816	0.00024	0.44	0.22
	15:30	30	28.67	2004	8016	4000	0.00025	0.43	0.21
	16:00	30	31.07	1818	7272	3628	0.00023	0.42	0.21
	16:30	30	27.54	1767	7068	3527	0.00022	0.36	0.18
	17:00	30	28.25	1448	5792	2890	0.00018	0.31	0.15
	17:30	30	28.73	1695	6780	3383	0.00021	0.36	0.18
	18:00	30	29.86	1831	7324	3654	0.00023	0.41	0.20

Total Gaseous Nonmethane Organic emissions removed in pounds from MW-1A and MW-2A

Site: Tisdale's Quick Stop (event 2 of 3) UST Permit #: 18686

CALCULATIONS - Flow at Dry Standard Cubic Feet Per Minute

Date	Time	Temp	Relative Humidity	B <sub>wsw</sub>	B <sub>ws</sub>	۸	A	<b>L</b>	Q <sub>std</sub>
		(၁့)	(%)	(%)	(%)	(tt/sec)	(ft²)	(°R)	(dscfm)
2/24/2010	10:00	21.3	71.3	0.011	0.018	16.02	0.022	530.0	20.50
	10:30	35.6	78.7	0.029	0.045	11.88	0.022	555.8	14.10
	11:00	37.7	84.2	0.036	0.054	14.80	0.022	559.5	17.28
	11:30	39.3	82.3	0.038	0.058	13.53	0.022	562.4	15.66
	12:00	40.1	83.9	0.041	0.061	12.75	0.022	563.9	14.66
	12:30	40.7	89.1	0.045	0.067	15.07	0.022	564.9	17.18
	13:00	38.5	85.4	0.038	0.057	17.48	0.022	561.0	20.29
	13:30	37.3	83.2	0.034	0.052	16.08	0.022	558.8	18.84
	14:00	40.4	82.1	0.040	0.061	15.63	0.022	564.4	17.96
	14:30	41.3	81.6	0.042	0.064	13.57	0.022	566.0	15.50
	15:00	41.1	83.9	0.043	0.065	14.48	0.022	565.7	16.54
	15:30	39.7	78.5	0.037	0.056	15.18	0.022	563.1	17.58
	16:00	41.7	79.3	0.042	0.063	14.08	0.022	566.7	16.08
	16:30	40.3	76.3	0.037	0.056	13.72	0.022	564.2	15.84
	17:00	41.5	75.4	0.039	0.059	14.42	0.022	566.4	16.54
	17:30	40.4	74.7	0.037	0.055	13.62	0.022	564.4	15.74
	18:00	42.2	75.6	0.041	0.062	15.48	0.022	567.6	17.68

Site: Tisdale's Quick Stop (event 2 of 3) UST Permit #: 18686

CALCULATIONS - Pollutant Mass Removal in pounds

Time	Elapsed Time	Q <sub>std</sub>	PPM <sub>meas</sub>	₽₽М <sub>с</sub>	Cc:m	ပိ	PMRc	PMR
_	(min)	(dsctm)	(mdd)	(mdd)	(mg/dsm³)	(lb/dscf)	(lb/hr)	(qp)
	0	20.50	42	168	84	1 1		00.00
	30	14.10	45	180	06	0.00001	0.00	0.00
	30	17.28	49	196	98	10000.0	0.01	00.00
	8	15.66	51	204	102	0.00001	0.01	00.0
3	o	14.66	54	216	108	0.00001	0.01	0.00
3	0	17.18	57	228	114	0.00001	0.01	0.00
30		20.29	59	236	118	0.00001	0.01	0.00
30	_	18.84	64	256	128	0.00001	0.01	0.00
30		17.96	62	248	124	0.00001	0.01	0.00
3		15.50	99	264	132	0.00001	0.01	0.00
3		16.54	69	276	138	0.00001	0.01	0.00
3		17.58	71	284	142	0.00001	0.01	0.00
ñ	0	16.08	9/	304	152	0.00001	0.01	0.00
က	Q	15.84	79	316	158	0.00001	0.01	0.00
	30	16.54	83	332	166	0.00001	0.01	0.01
	30	15.74	80	320	160	0.00001	0.01	0.00
(.,	30	17.68	81	324	162	0.00001	0.01	0.01

Total Gaseous Nonmethane Organic emissions removed in pounds from MW-3A and MW-4A

0.07

Site: Tisdale's Quick Stop (event 3 of 3) UST Permit #: 18686

CALCULATIONS - Flow at Dry Standard Cubic Feet Per Minute

Date	Time	Temp	Relative	B <sub>wsw</sub>	B <sub>ws</sub>	>	A	L v	Q <sub>std</sub>
		(0,)	(%)	(%)	(%)	(ft/sec)	(ff²)	(°R)	(dscfm)
2/25/2010	10:10	13.6	79.7	0.008	0.012	13.08	0.022	516.2	17.29
	10:40	25.8	75.3	0.016	0.025	11.73	0.022	538.1	14.69
	11:10	29.1	77.2	0.020	0.031	11.35	0.022	544.1	13.97
	11:40	28.8	74.5	0.019	0.029	10.52	0.022	543.5	12.98
	12:10	29.6	75.3	0.020	0.031	11.93	0.022	545.0	14.66
	12:40	30.2	74.1	0.020	0.031	12.07	0.022	546.0	14.78
	13:10	31.6	72.1	0.021	0.033	11.05	0.022	548.6	13.45
	13:40	29.8	76.3	0.020	0.031	10.68	0.022	545.3	13.10
	14:10	32.1	79.9	0.024	0.038	10.20	0.022	549.5	12.34
	14:40	33.3	81.3	0.027	0.041	11.25	0.022	551.6	13.51
	15:10	36.1	78.2	0.030	0.046	11.82	0.022	556.7	13.99
	15:40	36.4	76.6	0.030	0.046	12.07	0.022	557.2	14.27
	16:10	33.2	72.1	0.023	0.036	10.63	0.022	551.4	12.84
	16:40	37.1	75.3	0.031	0.047	10.35	0.022	558.5	12.20
	17:10	36.7	78.8	0.031	0.048	10.12	0.022	557.7	11.93
	17:40	39.7	76.3	0.036	0.055	11.30	0.022	563.1	13.10
	18:10	39.9	76.0	0.036	0.055	11.88	0.022	563.5	13.76

Site: Tisdale's Quick Stop (event 3 of 3) UST Permit #: 18686

CALCULATIONS - Pollutant Mass Removal in pounds

		Elapsed			200		,		į,
Date	Time	Time	$Q_{ m std}$	FFIVImeas	ਨ ਵ ਵ	د E::	ٌ	PINIKC	7 7 7 7
		(min)	(mjosp)	(mdd)	(mdd)	(mg/dsm <sub>3</sub> )	(lb/dscf)	(lb/hr)	(qII)
2/25/2010	10:10	0	17.29	73	292	146	: :	1	0.00
	10:40	30	14.69	75	300	150	0.00001	0.01	00.00
	11:10	30	13.97	79	316	158	0.00001	0.01	00.00
	11:40	30	12.98	82	328	164	0.00001	0.01	0.00
	12:10	30	14.66	80	320	160	0.00001	0.01	0.00
	12:40	30	14.78	98	344	172	0.00001	0.01	0.00
	13:10	30	13.45	88	352	176	0.00001	0.01	0.00
	13:40	30	13.10	93	372	186	0.00001	0.01	0.00
	14:10	30	12.34	93	372	186	0.00001	0.01	00.00
	14:40	30	13.51	98	392	196	0.00001	0.01	00.00
	15:10	30	13.99	86	392	196	0.00001	0.01	0.01
	15:40	30	14.27	100	400	200	0.00001	0.01	0.01
	16:10	30	12.84	106	424	212	0.00001	0.01	0.01
	16:40	30	12.20	107	428	214	0.00001	0.01	0.00
	17:10	30	11.93	111	444	222	0.00001	0.01	0.00
	17:40	30	13.10	117	468	234	0.00001	0.01	0.01
	18:10	30	13.76	124	496	247	0.00002	0.01	0.01

Total Gaseous Nonmethane Organic emissions removed in pounds from MW-2 and MW-3

# APPENDIX C

DISPOSAL MANIFEST(s)

Pleas	Print or type (Form designed for use on elite		OUS WASTE M	ANIF	EST		
	NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPAID No.			Manifest Document No.	489	2. Page 1
		dale Quick Step 19 Thurqood Marshal 19stree, S.C	11 Boulevard				
	5. Transporter 1 Company Name	6.	US EPA ID Number		A. State Trans	poder's ID	
	ARM ENVIRONMENTAL SET	AVICES, INC.			B. Transporter	***************************************	3-783-3314
	7. Transpoder 2 Company Name	8.	US EPA ID Number		C. State Trans	***************************************	
	9. Designated Facility Name and Site Address	10:	DC MA ID Aborboo	***************************************	D, Transporter	-	***************************************
	Water Recovery 435 Qld Mt. Holly	ru.	US EPA ID Number		E. State Facilit  F. Facility's Ph	· •ne	rateconyclistechnic drawning and proportion of the state
	Mt. Holly, S.C.				843	797-8674	<del></del>
	11. WASTE DESCRIPTION \$			12. Co No.	ontainers Type	†3. Totał Quantity	14. Unit WI./V
	NON-HAZARDOUS PETROLEU	JM CONTAMINATED S	SOIL				
G E N E	NON-HAZARDOUS PETROLE	JM CONTAMINATED V	VATER		T	2004	G.1.
RATO	C.						
R	d.						
	G. Additional Descriptions for Materials Listed Abo	ve			H. Handling Co	des for Wastes Listed A	Above
	15. Special Handling Instructions and Additional In					***************************************	
	PO BOX 50285 COLUMBIA, SC 29250	oes, inc.					
	16. GENERATOR'S CERTIFICATION: I hereby con proper condition for transport. The materials	rdify that the contents of this shipm described on this manifest are not	nent are fully and accurately describe subject to federal hazardous waster	d and are in egulations.	all respects		
		~4		***************************************	***************************************		Dale
	Billy Pitterger Agent	for Tisdale	Baly Pitters	<u> </u>			Month Day
T R	17. Transporter 1 Acknowledgement of Receipt of	Materials Quick Stop	<del></del>	J			Date
A	Printed Typed Name		Signature Bitto				Month Day
SPO	18. Transporter 2 Acknowledgement of Receipt of	Materials	1 Well rawy	<del>`'Y&amp;</del>	**************************************	**************************************	Date
R E R	Printed/Typed Name	***************************************	Signature		<del>714 - 114 (1141)</del>	35436101614546144141414141414141414141414141414	Month Day
F A C	19. Discrepancy Indication Space			464840000000000000000000000000000000000			<u></u>
L	20. Facility Owner or Operator; Certification of rece	ipt of the waste materials covered	by this manifest, except as noted in it	lem 19.			
Ī.	<i>j</i>	······································					Date

# NON-HAZARDOUS WASTE MANIFEST Please print or type (Form designed for use on elife (12 pitch) typewriter)

		NON-HAZARDOUS WASTE MANIFEST	1. Generalor's US EPA ID	) No.	Manifest Document No.	430	2. Page 1		
			Jale's Quick	Stop Yarshall Blid.					
		4. Generator's Phone ( )	pstree S	C C					
		5. Transporter 1 Company Name  ARM ENVIRONMENTAL SER'	0.	. US EPA ID Numb	PET	A. State Trans		AL 24.56.5 2	
		7. Transporter 2 Company Hame	8.	. US EPA ID Numb	jer	B. Transporter C. Slate Trans		803-783-3314	
						D. Transporte			
		9. Designated Facility Name and Sile Address Water Recovery	10	0. US EPA ID Numi	per	E. Slate Facili	ly's ID		
		435 Old Mt. Holly Mt. Holly S.C				F. Facility's Pt	1971 - 8674		
		11. WASTÉ DESCRIPTION	***************************************	aalidaalaa sagaa aa	12. C	ontainers Type	13. Total Quantity	14. Unil Wl./Vol.	
		NON-HAZARDOUS PETROLEU	M CONTAMINATE	D SOIL					
	GEZE	NON-HAZARDOUS PETROLEU	M CONTAMINATE	D WATER	-	T	1420	Gal.	
	R A T	<b>C</b> .							
STE	O R	d.							
A		G. Additional Descriptions for Materials Listed Above	H. Handling C	odes for Wastes Listed Above					
NON-HAZARDOUS WASTE									
A		15. Special Handling Instructions and Additional Info							
NON-		ARM ENVIRONMENTAL SERVIC PO BOX 50285 COLUMBIA, SC 29250	ES, INC.						
		16. GENERATOR'S CERTIFICATION: I hereby cert in proper condition for transport. The materials di	ify that the contents of this s	shipment are fully and accurate e not subject to federal hazard	ely described and are in ous waste regulations.	all respects			
		Stinfqd/Typgd Name		. Signature 🛆				Date	
	Ŧ	Billy Alexander Apart 4	or tisdak's A	vick Belly H	tenou_		Montt 2	Day Year   24   10	
	TRAN	PrintedTyped Name		Signature	•		Monti	Day Year	
	SP	18. Transporter 2 Acknowledgement of Receipt of M.	ota via ko	1 Billy R	Henger_		<u> </u>	1841/01	
	AZSPORTER	Printed/Typed Name	alerds	Signature	<u> </u>	generalis de l'accident de	Montl	Date Day Year	
	FA	19. Discrepancy Indication Space							
	Ç	20. Facility Owner or Operator; Certification of receip	t of the waste materials cov	ered by this manifest, except a	is noted in item 19.				
	L						Λ	Date	
	T	Printed/Typed Name		Signature	1 1		Month	Day Year	

# NON-HAZARDOUS WASTE MANIFEST Please print or type (Form designed for use on eitle (12 pitch) hypeweiler)

	79430	g prince type (resembled to the control of the ()	e proof ()possessi)						
		NON-HAZARDOUS	1. Generator's US EPA ID No.			Manifest Document No.	431	2. Page 1	
ľ	ŀ	3. Generator's Name and Mailing Address				***************************************	!~/!	ol	
		Tisa	dale Quick Stop 19 Thurqood Marsta ngstree,S.C	n RIV.					
		1/8	19 1 Marsha	11 Ou.		**************************************		***************************************	
		4. Generator's Phone ( )							
		5. Transporter 1 Company Name ARM ENVIRONMENTAL SER	ο.	US EPA ID Number		A. State Trans	······································	700 004 6	
	ŀ	7. Transporter 2 Company Name	8.	US EPA ID Number		B. Transporter C. State Trans		783-3314	
			***			D. Transporte	***************************************		
		9. Designated Facility Name and Site Address	10.	US EPA ID Number	enternamicanism monador estrició	E. State Facili	ty's ID		
		Water Recovery 435 010 Mt. Holly							
		ME CILL STORY		F. Facility's Ph	none				
	ľ	11. WASTE DESCRIPTION			12. Co	nlainers	_13,	14. Unit	
					No.	Туре	Total Quantily	Wt./Vol.	
		NON-HAZARDOUS PETROLEU	M CONTAMINATED S	OII		'			
				W 113					
	G	b.	***************************************				<u> </u>	··········	
	E	NON-HAZARDOUS PETROLEU	M CONTAMINATED V	VATER			1/ 11/	GJ.	
	E R	C.			l.	T)	1646	<u> </u>	
	Α	•							
	T O								
ш	R	d.							
S									
NON-HAZARDOUS WASTE		G. Additional Descriptions for Materials Listed Above	3		h	H. Handling C	odes for Wastes Listed Ab	ove	
S		~							
8									
2									
Z		To Consider the Million Land of the Administration of the Million Land of the Million							
ব		15. Special Handling Instructions and Additional Info							
Ξ		ARM ENVIRONMENTAL SERVICE PO BOX 50285	JES, INC.						
9		COLUMBIA, SC 29250							
econtile*									
		16. GENERATOR'S CERTIFICATION: I hereby cert	lify that the contents of this shipme	ant are fully and accurately described	and are in	all respects			
		in proper condition for transport. The materials d	esonoed on this marilest are not s	suojest to regeral nazardous waste feg	guiations.		· juntonia juntonia		
		Printed/Typgd Name		Signature				Date	
		Billy Pitterner Agent for	Tistale Quick	Billu Patters	201		<u> </u>	onih Day Year	
	I.	17. Transparter 1 Acknowledgement of Receipt of M	alerials \$ 0,0		J	***************************************		Date	
	-E420PO	Booled/Typed Name	<b>,</b>	Signature				onih Day Year	
	P C	18. Transporter 2 Acknowledgement of Receipt of M	alerials	I LOW FOUR	<del>1984</del>			<u> </u>	
	)ATER	Printed/Typed Name	**************************************	Signature			Мо	onih Day Year	
	F								
	F	19. Discrepancy Indication Space							
	A								
	L	20. Facility Owner or Operator; Certification of receip	of the waste materials covered b	y this manifest, except as noted in ite	m 19.				
	Ī	Printed/Typed Name	<del></del>	Signature 5	4	<del>,                                    </del>	<del></del>	Date onth Day/_Year	
	Ÿ	Dan't!	Nat	L.	/M_	bul	, MC	onth Day Year	



### C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

MR MARTY EASLER 196 RICHBURG ROAD **GREELEYVILLE SC 29056** 

APR 2 2 2011

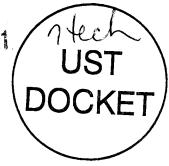
Re:

Four AFVR Events

Tisdales Quick Stop, 1989 Thurgood Marshall Blvd, Kingstree, SC

UST Permit # 18686, CA # 41220 Release reported March 30, 2001 AFVR Report received March 19, 2010

Williamsburg County



Dear Mr. Easler:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (SCDHEC) has reviewed the referenced report and noted the findings. The next necessary scope of work is to conduct 4 Aggressive Fluid Vapor Recovery (AFVR) events to remove free phase product from MW-2, and MW-3. Two events should be conducted on MW-2 and two events should be conducted on MW-3. AFVR events should not be conducted on a well less than 21 days from the occurrence of the last event on that well.

Magnehelic gauges must be installed on the extraction wells and monitoring wells immediately surrounding the extraction wells. The AFVR should be completed by establishing a vacuum on the subsurface through the existing monitoring wells. The unit must be capable of providing a minimum airflow of 250 cubic feet per minute (CPM) at 25 inches Mercury vacuum. An airtight seal must be established on the top of each extraction well. Drop tubes inserted in the well(s) should have an inside diameter of at least one (1) inch and should initially be installed six inches below the bottom of the product or the top of the well screen whichever is deeper. The drop tubes should be lowered deeper in the well only if the well exhibits slow recovery (repeatedly goes dry) or if it is deemed necessary to establish a steeper hydraulic gradient to enhance free product migration toward the well. The goal is to maximize the recovery of free product and petroleum vapors in the capillary fringe and minimize the recovery of ground water.

Cost Agreement # 41220 has been approved in the amount shown on the enclosed cost agreement form for the aforementioned scope of work. The AFVR activities may proceed immediately upon receipt of this letter. The report submitted at the completion of these activities should include the following:

- A narrative portion documenting the AFVR events noting site conditions, the name of the AFVR contractor, field personnel, date, time the AFVR events started and ended, ambient air temperature, and general weather conditions during the AFVR events.
- A brief description of the completed work scope and any relevant descriptions pertaining to the data tables.
- A table summarizing the airflow (in CFM) and volatile air emissions concentrations collected from the stack of the truck every thirty minutes through the duration of the events. The table shall also document which well(s) were being recovered from during that time interval.
- A table summarizing the magnehelic gauge measurements from all applicable wells on a thirty-minute time interval.
- The total volume of water recovered (gallons).
- The total volume of free phase product recovered (typically measured with a product/water interface device inserted into the top of the tanker at the completion of the event and then converted to an approximate volume).
- The total weight of petroleum removed as vapor. This is calculated based on the airflow rate and the concentration of vapor.
- A table documenting the free product thickness in each well before and after the recovery events.
- Scaled base map depicting the location of the extraction wells and the surrounding wells equipped with magnehelic gauges.
  SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

Recovered free phase petroleum and groundwater must be accepted by a permitted treatment facility.
 There can be no spillage or leakage in transport. A copy of the disposal manifest from the receiving facility that clearly designates the quantity received must be included as an appendix to the final report.

Geological Resources, Inc. can submit an invoice for direct billing from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. Please note that all applicable South Carolina certification requirements apply to the laboratory services, well installation, and report preparation. All site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

An AFVR report and invoice are due within 90 days from the date of this letter. Interim invoices may not be submitted for this scope of work. If the invoice is 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 from the Division is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the Division for the cost to be paid. The SCDHEC 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, SCDHEC 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.

The Department grants pre-approval for transportation of virgin petroleum impacted 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.

On all correspondence concerning this site, please reference **UST Permit # 18686 and CA # 41220.** If there are any questions concerning this project, please contact me at (803) 896-4085 or by email at <a href="mailto:martinjm@dhec.sc.gov">martinjm@dhec.sc.gov</a>.

Sincerely,

Jim Martin, Hydrogeologist Corrective Action Section

UST Management Division

Bureau of Land and Waste Management

enc: Approved Cost Agreement

cc: Geological Resources, Inc., 2301 Crown Point Executive Drive, Suite F, Charlotte, NC 28227 (w/enc)

Technical file (w/o enc)

## Approved Cost Agreement 41220

Facility: 18686 TISDALES QUICK STOP

MARTINJM PO Number:

Task / Description Categories	Item Description	Qty / Pct	Unit Price	<u>Amount</u>
04 MOB/DEMOB				
	A EQUIPMENT	4.0000	575.00	2,300.00
S.	B PERSONNEL	4.0000	290.00	1,160.00
17 DISPOSAL				
	A2 WASTEWATER - PUMPING TEST	4,000.0000	0.60	2,400.00
19 RPT/PROJECT MNGT & COORDINATIO			- · · · · · · · · · · · · · · · · · · ·	
	PCT PERCENT	0.1500	18,980.00	2,847.00
23 EFR			*	· , · · · · · · · · · · · · · · · · · ·
	A 8 HOUR EVENT	4.0000	3,000.00	12,000.00
	C OFF GAS TREATMENT	32.0000	35.00	1,120.00
		Total Amo	unt	21,827.00



# Geological Resources, Inc.

May 17, 2011

Mr. Jim Martin
South Carolina Department of Health
and Environmental Control
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

Re:

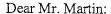
Aggressive Fluid Vapor Recovery Events

Tisdale's Quick Stop

1989 Thurgood Marshall Blvd., Kingstree, Williamsburg County, South Carolina

UST Permit No. 18686

CA No. 41220



Geological Resources, Inc. (GRI) has completed the first two of four aggressive fluid vapor recovery (AFVR) events at the above referenced site in Kingstree, South Carolina. The AFVR events were conducted consecutively on May 3 and May 4, 2011. A copy of the AFVR reports and an interim invoice are attached. Please contact me at (704) 845-4010 with any questions.

Sincerely,

John M. B. License No

enclosure

cc:

file

2301 Crown Point Executive Drive Suite F Charlotte, NC 28227 Phone: (704) 845-4010 / (888) 870-4133 Fax: (704) 845-4012



# HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Monday, May 16, 2011

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on May 3, 2011. Included is the documentation for the event. The 8 hour event was conducted on monitoring well MW-2. If you have any questions, please do not hesitate to contact our office.

Sincerely,

Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC May 10, 2011

## **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 05/03/11. The ambient temperature was 71 deg F and weather conditions were sunny. The depths to product and water were measured prior to and subsequent to the AFVR event. (See attached data) Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event.

The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

### **Pollutant Mass Removal**

Total weight of 0.495 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

## Liquid Disposal

Approximately 1628 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

# **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

# APPENDIX A AFVR FIELD NOTES

# HERR, Inc.

# AFVR - Field Notes

Site Name: TISDACE'S QUICK STOP Location: KINGSTREE, SC	
AFVR Contractor: 竹匠に、これい。 Personnel: CRI -	
Date: 5/3/11 Ambient Air Temperature and General Weather Condition: Sunny-Jour 7/3	-713
Start Time 1: 8:00 Stop Time 1: 4:00 Start Time 2: Stop Time 2:	
Total volume of water removed during the 8-hour AFVR Event: 1628 94	
Total volume of product removed during the 8-hour AFVR Event:	
Product Recovery Rate:	

Relevant				
Estimated volume of water removed during this event	0.11	- Load		
Depth to water at cessation of vacuuming (ft. below TOC)	17.69			
Depth to product at cessation of at cessation of vacuuming (ft. below TOC) (ft. below TOC)	101			
Depth to water prior to stinger placement (ft. below TOC)	52.41			
Depth to product prior to stinger placement (ft. below TOC)	•			
Monitoring Well	Mw 2			

# TISDALE'S QUICL STOP 5/3/11

# **Aggressive Fluid/Vapor Recovery Notes**

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

	MW- 2	MW-	MW-		Stinge	r Placement	
Time	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Stinger Depth	Product Depth	Water Level	Notes
8:00	20			15'	-0-	14.29	
8:30	∂0						
9:00	20						
9:30	20						
10.00	20						
10:30	20						
11:00	20						
11:30	20						
12:00	20						
/2:30	ଚତ						
1:00	90						
1:30	90	_	·				
2,00	90						
9.30	20						
3.00	90						
3:30	90						
4:00	20	_			-0-	17.69	

Vacuum at Pump:_	<u> </u>		

# TISOACE'S QUICKSTOP 5/3/11

# **Aggressive Fluid/Vapor Recovery Notes**

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

	RA!	w-	MW-		MW-		MW-	
Time	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)
8:00	13.96	0				,		(9)
8:30		0						
9:00		0						
9:30		0						
10.00		0						
10:30		0	-					
11:00		O					77	
//:30		0						
12:00		0						
12:30		0						
1:00		0						
1:30		0						
2:00		0						
2:30		٥						
3:00		0						
3,30		0						
4:00	13.95	D			-			

# TISOALES QUICLESTOP - 5/3/11

# Aggressive Fluid/Vapor Recovery Notes

Time	PID <u>at stack</u> (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (F°)	Relative Humidity (%)	Other
8:00	218	145	332	96	45	
8:30	278	162	764	100	45	
9:00	282	165	3 <b>5</b> 8	/03	45	
9:30	341	196	369	106	44	
10:00	428	234	372	/08	44	
10:30	472	265	385	/07	44	
11:00	467	255	392	108	44	
11:30	458	251	387	/08	44	
12:00	462	256	396	10%	44	
12:30	466	262	412	108	44	
1:00	439	254	408	/O8	44	
1:30	396	248	392	/D8	44	
2:00	387	241	415	/08	44	
2:30	766	224	410	/08	44	
3:00	345	2()	426	107	44	
3:30	351	212	418	107	44	
4:00	342	205	411	107	44	

# APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site:

Tisdale's Quick Stop

**UST Permit #:** 18686

Calculations - Flow at DSCFM												
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)					
5/3/11	8:00	332	0.022	96.0	45	0.016507704	6.82					
5/3/11	8:30	364	0.022	100.0	45	0.018702695	7.41					
5/3/11	9:00	358	0.022	103.0	45	0.020517186	7.23					
5/3/11	9:30	369	0.022	106.0	44	0.021971220	7.41					
5/3/11	10:00	372	0.022	108.0	44	0.023345247	7.43					
5/3/11	10:30	385	0.022	107.0	44	0.022648832	7.71					
5/3/11	11:00	392	0.022	108.0	44	0.023345247	7.83					
5/3/11	11:30	387	0.022	108.0	44	0.023345247	7.73					
5/3/11	12:00	396	0.022	108.0	44	0.023345247	7.91					
5/3/11	12:30	412	0.022	108.0	44	0.023345247	8.23					
5/3/11	1:00	408	0.022	108.0	44	0.023345247	8.15					
5/3/11	1:30	392	0.022	108.0	44	0.023345247	7.83					
5/3/11	2:00	415	0.022	108.0	44	0.023345247	8.29					
5/3/11	2:30	410	0.022	108.0	44	0.023345247	8.19					
5/3/11	3:00	426	0.022	107.0	44	0.022648832	8.53					
5/3/11	3:30	418	0.022	107.0	44	0.022648832	8.37					
5/3/11	4:00	411	0.022	107.0	44	0.022648832	8.23					
Averages		391	0.022	106.18	44.18	0.022258903	7.841					

Site: Tisdale's Quick Stop

**UST Permit #:** 18686

		Calcul	ations - Po	llutant	Mass R	emoval in po	ounds			
Marg. Elap. Time	Elapsed Time (min)	Flow (DSCFM) (Qstd)	PPM measured (ppm)	K (#C- gas)	PPMg	Cg:m (mg/dsm^3)	Cg (lb/dscf)	PMRg (lb/hr)	PMR (lb)	
0	0	6.82	218	1	218	1159.29	0.000072374	0.030	0.000	
30	30	7.41	278	1	278	1478.35	0.000092294	0.041	0.021	
30	60	7.23	282	1	282	1499.63	0.000093622	0.041	0.020	
30	90	7.41	341	1	341	1813.38	0.000113209	0.050	0.025	
30	120	7.43	428	1	428	2276.03	0.000142092	0.063	0.032	
30	150	7.71	472	1	472	2510.01	0.000156700	0.072	0.036	
30	180	7.83	467	1	467	2483.42	0.000155040	0.073	0.036	
30	210	7.73	458	1	458	2435.56	0.000152052	0.071	0.035	
30	240	7.91	462	1	462	2456.83	0.000153380	0.073	0.036	
30	270	8.23	466	1	466	2478.11	0.000154708	0.076	0.038	
30	300	8.15	439	1	439	2334.52	0.000145744	0.071	0.036	
30	330	7.83	396	1	396	2105.86	0.000131469	0.062	0.031	
30	360	8.29	387	1_	387	2058.00	0.000128481	0.064	0.032	
30	390	8.19	366	1	366	1946.32	0.000121509	0.060	0.030	
30	420	8.53	345	1	345	1834.65	0.000114537	0.059	0.029	
30	450	8.37	351	1	351	1866.56	0.000116529	0.059	0.029	
30	480	8.23	342	1	342	1818.70	0.000113541	0.056	0.028	
Averages		7.84	382.24	1.00	382.24	2032.66	0.000126899	0.060	0.029	
Total Emission in pounds: 0.4										

### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K Cg:m = PPMg \* (Mg/K3) Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3 PMRg = Cg \* Qstd \* 60 min/hr PMR = PMRg \* ((T2 -T1)/60)

Qstd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer) Cross Sectional Area = area in ft<sup>2</sup> of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

 $K3 = 24.07 \text{ dsm}^3/1E6 \text{ mg-mole}$ , mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

# NON-HAZARDOUS WASTE

# **NON-HAZARDOUS WASTE MANIFEST**

Plea	se print or type (Form designed for use on elite (12 pitch) typewriter)					
	NON-HAZARDOUS 1. Generator's US EP/ WASTE MANIFEST	A ID No.	·	Manifest Document No	),	2. Page 1 of
	3. Generator's Name and Mailing Address TISOACE'S QUICKSTOP				estation de la constitución de la c	
	1989 THURESON MARSHALL KINGSTRE	4,5c				
	5. Transporter 1 Company Name	6. US EPA ID Number		A. State Tran	sported's ID	
	HERR Inc.	INCR-000139811	<u>.</u>	B. Transporte		7-1766
	7. Transporter 2 Company Name		C. State Tran			
			D. Yransporte	r 2 Phone		
	9. Designated Facility Name and Site Address HEMZ, Inc.		E. State Facil	ity's ID		
	217 N 701 BYPASS TABOR CITY, NC 28463	F. Facility's P	9/0 - 657-	L788		
	11. WASTE DESCRIPTION	NCR-00013981	12. Co No.	ntainers Type	13. Total Quantity	14. Unit Wt./Vol.
	· ā.		<del>                                     </del>	. 7,000	3.400,703	111270
0	Non-HAZ Petroleon Contact	Mater Mr	1	V.7.	1628	GALIS
GEZ				:		
E	C.					
A						
O R						
					."	
	G. Additional Descriptions for Materials Listed Above		J	H. Handling C	odes for Wastes Listed Abov	
	10 Consiste Management			***************************************		
	15. Special Handling Instructions and Additional Information					
	16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of the in proper condition for transport. The materials described on this manifest	is shipment are fully and accurately described are not subject to federal hazardous waste re	and are in a gulations.	ali respects		
	Ship of The said Marie					Date
	Printed/Typed Name	Signature			Mon	th Day Year
干	17, Transporter 1 Acknowledgement of Receipt of Materials			·····		Date
R	Priglad/Typed Name	Signatura L D	75	*	Moni	
200	Steve Bivenbank	Shell	<u> </u>	<i>.</i>		7311
Q R	18. Transporter 2 Acknowledgement of Receipt of Materials	V				Date
一年 人名のりつけ 一年 日	Printed/Typed Name	Signature	·		Mon	h Day Year
F A	19. Discrepancy Indication Space					
C	CO English County of County		12			
L	<ol> <li>Facility Owner or Operator, Certification of receipt of the waste materials of</li> </ol>	zovereo by mis manifest, except as noted in ite	នពៈមេ.		J	Date
<del> </del>	Printed/Typed Name	Signature 11.10			IMont	
Ľ	Marc Cox	1/4/10				14 1/1



## HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Monday, May 16, 2011

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on May 4, 2011. Included is the documentation for the event. The 8 hour event was conducted on monitoring well MW-3. If you have any questions, please do not hesitate to contact our office.

Sincerely

Mare Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC May 4, 2011

### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 05/04/11. The ambient temperature was 67 deg F and weather conditions were overcast. The depths to product and water were measured prior to and subsequent to the AFVR event. (See attached data) Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event. The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

### Pollutant Mass Removal

Total weight of 0.576 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

### Liquid Disposal

Approximately 1351 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

#### **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

## APPENDIX A AFVR FIELD NOTES

# HERR, Inc.

# AFVR - Field Notes

Site Name: 11504CE'S QUICL STOP	Location: KINGSTREE, SC
AFVR Contractor: ドライン TAC. これい	Personnel: C/CI -
Date: \$\frac{9}{1}\$! Ambient Air Temperature and	Ambient Air Temperature and General Weather Condition:
Stop	Start Time 2: Stop Time 2:
moved during the 8-hour AFVR Event:	51 Jul
Total volume of product removed during the 8-hour AFVR Event: Appra. 25	Apprx: 2 22)
Product Recovery Rate:	

	Depth to product prior to stinger	Depth to water prior to stinger	Depth to product at cessation of	Depth to water at cessation of	Estimated volume	Relevant
Monitoring Well	placement (ft. below TOC)	placement (ft. below TOC)	vacuuming (ft. below TOC)	vacuuming (ft. below TOC)	of water removed during this event	Observations
MW 3	13.93	13.7%	101	15.50	" July	
					1871/165/	

#### TISDALES QUICK STOP - 5/4/11

#### **Aggressive Fluid/Vapor Recovery Notes**

	MW- 3	MW-	MW-		Stinge	r Placement	
Time	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Stinger Depth	Product Depth	Water Level	Notes
8:00	20			15'	13.93	13.95	
8:30	20						
9:00	20						
9:30	26						
10:00	20						
10:30	20						
11:00	20						
11:30	20						
12:00	20						
12:30	20						
1:00	20						
1:30	∂0			,			
2:00	20						
2:30	20						
3:00	20						
3:30	90						
4:00	20				-0-	15.90	
							-

Vacuum at Pump: 22

#### TISDACE'S QUICKSTOP - 5/4/11

#### Aggressive Fluid/Vapor Recovery Notes

	M	w- /	M	w. 4	M	ıw-	N	nw-
Time	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)
8:00	13.96	0	/3.87	0				
8:36		0		0				
9:00		0		0				
9:30		0		0				
16.00		0		δ				
10.30		0		٥			-	
11:00		0		0				
11:00		٥		D				
12:00		٥		0			·	
12:30		٥		٥				
1.00		D		٥				
<i>j</i> .30		٥		6				
2:00		0		D				
2:30		٥		0				
3.00		٥		٥				
3:30		D		٥				
4.00	1356	٥	12.86	D				
							· · · · · · · · · · · · · · · · · · ·	<u> </u>
								<u> </u>

#### TISDALE'S QUICKSTOP. 5/4/11

#### Aggressive Fluid/Vapor Recovery Notes

Time	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature	Relative Humidity (%)	Other
8:00	312	185	529	78	65	<u> </u>
8:30	328	197	521		65	
9:00	411	291	<i>53</i> 2	85 87	65	
9:30	377	257	545	94	65	
10:00	352	238	563	/00	65	
10:30	236	227	566	/01	65	
11'.00	324	220	574	/03		
11.30	312	208	<i>5</i> 82	104	65 65	
12'.00	305	192	589	104	65	
12.30	296	181	552	104	65	
1:00	299	185	588	105	65	
1:30	991	173	596	105	65	
9.00	275	166	603	105	65	
2:30	263	151	552	105	65 65	
3:00	271	159	608	105	65	
3:30	278	162	605	105	65	
4:00	981	167	598	105	65	
	-					

### APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site: Tisdale's Quick Stop UST Permit #: 18686

			Calculat	ions - Flow a	t DSCFM		
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)
5/4/11	8:00	529	0.022	78.0	65	0.013394060	11.27
5/4/11	8:30	521	0.022	82.0	65	0.015312026	10.99
5/4/11	9:00	532	0.022	85.0	65	0.016908559	11.15
5/4/11	9:30	545	0.022	94.0	65	0.022638549	11.17
5/4/11	10:00	563	0.022	100.0	65	0.027380918	11.36
5/4/11	10:30	566	0.022	101.0	65	0.028253968	11.39
5/4/11	11:00	574	0.022	103.0	65	0.030076874	11.49
5/4/11	11:30	582	0.022	104.0	65	0.031028151	11.61
5/4/11	12:00	589	0.022	104.0	65	0.031028151	11.75
5/4/11	12:30	592	0.022	104.0	65	0.031028151	11.81
5/4/11	1:00	588	0.022	105.0	65	0.032006961	11.70
5/4/11	1:30	596	0.022	105.0	65	0.032006961	11.86
5/4/11	2:00	603	0.022	105.0	65	0.032006961	12.00
5/4/11	2:30	592	0.022	105.0	65	0.032006961	11.78
5/4/11	3:00	608	0.022	105.0	65	0.032006961	12.10
5/4/11	3:30	605	0.022	105.0	65	0.032006961	12.04
5/4/11	4:00	598	0.022	105.0	65	0.032006961	11.90
Averages		575.47	0.022	99.41	65.00	0.027711655	11.611

Site:

Tisdale's Quick Stop

**UST Permit #:** 18686

		Calcul	ations - Po	llutant	Mass R	emoval in pe	ounds		
Marg. Elap.	Elapsed Time	Flow (DSCFM)	PPM measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)
0	0	11.27	312	1	312	1659.16	0.000103581	0.070	0.00
30	30	10.99	328	1	328	1744.25	0.000108893	0.072	0.03
30	60	11.15	411	1	411	2185.63	0.000136449	0.091	0.04
30	90	11.17	377	1	377	2004.82	0.000125161	0.084	0.04
30	120	11.36	352	1	352	1871.87	0.000116861	0.080	0.04
30	150	11.39	336	1	336	1786.79	0.000111549	0.076	0.03
30	180	11.49	324	1	324	1722.97	0.000107565	0.074	0.03
30	210	11.61	312	1_	312	1659.16	0.000103581	0.072	0.03
30	240	11.75	305	1	305	1621.94	0.000101257	0.071	0.03
30	270	11.81	296	1	296	1574.08	0.000098270	0.070	0.03
30	300	11.70	299	1	299	1590.03	0.000099266	0.070	0.03
30	330	11.86	281	1	281	1494.31	0.000093290	0.066	0.03
30	360	12.00	275	1	275	1462.40	0.000091298	0.066	0.03
30	390	11.78	263	1	263	1398.59	0.000087314	0.062	0.03
30	420	12.10	271	1	271	1441.13	0.000089970	0.065	0.03
30	450	12.04	278	1	278	1478.35	0.000092294	0.067	0.03
30	480	11.90	281	1	281	1494.31	0.000093290	0.067	0.03
Averages		11.61	311.82	1.00	311.82	1658.22	0.000103523	0.072	0.03
						Total Er	nission in pound	is:	0.57

#### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K
Cg:m = PPMg \* (Mg/K3)
Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3
PMRg = Cg \* Qstd \* 60 min/hr
PMR = PMRg \* ((T2 -T1)/60)

Qstd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer) Cross Sectional Area = area in ft<sup>2</sup> of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

 $K3 = 24.07 \text{ dsm}^3/1E6 \text{ mg-mole}$ , mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

# NON-HAZARDOUS WASTE

#### **NON-HAZARDOUS WASTE MANIFEST**

Piez	se print or type (Form designed for use on elite (1)	2 pitch) typewriter)					
	NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No.			Manifest Document No.		2. Page 1
	3. Generator's Name and Mailing Address TISOALES QU/CKSTo/	0					<u></u>
	1989 THURLOWD MARS	HALL KINGS	STREE SC			·	
	5: Transporter 1 Company Name	.8.	US EPA ID Number		A. State Trans	porter's ID	
	HELL IX.	Ι.Λ.	ICR - 000/398	16	B. Transporter		7-6399
	7. Transporter 2 Company Name	8.	US EPA ID Number		C. State Trans		
					D. Transporter	2 Phone	
	9. Designated Facility Name and Site Address HEパ名 IAc .	10.	US EPA ID Number		E. State Facilit	910-653-6	399
	20 N 701 Bypass TARON CITY NO	DRYLT IN	10/2 · 000/252	H	F. Facility's Ph	ane	
	11. WASTE DESCRIPTION '/			12. Cd	ntainers	13.	,14,
	:			No.	Туре	Total Quantity	Unit Wit/Vol.
	Non-HAZ Petroleun	Cortect 1	Jetonik	į	V.7.	1351	GAC
G	.b.		······································			**************************************	
GWZWR							
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R	<b></b>						
T							
O R	d.						
n	<b>V</b>				:		
	G. Additional Descriptions for Materials Listed Above	·	***************************************	<u> </u>	H. Handling Co	des for Wastes Listed Abov	re
					-		
N	15. Special Handling Instructions and Additional Inform	nation					
					de la la companya de	A LONG AND	1 1
	<ol> <li>GENERATOR'S CERTIFICATION: I hereby certified in proper condition for transport. The materials des</li> </ol>	y that the contents of this shipm scribed on this manifest are not	ent are fully and accurately describe subject to federal hazardous waste r	d and are in egulations.	all respects		
						F*************************************	Date
	Printed/Typed Name		Signature	······································	······································	Mon	
T R	17. Transporter 1 Acknowledgement of Receipt of Mai	lerials	<u> </u>				Date
A	Printed/Typed Name		Signature	<b>*</b>	11	Mon	th Day Year
S	Steve proceasi	<del>~</del> \	1/2000	1 1,00		5	1411
B	Transporter 2 Acknowledgement of Receipt of Mai     Printed/Typed Name	terials	18				Date:
-RAZSPORTER	French Lybon (withe		Signature			Mon	th Day Year
	19. Discrepancy Indication Space	<del></del>			***************************************		
F							
A							
Ī	29. Facility Owner or Operator; Certification of receipt	of the waste materials covered	by this manifest, except as noted in i	tem 19.			
L							Date
T	Printed/Typed Name	······································	Signature /	4		Mon	ib Day Year
Y	Marc Co			<u>ノ                                    </u>			191/





#### Geological Resources, Inc.

June 7, 2011

Mr. Jim Martin
South Carolina Department of Health
and Environmental Control
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

Re: Aggressive Fluid Vapor Recovery Events

Tisdale's Quick Stop

1989 Thurgood Marshall Blvd., Kingstree, Williamsburg County, South Carolina

UST Permit No. 18686

CA No. 41220

Dear Mr. Martin:

Geological Resources, Inc. (GRI) has completed the third of four aggressive fluid vapor recovery (AFVR) events at the above referenced site in Kingstree, South Carolina. The AFVR event was conducted on May 24, 2011. A copy of the AFVR reports and an interim invoice are attached. Please contact me at (704) 845-4010 with any questions.

Sincerely,

John

enclosure

cc:

file



#### HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Monday, May 30, 2011

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on May 24, 2011. Included is the documentation for the event. The 8 hour event was conducted on monitoring well MW-2. If you have any questions, please do not hesitate to contact our office.

Sincerely,

Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC May 24, 2011

#### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 05/24/11. The ambient temperature was 84 deg F and weather conditions were sunny. The depths to product and water were measured prior to and subsequent to the AFVR event. (See attached data) Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event.

The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### **Pollutant Mass Removal**

Total weight of 0.866 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### Liquid Disposal

Approximately 1326 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

#### **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

### APPENDIX A AFVR FIELD NOTES

# HERR, Inc.

# AFVR - Field Notes

Site Name: TISO ACE'S QUICKSTOP Location: Kin 65 TAGE SC	tor: HEAL Tac Steve Personnel: GAI -	7-11 Ambient Air Temperature and General Weather Condition: Survey - Jour 840	Stop Time 1: 4.00 Start Time 2: Stop Time 2:	Total volume of water removed during the 8-hour AFVR Event: /356 3cc	Total volume of product removed during the 8-hour AFVR Event: Appx: 2.5 5.1	zry Rate:
Site Name: TISO ACE'S	AFVR Contractor: HEMZ, TAL	Date: 5-24-11	Start Time 1: 8:00	Total volume of water remo	Total volume of product ren	Product Recovery Rate:

<sub>so</sub>	T	Ī		T	
Relevant Observations		Harris and the state of the sta			 The second secon
Estimated volume of water removed during this event			The state of the s		
Depth to water at cessation of vacuuming (ft. below TOC)	_S/+ '3'/				
Depth to product at cessation of vacuuming (ft. below TOC)					
Depth to water prior to stinger placement (ft. below TOC)	17,00				
Depth to product prior to stinger placement (ft. below TOC)		13.60			
Monitoring Well	12 E				

### TISDALES QUICKSTOP - 5/24/11

#### **Aggressive Fluid/Vapor Recovery Notes**

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

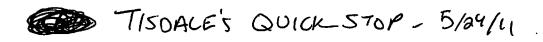
	mw- 2	MW-	MW-		Stings	r Placement	,
Time		Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Stinger Depth	Product Depth	Water Level	Notes
8.00	22			15'	13.66	14.01	
8:30	23						
9'.00	23			W. 14			
9:30	23						
10.00	23						
10:30	23						
11:00	23						
11:30	23						
12,00	23						
12:30	23						
1:00	23	-					
1:30	23						
2',00	23						
21.30	23						
3',00	23						
3'.30	23					!	
4:00	23				·		

Vacuum at Pump:	25		

#### TISDALE'S QUICKSTOP - 5/24/11

#### Aggressive Fluid/Vapor Recovery Notes

	M	w. /				IW-	N	IW-
Time	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)
8,00	14.50	.12	14.09	.16			<del> </del>	
8:30		./5		./6				
9'.00		.20		.20				
9130		.20		.20				
10,00		.21		,22				
1630		.21		.22			<del></del>	
11:00		.25		.22			,	
11:30		.25		.22				····
12'.00		,30		. 22				
12:30		.30		.22	· · · · · · · · · · · · · · · · · · ·			
/ ',00		.30		.22				
/:30		٥٤,		. 24			-	
21.00		.30		.24				
2:30		.30		·25	1 <b>1-</b>			
3'.0%		.72		. 25				
3:30		.72		.25	7			
41.00	14.49	.32	14.09	·25				
			•					
					-			
			-					



#### **Aggressive Fluid/Vapor Recovery Notes**

Time	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Celsius)	Relative Humidity (%)	Other
8,00	609	447	428	35.6	48	
8:30	623	451	447	36.7	48	
9:00	6/8	455	472	37.8	48	
9'30	610	447	485	42.2	48	
10,00	578	413	508	1.34	48	
101.30	571	418	512	47.8	48	
11:00	535	421	516	47.8	48	
1/:30	557	372	522	48.9	48	
12:00	548	386	5/9	50.0	48	
/21.30	632	357	528	51.7	48	·
1:00	526	345	521	51.7	48	
1:30	528	341	526	51.7	48	
2:00	521	336	534	51.7	48	
5,'39	514	306	541	51.7	48	
3.08	502	291	546	51.7	48	
3:30	488	277	552	51.7	48	
41.00	455	251	557	51.7	48	

### APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site:

Tisdale's Quick Stop

UST Permit #: 18686

			Calculat	ions - Flow a	t DSCFM		
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)
5/24/11	8:00	428	0.022	96	48	0.017639427	8.78
5/24/11	8:30	447	0.022	98	48	0.018781507	9.13
5/24/11	9:00	472	0.022	100	. 48	0.019989612	9.59
5/24/11	9:30	485	0.022	108	48	0.025554736	9.67
5/24/11	10:00	508	0.022	115	48	0.031538722	9.94
5/24/11	10:30	512	0.022	118	48	0.034474598	9.93
5/24/11	11:00	516	0.022	118	48	0.034474598	10.01
5/24/11	11:30	522	0.022	120	48	0.036569080	10.07
5/24/11	12:00	519	0.022	122	48	0.038780279	9.96
5/24/11	12:30	528	0.022	125	48	0.042329898	10.04
5/24/11	1:00	521	0.022	125	48	0.042329898	9.91
5/24/11	1:30	526	0.022	125	48	0.042329898	10.00
5/24/11	2:00	534	0.022	125	48	0.042329898	10.15
5/24/11	2:30	541	0.022	125	48	0.042329898	10.29
5/24/11	3:00	546	0.022	125	48	0.042329898	10.38
5/24/11	3:30	552	0.022	125	48	0.042329898	10.50
5/24/11	4:00	557	0.022	125	48	0.042329898	10.59
Averages		512.59	0.022	117.35	48	0.035084808	9.938

Tisdale's Quick Stop

**UST Permit #: 18686** 

	Calculations - Pollutant Mass Removal in pounds									
Marg. Elap.	Elapsed Time	Flow (DSCFM)	PPM measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR	
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)	
0	0	8.78	609	1	609	3238.55	0.000202183	0.107	0.000	
30	30	9.13	623	1	623	3313.00	0.000206831	0.113	0.057	
30	60	9.59	618	1	618	3286.41	0.000205171	0.118	0.059	
30	90	9.67	610	1	610	3243.87	0.000202515	0.117	0.059	
30	120	9.94	578	1	578	3073.70	0.000191891	0.114	0.057	
30	150	9.93	571	1	571	3036.48	0.000189567	0.113	0.056	
30	180	10.01	535	1	535	2845.04	0.000177616	0.107	0.053	
30	210	10.07	557	1	557	2962.03	0.000184919	0.112	0.056	
30	240_	9.96	548	1	548	2914.17	0.000181931	0.109	0.054	
30	270	10.04	532	1	532	2829.08	0.000176620	0.106	0.053	
30	300	9.91	526	1	526	2797.17	0.000174628	0.104	0.052	
30	330	10.00	528	1	528	2807.81	0.000175292	0.105	0.053	
30	360	10.15	521	1	521	2770.59	0.000172968	0.105	0.053	
30	390	10.29	514	1	514	2733.36	0.000170644	0.105	0.053	
30	420	10.38	502	1	502	2669.55	0.000166660	0.104	0.052	
30	450	10.50	488	1	488	2595.10	0.000162012	0.102	0.051	
30	480	10.59	455	1	455	2419.61	0.000151056	0.096	0.048	
Averages		9.94	547.94	1.00	547.94	2913.85	0.000181912	0.108	0.051	
	Total Emission in pounds: 0.866									

#### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K
Cg:m = PPMg \* (Mg/K3)
Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3
PMRg = Cg \* Qstd \* 60 min/hr
PMR = PMRg \* ((T2 -T1)/60)

Qstd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer) Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

K3 = 24.07 dsm<sup>3</sup>/1E6 mg-mole, mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

## APPENDIX C LIQUID DISPOSAL MANIFEST

# NON-HAZARDOUS WASTE

#### **NON-HAZARDOUS WASTE MANIFEST**

Pleas	e print or type (Form designed for use on elite (	12 pitch) typewriter)					1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No.	**************************************		Manifest Document No.		2. Page 1 of
	3. Generator's Name and Mailing Address TISDALES QUICKST	of					
	1989 THURGOOD MARS	HALL ILINGS	THUESE				
	5. Transporter 1 Company Name	ъ.	US EPA ID Number		A. State Trans	porter's ID	
	HERR, Inc. 7. Transporter 2 Company Name	ĪN.	CR-000138816		B. Transporter	,	3-6349
	7. Transporter 2 Company Name	8.	US EPA ID Number		C. State Trans		
					D. Transporter	2 Phone	
	9. Designated Facility Name and Site Address HEMM, The.	10.	US EPA ID Number		E. State Facilit	y's ID	
	217 N. 701 Bypass				F. Facility's Ph		
	TABON CITY NO 284	163 N	CP-000139816			910-653-	-6399
	11. WASTE DESCRIPTION			12, Co		13. Total	Unit
	a.			No.	Туре	Quantity	Wt./Vol.
	NON-HAZ Petroleur	n Contact h	Jater NY	1	V.T.	1326	GAL
G	b.						
G E N							
E R							
R	<b>c</b> ,						1
A							
O R	₫:						
			······································			:	
	G. Additional Descriptions for Materials Listed Abov	e			H. Handling Ci	odes for Wastes Listed Abo	ve.
N							:
	15. Special Handling Instructions and Additional Info	ormation					
							Ser Valle ee
	45 CENERATORIS CERTIFICATION I bash			Lord on in	olf connects		1. //
	<ol> <li>GENERATOR'S CERTIFICATION: I hereby cer in proper condition for transport. The materials of</li> </ol>	lescribed on this manifest are not s	subject to federal hazardous waste re	egulations.	an residence	P.	
							Date
	Printed/Typed Name		Signature			Mo	nth Day Year
7	17. Transporter 1 Acknowledgement of Receipt of N	Materials:	1	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	www.commerce.com		Date Date
Ř	Printed/Typed Name	punkan MATA	Signatule /			Mo	
N S	Steve Brenda	r K	Signature	/5/	- Lange	i i i i i i i i i i i i i i i i i i i	グレングリア
P	18. Transporter 2 Acknowledgement of Receipt of M	······································	1/				Date
TRANSPORTER	Printed/Typed Name		Signature	······	<del>ii</del>	Мо	nth Day Year
R	19. Discrepancy Indication Space			<del></del>			
F A C	19. Бізогерапсу поканоп Space						
	20. Facility Owner or Operator, Cortification of received	pt of the waste materials covered b	by this manifest, except as noted in it	tern 19.		<u></u>	
							Date
Ť Y	PrintedTyped Name  Nevc, Co-		Signature	11/2		Mo	oth Day Year
			1 / 1/1	<u> </u>			7271



#### Geological Resources, Inc.

June 24, 2011

Mr. Jim Martin, Hydrogeologist South Carolina Department of Health and Environmental Control 2600 Bull Street Columbia, South Carolina 29201-1708

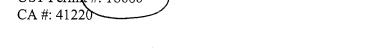
Re:

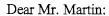
AFVR Report

Tisdales Quick Stop

Kingstree, Williamsburg County

UST Permit #: 18686





This report presents the results of four aggressive fluid-vapor recovery (AFVR) activities conducted on May 3, May 4, May 24 and June 14, 2011 at the above referenced site. The activities were conducted in accordance with the requirements outlined in correspondence from the SCDHEC dated April 22, 2011 and addressed to Mr. Marty Easler. The purpose of the activities was to remove free product from and reduce dissolved phase contaminant concentrations in monitoring wells MW-2 and MW-3. The following Figures, Tables and Appendices have been included:

Figure 1:

Site Location Map

Figure 2:

Site Map

Table 1A:

AFVR Event Chronology - May 3, 2011

Table 1B:

Appendix A:

AFVR Event Chronology - May 4, 2011

Table 1C:

AFVR Event Chronology – May 24, 2011

Table 1D:

AFVR Event Chronology – June 14, 2011

Table 2:

Summary of Monitoring Well Gauging Data

AFVR Reports, Calculations, Disposal Manifests

GRI personnel and the AFVR contractor, Hazmat Emergency Response and Remediation, Inc. (HERR) arrived on-site on May 3, 2011 for the first of four AFVR events. The first event was conducted on monitoring well MW-2. General weather conditions were sunny with an ambient air temperature of approximately 71°F at the time of system start-up. No

free product was detected in MW-2 prior to system startup. AFVR activities were conducted for eight (8) hours on MW-2 using a vacuum truck with a maximum vacuum rating of 25 in., Hg and a capacity of 325 cubic feet per minute. During the course of the event, the vacuum at the well remained steady at 20 in. Hg throughout the day. Please note that the

2301 Crown Point Executive Drive Suite F Charlotte, NC 28227 Phone: (704) 845-4010 / (888) 870-4133 Fax: (704) 845-4012

Tisdale Quick Stop AFVR Report Page 2 of 3

vacuum truck was equipped with a charcoal-activated filter for off-gas treatment of vapor phase hydrocarbons. A total of 1,628 gallons of liquid were removed during the event. No measurable free product was present in MW-2 at the conclusion of the event. Based on data collected during the AFVR event, an estimated total of 0.495 pounds (approximately 0.079 gallons) of vapor phase hydrocarbons were calculated to have been removed during the event.

GRI personnel and HERR arrived on-site on May 4, 2011 for the second of four AFVR events. The second event was conducted on monitoring well MW-3. General weather conditions were overcast with an ambient air temperature of approximately 67°F at the time of system start-up. Approximately 0.03 feet of free product was measured in MW-3 prior to system startup. AFVR activities were conducted for eight (8) hours on MW-3 using a vacuum truck with a maximum vacuum rating of 25 in. Hg and a capacity of 325 cubic feet per minute. During the course of the event, the vacuum at the well remained steady at 20 in. Hg throughout the day. Please note that the vacuum truck was equipped with a charcoal-activated filter for off-gas treatment of vapor phase hydrocarbons. A total of 1,351 gallons of liquid were removed during the event of which an estimated 2.0 gallons were liquid phase free product. No measurable free product was present in MW-3 at the conclusion of the event. Based on data collected during the AFVR event, an estimated total of 0.576 pounds (approximately 0.092 gallons) of vapor phase hydrocarbons were calculated to have been removed during the event.

GRI personnel and HERR arrived on-site on May 24, 2011 for the third of four AFVR events. The third event was conducted on monitoring well MW-2. General weather conditions were sunny with an ambient air temperature of approximately 84°F at the time of system start-up. Approximately 0.43 feet of free product was measured in MW-2 prior to system startup. AFVR activities were conducted for eight (8) hours on MW-2 using a vacuum truck with a maximum vacuum rating of 25 in. Hg and a capacity of 325 cubic feet per minute. During the course of the event, the vacuum at the well remained steady at 23 in. Hg throughout the day. Please note that the vacuum truck was equipped with a charcoal-activated filter for off-gas treatment of vapor phase hydrocarbons. A total of 1,326 gallons of liquid were removed during the event of which an estimated 2.5 gallons were liquid phase free product. No measurable free product was present in MW-2 at the conclusion of the event. Based on data collected during the AFVR event, an estimated total of 0.866 pounds (approximately 0.139 gallons) of vapor phase hydrocarbons were calculated to have been removed during the event.

GRI personnel and HERR arrived on-site on June 14, 2011 for the fourth of four AFVR events. The fourth event was conducted on monitoring well MW-3. General weather conditions were sunny with an ambient air temperature of approximately 74°F at the time of system start-up. Approximately 0.12 feet of free product was measured in MW-3 prior to system startup. AFVR activities were conducted for eight (8) hours on MW-3 using a vacuum truck with a maximum vacuum rating of 25 in. Hg and a capacity of 325 cubic feet per minute. During the course of the event, the vacuum at the well remained steady at 22 in. Hg throughout the day. Please note that the vacuum truck was equipped with a charcoal-activated filter for off-gas treatment of vapor phase hydrocarbons. A total of 1,251 gallons of liquid were removed during the event of which an estimated 1.5 gallons were liquid phase free product. No measurable free product was present in MW-3 at the conclusion of the event. Based on data collected during the AFVR event, an estimated total of 0.603 pounds (approximately 0.096 gallons) of vapor phase hydrocarbons were calculated to have been removed during the event.

Tisdale Quick Stop AFVR Report Page 3 of 3

If you have any comments or questions concerning this project, please do not hesitate to contact the undersigned at (704) 845-4010.

Sincerely,

Scott Ball

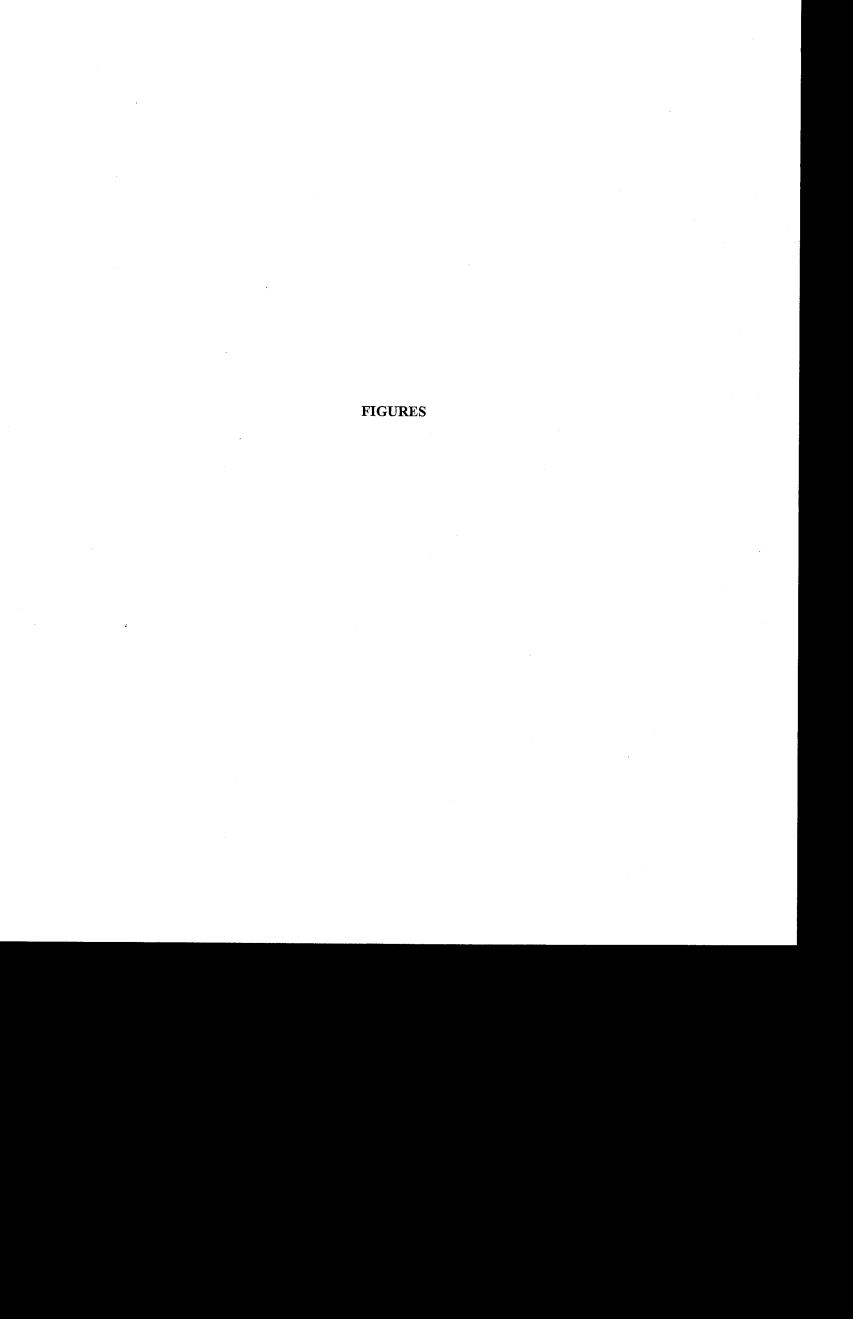
Project Manager M. BROW

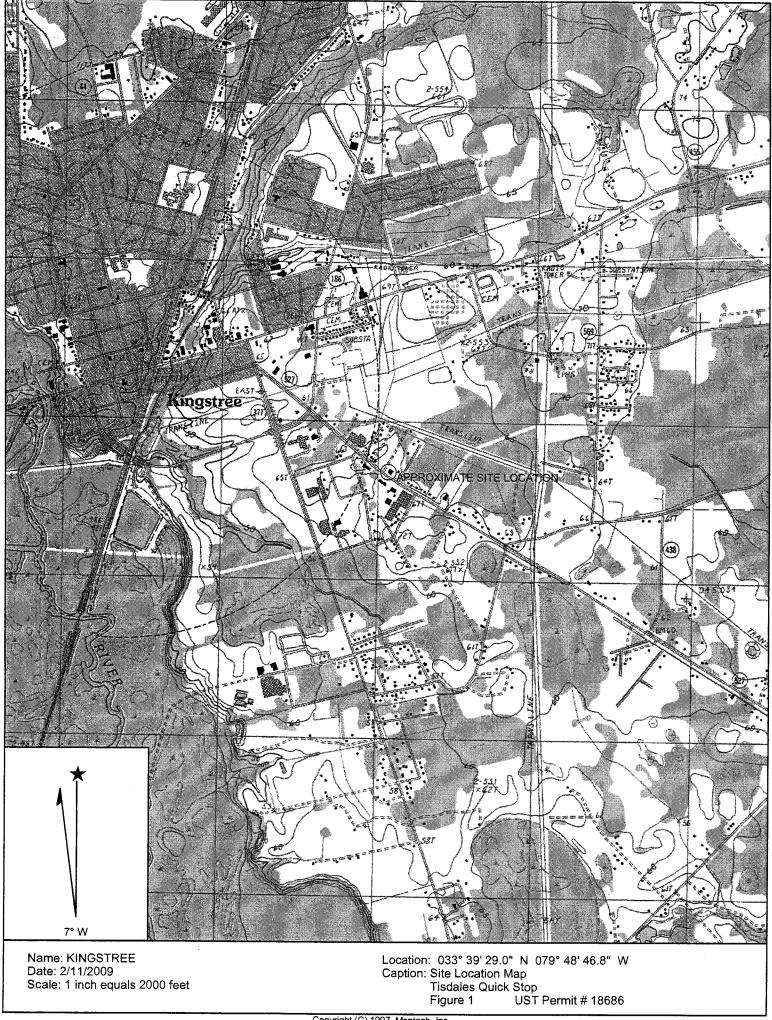
John M. Brown OWAL GEOWY License No. 1116

enclosures

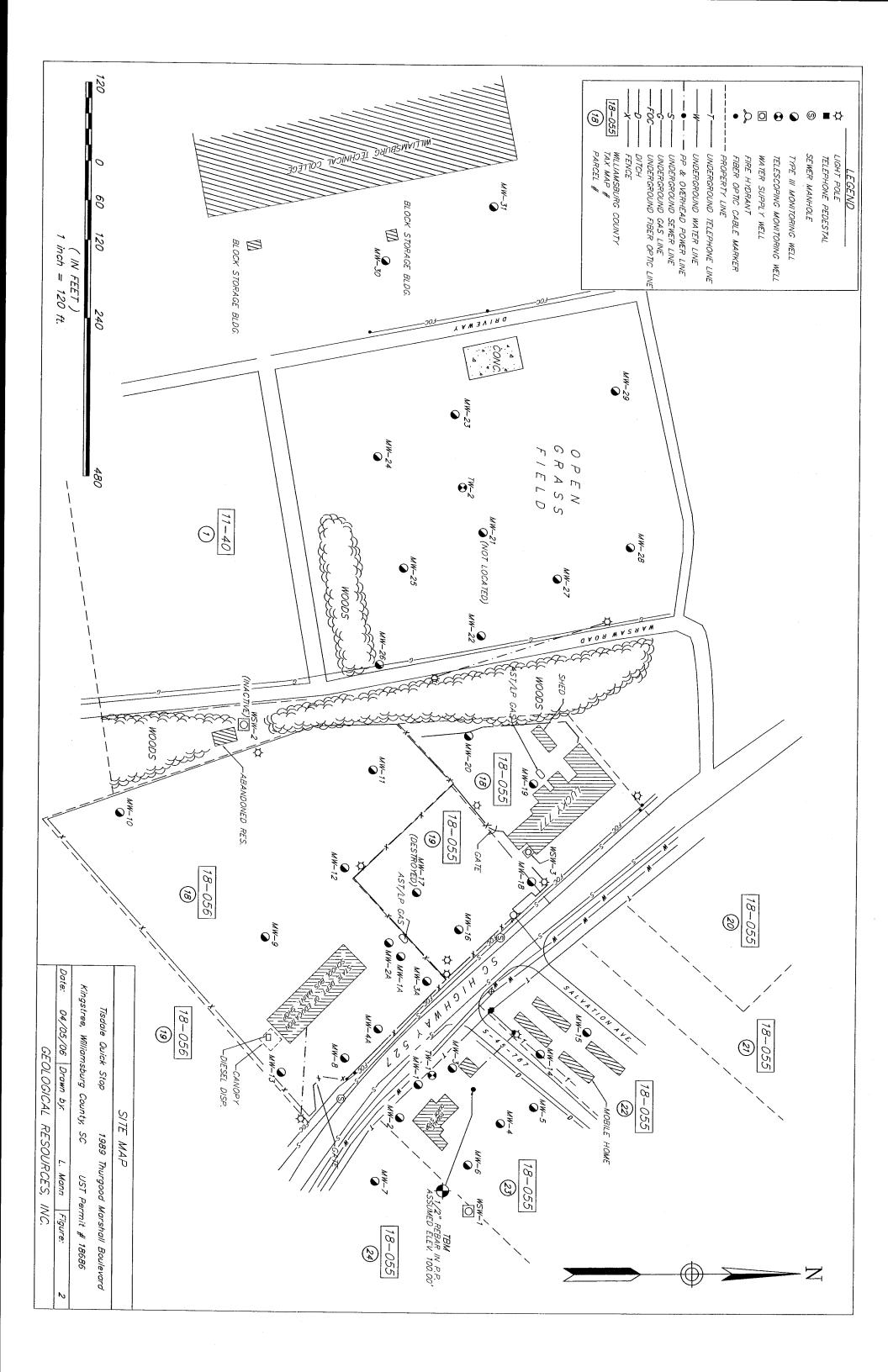
Mr. Marty Easler cc:

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TABLES

# TABLE 1A AFVR EVENT CHRONOLOGY MAY 3, 2011 TISDALE'S QUICK STOP UST PERMIT #18686

Task	Hours	Personnel	Equipment	Company
Gauge Liquid Levels in MW-2	7:45	HERR	Interface Probe	HERR
Vacuum Truck Setup for Fluid Removal in MW-2	7:45 - 8:00	Vacuum Truck Operator	Vacuum Truck	HERR
Supervise Startup of AFVR	7:45 - 8:15	GRI	NA	GRI
Fluid Recovery in MW-2	8:00 - 16:00	HERR	Vacuum Truck	HERR
Gauge Liquid Level in MW-2	16:15	HERR	Interface Probe	HERR

# TABLE 1B AFVR EVENT CHRONOLOGY MAY 4, 2011 TISDALE'S QUICK STOP UST PERMIT #18686

Task	Hours	Personnel	Equipment	Company
Gauge Liquid Levels in MW-3	7:45	HERR	Interface Probe	HERR
Vacuum Truck Setup for Fluid Removal in MW-3	7:45 - 8:00	Vacuum Truck Operator	Vacuum Truck	HERR
Supervise Startup of AFVR	7:45 - 8:15	GRI	NA	GRI
Fluid Recovery in MW-3	8:00 - 16:00	HERR	Vacuum Truck	HERR
Gauge Liquid Level in MW-3	16:15	HERR	Interface Probe	HERR

# TABLE 1C AFVR EVENT CHRONOLOGY MAY 24, 2011 TISDALE'S QUICK STOP UST PERMIT #18686

Task	Hours	Personnel	Equipment	Company
Gauge Liquid Levels in MW-2	7:45	HERR	Interface Probe	HERR
Vacuum Truck Setup for Fluid Removal in MW-2	7:45 - 8:00	Vacuum Truck Operator	Vacuum Truck	HERR
Supervise Startup of AFVR	7:45 - 8:15	GRI	NA	GRI
Fluid Recovery in MW-2	8:00 - 16:00	HERR	Vacuum Truck	HERR
Gauge Liquid Level in MW-2	16:15	HERR	Interface Probe	HERR

# TABLE 1D AFVR EVENT CHRONOLOGY JUNE 14, 2011 TISDALE'S QUICK STOP UST PERMIT #18686

Task	Hours	Personnel	Equipment	Company
Gauge Liquid Levels in MW-3	7:45	HERR	Interface Probe	HERR
Vacuum Truck Setup for Fluid Removal in MW-3	7:45 - 8:00	Vacuum Truck Operator	Vacuum Truck	HERR
Supervise Startup of AFVR	7:45 - 8:15	GRI	NA	GRI
Fluid Recovery in MW-3	8:00 - 16:00	HERR	Vacuum Truck	HERR
Gauge Liquid Level in MW-3	16:15	HERR	Interface Probe	HERR

#### TABLE 2 SUMMARY OF MONITORING WELL GAUGING DATA TISDALE'S QUICK STOP UST PERMIT #18686

Well No.	Date Time		Depth to Free Product	Depth to Ground Water	Free Product Thickness
MW-2	05/03/11	7:45		14.29	
IVI VV -2	03/03/11	16:15		17.69	
Maria	05/04/11	7:45	13.93	13.96	0.03
MW-3	03/04/11	16:15		15.90	
MW-2	05/24/11	7:45	13.66	14.09	0.43
IVI VV -2	03/24/11	16:15		15.45	
MW-3	06/14/11	7:45	15.10	15.22	0.12
	00/14/11	16:15		16.67	

Note:

<sup>•</sup> Data reported in feet.



APPENDIX A

AFVR Reports, Calculations, Disposal Manifests



#### HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Monday, May 16, 2011

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on May 3, 2011. Included is the documentation for the event. The 8 hour event was conducted on monitoring well MW-2. If you have any questions, please do not hesitate to contact our office.

Sincerely,

Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC May 10, 2011

#### <u>AFVR</u>

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 05/03/11. The ambient temperature was 71 deg F and weather conditions were sunny. The depths to product and water were measured prior to and subsequent to the AFVR event. (See attached data) Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event.

The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### Poliutant Mass Removal

Total weight of 0.495 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### Liquid Disposal

Approximately 1628 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

#### **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

# APPENDIX A AFVR FIELD NOTES

# HERR, Inc.

# AFVR - Field Notes

Site Name: TISDACE'S QUICK STOP Location: KIN 657PAZE, 5 C	STREE, S.C.
AFVR Contractor: HECC TAC Steve Personnel: CAL	
Date: 5/3/11 Ambient Air Temperature and General Weather Condition: Sunny-7on 7/3	ndition: Survy-70in 713
Start Time 1: 8:00 Stop Time 1: 4:00 Start Time 2:	Stop Time 2:
Total volume of water removed during the 8-hour AFVR Event: 1628 gwl	
Total volume of product removed during the 8-hour AFVR Event:	
Product Recovery Rate:	

Relevant Observations				
Estimated volume of water removed during this event	0 - > 0 / -	1000		
Depth to water at cessation of vacuuming (ft. below TOC)	17.69			
Depth to product at cessation of vacuuming (ft. below TOC)				
Depth to water prior to stinger placement (ft. below TOC)	14.29			
Depth to product prior to stinger placement (ft. below TOC)	1:)			
Monitoring Well	Mw 2			

## TISDALE'S QUICK STOP 5/3/11

### **Aggressive Fluid/Vapor Recovery Notes**

	vacu	um conversior	1: (inches of w	ater X 0.07355	= inches of m	ercury)	
	MW- 2	MW-	MW-		Stinge	r Placement	
Time	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Stinger Depth	Product Depth	Water Level	Notes
8:00	20		\s/	15'	-0-	14.29	
8:30	20					1101	
9:00	20						
9:30	20						
10.00	20						
10:30	20						
11:00	20						
11:30	20						
12:00	20						
12:30	ଚତ						
1:00	90						
1:30	90						
2,00	90						
9,30	20						<del></del>
3:00	90						
3:30	90						
4:00	20				-0-	17.69	
						, , ,	·
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	$\bigcirc$	
Vacuum of Dumen	$\omega$	

## TISOACE'S QUICKSTOP 5/3/11

### **Aggressive Fluid/Vapor Recovery Notes**

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

		,		or water X o				
	N/i	W- I Vacuum	N	W- Vacuum	N.	W- Vacuum	<u> </u>	/W-
	Water	Influence	Water	Influence	Water	Influence	Water	Vacuum Influence
Time	Level	at Well	Level	at Well	Level	at Well	Level	at Well
8:00	13.96	(in. Hg)		(in. Hg)		(in. Hg)	<u> </u>	(in. Hg)
8:30	12.16	0						
9:00		0				<b></b> -		
9:30		0	<del></del>			<u> </u>	<u> </u>	
10.00		0	<u> </u>					
10:30		0						
11:00		Ö						
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12:00		0						
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1:30		0						
2:00		0						
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3:00		0						
3,30		0						
4:00	13.95	D						
					· · · · · · · · · · · · · · · · · · ·			

## TISOALES QUICKSTOP - 5/3/11

## Aggressive Fluid/Vapor Recovery Notes

Time	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (F)	Relative Humidity (%)	Other
8:00	218	145	332	96	45	
8:30	278	162	364	100	45	
9:00	282	165	3 <i>5</i> 8	/03	45	
9:30	341	196	369	106	44	
10:00	428	234	372	/08	44	
10:30	472	265	385	/07	44	**************************************
11:00	467	255	392	108	44	
11:30	458	251	387	/08	44	
12:00	462	256	396	108	44	
12:30	466	262	412	108	44	
1:00	439	254	408	<i>10</i> 8	44	
1:30	396	248	352	/D8	44	
2:00	ב85	241	415	/08	44	
2:30	366	224	410	/08	44	
3:00	345	217	426	107	44	
3:30	351	212	418	107	44	
4:00	342	205	411	107	44	
					•	
						•

# APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site:

Tisdale's Quick Stop

**UST Permit #:** 18686

•		<del></del>	Calculat	ions - Flow at	DSCFM		
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)
5/3/11	8:00	332	0.022	96.0	45	0.016507704	6.82
5/3/11	8:30	364	0.022	100.0	45	0.018702695	7.41
5/3/11	9:00	358	0.022	103.0	45	0.020517186	7.23
5/3/11	9:30	369	0.022	106.0	44	0.021971220	7.41
5/3/11	10:00	372	0.022	108.0	44	0.023345247	7.43
5/3/11	10:30	385	0.022	107.0	44	0.022648832	7.71
5/3/11	11:00	392	0.022	108.0	44	0.023345247	7.83
5/3/11	11:30	387	0.022	108.0	44	0.023345247	7.73
5/3/11	12:00	396	0.022	108.0	44	0.023345247	7.91
5/3/11	12:30	412	0.022	108.0	44	0.023345247	8.23
5/3/11	1:00	408	0.022	108.0	44	0.023345247	8.15
5/3/11	1:30	392	0.022	108.0	44	0.023345247	7.83
5/3/11	2:00	415	0.022	108.0	44	0.023345247	8.29
5/3/11	2:30	410	0.022	108.0	44	0.023345247	8.19
5/3/11	3:00	426	0.022	107.0	44	0.022648832	8.53
5/3/11	3:30	418	0.022	107.0	44	0.022648832	8.37
5/3/11	4:00	411	0.022	107.0	44	0.022648832	8.23
Averages		391	0.022	106.18	44.18	0.022258903	7.841

Site: Tisdale's Quick Stop

**UST Permit #:** 18686

		Calcul	ations - Po	liutant	Mass R	emoval in po	ounds		
Marg. Elap.	Elapsed Time	Flow (DSCFM)	PPM measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)
. 0	0	6.82	218	1	218	1159.29	0.000072374	0.030	0.000
30	30	7.41	278	1	278	1478.35	0.000092294	0.041	0.021
30	60	7.23	282	1	282	1499.63	0.000093622	0.041	0.020
30	90	7.41	341	1	341	1813.38	0.000113209	0.050	0.025
30	120	7.43	428	1	428	2276.03	0.000142092	0.063	0.032
30	150	7.71	472	1	472	2510.01	0.000156700	0.072	0.036
30	180	7.83	467	1	467	2483.42	0.000155040	0.073	0.036
30	210	7.73	458	1	458	2435.56	0.000152052	0.071	0.035
30	240	7.91	462	1	462	2456.83	0.000153380	0.073	0.036
30_	270	8.23	466	1	466	2478.11	0.000154708	0.076	0.038
30	300	8.15	439	1	439	2334.52	0.000145744	0.071	0.036
30	330	7.83	396	1	396	2105.86	0.000131469	0.062	0.031
30	360	8.29	387	1	387	2058.00	0.000128481	0.064	0.032
30	390	8.19	366	1	366	1946.32	0.000121509	0.060	0.030
30	420	8.53	345	1	345	1834.65	0.000114537	0.059	0.029
30	450	8.37	351	1	351	1866.56	0.000116529	0.059	0.029
30	480	8.23	342	1	342	1818.70	0.000113541	0.056	0.028
Averages		7.84	382.24	1.00	382.24	2032.66	0.000126899	0.060	0.029
				•		Total Er	mission in pound	ds:	0.495

#### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K Cg:m = PPMg \* (Mg/K3) Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3 PMRg = Cg \* Qstd \* 60 min/hr PMR = PMRg \* ((T2 -T1)/60)

Qstd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer)

Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

 $K3 = 24.07 \text{ dsm}^3/1E6 \text{ mg-mole}$ , mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

#### NON-HAZARDOUS WASTE MANIFEST

Ple	ease print or type (Form designed for use on elite	(12 pitch) typewriter)					
	NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA I	D No.		Manifest Document No		2. Page 1 of
	3. Generator's Name and Malling Address TISOALES QUICKSTOR	2		***************************************			
1	1989 THURESON MARSHALL 4. Generator's Phone (	- KINGSTREE	750				
	5. Transporter 1 Company Name	· ·	US EPA ID Number		A. State Trans	sporter's ID	
	HERR, Inc. 7. Transporter 2 Company Name		NCR-0001398	116	B. Transporte		53-6399
	7. Transporter 2 Company Name		US EPA ID Number	<u> </u>	C. State Tran		<u>~~~~~~</u>
					D. Transporte	r 2 Phone	:-
	9. Designated Facility Name and Site Address	1	0. US EPA ID Number	······································	E. State Facil	ity'e ID	
	HERR, Inc.				]		
	217 N 701 Bypass				F. Facility's P		
4	TAGOR CHY, NE 28	5463	NCR-0001381	318		910-657-	-6388
	11. WASTE DESCRIPTION			12. Cd	intainers	13. Total	14.
		<u> </u>		No.	Туре	Quantity	Unit Wt.∕Vol.
	Non-HAZ Petroleun	Contat 1	data Mil		V.T.	1628	CACO
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WA	G. Additional Descriptions for Materials Listed Abo	A6.			H. Handling C	l odes for Wastes Listed At	ove
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A	15. Special Handling Instructions and Additional In	formation					
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25	and the second of the second o						
-	Market and Address of the Control of						
					4/ A/		
	16. GENERATOR'S CERTIFICATION: I hereby or in proper condition for transport. The materials	arily mai the contents of this described on this manifest at	snipment are fully and accurately descr re not subject to federal hazardous was	ibed and are in te regulations.	all respects		
						· .	
	Printed/Typed Name		Signature				Date
			O GILLION			M	ionth Day Year 
F	17. Transporter 1 Acknowledgement of Receipt of	Malerials	<u> </u>	***************************************	***************************************		Date Date
RANSPORTER	Printed/Typed Name		Signature	0/1	<b>#</b> 4. · •		onth Day Year
N S	Steve Divent	BANK			LL		5 311
P	18. Transporter 2 Acknowledgement of Receipt of						Date Date
R	Printed/Typed Name		Signature			M	Ionth Day Year
E							1 1
	19. Discrepancy Indication Space					······	
F							
C							
	20. Facility Owner or Operator, Certification of rece	ipt of the waste materials cov	vered by this manifest, except as noted	in item 19.			
ī							Date
I	Printed/Typed Name		Signature // 1	10		М	onth Day Year
Y	1 /Vlace Cox		1/4/0				<u>&gt; 14 1//</u>

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#### HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Monday, May 16, 2011

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on May 4, 2011. Included is the documentation for the event. The 8 hour event was conducted on monitoring well MW-3. If you have any questions, please do not hesitate to contact our office.

Sincerely,

Marc Cox HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC May 4, 2011

#### <u>AFVR</u>

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 05/04/11. The ambient temperature was 67 deg F and weather conditions were overcast. The depths to product and water were measured prior to and subsequent to the AFVR event. (See attached data) Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event. The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### Pollutant Mass Removal

Total weight of 0.576 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### **Liquid Disposal**

Approximately 1351 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

#### **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

# APPENDIX A AFVR FIELD NOTES

# HERR, Inc.

# AFVR - Field Notes

Site Name: TISDACE'S QUICE STOP	Location: KINGSTREE, SC	J
AFVR Contractor: HEGG TAC Shoc	Personnel: GRI -	
Date: S/4/11 Ambient Air Temperature and	mbient Air Temperature and General Weather Condition: Duvecth 67.0	vest 67°
Start Time 1: 8.00 Stop Time 1: 4.00	Start Time 2:	Stop Time 2:
Fotal volume of water removed during the 8-hour AFVR Event:_	1351 gel	
Total volume of product removed during the 8-hour AFVR Event: Agarx: A 32	Apprix: 2 sel	
Product Recovery Rate:		

Relevant Observations					
Estimated volume of water removed during this event	1. Mari	131/10	,		
Depth to water at cessation of vacuuming (ft. below TOC)	15.90	,			
Depth to product at cessation of vacuuming (ft. below TOC)	-0-				
Depth to water prior to stinger placement (ft. below TOC)	13.2%				
Depth to product prior to stinger placement (ft. below TOC)	1.3.93				
Monitoring Well	C all				

## TISDACES QUICK STOP - 5/4/11

## Aggressive Fluid/Vapor Recovery Notes

vacu	um conversior	: (inches of w	ater X 0.07355	= inches of m	nercury)	
<sub>MW-</sub> 3	MW-	MW-		Stinge	er Placement	
Targeted Well	Targeted Well	Targeted Well	Stinger Depth	Product Depth	Water Level	Notes
ł .	(iii. rig)	(III. Hg)	151	13.62	1265	
			/ -	13.13	12.13	
				-		
				<u> </u>		
20						
		<u> </u>				
			•			·
					· .	
						<del></del>
				-7-	1550	
					73.10	
	-					
	MW- 3 Vacuum at Targeted	MW- 3 Vacuum at Targeted Well (in. Hg)  2 D  2 b  2 b  2 b  2 b  2 b  2 b  2 b	MW-         3         MW-         MW-           Vacuum at Targeted Well (in. Hg)         Vacuum at Targeted Well (in. Hg)         Vacuum at Targeted Well (in. Hg)           2 D         2 D         2 D           2 D         2 D	MW-         MW-         MW-           Vacuum at Targeted Well (in. Hg)         Vacuum at Targeted Well (in. Hg)         Stinger Depth           2 D         /5'           2 b         /5'           2 c         /5'           2 c	MW.         3         MW.         MW.         Stings           Vacuum at Targeted Well (in. Hg)         Vacuum at Targeted Well (in. Hg)         Stinger Depth         Product Depth           Q D         / 5'         /3.93           Q D         / 5'         /3.93           Q D         / 5'         /3.93           Q D         / 5'         / 3.93           Q D         / 5'         / 3.93           Q D         / 5'         / 3.93           Q D         / 20         / 20           Q D         / 20 <td>Vacuum at Targeted Well (in. Hg)         Vacuum at Targeted Well (in. Hg)         Vacuum at Targeted Well (in. Hg)         Stinger Depth         Product Depth         Water Level           2 D         /5'         /3.93         /3.95           2 D         /3.95         /3.95           3 D         /3.95         /3.95           3 D         /3.95         /3.95           4 D         /3.95         /3.95           4 D         /3.95         /3.95           4 D         /3.95         /3.95           5 D         /3.95         /3.95           6 D         /3.95         /3.95           7 D         /3.95         /3.95           7 D         /3.95         /</td>	Vacuum at Targeted Well (in. Hg)         Vacuum at Targeted Well (in. Hg)         Vacuum at Targeted Well (in. Hg)         Stinger Depth         Product Depth         Water Level           2 D         /5'         /3.93         /3.95           2 D         /3.95         /3.95           3 D         /3.95         /3.95           3 D         /3.95         /3.95           4 D         /3.95         /3.95           4 D         /3.95         /3.95           4 D         /3.95         /3.95           5 D         /3.95         /3.95           6 D         /3.95         /3.95           7 D         /3.95         /3.95           7 D         /3.95         /

Vacuum at Pump: 22

## TISOALE'S QUICKSTOP - 5/4/11

### Aggressive Fluid/Vapor Recovery Notes

	vac	uum convers	sion: (inches	of water X 0.	07355 = inc	ches of merc	ury)		
	MW- /		M	w- 4	· N	IW-	MW-		
Time	Water Level	Vacuum Influence at Well (in. Hg)							
8:00	13.96	٥	/3.87	0					
8:36		0		0					
9:00		0		0			4		
9:30		٥		0					
10.00		0		ð					
10.30		0		٥					
11:00		0		0					
11:00		٥		D					
12:00		٥		0					
12:30	-	٥		٥					
1.00		D		٥					
<i>j</i> :.30		0		6					
2:00		0		٥			1.		
2:30		٥		٥					
3:00		٥		٥					
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4.00	1356	٥	13.86	D					
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## TISDALE'S QUICKSTOP. 5/4/11

## Aggressive Fluid/Vapor Recovery Notes

Time	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature	Relative Humidity (%)	Other
8:00	312	185	529	78	65	
8:30	328	197	521		65	
9:00	411	291	532	85 85	65	
9:30	377	257	545	94	65	
10:00	352	238	563	/00	65	
10:30	236	227	566	/01	65	
11'.00	324	220	574	/03		
11:30	312	208	58a	104	65 65	
12'.00	305	192	589	104	65	
12:30	296	181	552	104	65	
1:00	299	185	588	105	65	
1:36	591	/73	596	105	65	
9,00	275	166	663	105	65	
2:30	263	151	552	105	65	
3:00	271	159	608	105	65 65	
3:30	278	162	605	105	65	
4:00	981	167	598	105	65	

# APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site:

Tisdale's Quick Stop

**UST Permit #:** 18686

			Calculat	ions - Flow a	t DSCFM		
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)
5/4/11	8:00	529	0.022	78.0	65	0.013394060	11.27
5/4/11	8:30	521	0.022	82.0	65	0.015312026	10.99
5/4/11	9:00	532	0.022	85.0	65	0.016908559	11.15
5/4/11	9:30	545	0.022	94.0	65	0.022638549	11.17
5/4/11	10:00	563	0.022	100.0	65	0.027380918	11.36
5/4/11	10:30	566	0.022	101.0	65	0.028253968	11.39
5/4/11	11:00	574	0.022	103.0	65	0.030076874	11.49
5/4/11	11:30	582	0.022	104.0	65	0.031028151	11.61
5/4/11	12:00	589	0.022	104.0	65	0.031028151	11.75
5/4/11	12:30	592	0.022	104.0	65	0.031028151	11.81
5/4/11	1:00	588	0.022	105.0	65	0.032006961	11.70
5/4/11	1:30	596	0.022	105.0	65	0.032006961	11.86
5/4/11	2:00	603	0.022	105.0	65	0.032006961	12.00
5/4/11	2:30	592	0.022	105.0	65	0.032006961	11.78
5/4/11	3:00	608	0.022	105.0	65	0.032006961	12.10
5/4/11	3:30	605	0.022	105.0	65	0.032006961	12.04
5/4/11	4:00	598	0.022	105.0	65	0.032006961	11.90
Averages		575.47	0.022	99.41	65.00	0.027711655	11.611

Site:

Tisdale's Quick Stop

**UST Permit #:** 18686

		Calcul	ations - Po	ilutant	Mass R	emoval in po	ounds		
Marg.	Elapsed	Flow	PPM	2	DD##	0	0	Daap	PMR
Elap.	Time	(DSCFM)	measured	K (#C-	PPMg	Cg:m	Cg ·	PMRg	PINK
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)
0	0	11.27	312	1	312	1659.16	0.000103581	0.070	0.000
30	30	10.99	328	1	328	1744.25	0.000108893	0.072	0.036
30	60	11.15	411	1	411	2185.63	0.000136449	0.091	0.046
30	90	11.17	377	1	377	2004.82	0.000125161	0.084	0.042
30	120	11.36	352	1	352	1871.87	0.000116861	0.080	0.040
30	150	11.39	336	1	336	1786.79	0.000111549	0.076	0.038
30	180	11.49	324	1	324	1722.97	0.000107565	0.074	0.037
30	210	11.61	312	1	312	1659.16	0.000103581	0.072	0.036
30	240	11.75	305	1	305	1621.94	0.000101257	0.071	0.036
30	270	11.81	296	-1	296	1574.08	0.000098270	0.070	0.035
30	300	11.70	299	1	299	1590.03	0.000099266	0.070	0.035
30	330	11.86	281	1	281	1494.31	0.000093290	0.066	0.033
30	360	12.00	275	1	275	1462.40	0.000091298	0.066	0.033
30	390	11.78	263	1	263	1398.59	0.000087314	0.062	0.031
30	420	12.10	271	1	271	1441.13	0.000089970	0.065	0.033
30	450	12.04	278	1	278	1478.35	0.000092294	0.067	0.033
30	480	11.90	281	1	281	1494.31	0.000093290	0.067	0.033
Averages		11.61	311.82	1.00	311.82	1658.22	0.000103523	0.072	0.034
						Total E	mission in poun	ds:	0.576

#### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K
Cg:m = PPMg \* (Mg/K3)
Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3
PMRg = Cg \* Qstd \* 60 min/hr
PMR = PMRg \* ((T2 -T1)/60)

Qstd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer) Cross Sectional Area = area in ft<sup>2</sup> of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

 $K3 = 24.07 \text{ dsm}^3/1E6 \text{ mg-mole}$ , mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

#### **NON-HAZARDOUS WASTE MANIFEST**

	se print or type (Form designed for use on eille (12 pitch) typewriter  NON-HAZARDOUS 1. Generator's U  WASTE MANIFEST		Her ever recoler	Manifest Document No.	<u> </u>	2. Page 1
	3. Generator's Name and Mailing Address TISOALES QUICKSTOP					
	1984 THURLOWD MARSHALL	KINGTHEE, SC			.i. =	
	5: Transporter 1 Company Name	6. US EPA ID Number		A. State Transp	orter's ID	
	HERRIA.	NCP 00135	816	B. Transporter	1 Phone 9/0-6	57-6395
	7. Transporter 2 Company Name	8. US EPA ID Number		C. State Trans	onter's ID	e grae likiti militira ili
-4	Designated Facility Name and Site Address		***************************************	D. Transporter	2 Phone	
	HERRI Inc.	10. US EPA ID Number		E. State Facility	910- C53-	6399
	217 N 701 Byzss TARON (174, NC 28463	INCR-000139	816	F. Facility's Ph		
	II. WAS IE DESCRIPTION		12. C	onlainers Type	13. Total Quantity	14. Unit WL/Vol.
	Norther Petroleon Cont	tact Vatornik		U.T.	1351	GAC
G II Z II	b.					
R A T	C.					
OR	d.					
	G. Additional Descriptions for Materials Listed Above	4	<del>- ,                                   </del>	H. Handling Co	des for Wastes Listed Abo	ive
	15. Special Handling Instructions and Additional Information			<u> </u>		
	та. Эрежи панину пъписия в по добщина пиртивия					
	AS CENTRATORS SERVICIOS TO AN INC.					And the second se
	<ol> <li>GENERATOR'S CERTIFICATION: I hereby certify that the content in proper condition for transport. The materials described on this materials.</li> </ol>	anifest are not subject to tederal hazardous wa	ste regulations.	ran respects		Date
	Printed/Typed Name	Signature			Mo	
I	17. Transporter 1 Acknowledgement of Receipt of Materials	<i>n</i> -				Date
日本ないなり	Steve Riveabux	Signature	Bu	14	Mo	nth Day Ye
Į P	18. Transporter 2 Acknowledgement of Receipt of Materials					Date
R-ER	Printed/Typed Name	Signature			Mo	ath Day Ye
FAC	19. Discrepancy Indication Space			i de la companya de		
ĭ	20. Facility Owner or Operator; Certification of receipt of the waste mat	terials covered by this manifest, except as noted	d in item 19.			
					4	Date

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Rev. 3/95



#### HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Monday, May 30, 2011

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on May 24, 2011. Included is the documentation for the event. The 8 hour event was conducted on monitoring well MW-2. If you have any questions, please do not hesitate to contact our office.

Sincerely,

Marc Cox

HERR Project Manager

Erving North & South Carolina

Tisdale's Quick Stop Kingstree, SC May 24, 2011

#### <u>AFVR</u>

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 05/24/11. The ambient temperature was 84 deg F and weather conditions were sunny. The depths to product and water were measured prior to and subsequent to the AFVR event. (See attached data) Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event.

The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### Pollutant Mass Removal

Total weight of 0.866 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### **Liquid Disposal**

Approximately 1326 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

#### **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

# APPENDIX A AFVR FIELD NOTES

# HERR, Inc.

# AFVR - Field Notes

Site Name: TISO ACE'S QUICKSTOP Location: KIN 65 THEIE SC
AFVR Contractor: HEM2, Tac Steve Personnel: GAL -
Date: 5-24-1/ Ambient Air Temperature and General Weather Condition: Survey - Jour 840
Start Time 1: 8:00 Stop Time 1: 4:00 Start Time 2: Stop Time 2:
Total volume of water removed during the 8-hour AFVR Event:
Total volume of product removed during the 8-hour AFVR Event: Apps: 3.5 5cl
Product Recovery Rate:

Estimated volume Relevant of water removed Observations during this event			The state of the s	Section 2011 in the section of the s	
Depth to water at cessation of Estim vacuuming of wa (ft. below TOC)					
Depth to water prior to stinger at cessation of placement vacuuming (ft. below TOC)		The second secon			
Depth to water prior to stinger placement (ft. below TOC)	1,400				
Depth to product prior to stinger placement (ft. below TOC)	444	13.67			
Monitoring Well	MW.				

# TISDALE'S QUICKSTOP - 5/24/11

# **Aggressive Fluid/Vapor Recovery Notes**

	vacu	ium conversior	n: (inches of w	ater X 0.07355	ater X 0.07355 = inches of mercury)					
	MW- 2	MW-	MW-		Stinger Placement					
Time	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Stinger Depth	Product Depth	Water Level	Notes			
8.00	22		,	15'	13.66	14.09				
8:30	23									
9'.00	23									
9:30	23									
10,00	23		-							
10:30	23									
11:00	23					-				
/('.30	23									
12'.00	23									
12:30	23		,							
/:ob	23									
1.30	23									
2'.00	23									
21.30	23						<u> </u>			
3',00	23									
3'.30	23									
4:00	23									
							,			
							,			

Vacuum at Pump: 25

# TISDALE'S QUICKSTOP - 5/24/11

# Aggressive Fluid/Vapor Recovery Notes

	vacuum conversion: (inches of water X 0.07355 = inches of mercury)									
	M	Mw- / Mw- 7 Mw-		IW-	N	ΛW-				
Time	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)		
8,00	14.50	./2	14.09	./6		(		(rig)		
8:30		.15		./6						
9'.00		.20		.20	-					
9130		.20		.20						
10.00		.21		,22						
1630		.21		.22			-			
11:00		.25		.22						
11:30		.25		.22						
12:00		,30		. 22						
12:30		.30		.22						
/:00		.30		. 22						
1:30		,30		. 24						
21.00		.30		.24						
2:30		.30		.25						
3'.00		.72		.25						
3'.30		.72		.25						
41.00	14.49	.72	14.09	.25						

# Aggressive Fluid/Vapor Recovery Notes

Time	PID <u>at stack</u> (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Celsius)	Relative Humidity (%)	Other
8.00	609	447	428	35.6	48	
8:30	623	451	447	36.7	48	
9:00	6/8	455	472	37.8	48	
9:30	610	447	485	42.2	48	
10,00	578	413	508	46.1	48	
10:30	571	418	512	47.8	48	
11:00	535	421	516	47.8	48	
//:3 <sub>b</sub>	<i>55</i> 7	372	522	48.9	48	
12:00	548	386	5/9	50.0	48	
/21.30	532	357	<i>5</i> 28	51.7	48	
1:00	526	345	521	51.7	५८	
1:30	528	341	526	51.7	48	
2:00	521	336	534	51.7	48	
9,'30	514	306	54	51.7	48	**** V V
3:08	502	291	546	51.7	78	
3.30	488	277	552	51.7	48	
4,00	455	251	557	51.7	48	

# $\frac{\text{APPENDIX B}}{\text{POLLUTANT MASS REMOVAL DATA SHEETS}}$

Site: Tisdale's Quick Stop UST Permit #: 18686

	Calculations - Flow at DSCFM										
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)				
5/24/11	8:00	428	0.022	96	48	0.017639427	8.78				
5/24/11	8:30	447	0.022	98	48	0.018781507	9.13				
5/24/11	9:00	472	0.022	100	. 48	0.019989612	9.59				
5/24/11	9:30	485	0.022	108	48	0.025554736	9.67				
5/24/11	10:00	508	0.022	115	48	0.031538722	9.94				
5/24/11	10:30	512	0.022	118	48	0.034474598	9.93				
5/24/11	11:00	516	0.022	118	48	0.034474598	10.01				
5/24/11	11:30	522	0.022	120	48	0.036569080	10.07				
5/24/11	12:00	519	0.022	122	48	0.038780279	9.96				
5/24/11	12:30	528	0.022	125	48	0.042329898	10.04				
5/24/11	1:00	521	0.022	125	48	0.042329898	9.91				
5/24/11	1:30	526	0.022	125	48	0.042329898	10.00				
5/24/11	2:00	534	0.022	125	48	0.042329898	10.15				
5/24/11	2:30	541	0.022	125	48	0.042329898	10.29				
5/24/11	3:00	546	0.022	125	48	0.042329898	10.38				
5/24/11	3:30	552	0.022	125	48	0.042329898	10.50				
5/24/11	4:00	557	0.022	125	48	0.042329898	10.59				
Averages		512.59	0.022	117.35	48	0.035084808	9.938				

Site: Tisdale's Quick Stop

**UST Permit #:** 18686

Calculations - Pollutant Mass Removal in pounds											
Marg. Elap.	Elapsed Time	Flow (DSCFM)	PPM measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR		
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)		
0	0	8.78	609	1_	609	3238.55	0.000202183	0.107	0.000		
30	30	9.13	623	1	623	3313.00	0.000206831	0.113	0.057		
30	60	9.59	618	11_	618	3286.41	0.000205171	0.118	0.059		
30	90	9.67	610	1	610	3243.87	0.000202515	0.117	0.059		
30	120	9.94	578	1	578	3073.70	0.000191891	0.114	0.057		
30	150	9.93	571	1	571	3036.48	0.000189567	0.113	0.056		
30	180	10.01	535	1	535	2845.04	0.000177616	0.107	0.053		
30	210	10.07	557	1	557	2962.03	0.000184919	0.112	0.056		
30	240	9.96	548	11_	548	2914.17	0.000181931	0.109	0.054		
30	270	10.04	532	1	532	2829.08	0.000176620	0.106	0.053		
30	300	9.91	526	1	526	2797.17	0.000174628	0.104	0.052		
30	330	10.00	528	1	528	2807.81	0.000175292	0.105	0.053		
30	360	10.15	521	1	521	2770.59	0.000172968	0.105	0.053		
30	390	10.29	514	1	514	2733.36	0.000170644	0.105	0.053		
30	420	10.38	502	1	502	2669.55	0.000166660	0.104	0.052		
30	450	10.50	488	1	488	2595.10	0.000162012	0.102	0.051		
30	480	10.59	455	1	455	2419.61	0.000151056	0.096	0.048		
Averages		9.94	547.94	1.00	547.94	2913.85	0.000181912	0.108	0.051		
	Total Emission in pounds: 0.866										

### Pollutant Mass Removal Calculations

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K Cg:m = PPMg \* (Mg/K3) Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3 PMRg = Cg \* Qstd \* 60 min/hr PMR = PMRg \* ((T2 -T1)/60)

Qstd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer) Cross Sectional Area = area in ft<sup>2</sup> of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/PID at the blower discharge piping  $V = N_{\text{total}}$  and  $N_{\text{total}}$  are  $N_{\text{total}}$  are  $N_{\text{total}}$  and  $N_{\text{total}}$  are  $N_{\text{to$ 

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

 $K3 = 24.07 \text{ dsm}^3/1E6 \text{ mg-mole}$ , mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

## NON-HAZARDOUS WASTE MANIFEST

F	leas	ie print or type (Form designed for use on elite						
		NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA	ID No.		Manifest Document No.		2. Page 1
		3. Generator's Name and Mailing Address TISOALES QUICKS	ė. O					
		1989 THURGOOD MAR		and an experience of the control of				
		4. Generator's Phone ( )	SHALC 12	ingstree, ec				
		5. Transporter 1 Company Name		6. US EPA ID Number		A. State Trans	A CONTRACTOR OF THE CONTRACTOR	
		HERR, The. 7. Transporter 2 Company Name		NCN-000/358 8. US EPA ID Number	<u> </u>	B. Transporter		53-6399
				l do Less to agricultural		C. State Trans D. Transporter		
		9. Designated Facility Name and Site Address		10. US EPA ID Number	<del></del>	E. State Facilit		
		HERK, Inc. 27 N. 701 Bypass		e e e				
		TABON CITY NC 28	467	NCR-000/398	17	F. Facility's Ph	9/0-653-	-1799
		11. WASTE DESCRIPTION		17.0/- 3301.5/70		) Intainers	13. Total	14. Unit
		a.			No.	Туре	Quantity	Wi./Vol.
		NON-HAZ Petroleu	m Contact	- Water Nix	1	V.T.	1326	GAL
	G E N	b.						
	Εl.		-					
	R A	C.						
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3		G. Additional Descriptions for Materials Listed Abo	n.e			H. Handling Co	odes for Wastes Listed Abo	we
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N-HAZARDOUS WASTE		15. Special Handling Instructions and Additional in	formation			<u> </u>		
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							-	
2	J						and the state of	
						H = H		
	J	16. GENERATOR'S CERTIFICATION: I hereby coin proper condition for transport. The materials	ertify that the contents of this described on this manifest a	shipment are fully and accurately descri are not subject to federal hazardous wast	bed and are in regulations.	all respects		-
					=		<del>[</del>	
		Printed/Typed Name		Signature	***************************************			Date nth Day Year
F	4							1 1
	T R A	17. Transporter 1 Acknowledgement of Receipt of Printed/Typed Name	watenais	Signati/e /			Mo	Date nth Day Year
1	N S	Steve Brench	r (C		/5			
	P.	18. Transporter 2 Acknowledgement of Receipt of	Materials			1118 .		Date
	ANSPORTER	Printed/Typed Name		Signature			Ма	nth Day Year
Γ	F	19. Discrepancy Indication Space			**************************************	NANNANANANANANANANANANANANANANANANANAN		
- 1.	A							
	9	20. Facility Owner or Operator, Certification of rece	eipt of the waste materials or	overed by this manifest, except as noted in	n:item 19.	**************************************		
			*			· · · · · · · · · · · · · · · · · · ·		Date
Į.	T Y	Marc, Ca-		Signature	11		Mo	nth Day Year
L		1 040,			1// -		2	101111



## HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Wednesday, June 22, 2011

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on June 14, 2011. Included is the documentation for the event. The 8 hour event was conducted on monitoring well MW-3. If you have any questions, please do not hesitate to contact our office.

Sincerely,

Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC June 14, 2011

#### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 06/14/11. The ambient temperature was 74 deg F and weather conditions were sunny. The depths to product and water were measured prior to and subsequent to the AFVR event. (See attached data) Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event.

The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### Pollutant Mass Removal

Total weight of 0.603 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### Liquid Disposal

Approximately 1251 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

## **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

# APPENDIX A AFVR FIELD NOTES

# HERR, Inc.

# AFVR - Field Notes

Site Name: TISOACE'S QUICK STOP Location: 1989 THURESORD MARSHALL - KINGSTREE SC
AFVR Contractor: HERC, Inc. Steve Personnel: (12)
Date: 6/14/11 Ambient Air Temperature and General Weather Condition: 74° 2000 Security
Start Time 1: 8.00 Stop Time 1: 4.00 Start Time 2: Stop Time 2:
Total volume of water removed during the 8-hour AFVR Event: 1951 9 d
Total volume of product removed during the 8-hour AFVR Event: Approx 1.35-1.5 54/5
Product Recovery Rate:

Relevant Observations					
Estimated volume of water removed		190	127		
Depth to water at cessation of vacuuming (ft below TOC)	16.67				
Depth to product at cessation of vacuuming (ft. below TOC)	101				
Depth to water prior to stinger placement (ft. below TOC)	15.22				
Depth to product prior to stinger placement (ft. below TOC)	15:10				
Monitoring Well	MUS				

# CARMICHAEL 66 - 6/14/11

# **Aggressive Fluid/Vapor Recovery Notes**

		_			
vacuum conversion:	(inches	of water X	0.07355 =	: inches of me	rcury)

		MW-	MW-	Stinger Placement				
Time	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Stinger Depth	Product Depth	Water Level	Notes	
8:00	22		, , , , ,	15'6"	15.10	15.22		
8:30	92							
9'.00	22							
9:30	22							
10,00	22							
10:30	22							
11:00	22							
11:30	22							
12100	22							
12:30	22							
1.00	22							
1:30	22							
9,'00	22							
2.30	22							
3:00	22							
3:30	22							
4,00	22				-0-	16.67		
				·				
	÷							

Vacuum at Pump:

CARMICHAEL 66 - 6/14/11

# **Aggressive Fluid/Vapor Recovery Notes**

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

	M	w- /	м	W-	N	W-	M	W-
Time	Water Level	Vacuum Influence at Well (in. Hg)						
8,00	15.05	0						
8:30		6						
9'.00		٥						
9.30	·	0						
10.00		.20						
10:30		.20			_			
11:00		.26						
11:00		٥٥.						
12:00		.30						
12:30		.30						
1:00		.60						
1:30	·	.60					,	
2,00		.70						
۵٬،3۵		.70						
3'.60		.70					* ,	
3:30		.70						
41.00	15.65	.70						
					-			
		·						
							-	
					<del></del>			

# CARMICHAEL 66 - 6/14/11

# Aggressive Fluid/Vapor Recovery Notes

8:50 329 217 507 95 78 8:30 346 232 516 98 78 9:00 361 248 521 /02 78 9:30 382 271 538 /05 78 /0:00 416 289 546 /06 78 /0:30 394 281 546 /06 78 /1:00 361 276 552 107 78 /1:30 378 264 555 /07 78 /1:30 366 246 555 /07 78 /1:30 344 222 568 /07 78 /1:30 312 /12 574 /07 78 /1:30 312 /12 574 /07 78 /1:30 312 /12 574 /07 78 /1:30 312 /12 574 /07 78 /1:30 312 /12 574 /07 78 /1:30 313 /12 574 /07 78 /1:30 315 /07 78 /1:30 317 /06 591 /07 78 /1:30 317 /06 591 /07 78 /1:30 318 /07 78 /1:30 317 /06 591 /07 78 /1:30 317 /06 591 /07 78 /1:30 318 /07 78 /1:30 319 /07 78 /1:30 310 /07 78 /1:30 311 /07 78 /1:30 301 /07 78 /1:30 301 /07 78 /1:30 301 /07 78 /1:30 301 /07 78 /1:30 301 /07 78 /1:30 301 /07 78 /1:30 301 /07 78 /1:30 301 /07 78 /1:30 301 /07 78 /1:30 301 /07 78 /1:30 301 /07 78 /1:30 301 /07 78 /1:30 301 /07 78 /1:30 301 /07 78 /1:30 301 /07 78 /1:30 301 /07 78 /1:30 301 /07 78 /1:30 301 /07 78 /1:30 301 /07 78	Time	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Celsius)	Relative Humidity (%)	Other
8:30 346 232 516 98 78 9:00 361 248 521 /02 78 9:30 382 271 538 /05 78 /0:00 416 289 546 /06 78 /0:30 394 281 546 /06 78 /1:00 391 276 552 107 78 /1:30 378 264 555 107 78 /2:00 366 246 555 107 78 /2:00 366 246 557 /07 78 /2:30 352 238 557 /07 78 /2:30 344 222 568 /07 78 /2:30 352 78 568 /07 78 /2:30 360 571 /86 571 /07 78 2:30 361 /88 608 /07 78 3:00 288 /63 612 /07 78 7:30 256 791 /54 618 /07 78	8,'00	329		507	95	78	
9:00     361     348     531     78       9:30     382     371     538     765     78       76:00     416     389     546     766     78       76:30     394     381     545     766     78       76:00     391     376     552     107     78       76:00     366     246     555     107     78       76:00     366     246     555     107     78       76:00     364     246     555     107     78       76:00     344     222     568     707     78       76:00     347     222     574     107     78       9:00     257     786     571     78       3:30     361     78     608     707     78       3:00     288     73     612     707     78       3:30     371     754     618     707     78       3:30     371     754     618     707     78	8:30		232	516	98	· · · · · · · · · · · · · · · · · · ·	-
9:30     382     271     538     765     78       76:00     416     289     546     76     78       76:30     394     281     545     766     78       77:00     391     276     552     107     78       77:00     366     246     555     707     78       78:00     364     246     555     707     78       78:00     344     222     568     707     78       78:00     344     222     568     707     78       78:00     367     78     78     78       8:00     367     78     78     78       8:00     288     763     78     78       8:00     288     763     78     78       8:00     288     763     78     78       8:00     288     763     78     78       8:00     288     763     78     78       8:00     288     763     78     78       8:00     288     763     78     78       8:00     288     763     78     78       8:00     288     763     78     78 <td< td=""><td>9'.00</td><td>361</td><td>248</td><td>521</td><td>/02</td><td>1</td><td></td></td<>	9'.00	361	248	521	/02	1	
10.00   416   289   546   166   78   16.00   391   276   552   107   78   17.30   378   264   555   107   78   17.30   352   238   557   107   78   17.30   352   238   557   107   78   17.30   312   192   568   107   78   17.30   312   192   574   107   78   17.30   312   192   574   107   78   17.30   312   192   574   107   78   17.30   271   186   591   107   78   17.30   288   163   612   107   78   107   1	9:30	782	271				
10:30     394     281     545     166     78       11:30     398     264     552     107     78       11:30     378     264     548     107     78       12:00     366     246     555     107     78       12:30     352     238     557     107     78       1:00     344     222     568     107     78       1:30     312     192     574     107     78       2:30     267     186     591     107     78       2:30     301     188     608     107     78       3:00     288     163     612     107     78       3:30     271     154     618     107     78       5:30     271     154     618     107     78	100.00	416	289		106		
1/1:00     391     276     552     107     78       1/1:30     378     264     548     107     78       1/2:00     366     246     555     107     78       1/2:00     352     238     557     107     78       1/00     344     222     568     107     78       1/30     312     1/2     574     107     78       2/00     267     186     591     107     78       2/30     301     188     68     167     78       3/00     288     163     612     107     78       3/30     271     1/54     618     107     78       1/30     371     1/54     618     107     78	10:30	394	981	545	106		
11:30     378     244     548     107     78       12:00     364     246     555     107     78       12:30     352     938     557     107     78       1:00     344     222     568     107     78       1:30     312     142     574     107     78       9:00     247     186     591     107     78       9:30     301     188     608     107     78       3:00     288     163     612     107     78       3:30     271     154     618     107     78       5:30     271     154     618     107     78	11:00	391	276	552	107		
12:00   366   246   555   107   78     13:30   352   338   557   107   78     1:00   344   222   568   107   78     1:30   312   192   574   107   78     1:30   312   186   591   107   78     1:30   361   188   608   107   78     3:00   288   163   612   107   78     3:30   271   154   618   107   78     5:30   271   154   618   107   78     5:30   371   154   618   107   78	11:30	378	264	548	/07		
13:30     352     938     557     107     78       1:00     344     222     568     107     78       1:30     312     192     574     107     78       9:00     367     186     591     107     78       9:30     301     188     608     107     78       3:00     288     163     612     107     78       3:30     971     154     618     107     78	12:00	366	246	555	107		
1:00     344     222     568     107     78       1:30     312     192     574     107     78       0:00     267     186     591     107     78       0:30     301     188     608     107     78       3:00     288     163     612     107     78       3:30     271     154     618     107     78	12:30	352	978	557	107		
1:30 312 192 574 107 78  0:00 397 186 591 107 78  0:30 301 188 608 107 78  3:00 288 163 612 107 78  7:30 971 154 618 107 78	1:00	344	222	568	107		
0:00     297     186     591     107     78       0:30     301     188     608     107     78       3:00     288     163     612     107     78       3:30     271     154     618     107     78	1:30	312	192	574			
2:36     301     /88     608     107     78       3:00     288     /63     612     107     78       3:30     271     /54     618     /07     78		297	186	591	107		
3.30 871 154 618 107 78		301	/88	608			
3:30 271 154 618 107 78	3,00	288	163	612	107	78	
		271	154	618			
	4:00	259	/43	621	1		
							<del> </del>

# $\frac{\text{APPENDIX B}}{\text{POLLUTANT MASS REMOVAL DATA SHEETS}}$

Site: Tisdale's Quick Stop

**UST Permit #:** 18686

			Calculat	ions - Flow a	t DSCFM		
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)
6/14/11	8:00	507	0.022	95	78	0.028260024	10.31
6/14/11	8:30	516	0.022	98	78	0.031107004	10.41
6/14/11	9:00	521	0.022	102	78	0.035313888	10.39
6/14/11	9:30	538	0.022	105	78	0.038807747	10.63
6/14/11	10:00	546	0.022	106	78	0.040041944	10.76
6/14/11	10:30	545	0.022	106	78	0.040041944	10.74
6/14/11	11:00	552	0.022	107	78	0.041312626	10.84
6/14/11	11:30	548	0.022	107	78	0.041312626	10.76
6/14/11	12:00	555	0.022	107	78	0.041312626	10.90
6/14/11	12:30	557	0.022	107	78	0.041312626	10.94
6/14/11	1:00	568	0.022	107	78	0.041312626	11.16
6/14/11	1:30	574	0.022	107	78	0.041312626	11.27
.6/14/11	2:00	591	0.022	107	78	0.041312626	11.61
6/14/11	2:30	608	0.022	107	78	0.041312626	11.94
6/14/11	3:00	612	0.022	107	78	0.041312626	12.02
6/14/11	3:30	618	0.022	107	78	0.041312626	12.14
6/14/11	4:00	621	0.022	107	78	0.041312626	12.20
Averages		563.35	0.022	105.24	78.00	0.039294791	11.118

Tisdale's Quick Stop

**UST Permit #:** 18686

		Calcul	ations - Po	llutant	Mass Re	emoval in po	ounds		
Marg. Elap.	Elapsed Time	Flow (DSCFM)	PPM measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)
0	0	10.31	329	1	329	1749.56	0.000109225	0.068	0.000
30	30	10.41	345	1	345	1834.65	0.000114537	0.072	0.036
30	60	10.39	361	1	361	1919.73	0.000119849	0.075	0.037
30	90	10.63	382	1	382	2031.41	0.000126821	0.081	0.040
30	120	10.76	416	1	416	2212.21	0.000138109	0.089	0.045
30	150	10.74	394	.1	394	2095.22	0.000130805	0.084	0.042
30	180	10.84	391	1	391	2079.27	0.000129809	0.084	0.042
30	210	10.76	378	1	378	2010.14	0.000125493	0.081	0.04
30	240	10.90	366	1	366	1946.32	0.000121509	0.079	0.040
30	270	10.94	352	1	352	1871.87	0.000116861	0.077	0.038
30	300	11.16	344	1	344	1829.33	0.000114205	0.076	0.038
30	330	11.27	312	1	312	1659.16	0.000103581	0.070	0.035
30	360	11.61	297	1	297	1579.39	0.000098602	0.069	0.034
30	390	11.94	301	1	301	1600.66	0.000099929	0.072	0.036
30	420	12.02	288	1	288	1531.53	0.000095614	0.069	0.034
30	450	12.14	271	1	271	1441.13	0.000089970	0.066	0.033
30	480	12.20	259	1	259	1377.32	0.000085986	0.063	0.03
Averages		11.12	340.35	1.00	340.35	1809.94	0.000112994	0.075	0.03

Total Emission in pounds:

0.603

### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K Cg:m = PPMg \* (Mg/K3) Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3 PMRg = Cg \* Qstd \* 60 min/hr PMR = PMRg \* ((T2 -T1)/60)

Qstd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer) Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

 $K3 = 24.07 \text{ dsm}^3/1E6 \text{ mg-mole}$ , mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

	ON-HAZARDOUS	1. Generator's US EPA ID No	).		Manifest Document No	j	2. Page 1
3. Gener	ASTE MANIFEST alor's Name and Mailing Address				Document 140		of
TIS	daces Quickstop						
ECONO. I	9 THUPLOOD MANSHI	the KINGST	roc, sc				
10001	porter 1 Company Name	6.	US EPA ID Number	f			
	ERR, Inc.		JCR-00013		A. State Trans  B. Transporte	<u> </u>	53-6399
7. Transp	orier 2 Company Name	8,	US EPA ID Number	T	C. State Trans		
9. Design	nated Facility Name and Site Address	<u>l</u> 10.	US EPA ID Numbe		D. Transporte		
HE	RR, Inc. 1 N 701 Bypass		Our El Alta Manage	1	E. State Facili	nys ID	
7	1 N 101 Kypass	Dr			F. Facility's P	hone	
11. WAS	BON CITY NC 2	8463 17	JCR-000/3	98/L		910-653	-6399
	The tribute of the tribute			12. Ci	ontainers Type	13. Total Quantity	14. Unit WL/Vo
a.					<u> </u>		
Non	1-HAZ Petroleun	Contact	Weter Ava	/	V.T.	1251	GA
G b.		-				1001	
E N						1200	
E						TEN	
R <sup>c</sup>						-	
A T O							].
R d.							
G. Additio	onal Descriptions for Materials Listed Abov	/O			H Handing C	odes for Wastes Listed Ab	
					The factoring of	Out of Trapies Estate Ap	ove
15. Speci	al Handling Instructions and Additional Inf	omation	***************************************	***************************************	<u> </u>		
16 GENE	PATOR'S CERTIFICATION: I basely as				H = H		
in pro	RATOR'S CERTIFICATION: I hereby cer per condition for transport. The materials of	my mai the contents of this ship lescribed on this manifest are no	nent are fully and accurately t subject to federal hazardous	described and are in s waste regulations.	all respects		
<u> </u>							Date
Printed/T)	ped Name		Signature	***************************************		Ma	
T 17. Trans	porter 1 Acknowledgement of Receipt of N	atoriak		·		·	
R Printed/T)	ped Name	4	Signature		7		Date
Printed/Ty 18. Transp	eve Bivent	THAT	1 De	15/1	when	€ Mo	
O 18. Transp	porter 2 Acknowledgement of Receipt of M	aterials					Date
T Printedally	ped Name		Signature			Мо	nth Day Ye
5							
E R 19. Discre	pancy Indication Space						
F 19. Discre	pancy Indication Space						
F 19. Discre							
F 19. Discre	pancy Indication Space  / Owner or Operator; Certification of receit	at of the waste materials covered	by this manifest, except as n	ioled in Item 19.		ş	
F A C 20. Facility		ot of the waste materials covered		oled in Item 19.		Mo	Date Qth Day Ye

F-14 © 2002 LABEL MASTER ® (800) 621-5808 www.labelmaster.com



Rev. 3/95



#### C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

MR MARTY EASLER 196 RICHBURG ROAD **GREELEYVILLE SC 29056** 

SFP 08 2011



Re:

**QAPP Contractor Addendum Directive** 

Tisdales Quick Stop, 1989 Thurgood Marshall Blvd, Kingstree, SC

UST Permit # 18686

Release reported March 30, 2001 AFVR Report received June 27, 2011

Williamsburg County

Dear Mr. Easler:

The Underground Storage Tank Management Division (UST Division) of the South Carolina Department of Health and Environmental Control (SCDHEC) has reviewed the referenced report. The report indicates the presence of chemicals of concern in the groundwater.

To determine what risk the referenced release may pose to the environment and public health, and in accordance with Section 280.65 of the South Carolina Underground Storage Tank Control Regulations. implementation of a Groundwater-sampling event in which samples should be collected for BTEX, Naphthalene, MtBE, 1,2-DCA, ethanol, and 8-Oxygenates from all wells associated with this site as outlined in the UST Quality Assurance Program Plan (QAPP) is necessary. The groundwater-sampling event should be conducted in accordance with the UST QAPP and in compliance with all applicable regulations. A copy of the SCDHEC QAPP for the UST Division is available at: http://www.dhec.sc.gov/environment/lwm/html/ust.htm

Please have your contractor complete and submit the QAPP Contractor Addendum and Cost Agreement to the UST Division 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 pre-approval from the SCDHEC must be issued before work begins.

On all correspondence regarding this site, please reference UST Permit #18686. If you have questions or need additional information, feel free to contact me by telephone at (803) 896-4085, by fax at (803) 896-6245, or by e-mail to martinim@dhec.sc.gov.

Sincerely,

Jim Martin, Hydrogeologist

Corrective Action Section

Underground Storage Tank Management Division

Bureau of Land and Waste Management

Geological Resources, Inc., 2301 Crown Point Executive Drive, Suite F, Charlotte, NC 28227 cc:

Technical File



## Geological Resources, Inc.

September 30, 2011

Mr. Jim Martin
South Carolina Department of Health
and Environmental Control
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management





Re:

GRI Proposal No. 11-353

Cost Agreement and QAPP Contractor Addendum

Tisdale's Quick Stop

1989 Thurgood Marshall Blvd., Kingstree, Williamsburg County

UST Permit No. 18686

Dear Mr. Martin:

In response to your September 08, 2011 QAPP Contractor Addendum Directive, Geological Resources, Inc. (GRI) submits the attached Cost Agreement to conduct a comprehensive ground sampling event at the above referenced site. The associated QAPP Contractor Addendum is also attached. Please contact me at (704) 845-4010 with any questions.

Sincerely,

Geological Resources, Inc.

S.C. Site Rehabilitation Contractor #74

W. Scott Ball

Senior Project Manager

enclosure

cc:

file



South Carolina Department of Health and Environmental Control

H. Field Blank

#### July 1, 2011

# ASSESSMENT COMPONENT COST AGREEMENT SOUTH CAROLINA

Department of Health and Environmental Control
Underground Storage Tank Management Division
State Underground Petroleum Environmental Response Bank Account

\$5.00

each x

\$5.00

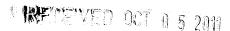
GRI Proposal No. 11-353 Facility Name: **Tisdales Quick Stop** UST Permit #: 18686 Cost Agreement #: UNIT PRICE ITEM QUANTITY UNIT **TOTAL** 1. Plan\* \$50.00 \$0.00 B. Tax Map Χ \$525.00 \$525.00 C. Tier II or Comp. Plan /QAPP Appendix B 1 Х 2. Receptor Survey \* \$500.00 \$0.00 3. Survey (500 x 500 feet) \$1,000.00 \$0.00 A. Comprehensive Survey Χ B. Subsurface Geophysical Survey 1. < 10 meters below grade \$2,750.00 \$0.00 X \$3,250.00 \$0.00 2. > 10 meters below grade X \$0.00 C. Geophysical UST or Drum Survey \$1,125.00 Χ 4. Mob/Demob (Each) \$0.00 \$575.00 A. Equipment X \$580.00 \$290.00 B. Personnel χ C. Adverse Terrain Vehicle to install wells x \$575.00 \$0.00 5. Soil Borings (hand auger)\* (Feet) \$0.00 \$14.00 feet Х 6. Soil Borings (drilled) & Field Screening \* Rate includes collection of water sample or soil sample, and lab or other analyses \$0.00 \$17.00 A. Standard feet C. Fractured Rock \$27.50 \$0.00 feet Χ 7. Soil Leachability Model (Each) \$0.00 \$200.00 each x 8. Abandonment\* (per foot) \$0.00 A. 2" diameter or less \$5.00 feet Х \$5.50 \$0.00 B. Greater than 2" to 6" diameter feet Χ \$18.00 \$0.00 C. Dug/Bored well (up to 6 foot diameter) feet Х 9. Well Installation\* (per foot) \$0.00 \$20.00 A. Water Table (hand augered) feet Х \$38.00 \$0.00 B. Water Table (drill rig) feet Χ \$0.00 \$58.00 C. Telescoping/ Pit Cased feet Х \$58.00 \$0.00 D. Rock Drilling feet Х \$45.00 \$0.00 E. 2" Rock Coring feet Х \$47.20 \$0.00 G. Rock Multi-sampling ports/screens feet Х \$45.00 \$0.00 H. Recovery Well (4 inch diameter) each x \$18.50 I. Pushed Pre-packed screen (1.25 diameter) each x \$0.00 \$0.00 \$45.00 J. Rotosonic (2 inch diameter) each x 10. Groundwater Sample Collection / Gauge Depth to Water or Product (Each) \$1,815.00 \$55.00 A. Groundwater Purge 33 wells x \$0.00 B. Air or Vapors samples x \$90.00 \$60.00 2 samples x \$30.00 C. Water Supply \$70.00 \$35.00 D. Groundwater No Purge or Duplicate 2 samples x \$20.00 \$80.00 E. Gauge Well only (MWs 1A, 2A, 3A, 4A) per well x \$0.00 F. Sample Below Product wells x \$50.00 \$0.00 \$40.00 G. Pasive Diffusion Bag each x

11. Laboratory Analyses-Groundwater (Each Samp	(ما	1		
A1. BTEX+Naphth.+ Oxyg's+ 1,2 DCA + Ethanol	39	samples x	\$100.00	\$3,900.00
AA. Lead, Filtered	"	samples x	\$46.00	\$0.00
B1. Rush EPA Method 8260B (All of item A.)		samples x	\$143.00	\$0.00
C1. Trimethal, Butyl, and Isopropyl Benzenes		samples x	\$40.00	\$0.00
D. PAH's		samples x	\$120.00	\$0.00
E. Lead, Unfiltered		samples x	\$20.00	\$0.00
F. EDB by EPA 8011		samples x	\$55.00	\$0.00
FF. EDB by EPA Method 8011 Rush		samples x	\$35.00 \$75.00	\$0.00
G. 8 RCRA Metals		1 '	\$140.00	\$0.00
H. TPH (9070)		samples x	\$140.00 \$55.00	\$0.00
l. pH		samples x	, i	\$0.00
J. BOD		samples x	\$10.00	
		samples x	\$40.00	\$0.00
P1. Ethanol 11. Analyses-Soil (Each Sample)		samples x	\$21.50	\$0.00
			¢400.00	<b>60 00</b>
Q. BTEX + Naphth.  R. PAH's		samples x	\$100.00 \$130.00	\$0.00
S. 8 RCRA Metals		samples x	\$120.00 \$150.00	\$0.00
		samples x	\$150.00	\$0.00
T. Oil & Grease (9071)		samples x	\$60.00	\$0.00
U. TPH-DRO (3550B/8015B)		samples x	\$65.00	\$0.00
V. TPH- GRO (5030B/8015B)		samples x	\$65.00	\$0.00
W. Grain size/hydrometer		samples x	\$99.00	\$0.00
X. Total Organic Carbon		samples x	\$35.00	\$0.00
11. Analyses-Air (Each Sample)				
Y. BTEX + Naphthalene		samples x	\$247.50	\$0.00
11. Analyses-Free Phase Product (Each Sample)				***
Z. Hydrocarbon Fuel Identification  12. Aquifer Characterization*		samples x	\$620.00	\$0.00
				**
A. Pumping Test		hours x	\$120.00	\$0.00
B. Slug Test*		tests x	\$150.00	\$0.00
C. Fractured Rock		tests x	\$500.00	\$0.00
13. Free Product Recovery Rate Test* (Each)	<b>_</b>	tests x	\$120.00	\$0.00
14. Fate/Transport Modeling				
A. Mathematical Model		each x	\$300.00	\$0.00
B. Computer Model		each x	\$500.00	\$0.00
15. Risk Evaluation				
A. Tier I Risk Evaluation		×	\$300.00	\$0.00
B. Tier II Risk Evaluation		X	\$500.00	\$0.00
16. Subsequent Survey*		x	\$300.00	\$0.00
17. Disposal* (gallons or tons)				,
A. Wastewater	180	gallons x	\$0.80	\$144.00
B1. Free Product		gallons x	· \$0.85	\$0.00
C. Soil Treatment/Disposal		tons x	\$72.50	\$0.00
D. Drilling fluids		gallons x	\$0.80	\$0.00
18. Miscellaneous (attach receipts)				
		x		\$0.00
		x		\$0.00
		х		\$0.00
20. Tier I Assessment (Use DHEC 3665 form)		Х	,	\$0.00
21. IGWA (Use DHEC 3666 form)		Х		\$0.00
22. Corrective Action (Use DHEC 3667 form)		х		\$0.00

23. Aggressive Fluid & Vapor Recovery (AFVR)				
A. 8-hour Event*		each x	\$3,000.00	\$0.00
B. AFVR per-hour Continuance		per hour x	\$204.00	\$0.00
C. Off-gas treatment per-hour Continuance		per hour x	\$35.00	\$0.00
24. Granulated Activated Carbon (GAC) filter system	n installation &	service:		
A. New GAC System Installation*		each x	\$2,500.00	\$0.00
B1. Refurbished GAC Sys. Install*		each x	\$1,180.00	\$0.00
C. Filter replacement/removal*		each x	\$450.00	\$0.00
D1. GAC System removal, cleaning, & refurbishmen	t*	each x	\$720.00	\$0.00
E. GAC System housing		each x	\$450.00	\$0.00
F. In-line particulate filter		each x	\$150.00	\$0.00
G. Additional piping & fittings		feet x	\$4.00	\$0.00
25. Well Repair				
A. Additional Copies of the Report Delivered		each x	\$32.50	\$0.00
B. Repair 2x2 MW pad		each x	\$100.00	\$0.00
C. Repair 4x4 MW pad		each x	\$150.00	\$0.00
D. Repair well vault		each x	\$225.00	\$0.00
F. Replace well cover bolts		each x	\$10.00	\$0.00
G. Replace locking well cap & lock		each x	\$15.00	\$0.00
H. Replace/Repair stick-up		each x	\$137.50	\$0.00
I. Convert Flush-mount to Stick-up		each x	\$175.00	\$0.00
J. Convert Stick-up to Flush-mount		each x	\$125.00	\$0.00
K. Replace missing/illegible well ID plate		each x	\$22.50	\$0.00
Report Prep & Project Management	15%	х	\$7,179.00	\$1,076.85
TOTAL				\$8,255.85

<sup>\*</sup>The appropriate mobilization cost can be added to complete these tasks, as necessary

Appendix B: Contractor Addendum



## **Section A: Project Management**

Date:

### A1 Title and Approval Page

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Quality Assurance Project Plan
Addendum to the SC DHEC UST Programmatic QAPP
For
Tisdales Quick Stop – UST Permit No. 18686

1989 Thurgood Marshall Blvd., Kingstree, Williamsburg County, South Carolina

Prepared by: W. Scott Ball
Geological Resources, Inc.
S.C. Site Rehabilitation Contractor #74

9/30/2011

Geological Resources. Inc.

Approvals Date Jim Martin SC DHEC Project Manager Signature John M. Brown, PG - GRI Contractor QA Manager Signature Date 4 Scott Ball - GRI Site Rehabilitation Contractor Signature Date\_09-30-2011 Harry Behzadi Signature Laboratory Director

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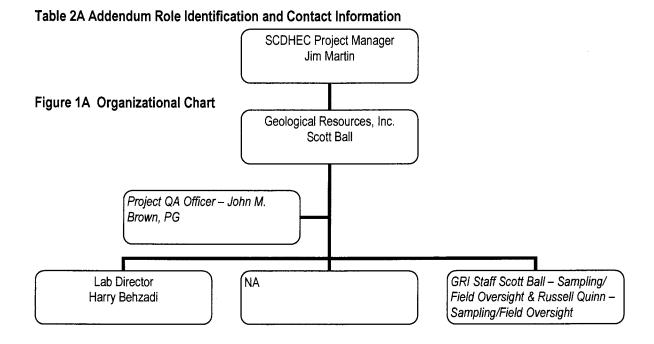
## **A3 Distribution List**

Name	Title	Organization/Address	Telephone Number	Fax Number	Email Address
Jim Martin	SC DHEC Technical Project Manager	SCDHEC, UST Management Division, 2600 Bull St., Columbia, SC, 29201	803-896- 8085	803-896- 6245	Jim Martin (martinjm@dhec.sc.gov)
John M. Brown, P.G.	Project Verifier	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704-845- 4010	704- 845- 4012	johnbrown@geologicalresourcesi nc.com
John M. Brown, P.G.	QA Officer	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704-845- 4010	704- 845- 4012	johnbrown@geologicalresourcesi nc.com
Scott Ball	Site Rehabilitation Contractor	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704-845- 4010	704- 845- 4012	wsb@geologicalresourcesinc.com
Scott Ball	Field Manager	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704-845- 4010	704- 845- 4012	wsb@geologicalresourcesinc.com
NA	Well Services/Driller	NA	NA	NA	NA
Harry Behzadi	Laboratory Director	Accutest, 4405 Vineland Road, Suite C-15, Orlando, FL 32811	407-425- 6700	427- 425- 0707	harryb@accutest.com

**Table 1A Addendum Distribution List** 

**A4 Project Organization** 

Role from the UST Master QAPP	Name of person in this Role for this Project	Organization/Address	Telep hone Num ber	Fax Number	Email Address
Project Manager	Jim Martin	SCDHEC, UST Management Division, 2600 Bull St., Columbia, SC, 29201	803- 896- 8085	803-896- 6245	Jim Martin (martinjm@dhec.sc.gov)
John M. Brown, P.G.	QA Officer	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704- 845- 4010	704- 845- 4012	johnbrown@geologicalresou rcesinc.com
Site Rehabilitation Contractor	Scott Ball	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704- 845- 4010	704- 845- 4012	wsb@geologicalresourcesin c.com
Field Manager	Scott Ball	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704- 845- 4010	704- 845- 4012	wsb@geologicalresourcesin c.com
Analytical Laboratory Director	Harry Behzadi	Accutest, 4405 Vineland Road, Suite C-15, Orlando, FL 32811	407- 425- 6700	427- 425- 0707	harryb@accutest.com
Soil Boring and Monitoring Well Driller	NA	NA	NA	NA	NA
Project Verifier	John M. Brown, PG	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704- 845- 4010	704- 845- 4012	johnbrown@geologicalresou rcesinc.com



#### A5 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.

Release reported in March 2001. IGWA completed in December 2001. Tier II completed March 2003. Tier II Addendum completed in October 2004. 35 shallow monitoring wells (MW-1 through MW-31 and MW-1A through MW-4A) and 2 telescoping wells (TW-1 and TW-2) have been installed at the site. Numerous ground water sampling events and AFVR events were conducted at the site from February 2004 through June 2011. The last comprehensive ground water sampling event was conducted in November 2009. MW-1A through MW-4A have historically contained free product and will only be gauged for free product during the proposed sampling event. In the event that any of the wells do not contain free product, samples will be collected from them.

The release is currently being assessed to monitor contaminant concentrations in the ground water.

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

UST

### A6 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).

Comprehensive ground water sampling event.

2.	The work	will begin	within	5 business	days			aft	er cost app	orova	l and
	sampling	should	be	complete	by_	<u>30</u>	days	after	approval	of	cos
	<u>agreement</u>										

3. Are there are time or resource constraints? Yes Include those factors that may interfere with the tentative schedule. Inclement weather, personnel availability, equipment failures, could possibly bring changes such as delay of final report submittal, to the tentative schedule.

# A7 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.

Tisdales Quick Stop, 1989 Thurgood Marshal Blvd, Kingstree, Williamsburg County, SC (see attached Figures 1 & 2)

# **A8 Training and Certificates**

Required training and licenses:

Title/Job	Name	Training Required	Date training received	Type of License	License Number
Project Manager	Scott Ball	8 hour HAZWOPER	8/5/2011	NA	NA
Field Geologist	Russell Quinn	8 hour HAZWOPER	8/5/2011	NA	NA
Senior Geologist	John Brown, P.G.	NA	3/10/1994	P.G.	S.C. 1116
NA	Accutest	SC Certification	NA	SC Certification	96038001

Table 3A Required Training and Licenses

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

Terry Kennedy of	<u>Seological Resources, Inc.</u> is responsible to ensuring that personnel participating in th	į
project receive the	proper training. All training records will be stored in the following	
location:	Geological Resources, Inc. Corporate Files	
<u>lt is understood</u>	that training records will be produced if requested by SC DHEC.	

# Commercial Lab(s)

Full Name of the Laboratory	Accutest		
-----------------------------	----------	--	--

Name of Lab Director Harry Behzadi	
SC DHEC Certification Number 96038001	
Parameters this Lab will analyze for this project: BTEX, MTBE, naphthalene, 1,2-DCA, ethanol Oxygenates by Method 8260	and 8
Full Name of the Laboratory	
Name of Lab DirectorSC DHEC Certification Number	
Parameters this Lab will analyze for this project:	
Please note: SC DHEC may require that the contractor submit some or all of the Laboratory's as part of this QAPP.	SOPs
A9 Documents and Records	
Personnel will receive the most current version of the QAPP Addendum via: (Check all that apply)	
X_US MailCourier _X_Hand delivered	
Other (please specify): e-mail	

Record	Produced By	Hardcopy/ Electronic	Storage Location For how long?	Archival
Field Notes	GRI	Hardcopy and electric	20 Years	Yes – Computer and GRI library
Chain of Custody	Accutest	Hardcopy and electric - EDD	10 Years	Yes - Electronic
Chain of Custody	GRI	Hardcopy and electric	20 Years	Yes – Computer and GRI library
Report	GRI	Hardcopy and electric	20 Years	Yes - Computer and GRI library
Lab Data	Accutest- Orlando	Hardcopy and electric - EDD	10 Years	Yes - Electronic

Table 4A Record Identification, Storage, and Disposal

# **Section B Measurement/Data Acquisition**

# **B1 Sampling Process/Experimental Design**

ltem	Start Date	End Date	Comments
QAPP Preparation	9/8/2011	9/30/11	In Progress
QAPP Approval	1 business day after submittal to DHEC	30 calender days from date received by DHEC	Assume 30 day turnaround
Ground Water	5 days from receipt	1 – 2 weeks after	
Sampling	of approved ACCA	QAPP approval	
Report Preparation	15 days from receipt of lab report	3 – 4 weeks from receipt of lab report	

**Table 5A Sampling Activities** 

# **B2 Sampling Methods**

Other

Please note: The contractor must follow sampling protocols as given in the UST QAPP.				
Estimate the number of samples of each matr	ix that are expected to be collected:			
Soil				
Ground Water from monitoring wells	33 (MW-1 through MW-31, TW-1 and TW-2) as shown on attached Figure 2			
From Drinking/Irrigation water wells	WSW-1 and WSW-3 as shown on attached Figure 2			
From surface water features				

temperature blank, field blank, trip blank and 2 duplicates

Total number of Water samples	<u>39</u>		
<b>Equipment needed for sampling:</b> Sampling equ (if required), Horiba for field measurements (pH, D bailers, nylon string, nitrile gloves, cooler, ice, sam drum to containerize purge water (if required).	O, Temp., specific conduct	tivity), disposable polyethyle	ne
The samples will be (check as many as apply):	Homogenized	_XSplit	
If any of the above are circled please indicate he Depth to water and free product (if present) will be and/or an interface probe. Readings will be record sampled by lowering a polyethylene bailer attached sample will then be decanted from bailer into the lapurging is required, Approximately 3 well volumes temperature, specific conductivity) will be recorded on sample data forms. Purge water will be placed sampling activities.	measured using a decontaged on sample data forms. It is a nylon string down into aboratory provided sample will be removed and field red initially, after each volume	aminated water level indicate "No purge" wells will be to the well until filled. Water kits and placed on ice. If neasurements (pH, DO, e and after sample collection	•
Will Sampling Equipment have to be cleaned a	nd decontaminated or is	everything disposable?	
Water level indicator, interface probe and Horiba a	are decontaminated betwee	en each sample collection.	

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.

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. Water level indicator, interface probe and Horiba will be cleaned with alconox or a phosphate free soap and tap water. Rinse water will be

Fed-Ex for shipping of samples

drummed if necessary.

Nitrile gloves, string and bailers are disposable.

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
Horiba	Repair @ Enviro Equipment	Field Book/Notes	Russell Quinn
Water level meter	Repair @ Enviro Equipment	Field Book/Notes	Russell Quinn
Interface probe	Repair @ Enviro Equipment	Field Book/Notes	Russell Quinn

**Table 6A 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? After each sample is collected, it is placed in an ice filled cooler that is secured with the sampling personnel's company vehicle. Upon completion of sampling activities, sampling personnel sends the secured cooler and chain of custody via Fed-Ex to the laboratory. Samples are generally sent out via Fed-Ex at the end of each day's sampling event. Or, if possible, the samples/cooler are taken directly to the laboratory's service center where possession of the samples is taken by the lab. Samples requiring analyses that have short hold times are always sent out the same day the samples were collected. Even if short hold times are not a concern, collected samples are never kept in the sampler's/contractors possession for more than 24 hours.
- 2. How will the contactors cool the samples and keep the samples cool? Ice is placed in each cooler containing the empty sample kits prior to the start of sampling activities. The ice is chipped/cubed and typically purchased in 10 to 20 pound bags from a grocery or convenience store. The ice is checked periodically throughout the day during sampling and replenished when needed, typically 2 3 times a day during the summer months. Some of the cold water from the melted ice is retained in the cooler with replenished ice to retain an ice "slurry". Fresh ice is placed on the samples at the end of each sampling day prior to delivery to a laboratory service center or prior to shipping via Fed-Ex.
- 3. How will the lab determine the temperature of the samples upon receipt? Will they be using a temperature blank? A temperature blank should be included with each cooler of samples delivered to the laboratory. The lab will determine and record the temperature of the temperature blank using I/R thermometer. If a temperature blank is not submitted, the surface temperature of a

sample will be determined using an I/R thermometer. If the initial temperature reading is greater than 6° C, the lab will spot-check samples from four corners and center of the cooler using an I/R thermometer. If any of these temperatures are below 6° C, the lab will check the surface temperature of each sample and make note of any samples received with the 0.5° C to 6° C range. If the temperature of the samples upon receipt exceeds storage requirements, the exceedance shall be documented in laboratory records and discussed with GRI. The decision regarding the potentially affected samples shall also be documented.

#### 4. Where will the samples be stored in the Lab once they are received?

Samples are unpacked and inspected in the sample receipt area. After sample entry, samples are placed in an assigned and identified storage location until needed for analysis. Samples requiring cold storage will be stored between 0.5° to 6°C in an assigned and identified storage location. Samples which can be stored at room temperature will be stored in an assigned and identified room temperature storage location. Sample storage locations are secured and monitored for accurate temperature control.

5. Describe the chain of custody procedure and attach a copy of each chain of custody that will be used. If a Chain of Custody SOP exists from the Lab and the Contractor is willing to adhere to it, then this may be attached.

Chain of custody (COC) will be maintained from collection through data reporting. The COC record will be used as the primary documentation mechanism to ensure that information pertaining to the custody of each sample from field to laboratory is recorded. An example COC record is attached.

Sample possession during all sampling efforts must be traceable from the time of collection until the results are verified and reported. The sample custody procedures provide a mechanism for documentation of all information related to sample collection and handling to achieve this objective. The sample collector is responsible for the care and custody of samples until they are transferred to another person or dispatched properly under COC rules. A sample is defined as being under a person's custody if any of the following conditions exist: (1) it is in their possession, (2) it is in their view, after being in their possession, (3) it was in their possession and they have secured it, or (4) it is in a designated secure area.

All sample shipments will be accompanied by a COC record, which identifies its contents. The COC record will include the following information:

- Project name or number
- Project location
- Unique sample identification
- Date and time of sample collection
- Sample matrix (e.g., water, soil, etc.)

- Sample type (e.g., composite, grab, etc.)
- Preservatives used
- Number and type of containers used
- Analytical method to be performed
- Printed name and signature of sample collector(s)
- Custody transfer signatures and dates and times of sample transfer from the field to transporters and to the laboratory
- Bill of lading or transporter tracking number (if applicable)

All shipping containers will be secured with custody seals for transportation to the laboratory. Protective packing will be used with sample bottles to minimize the risk of breakage during transport. Shipping containers will be lined with plastic to minimize the effect of any breakage and to contain any spills. Samples that are known or suspected to be highly contaminated (based on field observations) will be packaged and shipped separately from other samples. When samples are required to be stored at a temperature that is less than or equal to 6°C, generous amounts of ice will be packed with the samples.

Sample Control is responsible for unpacking the cooler, signing the COC record, and documenting the date and time that samples arrived at the lab. Sample Control tracks the custody of the sample between receipt and entry where a unique sample ID is assigned. The condition, temperature, and appropriate preservation of samples shall be checked and documented on the COC record or alternate laboratory documentation that will be included in the laboratory report. After entry and review, the COC record is scanned into the LIMS and the original is stored with the client paperwork.

The security system used by the laboratory allows Accutest to designate the entire facility as a secure area since all exterior doors are either locked or attended. A record of sample preparation and analysis is included in the laboratory report, consisting of the analyst's initials, and date and time for all preparations and analyses performed on the sample.

Standard operating procedures (SOP) describing sample control and custody shall be maintained by the laboratory.

## **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	Equipment	Comments
-----------	---------	--------	-----------	----------

		Referenced		
BTEX, MTBE, 1,2-	MS005	8260B	Agilent 5973 or	
DCA,Naphthalene			5975, OI Analytical	
			purge and trap	
			system	
8 Oxygenates	MS005	8260B-oxy	Agilent 5973 or	
			5975, Ol Analytical	
			purge and trap	
			system	
pН			Horiba	
Dissolved Oxygen			Horiba	
Conductivity			Horiba	
temperature			Horiba	

Table 7A 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.

Abbreviation	Lab Identification of this SOP	Full Name of the SOP
MS005	MS005	Analysis of Volatile Organics by GC/MS

Table 8A SOP Abbreviation Key

2. Identify procedures to follow when failures occur, identify the individual responsible for corrective action and appropriate documentation:

Failure	Response	Documented Where?	Individual Responsible				
CCV or ICV outside of control Limits	Perform maintenance, recalibrate	Run Log	Bench Analyst				
MS/MSD outside of control limits	Investigate matrix effect, reference Blank Spike	Run Log	Bench Analyst				
Blank Spike outside of control limits	Investigate cause of failure, perform maintenance if necessary, re-analyze affected samples	Run Log and Maintenance Log	-				
Tune outside of control criteria	Perform detector maintenance, check for leaks	Run Log	Bench Analyst				
pH meter – Horiba	Calibrate, clean, replace battery	Field Log Book	Russell Quinn				
DO Meter – Horiba	Calibrate, clean, replace battery	Field Log Book	Russell Quinn				
Temperature meter – Horiba	Calibrate, clean, replace battery	Field Log Book	Russell Quinn				
Conductivity meter - Horiba	Calibrate, clean, replace battery	Field Log Book	Russell Quinn				

**Table 9A Corrective Action Procedures** 

#### 3. Identify sample disposal procedures.

Analysis	Matrix	Schedule for disposal	Method for disposal	Comments
8260B	Ground Water	In cool storage for a minimum 30 days after report submission, then stored at ambient until disposal	Glass crusher, water neutralized and siphoned off to a holding tank, which is pumped out by licensed waste handling company	

Table 10A Sample Disposal

4. Provide SOPs for the Kerr Method or the Ferrous Iron Method if these are parameters for this study. This can be attached or written here. If attached please note that it is an attachment and where it is located (if applicable).

# **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.

Serial Number	Type of Maintenance	Frequency	Parts needed/Location	Person responsible
GRI1	Calibration	Prior to each sampling event	Batteries, calibration solutions, replacement DO membranes – GRI equipment room	Russell Quinn
GRI1	Replace batteries	As needed	Batteries – GRI equipment room	Russell Quinn
GRI1	Replace Batteries	As needed	Batteries – GRI equipment room	Russell Quinn
Multiple units	Leak check, gas pressure check, detector check, septa replacement	As warranted by passing instrument QC and	As recommended in operator's manuel. Accutest Laboratories Southeast, Inc.	Bench Analyst
	GRI1 GRI1 GRI1	GRI1 Calibration  GRI1 Replace batteries  GRI1 Replace Batteries  Multiple units Leak check, gas pressure check, detector check, septa	GRI1 Calibration Prior to each sampling event  GRI1 Replace batteries As needed  GRI1 Replace Batteries As needed  Multiple units Leak check, gas pressure check, detector check, septa replacement instrument	GRI1 Calibration Prior to each solutions, replacement DO membranes – GRI equipment room  GRI1 Replace batteries As needed Batteries – GRI equipment room  GRI1 Replace Batteries As needed Batteries – GRI equipment room  Multiple units Leak check, gas pressure check, detector check, septa replacement production of the pressure check, detector check, septa replacement production of the product of

**Table 11A Instrument and Equipment Maintenance** 

2. Identify the testing criteria for each lab or field instrument that is used to ensure the equipment is performing properly. Indicate how deficiencies, if found, will be resolved, re-inspections performed, and effectiveness of corrective action determined and documented. Give the person responsible for this

Instrument/Equipment & Serial Number	Type of Inspection	Requirement	Individual Responsible	Resolution of Deficiencies
Horiba	Physical	Calibrate/Repair as needed	Russell Quinn	Return to

				manufacturer if needed
Water Level Indicator	Physical	Repair as needed	Russell Quinn	Return to manufacturer if needed
Interface probe	Physical	Repair as needed	Russell Quinn	Return to manufacturer if needed
Agilent 5973 of 5975, OI analytical purge and trap system	Tune check pass control before every analytical shift, then daily CCV passes method-defined criteria	Daily	Bench Analyst	Perform maintenance, recalibrate if necessary

Table 12A Instrument and Equipment Inspection

# **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*
Horiba	Manufacturer's Directions	Prior to the sampling event	Within limits established by manufacturer	Send to manufacturer or Enviro-Equipment	Send to manufacturer or Enviro- Equipment	Send to manufacturer or Enviro- Equipment
Agilent 5973 or 5975 equipped with OI analytical purge and trap system	Calibrate with series of standards as described in SW-846 8260B, internal standard calibration procedure	Initial calibration performed as necessary and verified daily (CCV)	As described in SW-846 8260B method	In case of daily calibration (CCV) failure, investigate cause of failure, perform maintenance if necessary and recalibrate	Bench Analyst	MS005

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference*

**Table 13A Instrument Calibration Criteria and Corrective Action** 

# **B8 Inspection/Acceptance Requirements for Supplies and Consumables**

- 1. Identify critical supplies and consumables for field and laboratory, noting supply source, acceptance criteria, and procedures for tracking, storing and retrieving these materials.
- 2. Identify the individual(s) responsible for this.

ltem	Vendor	Acceptance criteria	Handling/Storage Conditions	Person responsible for inspection and tracking.		
VOC vials	Scientific Free of contamination above ½		Accutest	Bench Analyst		
	Products, LLC	RL	Laboratories			
			Southeast shipping			
			department			
Calibration	Various	Within expiration date as	Standard	Bench Analyst		
Standards		specified by method	refrigators			
			according to			
			manufacturer's			
			instructions			
Analytical columns	Restek	In good condition	In the lab	Bench Analyst		
Tofler Deilere	FON	Sealed in unbroken plastic	GRI Warehouse in	Scott Ball		
Teflon Bailers	EON		cardboard boxes	Scott Dali		
Nitrila Claves	FON	Sealed in unbroken dispenser	GRI Warehouse in	Coott Doll		
Nitrile Gloves	EON	boxes	cardboard boxes	Scott Ball		
Nislan Ctring	FON	Sealed in plastic	GRI Warehouse in	Soott Poll		
Nylon String	EON		cardboard boxes	Scott Ball		

Table 14A List of Consumables and Acceptance Criteria

# **B9 Data Acquisition Requirements (Non-Direct Measurements)**

<sup>\*</sup> 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.

- 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
Computer database and GRI library	Historical ground water elevation and quality data	For showing contaminant concentration and ground water flow trends	
SCDHEC FOI	Historical ground water elevation and quality data	For showing contaminant concentration and ground water flow trends	

**Table 15A Non-Direct Measurements** 

4. Identify key resources/support facilities needed.

# B10 Data Management

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

GRI orders lab kit from Accutest

Accutest ships kit to GRI office (if done directly from Orlando facility) or courier delivers kit to GRI office from service center

Field personnel collects lab samples and returns lab samples and field notes to office.

Accutest courier picks up samples and signs COC. (Alternately - GRI ships coolers to Accutest Southeast)

Samples are analyzed as per the COC and SOPs.

Lab report is emailed to Project manager. Data is checked if usable is populated into tables for report deliverable.

Data is stored at lab and in GRI office (electronic and hard copies).

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?

Laboratory - CoC are scanned into PDF upon log-in, subsequent changes in tests ordered (if any) are made via formal request. Computer records are incrementally backed up through LAN every 20 minutes and fully backed up once a week.

Field Staff - Original field notes are reviewed by a senior geologist and project manager upon return of field staff to the GRI office then scanned into a PDF file and saved to working files stored at GRI.

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.

Every piece of analytical data is reviewed once by bench analyst upon initial data processing and undergoes secondary review by section supervisor or senior analyst prior to release to the clients. Third level review performed by QA staff at 10-15% of data.

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).

Raw analytical data is incrementally backed up; full automatic backup occurs once a week and tapes are produced in duplicates. One copy stored off-site. Bench run logs, CoC and other handwritten records are scanned into PDF files; sample reports are converted into PDF files and stored on local servers. Logbooks, Certificates of Analysis, etc. are secured on-site in lockable storage.

As with field notes, GRI reports are converted into PDF files and stored on the GRI server. Hard copies of reports are stored in the GRI library.

# **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. The samples will be collected by the on-site supervisor Will this person have the authority to stop work if severe problems are seen? Yes
- 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? 1. GRI's Contract QA Manager (John M. Brown. P.G.) will review the QC Data Summary associated with each Accutest Report to determine that all QA/QC requirements of the laboratory's SOP are met. 2. Accutest Laboratories Southeast participates in the semiannual analyses of PT samples in order to maintain primary state

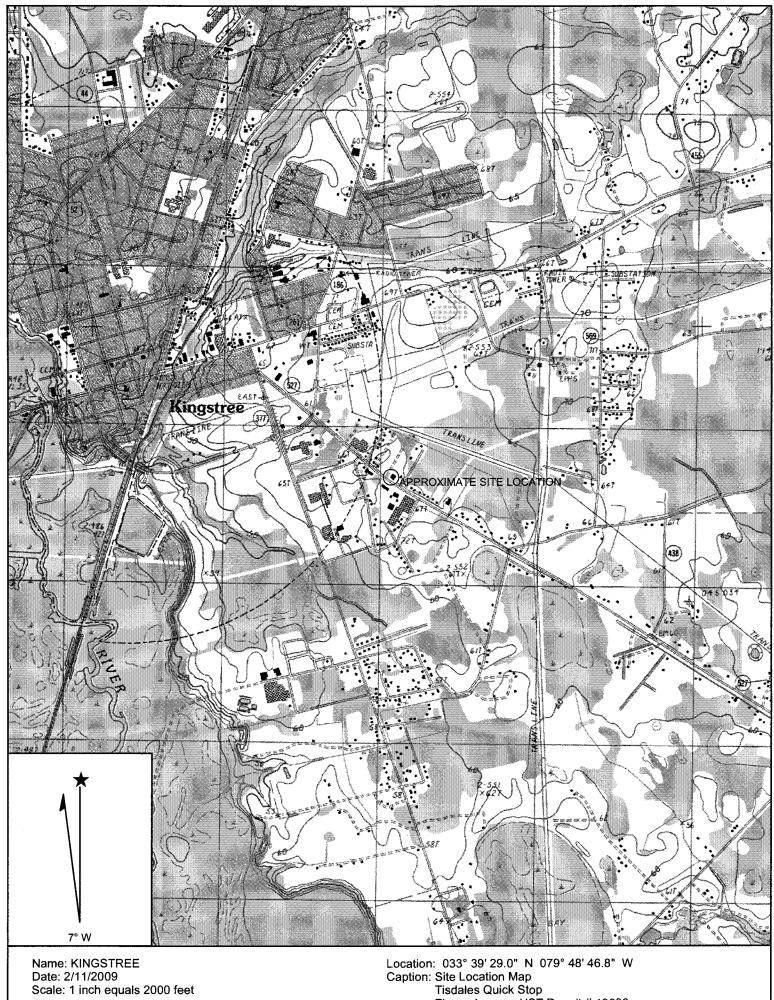
certification and for the benefit of other states' certification program. Accutest Laboratories Inc. maintains corporate purchasing contract with ERA, Waters Company, and results are on file with DHEC, lab certification group When or how often are these done? 1. Upon receipt of each laboratory report. 2. Semi-annually Who will the results be given to and who has the ability to stop work if problems are severe? 1. GRI's Contract QA Manager, Mr. John M. Brown. 2. Accutest Lab Director.

### **C2** Reports to Management

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

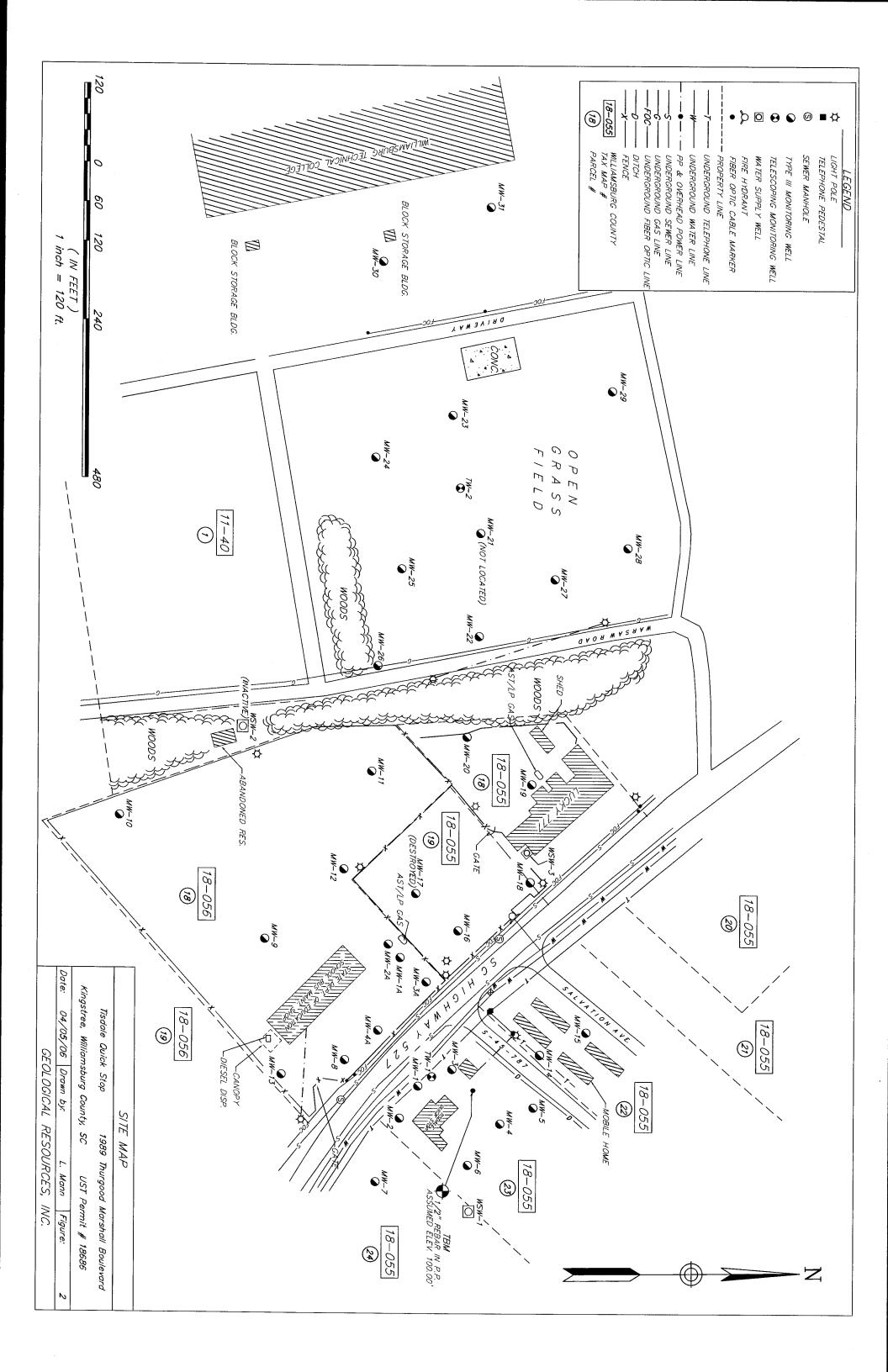
# **Section D Data Validation and Usability**

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



Scale: 1 inch equals 2000 feet

UST Permit # 18686 Figure 1



# 國M 基ACCUTEST.

# Accutest Laboratories Southeast Chain of Custody

Chain of Custody
4405 Vineland Road, Suite C-15 Orlando, Pl 32811

Accutest JOB #

PAGE	ΩF
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Project Cont	tact E-mail			Froject #				· · · · · · · · · · · · · · · · · · ·																			OI - Oil LIQ - Other Liquid
Phone#				Fax#																							AIR - Air SOL - Other Solid
Sampler(s)	Name(s) (Printed)				chase Orde	r#																					WP - Wipe
Accutest Sample #	Field ID / Point of Col	lection	DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	유	NON BACK			HZSOA	NAOH-ZNAC	DI WATER	MEOH					//							LAB USE ONLY
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#### C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

MR MARTY EASLER 196 RICHBURG ROAD GREELEYVILLE SC 29056 OCT 26 2011 US;

Re:

**Groundwater Sampling Directive** 

Tisdales Quick Stop, 1989 Thurgood Marshall Blvd, Kingstree, SC UST Permit # 18686, CA#42281 Release reported March 30, 2001 GRI Proposal October 7, 2011 Williamsburg County

Dear Mr. Easler:

The Underground Storage Tank Management Division (UST Division) of the South Carolina Department of Health and Environmental Control (SCDHEC) has reviewed the referenced addendum submitted on your behalf by Geological Resources, Inc. The previous assessment work for this release indicates that petroleum Chemicals of Concern (CoC) are present in the groundwater at concentrations that exceed risk-based screening levels (RBSLs). In order to obtain current groundwater quality data, a comprehensive groundwater sampling event is necessary. All work should be conducted in accordance with the UST Quality Assurance Program Plan (QAPP) and must be conducted in compliance with all applicable regulations. A copy of SCDHEC QAPP for the UST Management Division is available at http://www.scdhec.gov/environment/lwm/html/ust.htm.

Groundwater sampling activities at the site should begin immediately upon receipt of this letter. Cost Agreement #42281 has been approved for the amount shown on the enclosed cost agreement form for the sampling of all monitoring wells associated with the release. Groundwater samples should be collected and analyzed for BTEX, Naphthalene, MtBE, 1,2-DCA, the 8 Oxygenates, and Ethanol. Analyses should be in accordance with Appendix E of the QAPP and shall include a duplicate sample, field blank, and trip blank.

The monitoring report, contractor checklist from Appendix K of the QAPP, and invoice are due within 60 days from the date of this letter. The report submitted at the completion of these activities should include the required information outlined in the QAPP. 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.

Geological Resources, Inc. can submit an invoice for direct payment from the State Underground Petroleum Environmental Response Bank (SUPERB) Account for pre-approved costs. By law, the SUPERB Account cannot compensate any costs that are not pre-approved. Please note that applicable South Carolina certification requirements regarding laboratory services and report preparation must be satisfied. If the invoice is 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 from the UST Division is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the UST Division for the cost to be paid. The SCDHEC 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, the SCDHEC 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.

Please note, if unnecessary dilutions are completed resulting in reporting limits of individual CoC in excess of RBSL, the data cannot be used. In those cases, the UST Division may deny payment for any non-detect analysis where the reporting limit exceeds the RBSL. The UST Division encourages the use of 'J' values as necessary so the appropriate action can be determined for a release.

The SCDHEC 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 CoC concentrations based on laboratory analysis are below 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 #18686 and Cost Agreement #42281. If you have any questions regarding this correspondence, please contact me by telephone at (803) 896-4085, by fax at (803) 896-6245, or by e-mail to martinin@dhec.sc.gov.

Sincerely,

Jim Martin, Hydrogeologist

Corrective Action Section

Underground Storage Tank Management Division

Bureau of Land and Waste Management

enc: Approved Cost Agreement

Signed Site Specific QAPP Contractor Addendum

cc: Geological Resources, Inc., 2301 Crown Point Executive Drive, Suite F, Charlotte, NC 28227(w/

enc.)

Technical File (w/ enc.)

# FIRECEIVED OCT 0 5 2011

Geological Resources, Inc. S.C. Rehabilitation Contractor #74 Tisdales Quick Stop QAPP Revision 0 September 30, 2011

# **Section A: Project Management**

A1 Title and Approval Page

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H

Quality Assurance Project Plan Addendum to the SC DHEC UST Programmatic QAPP For

Tisdales Quick Stop – UST Permit No. 18686 1989 Thurgood Marshall Blvd., Kingstree, Williamsburg County, South Carolina Prepared by: W. Scott Ball Geological Resources, Inc. S.C. Site Rehabilitation Contractor #74 9/30/2011 Date:\_ Geological Resources. Inc.

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Jim Martin

SC DHEC Project Manager

John M. Brown, PG - GRI Contractor QA Manager

Scott Ball - GRI Site Rehabilitation Contractor

Harry Behzadi Laboratory Director

Date

Signature

Date\_09-30-2011

Signature

# Approved Cost Agreement 42281

Facility: 18686 TISDALES QUICK STOP

MARTINJM PO Number:

Task / Description Categories	Item Description	Qty / Pct	Unit Price	Amount
01 PLAN				
	C TIER II/COMP. PLAN/QAPP APP B	1.0000	525.00	525.00
04 MOB/DEMOB				
	B PERSONNEL	2.0000	290.00	580.00
10 SAMPLE COLLECTION				
	A GROUND WATER	33.0000	55.00	1,815.00
w	C WATER SUPPLY	2.0000	30.00	60.00
	D GROUNDWATER NO-PURGE	2.0000	35.00	70.00
	E GAUGE WELL ONLY	4.0000	20.00	80.00
	H FIELD BLANK	1.0000	5.00	5.00
11 ANALYSES				0.00
GW GROUNDWATER	A1 BTEXNM+OXYGS+1,2-DCA+ETH-8260B	39.0000	100.00	3,900.00
17 DISPOSAL				
	A WASTEWATER	180.0000	0.80	144.00
19 RPT/PROJECT MNGT & COORDINATIO				
	PCT PERCENT	0.1500	7,179.00	1,076.85
	- 11	Total Amou	ınt	8,255.85



# Geological Resources, Inc.

December 29, 2011

Mr. Jim Martin, Hydrogeologist SCDHEC UST Section 2600 Bull Street Columbia, South Carolina 29201

Re:

Ground Water Monitoring Report

November 2011 Tisdale's Quick Stop

1989 Thurgood Marshall Boulevard Kingstree, Williamsburg County, SC

UST Permit No. 18686

CA #36792

Dear Mr. Martin:

Please find enclosed the referenced report for the above mentioned site. If you have any questions, please do not hesitate to contact W. Scott Ball at (704) 845-4010.

UST

DEC 3 0 2011

Sincerely,

Geological Resources, Inc.

Hannah Brown

Administrative Assistant

Enclosure

cc:

Mr. Marty Easler

file

# GROUND WATER MONITORING REPORT NOVEMBER 2011 TISDALE'S QUICK STOP 1989 THURGOOD MARSHALL BOULEVARD KINGSTREE, WILLIAMSBURG COUNTY SOUTH CAROLINA UST PERMIT NO. 18686

Prepared for:

Mr. Marty Easler 196 Richburg Road Greeleyville, SC 29056

Prepared by:

Geological Resources, Inc. 2301-F Crown Point Executive Drive Charlotte, North Carolina 28227 Class I UST Site Rehabilitation Contractor # 74

December 29, 2011

W. Scott Ball

Senior Project Manager

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#### 1.0 INTRODUCTION

This report presents the results of comprehensive ground water sampling activities conducted in November 2011 at the Tisdales Quick Stop site located at 1989 Thurgood Marshall Highway, in Kingstree, Williamsburg County, South Carolina (Figures 1 and 2). The activities were conducted in accordance with the "Groundwater Sampling Directive" dated October 26, 2011 from the SCDHEC. The purpose of the activities was to obtain current ground water quality data for the site.

The site is a former petroleum retail location. There are two buildings on site, the first is used as a convenience store and grill and the second building is used for a liquor store. Surrounding properties are a mix of commercial and residential. According to the South Carolina Underground Storage Tank (UST) registry database, a release at the site occurred on March 30, 2001, and the confirmation date of the release is listed as April 6, 2001. Two 550 gallon gasoline tanks and one 1,000 gallon diesel tank were removed March 1, 2001. A total of 37 monitoring wells (MW-1 through MW-31, MW-1A through MW-4A, TW-1 and TW-2) have been installed previously at the site. Please refer to earlier submittals for additional information regarding previous assessment activities.

#### 2.0 FACILITY INFORMATION

• Facility Name:

Tisdales Quick Stop

• Location:

1989 Thurgood Marshall Blvd (Highway 527)

Kingstree, Williamsburg County

UST Permit No.

18686

Property Owner:

Andy McKnight 316 McCullough Lop

Kingstree, South Carolina 29566

(843) 382-2474

• UST Owner/Operator:

Marty Easler

196 Richburg Road

Greeleyville, South Carolina 29056

(843) 372-2502

• Site Rehabilitation Contractor:

Geological Resources, Inc.

2301-F Crown Point Executive Drive Charlotte, North Carolina 28227

(704) 845-4010

Class 1, Certification Number 74

• Laboratory:

Accutest Laboratories - Southeast

4405 Vineland Road, Suite C-15

Orlando, FL 32811 (407) 425-6700

State Certification Number: 96038001

Release Information:

• Date Discovered:

Estimated Amount of Release:

• Source of Release:

• UST Size/Contents:

March 30, 2001

Unknown

Leaking UST System

Two 550 gallon gasoline tanks and one 1,000 gallon diesel

tank (Removed March 1, 2001)

Longitude: 79.813° West

# 3.0 GROUND WATER QUALITY

Latitude: 33.658056° North

Thirty-one Type III monitoring wells (MW-1, MW-2, MW-6 through MW-10, MW-13 through MW-15, MW-18 through MW-31 and MW-1A through MW-4A) and two telescoping monitoring wells (TW-1 and TW-2) were gauged, purged and/or sampled on November 22, 23 and 30, 2011. Two water supply wells (WSW-1 and WSW-3) were purged and sampled on November 23, 2011. Monitoring wells MW-3, MW-1A, MW-3A, and MW-4A contained free product and therefore were not sampled. Free product thicknesses ranged from 0.02 feet (MW-4A) to 0.85 feet (MW-1A). Monitoring well MW-17 was previously destroyed and therefore, could not be sampled. Monitoring wells MW-11, MW-12 and MW-16 could not be found and were not sampled. Monitoring wells MW-4 and MW-5 were obstructed and could not be sampled. All monitoring wells were purged prior to sampling. The depths to ground water in the Type III monitoring wells which did not contain free product during the October 2011 sampling event ranged from 14.92 to 20.93 feet below the top of casings. Ground water elevations in the Type III monitoring wells relative to a temporary benchmark with an assumed datum of 100.00 feet ranged from 77.85 to 81.03 feet. Based on this data, ground water flow was generally toward the west. The horizontal hydraulic gradient across the site was less than 0.002 feet per foot. The vertical hydraulic gradient calculated for MW-1 and TW-1 was 0.04 feet per foot downward. A Site Map showing the locations of the monitoring wells and the structures on-site has been included as Figure 2. A Water Table Surface Map for the November 2011 sampling event has been included as Figure 3. A summary of well construction and gauging information is presented in Table 1.

Laboratory analyses were performed on the ground water samples collected from the monitoring wells during the November 2011 sampling event for BTEX, MTBE, naphthalene, 1,2-DCA and eight oxygenates using EPA Method 8260. Concentrations of one or more BTEX constituents, MTBE, and/or naphthalene that exceeded the RBSLs were reported in the ground water samples collected from MW-1, MW-2, MW-2 DUP, MW-8, MW-14, MW-21 through MW-23, MW-27, MW-2A and TW-2. Detectable concentrations of one or more BTEX constituents, MTBE and/or naphthalene that did not exceed the RBSLs were reported in ground water samples collected from MW-7, MW-9, MW-13, MW-19 DUP, MW-20, MW-26 and MW-28. Detectable concentrations of oxygenates were reported in the samples collected from MW-1, MW-2, MW-2

DUP, MW-8, MW-14, MW-18, MW-19, MW-19 DUP, MW-20 though MW-23, MW-27, MW-2A and TW-2. No detectable concentrations of requested method constituents were reported in the water supply well samples, the field blank or the trip blank. A Ground Water Quality Map based on data from the November 2011 sampling event has been included as **Figure 4**. Summaries of ground water sample analytical results are presented in **Tables 2** and **3**. A complete laboratory report has been included in **Appendix A**. Ground water sampling data sheets have been included in **Appendix B**. A copy of the purge water disposal manifest is included as **Appendix C**.

#### 4.0 QA/QC

Monitoring well gauging, purging and sampling was conducted in general accordance with the SCDHEC Programmatic QAPP and the approved site specific Contractor Addendum. All wells were purged and/or sampled with dedicated disposable bailers. All field measurement equipment was properly decontaminated between sampling locations. Duplicate samples from monitoring wells MW-2 and MW-19, as well as a field blank were collected during the sampling activities. A trip blank was included in the sample cooler. Laboratory results for MW-2 and MW-2 DUP as well as MW-19 and MW-19 DUP showed similar concentrations. No detectable concentrations of requested method constituents were reported for the field blank or trip blank. All applicable items on the Contractor Checklist were reviewed and verified. A copy of the Contractor Checklist is included as **Appendix D**.

# 5.0 CONCLUSIONS AND RECOMMENDATIONS

- A total of thirty-three monitoring wells and two water supply wells were gauged, purged and/or sampled in November 2011. Free product was present in monitoring wells MW-3, MW-1A, MW-3A, and MW-4A. Free product thicknesses ranged from 0.02 to 0.85 feet. Ground water flow at the site based on the November 2011 event was generally toward the west. The horizontal hydraulic gradient across the site was less than 0.002 feet per foot. The vertical hydraulic gradient was 0.04 feet per foot downward.
- Concentrations of one or more BTEX constituents, MTBE, and/or naphthalene that exceeded the RBSLs were reported in the ground water samples collected from MW-1, MW-2, MW-2 DUP, MW-8, MW-14, MW-21 through MW-23, MW-27, MW-2A and TW-2. Detectable concentrations of oxygenates were reported in the samples collected from MW-1, MW-2, MW-2 DUP, MW-8, MW-14, MW-18, MW-19, MW-19 DUP, MW-20 through MW-23, MW-27, MW-2A and TW-2.

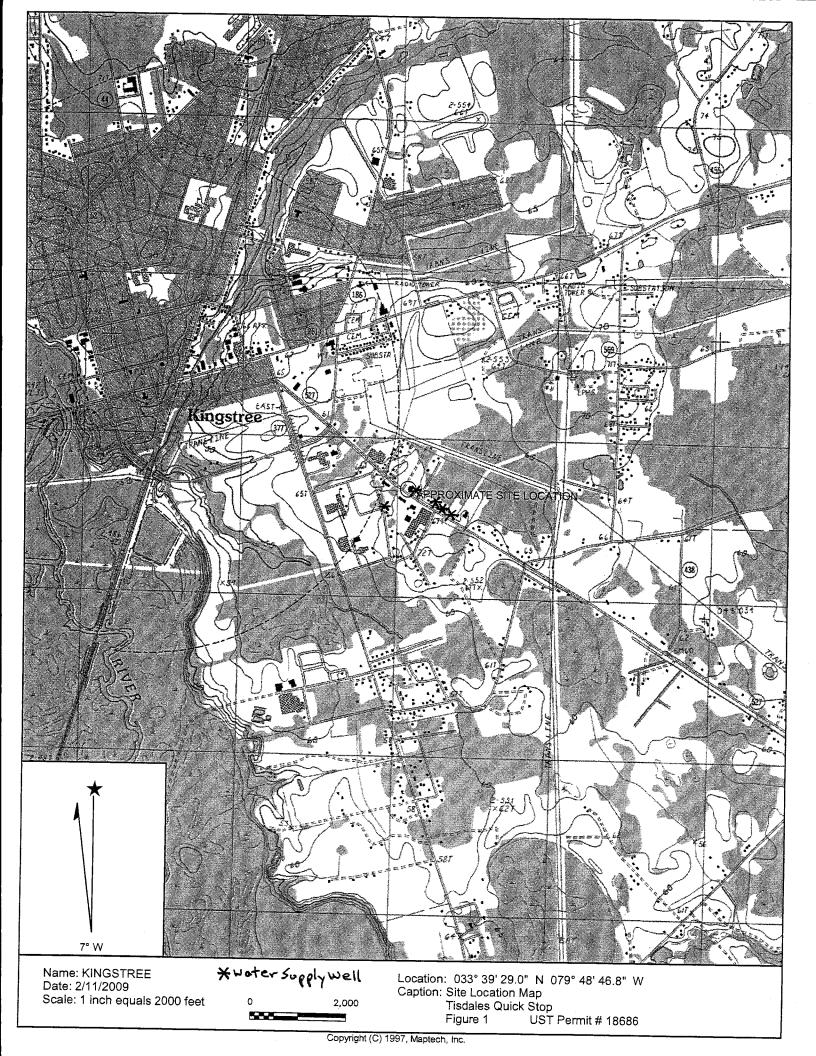
- Based on the historical presence of free product, an AFVR or MMPE event is recommended for the affected wells.
- Ground water sampling should continue as directed by the SCDHEC.

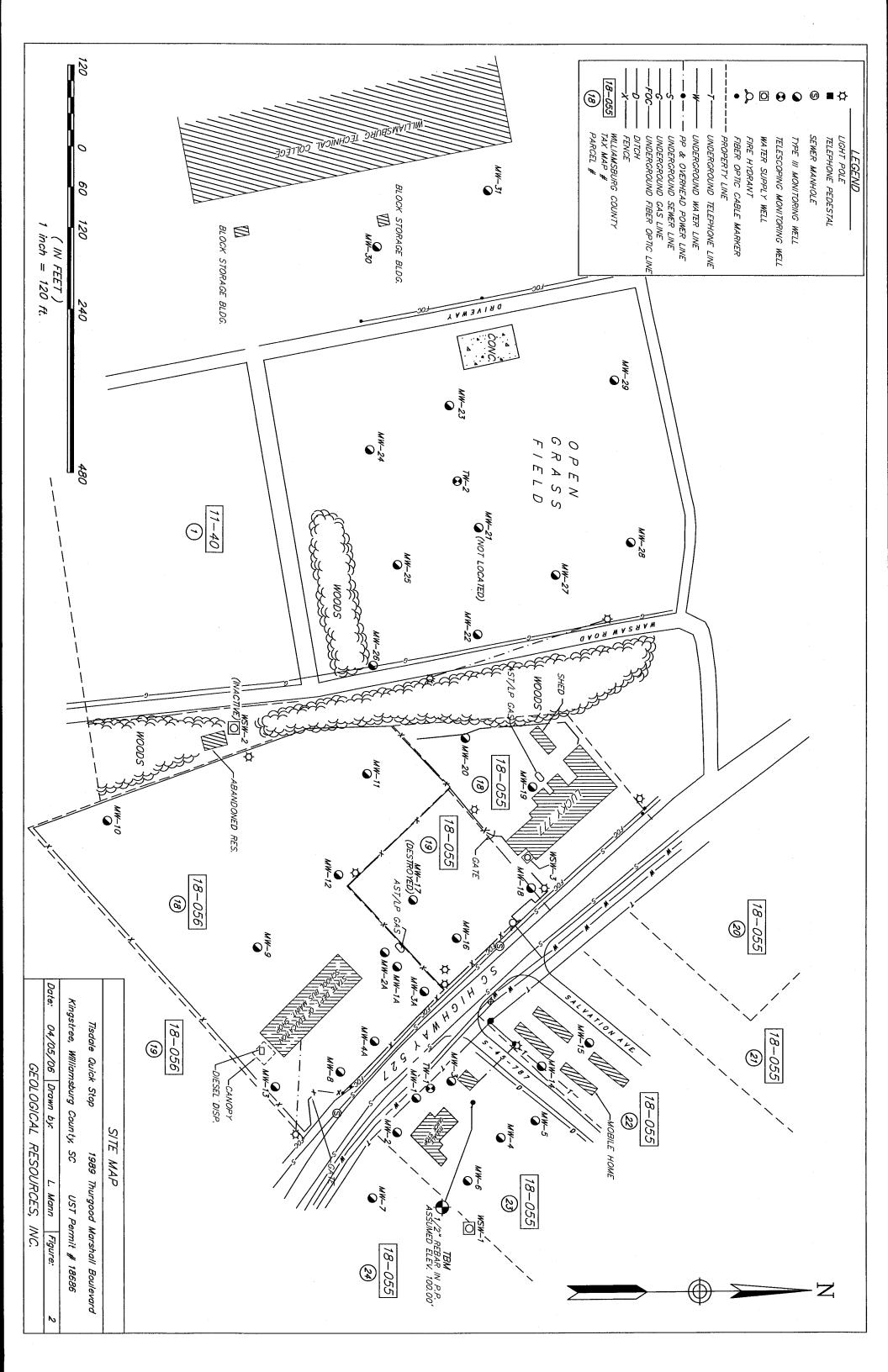
#### 6.0 LIMITATIONS

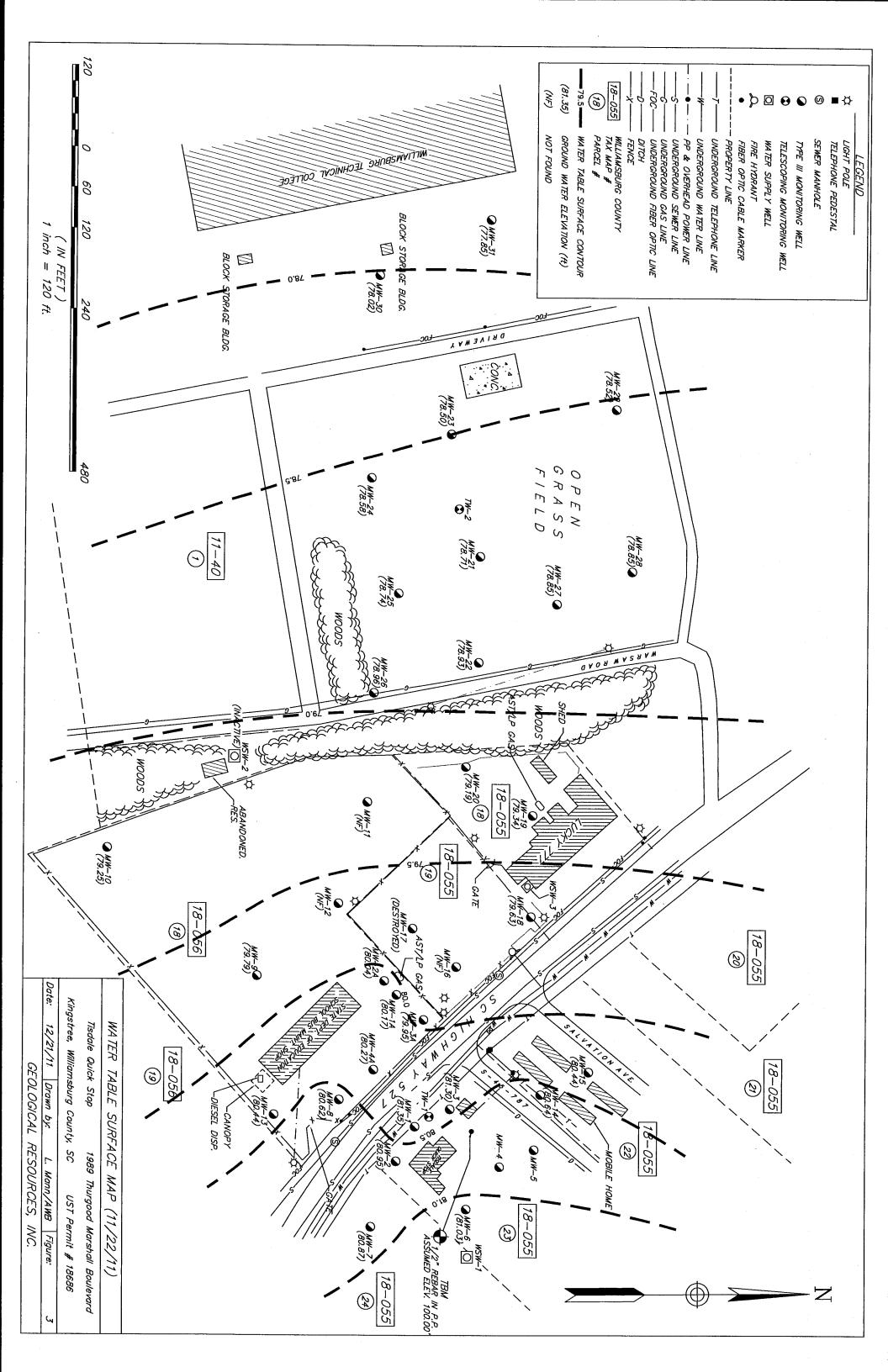
This report has been prepared for the exclusive use of Mr. Marty Easler and the SCDHEC for specific application to the referenced site in Williamsburg County, South Carolina. The assessment was conducted based on the scope of work and level of effort specified by the SCDHEC and with resources adequate only for that scope of work. Our findings have been developed in accordance with generally accepted standards of geology and hydrogeology practices in the State of South Carolina, available information, and our professional judgment. No other warranty is expressed or implied.

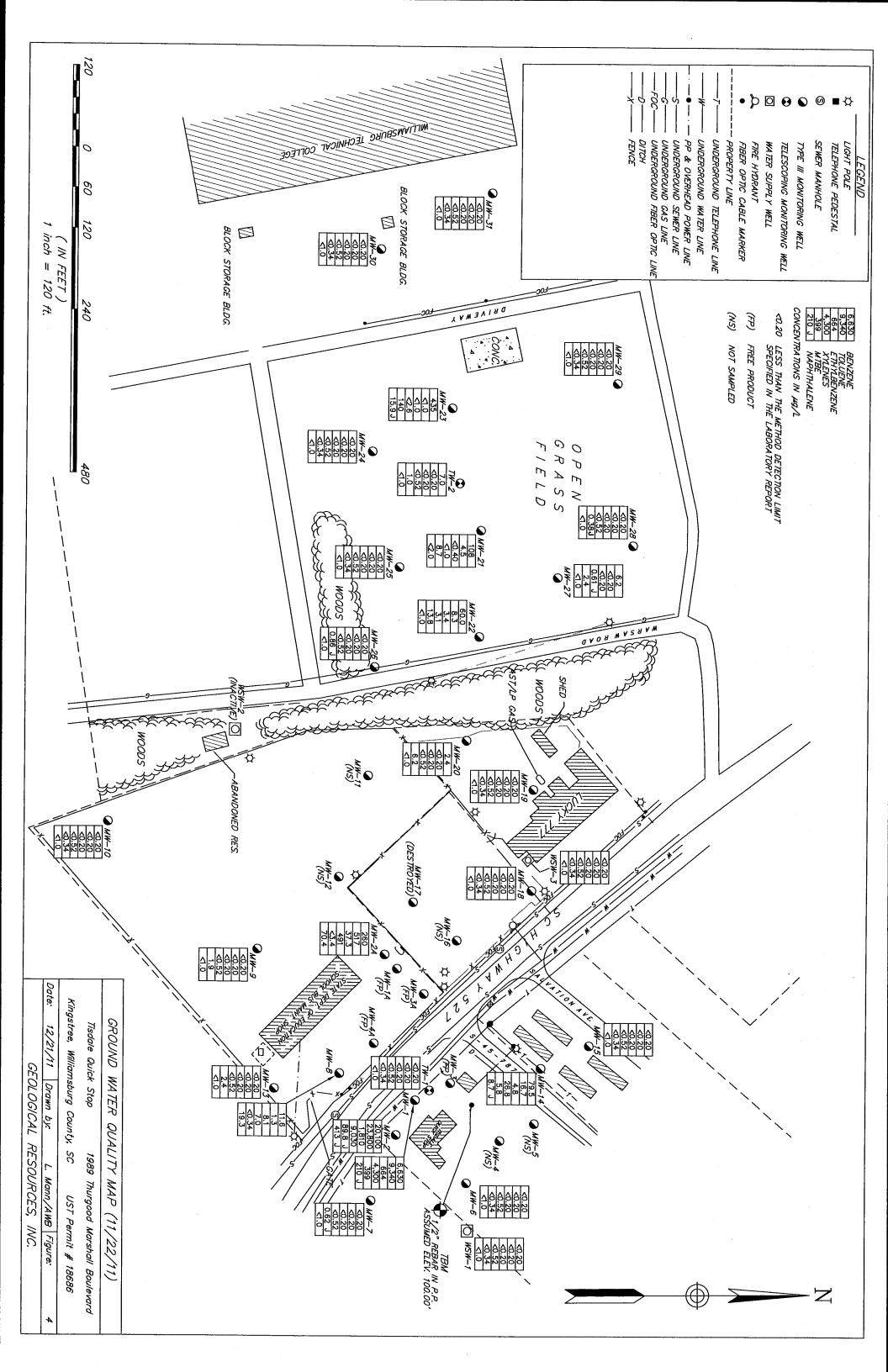
The data that are presented in this report are indicative of conditions that existed at the precise locations sampled and at the time the samples were collected. In addition, the data obtained from samples would be interpreted as being meaningful with respect to parameters indicated in the laboratory report. No additional information can logically be inferred from these data.

**FIGURES** 









**TABLES** 

# TABLE 1 SUMMARY OF GROUND WATER ELEVATION DATA TISDALES QUICK STOP UST PERMIT # 18686

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
MW-1	01/16/03		15.72		83.09	20	10-20
	02/09/04	98.81	14.25		84.56		
	09/23/04		11.94		86.87		
	01/21/05		13.09		85.72		
	03/23/06		12.43		86.38		
	01/07/09		15.12		83.69		
	11/04/09		15.58		83.23		
	11/22/11		17.46		81.35		
	01/16/03		17.35	1.90	83.10		10-25
	02/09/04		15.17	1.07	84.57	25	
	09/23/04		12.95	1.18	86.88		
MW-2	01/21/05	98.82	13.61	0.61	85.73		
IVI VV -Z	03/23/06	96.62	12.43		86.39		
	01/07/09		15.03	0.02	83.81		
	11/03/09		15.97	0.11	82.94		
	11/22/11		17.87		80.95		
MW-3	01/16/03	98.74	15.36	0.33	83.66	25	10-25
	02/09/04		14.34	0.19	84.56		
	09/23/04		12.12	0.06	86.67		
	01/21/05		13.38	0.02	85.38		
TAT AA -2	03/23/06		12.37		86.37		
	01/07/09		15.27	0.12	83.57		
	11/03/09		15.82	0.12	83.02		
	11/22/11		17.47	0.04	81.30		
	01/16/03	98.58	15.06		83.52	25	10-25
	02/09/04		14.01		84.57		
	09/23/04		11.96		86.62		
MW-4	01/21/05		13.13		85.45		
	03/23/06		12.24		86.34		
	01/07/09		14.84		83.74		
	11/04/09		15.68		82.90		
	11/22/11		OBS		OBS		

				WIII # 18080		T	
Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		14.77		83.36		
	02/09/04	]	13.77		84.36		
	09/23/04	]	11.71		86.42	1	
MW-5	01/21/05	98.13	13.14		84.99	7	10.00
101 00 - 3	03/23/06	98.13	12.80		85.33	22	12-22
	01/07/09	]	14.96		83.17		
	11/04/09		15.26		82.87		
	11/22/11		OBS		OBS		
	01/16/03		14.64	1	83.86		, "
	02/09/04		13.86		84.64		
	09/23/04		11.86		86.64	1	
MW-6	01/21/05	00.50	13.38	•	85.12	31.5	11 5 01 5
IVI W -0	03/23/06	98.50	12.81		85.69	21.5	11.5-21.5
	01/07/09		15.00		83.50		
	11/03/09		15.23		83.27	<b>]</b> ,	
	11/22/11	]	17.47		81.03	7	
	01/16/03		14.69		83.50		
	02/09/04		13.56		84.63	1	
	09/23/04		11.56		86.63	1	
MW-7	01/21/05	98.19	12.78		85.41		10.00
IVI VV - /	03/23/06	98.19	11.73		86.46	22	12-22
	01/07/09		14.60		83.59	1	
	11/03/09		15.27		82.92	1	
	11/22/11		17.32		80.87		
	01/16/03		14.85		83.32		
	02/09/04	] [	13.98		84.19		
	09/23/04	]	12.07		86.10	Ţ ·	
MW-8	01/21/05	98.17	13.33		84.84	]	10.00
1AT AA -Q	03/23/06	90.1/	12.14		86.03	22	12-22
	01/08/09		15.00		83.17	]	
	11/03/09		15.45		82.72		
	11/22/11	·	17.55		80.62		

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		15.79		82.73		
	02/09/04		15.00		83.52		
	09/23/04		13.12		85.40	1.	
MW-9	01/21/05	98.52	14.64		83.88	22	12.22
141 44 -3	03/23/06	96.32	13.29		85.23	7 22	12-22
	01/08/09		16.01		82.51		
	11/03/09		16.56		81.96		
	11/22/11		18.73		79.79		
	01/16/03		16.52		82.16		
	02/09/04		15.79		82.89		
	09/23/04		13.97		84.71		
MW-10	01/21/05	98.68	15.35		83.33	25	10-25
101 00 - 10	03/23/06	96.08	14.18		84.50	25	10-25
	01/08/09		15.75		82.93		
	11/03/09		17.41		81.27		
	11/22/11		19.43		79.25		
·	01/16/03		12.89		81.76		
	02/09/04		12.10		82.55		
	09/23/04		10.51		84.14	]	
MW-11	01/21/05	04.65	11.68		82.97	] ,,	7-22
IVI VV - 1 1	03/23/06	94.03	10.55		84.10	] 22	1-22
	01/08/09		NM		NM		
	11/03/09		NM		NM		
	11/22/11		NM		NM	]	
	01/16/03		13.13		82.57		
	02/09/04	] [	12.35		83.35	]	
	09/23/04		12.67		83.03	]	
MW-12	01/21/05	NM         NM           13.13         82.57           14         12.35         83.35           12.67         83.03           12.67         83.64           12.06         83.64           10.80         84.90	7 22				
1V1 VV -1 Z	03/23/06		7-22				
	W-11     03/23/06     94.65     10.55     84.10       01/08/09     NM     NM     NM       11/03/09     NM     NM     NM       11/22/11     NM     NM     NM       01/16/03     13.13     82.57       02/09/04     12.35     83.35       09/23/04     12.67     83.03       W-12     95.70     12.06     83.64       22	]					
	11/22/11	<u> </u>	NM		NM	]	

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval	
	01/16/03		15.65		83.36			
	02/09/04	]	14.70		84.31			
	09/23/04		12.90		86.11			
MW-13	01/21/05	99.01	14.05		84.96	Well Depth Sc In Section (Section (Sect	10-25	
WIW-13	03/23/06	99.01	12.82		86.19	25	10-23	
	01/08/09		15.68		83.33	7		
	11/03/09		16.30		82.71			
	11/22/11		18.57		80.44			
	01/16/03		15.12		83.24			
	02/09/04		14.24		84.12	1		
	09/23/04		12.03		86.33	1		
MW-14	01/21/05	00.26	13.78		84.58	75	10.25	
M W-14	03/23/06	98.36	12.75		85.61		10-25	
	01/08/09		15.32		83.04		10-25	
	11/04/09	- - -	15.77		82.59			
	11/22/11	1	17.72		80.64			
	01/16/03		16.40		83.19			
	02/09/04	]	15.55		84.04	7		
	09/23/04		13.50		86.09			
NOV 15	01/21/05	00.50	14.89		84.70	7	10.25	
MW-15	03/23/06	99.59	13.92		85.67	25	10-25	
	01/08/09	-	16.63		82.96			
	11/04/09	1	17.16		82.43			
	11/22/11		19.15		80.44			
	01/16/03		16.21	0.04	82.75			
	02/09/04	]	15.24	0.04	83.72			
	09/23/04	1	13.55		85.38			
MW 16	01/21/05	00.02	14.81	0.02	84.14	]	0 22	
MW-10	03/23/06	98.93	13.60		85.33	] 23	8-23	
	01/08/09		16.21		82.72			
MW-16	11/04/09	]	16.57		82.36			
	11/22/11	]	NM		NM	1		

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		16.00	0.07	82.31		
,	02/09/04		14.55		83.70	1	
	09/23/04		12.82		85.43		
MW-17	01/21/05	98.25	13.78		84.47	23	8-23
	03/23/06		NM		NM	1	
	11/03/09		NM		NM		
	11/22/11	·	NM		NM		:
	01/16/03		17.70		82.13		
	02/09/04	1	16.91		82.92		
	09/23/04	]	15.06		84.77		
MW-18	01/21/05	99.83	16.45		83.38	25	10.25
1V1 VV - 1 O	03/23/06	99.83	15.31		84.52	25	10-25
	01/08/09	]	17.89		81.94		
	11/04/09		18.40		81.43		
	11/22/11		20.20		79.63		
-	01/16/03		18.54		81.73		
	02/09/04		17.63		82.64	1	
	09/23/04		16.00		84.27		
MW-19	01/21/05	100.27	17.21		83.06	7	10.25
IVI VV - 19	03/23/06	100.27	16.15		84.12	25	10-25
	01/08/09		NM		NM		
	11/04/09		19.22		81.05		
	11/22/11		20.93		79.34		
	01/16/03		15.59		81.62		
	02/09/04	·	14.74		82.47	1	
	09/23/04		13.15		84.06	1	
MW-20	01/21/05	07.31	14.33		82.88	7	10.25
1V1 VV - Z U	03/23/06	97.21	13.21		84.00	25	10-25
	01/08/09	]	NM		NM	]	
	11/04/09	]	16.30		80.91	]	
	11/22/11	]	18.02		79.19	]	

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		14.70		81.02		
	02/09/04		13.85		81.87	1	
	09/23/04		12.27		83.45	· .	
MW-21	01/21/05	95.72	13.42		82.30	]	0.22
1V1 VV -2 1	03/23/06	95.72	NM		NM	23	8-23
	01/08/09		NM		NM		
	11/04/09		15.35		80.37		
	11/22/11		17.01		78.71		
	01/16/03		15.40		80.32		
	02/09/04		14.61		82.07		
	09/23/04		12.92		83.76		
MW-22	01/21/05	96.68	14.15		82.53	25	10-25
IVI VV -22	03/23/06	90.08	13.21		83.47	25	10-23
	01/08/09		15.54		81.14		
	11/04/09	-	16.08		80.60		
	11/22/11	]	17.75		78.93		
	01/16/03		15.08		80.70		
	02/09/04		14.30		81.48		
	09/23/04		12.72		83.06		
MW-23	01/20/05	95.78	13.82		81.96	24	9-24
101 00 -23	03/23/06	95.76	13.09		82.69	7 24	9-24
	01/08/09		15.21		80.57		
	11/04/09	]	15.64		80.14		
	11/22/11	]	17.28		78.50		
	01/16/03		13.00		80.86		
	02/09/04		12.19		81.67		
	09/23/04		10.58		83.28		
MW-24	01/20/05	02.96	11.71		82.15	]	0 72
IVI VV ~ Z 4	03/23/06	93.86	10.87		82.99	23	8-23
	01/08/09	]	13.17		80.69		
	11/04/09	]	13.79		80.07		
	11/22/11	]	15.28		78.58		

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		13.20		81.10		
	02/09/04		12.37		81.93		
	09/23/04		10.74		83.56		
MW-25	01/20/05	94.30	11.99		82.31	23	8-23
101 00 -23	03/23/06	94.30	11.00		83.30	] 23	8-23
	01/08/09		13.34		80.96		
	11/04/09		13.83		80.47		
	11/22/11		15.56		78.74		
	01/16/03		12.38		81.50		
	02/09/04		11.62		82.26		
	09/23/04		10.03		83.85		
MW-26	01/20/05	93.88	11.18		82.70	21	6-21
101 00 -20	03/23/06	93.66	10.58		83.30	] 21	0-21
	01/08/09		12.44		81.44		
	11/04/09		13.26		80.62		
	11/22/11		14.92		78.96		
	01/16/03		16.99		81.16		
	02/09/04		16.20		81.95		
	09/23/04		14.61		83.54		
MW-27	01/21/05	98.15	15.81		82.34	25	10-25
101 00 -27	03/23/06	98.13	14.84		83.31	] 23	10-23
	01/08/09		17.20		80.95		
	11/04/09		17.64		80.51		
	11/22/11		19.30		78.85	].	
	01/16/03		17.46		80.99		
	02/09/04		16.55		81.90		
	09/23/04		15.00		83.45	]	
MW-28	01/21/05	98.45	16.17		82.28	25	10-25
141 44 -70	03/23/06	70.43	15.21		83.24	] 23	10-23
	01/08/09		NM		NM		
	11/04/09	]	18.00		80.45	]	
	11/22/11		19.60		78.85		

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		16.17		80.61		
	02/09/04	] [	15.30		81.48	_	
	09/23/04	]	13.74		83.04		
MW-29	01/20/05	96.78	14.69		82.09	7	10.05
M W - 29	03/23/06	90.78	14.12		82.66	25	10-25
	01/08/09	1	16.31		80.47		
	11/04/09		16.71		80.07	1	
	11/22/11		18.26		78.52	7	
	01/16/03		15.18		80.20		
	02/09/04		14.36		81.02	7	
	09/23/04		12.85		82.53	<u> </u>	٠
MW-30	01/20/05	95.38	13.72		81.66	]	7.00
M W-30	03/23/06	95.38	13.04		82.34	22	7-22
	01/08/09	]	15.41		79.97		
	11/04/09		15.74		79.64	1	
	11/22/11	]	17.36		78.02	1.	
	09/23/04		13.88		82.17		
	01/20/05		14.73		81.32		
MW-31	03/23/06	96.05	14.22		81.83	7 20	10.20
W1W-31	01/08/09	96.03	16.49		79.56	20	10-20
Ī	11/04/09		16.37		79.68		
ĺ	11/22/11		18.20		77.85	1	
	01/21/05		13.46	0.09	83.82		
	03/23/06		12.11		85.09	1	
MW-1A	01/08/09	97.20	14.99		82.21	Unknown	Unknown
į	11/03/09	]	15.25	0.06	82.00		
	11/22/11		17.76	0.85	80.17		
	01/21/05		13.63	0.28	83.91		*****
	03/23/06	]	12.54	0.31	85.03		
MW-2A	01/08/09	97.30	15.86	0.54	81.90	Unknown	Unknown
	11/03/09	] [	15.61	0.02	81.71		
	11/22/11	] [	17.26		80.04	]	

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/21/05		13.46	0.22	84.00		
,	03/23/06		12.22	0.03	85.08	]	
MW-3A	01/08/09	97.27	15.68	1.00	82.45	Unknown	Unknown
	11/03/09		15.63	0.47	82.04	] .	
	11/22/11		18.02	0.82	79.95		
	01/21/05		13.06	0.02	85.05		
,	03/23/06		12.43		85.66		
MW-4A	01/08/09	98.09	16.02	0.85	82.80	Unknown	Unknown
	11/03/09		15.62	0.02	82.49	]	
	11/22/11		17.84	0.02	80.27		
	01/16/03		15.14		83.87		
	02/09/04		14.81		84.20		
	09/23/04		13.16		85.85		
TW-1	01/21/05	99.01	14.39		84.62	16	41.46
1 44-1	03/23/06	99.01	13.35		85.66	46	41-46
	01/08/09		15.97		83.04		
	11/04/09		16.84		82.17		
	11/22/11		18.76		80.25		
	01/16/03		14.33		80.93		
	02/09/04		13.58		81.68		
	09/23/04		11.98		83.28		
TW-2	01/21/05	95.26	13.07		82.19	5,	46.51
1 W-2	03/23/06	93.20	12.10		83.16	51	46-51
	01/08/09		14.52		80.74		
	11/04/09		15.01		80.25		
	11/22/11		16.63		78.63		

#### Notes:

- Elevations relative to a temporary benchmark with an assumed datum of 100.00 feet; data reported in feet.
- \*\*: If free product is present in a well, groundwater elevation calculated by: [Top of Casing Elevation Depth to Water] + [free product thickness x 0.8581].
- NM: Not measured; monitoring well is destroyed, covered or could not be located.
- OBS: Monitoring well obstructed.
- Monitoring wells MW-1A through MW-4A were installed by S&ME Consultants in January 2000.
- Monitoring wells MW-16 and MW-17 were completed above grade with stand up covers; depths to ground water were measured from the tops of casing; well depths and screened intervals were measured from the ground surface.

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	мтве	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	17,300	31,000	2,220	12,800	495	515	_	0.13
	02/09/04	11,400	19,600	1.010	12,000	395	525	-	NR
	10/07/04	4,160	7,500	504	4,400	348	290	-	0.03
MW-1	01/21/05	8,150	13,500	790	7,170	560	<500	-	NR
IAI AA -1	03/24/06	7,800	11,800	552	6,640	833	<100	_	NR
	01/07/09	15,700	15,100	1,600	12,310	1,120	878	<500	0.092
	11/04/09	7,120	12,600	988	6,940	<500	<500	<500	0.056
	11/23/11	6,630	9,340	664	4,300	399	210 J	<20	NR
***************************************	01/17/03	FP	FP	FP	FP	FP	FP	FP	FP
	02/09/04	FP	FP	FP	FP	FP	FP	FP	FP
	10/07/04	FP	FP	FP	FP	FP	FP	FP	FP
MW-2	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
IVI VV ~Z	03/24/06	14,600	17,900	2,240	12,000	164	495	FP	NR
	01/07/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/23/11	20,100	23,800	1,810	9,030	89.8 J	413 J	<50	NR
MW-2 DUP (DUP 2)	11/23/11	20,600	24,500	2,030	10,000	92.5 J	620 J	<50	NR
. '	01/17/03	FP	FP	FP	FP	FP	FP	FP	FP
	02/09/04	FP	FP	FP	FP	FP	FP	FP	FP
	10/07/04	FP	FP	· FP	FP	FP	FP	FP	FP
MW-3	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
141 44 -2	03/24/06	54.6	44.4	17.1	660	2.04	8	FP	NR
	01/07/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
	01/17/03	3.7	<1.0	1.8	7.2	<1.0	7.4	FP	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	FP	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	FP	< 0.02
MW-4	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	FP	NR
ATA 17 1	03/24/06	0.200J	<1.00	<1.00	1.44	0.340J	<1.00	FP	NR
	01/07/09	5.9	<5.0	<5.0	6.0	<5.0	8.0	<5.0	< 0.020
	11/04/09	< 5.0	<5.0	< 5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	МТВЕ	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	1.7	3.4	<1.0	7.1	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	< 0.02
MW-5	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		NR
IVI VV -3	03/24/06	<1.00	<1.00	<1.00	0.350J	<1.00	<1.00	-	NR
	01/07/09	< 5.0	<5.0	< 5.0	<15.0	<5.0	<5.0	<5.0	< 0.020
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	0.066
	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
	01/17/03	<1.0	<1.0	1.9	3.8	<1.0	7	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	< 0.02
MW-6	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
141 44 -0	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/07/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.020
	11/03/09	< 5.0	<5.0	< 5.0	<10.0	<5.0	<5.0	<5.0	< 0.020
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	01/17/03	70.3	145	24.3	308	1.8	25.7	-	< 0.02
	02/09/04	<1.0	11.4	60.2	441	<1.0	40.7	-	NR
	10/07/04	<1.0	1.1	2.4	25	<1.0	5.8	-	< 0.02
MW-7	01/21/05	<1.0	<1.0	4.5	26.9	<1.0	17.5	-	NR
IVI VV ~ /	03/24/06	<1.00	<1.00	<1.00	23.3	0.260J	9.62	-	NR
	01/07/09	< 5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/03/09	< 5.0	<5.0	<5.0	<10.0	<5.0	12.2	<5.0	< 0.020
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	0.62 J	<1.0	< 0.20	NR
	01/17/03	1,480	11,800	1,930	9,930	6.3	< 500	-	< 0.02
	02/09/04	59	1,700	424	2,380	<5.0	96	-	NR
	10/07/04	<1.0	3.2	7.4	71.1	<1.0	9	-	< 0.02
MW-8	01/21/05	12	161	55.6	1,100	<1.0	52.2	-	NR
141 44 -Q	03/24/06	4.19	24.1	118	1,070	<1.00	102	-	NR
	01/08/09	16.8	<5.0	<5.0	200.6	<5.0	18.5	<5.0	< 0.019
	11/03/09	<5.0	< 5.0	<5.0	12.8	<5.0	34.7	<5.0	< 0.020
<u> </u>	11/22/11	11.6	1.3	8.1	7.0	< 0.34	19.3	< 0.20	NR

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	мтве	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	34	< 5.00		< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	11.1	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	1.2	<1.0	< 5.00	- ;	< 0.02
MW-9	01/21/05	<1.0	<1.0	<1.0	<1.0	12.5	< 5.00	-	NR
1 <b>V1 VV -</b> 9	03/24/06	<1.00	<1.00	0.270J	2.49	1.5	<1.00	_	NR
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/03/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/30/11	< 0.20	< 0.20	< 0.20	< 0.52	1.9	<1.0	<0.20	NR
	01/17/03	<1.0	<1.0	<1.0	<1.0	1.5	< 5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
MW-10	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
141 44 - 10	03/24/06	<1.00	<1.00	<1.00	0.490J	<1.00	<1.00	-	NR
	01/08/09	< 5.0	< 5.0	< 5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/03/09	< 5.0	< 5.0	< 5.0	<10.0	<5.0	< 5.0	<5.0	< 0.020
	11/30/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	01/17/03	<1.0	<1.0	<1.0	<1.0	1.6	< 5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	23.7	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
MW-11	01/21/05	<1.0	<1.0	<1.0	<1.0	5.1	< 5.00	-	NR
101 00 -1 1	03/24/06	<1.00	<1.00	<1.00	<1.00	0.250J	<1.00	-	NR
	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
	01/17/03	<1.0	<1.0	<1.0	<1.0	2	< 5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
MW-12	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
141 44 -17	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	МТВЕ	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	42.5	<5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	145	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	6.3	< 5.00	-	< 0.02
MW-13	01/21/05	<1.0	<1.0	<1.0	<1.0	40.8	< 5.00	_	NR
IVI W -13	03/24/06	<1.00	<1.00	<1.00	<1.00	11	<1.00	-	NR
	01/08/09	<5.0	< 5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/03/09	<5.0	< 5.0	< 5.0	<10.0	<5.0	< 5.0	<5.0	< 0.020
	11/30/11	< 0.20	< 0.20	< 0.20	< 0.52	2.4	<1.0	< 0.20	NR
	01/17/03	3.4	<1.0	<1.0	4.5	<1.0	10.9	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
MW-14	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
IVI VV -14	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/08/09	< 5.0	<5.0	< 5.0	<15.0	< 5.0	<5.0	<5.0	< 0.019
	11/04/09	< 5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	79.5	16.7	4.8	26.8	5.8	8.7 J	< 0.40	NR
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	_	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
MW-15	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
141 44 -13	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/08/09	< 5.0	< 5.0	<5.0	<15.0	< 5.0	<5.0	<5.0	< 0.019
	11/04/09	< 5.0	< 5.0	< 5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	01/17/03	FP	FP	FP	FP	FP	FP	-	FP
	02/09/04	FP	FP	FP	FP	FP	FP	-	FP
	10/07/04	FP	FP	FP	FP	FP	FP	-	FP
MW-16	01/21/05	FP	FP	FP	FP	FP	FP	-	FP
141 44 -10	03/24/06	14,600	20,300	2,080	11,800	536	1,080	-	NR
	01/08/09	2,660	6,520	930	5,100	<25.0	633	<25.0	< 0.020
	11/04/09	18,500	33,300	2,880	16,300	454	928	<250	0.30
	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	МТВЕ	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	FP	FP	FP	FP	FP	FP	_	FP
	02/09/04	<1.0	13.2	12.5	74.2	19	10.1	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
MW-17	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	03/24/06	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS _
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
-	02/09/04	15.4	5.5	<1.0	5.6	<1.0	<5.00	-	NR
	10/07/04	1.5	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
MW-18	01/21/05	19.2	1.1	<1.0	7.1	<1.0	< 5.00	-	NR
141 14 16	03/24/06	36.2	1.27	<1.00	6.16	<1.00	<1.00	-	NR
	01/08/09	< 5.0	< 5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/04/09	< 5.0	< 5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
MW-19	01/21/05	3.1	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
1111111	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	< 5.0	< 5.0	< 5.0	<10.0	< 5.0	< 5.0	<5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
MW-19 DUP (DUP 1)	11/22/11	1.3	<0.20	<0.20	<0.52	<0.34	<1.0	<0.20	NR
	01/17/03	1,520	314	108	298	80.4	26.3	_	< 0.02
	02/09/04	3,220	530	15.2	830	78	61.2	- 1	NR
	10/07/04	90.2	6.6	<1.0	19.8	94.4	< 5.00	-	< 0.02
MW-20	01/21/05	1,120	43.1	5.8	95.1	73	36.9	-	NR
1V1 VV - 2U	03/24/06	44.9	0.300J	0.310J	3.54	9.14	<1.00	_	NR
	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	9.5	<5.0	<5.0	<10.0	< 5.0	<5.0	<5.0	< 0.019
	11/22/11	2.4	< 0.20	<0.20	< 0.52	6.2	<1.0	< 0.20	NR

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	МТВЕ	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	269	27.5	12	118	42.6	12.6	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
MW-21	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	_	NR
IVI VV -21	03/23/06	NS	NS	NS	NS	NS	NS	_	NS
	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	108	4.5	< 0.40	<1.0	8.7	<2.0	< 0.40	NR
	01/17/03	2,080	281	279	576	257	67.9	-	< 0.02
	02/09/04	782	49.2	41.4	77.5	93.4	15.8	- :	NR
	10/07/04	109	11.3	3.2	19.5	71.4	< 5.00	-	< 0.02
MW-22	01/21/05	3,980	300	197	454	67	112	-	NR
	03/23/06	0.340J	<1.00	<1.00	<1.00	8.11	<1.00	-	NR
	01/08/09	< 5.0	< 5.0	< 5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/04/09	< 5.0	< 5.0	< 5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	60.0	8.3	3.4	3.1	13.8	<1.0	< 0.20	NR
	01/17/03	27.6	<1.0	<1.0	3.7	27.2	10.5	-	< 0.02
	02/09/04	1,760	72	<1.0	592	372	17.2	-	NR
	10/07/04	1,620	103	<1.0	598	286	46		< 0.02
MW-23	01/20/05	1,670	111	<1.0	578	172	19.9	-	NR
141 44 -25	03/23/06	1,290	44.1	<1.00	266	168	38.4	-	NR
	01/08/09	574	< 5.0	<5.0	30.8	65.2	< 5.0	<5.0	< 0.019
	11/04/09	1,250	<25.0	<25.0	98.9	152	31.0	<25.0	< 0.019
	11/22/11	435	<1.0	<1.0	<2.6	140	15.9 J	<1.0	NR
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00		< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
MW-24	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
141 44 -7-4	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00		NR
	01/08/09	< 5.0	< 5.0	<5.0	<15.0	<5.0	<5.0	< 5.0	< 0.020
	11/04/09	< 5.0	<5.0	< 5.0	<10.0	<5.0	<5.0	< 5.0	< 0.020
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	мтве	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	4.9	<5.00	_	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
MW-25	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
141 44 -25	03/23/06	0.330J	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	< 5.0	<5.0	< 0.019
	11/04/09	< 5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	01/17/03	1.3	<1.0	<1.0	<1.0	4.7	< 5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
MW-26	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	_	NR
IVI VV -20	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/08/09	< 5.0	<5.0	<5.0	<15.0	< 5.0	<5.0	<5.0	< 0.019
	11/04/09	< 5.0	< 5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	0.86 J	<1.0	< 0.20	NR
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	- 1	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
MW-27	01/21/05	<1.0	<1.0	<1.0	<1.0	1.7	< 5.00	-	NR
141 44 -27	03/23/06	0.320J	<1.00	<1.00	<1.00	3.95	<1.00	-	NR
	01/08/09	< 5.0	< 5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/04/09	< 5.0	< 5.0	<5.0	<10.0	<5.0	< 5.0	<5.0	< 0.020
	11/22/11	6.2	< 0.20	< 0.20	0.61 J	2.4	<1.0	< 0.20	NR
	01/17/03	<1.0	<1.0	<1.0	<1.0	1.4	< 5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	_	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	< 0.02
MW-28	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	_	NR
141 44 -20	03/23/06	<1.00	<1.00	<1.00	<1.00	0.340 J	<1.00	-	NR
	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	<5.0	< 5.0	<5.0	<10.0	< 5.0	< 5.0	< 5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	0.38 J	<1.0	< 0.20	NR

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	мтве	Naphthalene	1,2-DCA	EDB
RBSL	Date	5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	< 0.02
MW-29	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	_	NR
141 44 -29	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	_	NR
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.020
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00		< 0.02
MW-30	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/08/09	< 5.0	< 5.0	< 5.0	<15.0	<5.0	<5.0	< 5.0	< 0.019
	11/04/09	< 5.0	< 5.0	< 5.0	<10.0	<5.0	11.0	<5.0	< 0.020
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
MW-31	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
1414 31	01/08/09	< 5.0	< 5.0	<5.0	<15.0	<5.0	< 5.0	< 5.0	< 0.019
	11/04/09	< 5.0	< 5.0	<5.0	<10.0	< 5.0	< 5.0	< 5.0	< 0.020
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
	03/24/06	20,700	30,600	3,310	17,600	1,880	891		NR
MW-1A	01/08/09	14,300	29,300	8,930	48,800	1,250	6,060	< 500	0.066
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
	03/23/06	FP	FP	FP	FP	FP	FP	FP	FP
MW-2A	01/08/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/30/11	260	517	37.3	491	<3.4	70.4	<2.0	NR

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	МТВЕ	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
	03/23/06	FP	FP	FP	FP	FP	FP	FP	FP
MW-3A	01/08/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
	03/24/06	19,600	34,800	3,900	21,500	247	952	FP	NR
MW-4A	01/08/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
	01/17/03	25.5	46.6	6.9	19.8	<1.0	9.3	-	< 0.02
	_02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00		NR
	_10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	- ,	< 0.02
TW-1	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
1 11 1	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/08/09	< 5.0	< 5.0	< 5.0	<15.0	< 5.0	<5.0	<5.0	< 0.020
	11/04/09	< 5.0	< 5.0	< 5.0	<10.0	< 5.0	<5.0	< 5.0	< 0.019
	11/23/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00		< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	11.7	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
TW-2	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
2	03/24/06	7.22	<1.00	<1.00	<1.00	1.7	<1.00	_	NR
	01/08/09	< 5.0	<5.0	<5.0	<15.0	< 5.0	< 5.0	<5.0	< 0.019
	11/04/09	< 5.0	<5.0	<5.0	<10.0	< 5.0	< 5.0	< 5.0	< 0.020
	11/22/11	7.0	< 0.20	< 0.20	< 0.52	1.0	<1.0	< 0.20	NR

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	МТВЕ	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR _
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	< 0.02
WSW-1	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	_	NR
"""	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00		NR
	01/08/09	< 5.0	<5.0	< 5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/04/09	<5.0	< 5.0	< 5.0	<10.0	< 5.0	< 5.0	<5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
WSW-2	11/03/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00		NR
WSW-3	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00		NR
	11/04/09	< 5.0	<5.0	< 5.0	<10.0	< 5.0	< 5.0	<5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
FIELD BLANK	11/22/11	<0.20	<0.20	<0.20	<0.52	<0.34	<1.0	<0.20	NR
TRIP BLANK	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR

#### Notes

- Analyses for selected volatile organic compounds by EPA Method 8260B; lead by EPA Method 6010B or 200.7; and EDB by Method 8011; results reported in μg/l.
- RBSL: May 2001 Risk Based Screening Level.
- Concentrations in bold face type exceeded the RBSL.
- <: Less than the report limit specified in the laboratory report.
- NS: Not sampled.
- NR: Analysis not requested.
- I or J: Estimated value.
- FP: Free product.

Well No.	Date	Ethanol	ЕТВА	ЕТВЕ	TAME	DIPE	TBF	ТВА	TAA
	03/24/06	<5,000	5,030	<50.0	<50.0	<50.0	<1,000	1,280	35,000
MW-1	11/04/09	<20,000	<10,000	<1,000	<1,000	< 500	<5,000	<10,000	10,200
	11/23/11	<2,500	<2,500	<31	<39	<35	< 500	<300	24,100
	03/24/06	<5,000	4,620	<50.0	54	<50.0	<1,000	1,020	25,700
MW-2	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/23/11	<6,300	<6,300	< 78	<98	<88	<1,300	<750	37,800
MW-2 DUP (DUP 2)	11/23/11	<6,300	<6,300	<78	<98	<88	<1,300	<750	37,000
	03/24/06	<100	99.1	<1.00	<1.00	<1.00	<20.0	26.7	223
MW-3	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
MW-4	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
171,11	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
MW-5	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
171 77 3	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	11/03/09	<200	115	<10.0	<10.0	<5.0	<50.0	<100	<100
17177	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	<5.0	<3.0	< 5.0
MW-7	11/03/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
1/1 // /	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	< 5.0
MW-8	11/03/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
171 77 0	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	11.2 J
MW-9	11/03/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
141 44 -7	11/30/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	< 5.0
MW-10	11/03/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
141 44 -10	11/30/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	< 5.0
MW-11	11/03/09	NS	NS	NS	NS	NS	NS	NS	NS
141 44 -1 7	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS

Well No.	Date	Ethanol	ЕТВА	ЕТВЕ	TAME	DIPE	TBF	TBA	TAA
MW-12	11/03/09	NS	NS	NS	NS	NS	NS	NS	NS
IVI W -12	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
MW-13	11/03/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
IVI W -13	11/30/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	<5.0
MW-14	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
IVI VV -14	11/22/11	<50	<50	< 0.62	< 0.78	< 0.70	<10	<6.0	450
MW-15	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
IVI VV -13	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	<5.0
, , , , , , , , , , , , , , , , , , , ,	03/24/06	<5,000	5,140	<50.0	72.5	<50.0	<1,000	1,560	34,600
MW-16	11/04/09	<10,000	<5,000	< 500	< 500	<250	<2,500	<5,000	45,400
	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
MW-17	11/03/09	NS	NS	NS	NS	NS	NS	NS	NS
191 99 -1 7	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
MW-18	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
1V1 VV -1 O	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	19.2 J
MW-19	11/03/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
101 00 -19	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	5.6 J
MW-19 DUP (DUP 1)	11/22/11	<25	<25	<0.31	<0.39	< 0.35	<5.0	<3.0	12.5 J
MW-20	11/03/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
IVI W -20	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	9.3 J	151
MW-21	11/03/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
IVI VV -2.1	11/22/11	<50	<50	< 0.62	1.1 J	< 0.70	<10	25.0 J	343
MW-22	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
171 77 -22	11/22/11	<25	<25	0.60 J	3.6	< 0.35	< 5.0	45.3	1,370
MW-23	11/04/09	<1,000	<500	<50.0	<50.0	<25.0	<250	< 500	1,490
171 77 -23	11/22/11	<130	<130	<1.6	9.7 J	<1.8	<25	<15	3,200
MW-24	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
171 77 -2-7	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	<5.0	<3.0	<5.0

Well No.	Date	Ethanol	ETBA	ETBE	TAME	DIPE	TBF	TBA	TAA
MW-25	11/04/09	<200	<100	<10.0	<10.0	< 5.0	< 50.0	<100	<100
141 44 -23	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	< 5.0
MW-26	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
141 (1 20	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	<5.0
MW-27	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
11111 27	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	43.2
MW-28	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
141 44 -20	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	< 5.0
MW-29	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
141 44 -29	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	< 5.0
MW-30	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
141 44 -30	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	<5.0	<3.0	< 5.0
MW-31	11/03/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
171 77 -51	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	<5.0	<3.0	< 5.0
MW-1A	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
141 44 - 17 X	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
MW-2A	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
171 77 21 1	11/30/11	<250	<250	<3.1	<3.9	<3.5	< 50	<30	83.3 J
MW-3A	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
101 (0 57)	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
MW-4A	11/04/09	FP	FP	FP	FP	FP	FP	FP	FP
172 77 12 %	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
	03/24/06	<100	<10.0	<1.00	<1.00	<1.00	<20.0	<20.0	<20.0
TW-1	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
	11/23/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	< 5.0
TW-2	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
1 44 - 2	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	15.9 J

Well No.	Date	Ethanol	ETBA	ЕТВЕ	TAME	DIPE	TBF	ТВА	TAA
WSW-1	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
W D W -1	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	< 5.0
WSW-3	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
W B W -5	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	<5.0	<3.0	< 5.0
FIELD	11/22/11	-25	-25	>0.21	<0.20	<0.25	-5 O	-2.0	<b>-5</b> 0
BLANK	11/22/11	<25	<25	< 0.31	<0.39	< 0.35	<5.0	<3.0	<5.0
TRIP BLANK	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	< 5.0

#### Notes:

- Analyses for oxygenates by Method 8260B; results reported in  $\mu$ g/l.
- <: Less than the report limit specified in the laboratory report.

APPENDICES

### APPENDIX A

 $Laboratory\ Analytical\ Report-Ground\ Water\ Samples$ 





### **Technical Report for**

GRI (Geological Resources Inc.)

Tisdale Quick Stop; Kingston, SC

Accutest Job Number: F88222

Sampling Dates: 11/22/11 - 11/23/11

#### Report to:

GRI

2301 F Crown Point EX Dr Charlotte, NC 28207

wsb@geologicalresourcesinc.com; carriekennedy@geologicalresourcesinc.com; johnbrown@geologicalresourcesinc.com; jjr@geologicalresourcesinc.com

ATTN: Scott Ball

Total number of pages in report: 54



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Harry Behzadi, Ph.D. Laboratory Director

Client Service contact: Muna Mohammed 407-425-6700

Certifications: FL (E83510), LA (03051), KS (E-10327), IA (366), IL (200063), NC (573), NJ (FL002), SC (96038001) DoD ELAP (L-A-B L2229), CA (04226CA), TX (T104704404), AK, AR, GA, KY, MA, NV, OK, UT, VA, WA, WI This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.

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### Sample Summary

GRI (Geological Resources Inc.)

Tisdale Quick Stop; Kingston, SC

Job No:

F88222

Sample Number	Collected Date	Time By	Received	Matr Code		Client Sample ID
F88222-1	11/23/11	10:12 RQ	11/29/11	AQ	Ground Water	MW 1
F88222-2	11/23/11	10:21 RQ	11/29/11	AQ	Ground Water	MW 2
F88222-3	11/22/11	10:15 RQ	11/29/11	AQ	Ground Water	MW 6
F88222-4	11/22/11	10:34 RQ	11/29/11	AQ	Ground Water	MW 7
F88222-5	11/22/11	17:41 RQ	11/29/11	AQ	Ground Water	MW 8
F88222-6	11/22/11	10:47 RQ	11/29/11	AQ	Ground Water	MW 14
F88222-7	11/22/11	10:58 RQ	11/29/11	AQ	Ground Water	MW 15
F88222-8	11/22/11	11:28 RQ	11/29/11	AQ	Ground Water	MW 18
F88222-9	11/22/11	11:44 RQ	11/29/11	AQ	Ground Water	MW 19
F88222-10	11/22/11	12:01 RQ	11/29/11	AQ	Ground Water	MW 20
F88222-11	11/22/11	14:20 RQ	11/29/11	AQ	Ground Water	MW 21
F88222-12	11/22/11	13:00 RQ	11/29/11	AQ	Ground Water	MW 22
F88222-13	11/22/11	16:00 RQ	11/29/11	AQ	Ground Water	MW 23



### Sample Summary (continued)

GRI (Geological Resources Inc.)

Tisdale Quick Stop; Kingston, SC

Job No:

F88222

Sample Number	Collected Date	Time I	Зу	Received	Matri Code		Client Sample ID
F88222-14	11/22/11	15:21 I	RQ	11/29/11	AQ	Ground Water	MW 24
F88222-15	11/22/11	13:47 I	RQ	11/29/11	AQ	Ground Water	MW 25
F88222-16	11/22/11	13:24 I	RQ	11/29/11	AQ	Ground Water	MW 26
F88222-17	11/22/11	12:37 I	RQ	11/29/11	AQ	Ground Water	MW 27
F88222-18	11/22/11	12:21 F	RQ	11/29/11	AQ	Ground Water	MW 28
F88222-19	11/22/11	16:29 I	RQ	11/29/11	AQ	Ground Water	MW 29
F88222-20	11/22/11	17:12 F	RQ	11/29/11	AQ	Ground Water	MW 30
F88222-21	11/22/11	16:47 F	RQ	11/29/11	AQ	Ground Water	MW 31
F88222-22	11/23/11	09:45 F	RQ	11/29/11	AQ	Ground Water	TW 1
F88222-23	11/22/11	14:57 F	ξQ	11/29/11	AQ	Ground Water	TW 2
F88222-24	11/22/11	11:34 R	Q	11/29/11	AQ	Ground Water	WSW 1
F88222-25	11/22/11	11:34 R	2Q	11/29/11	AQ	Ground Water	WSW 3
F88222-26	11/22/11	11:44 R	Q.	11/29/11	AQ	Ground Water	MW DUP 1



### Sample Summary (continued)

GRI (Geological Resources Inc.)

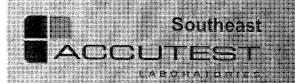
Tisdale Quick Stop; Kingston, SC

Job No:

F88222

Sample Number	Collected Date	Time By	Received	Matri Code		Client Sample ID
F88222-27	11/23/11	10:21 RQ	11/29/11	AQ	Ground Water	MW DUP 2
F88222-28	11/22/11	11:59 RQ	11/29/11	AQ	Field Blank Water	FIELD BLANK
F88222-29	11/22/11	00:00 RQ	11/29/11	AQ	Trip Blank Water	TRIP BLANK





Sample Results	
Report of Analysis	



Ву

MM

Page 1 of 1

Client Sample ID: MW 1

Lab Sample ID:

F88222-1

Matrix: Method:

AQ - Ground Water

SW846 8260B

Date Sampled: 11/23/11

Date Received: 11/29/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

100

File ID DF

Analyzed

12/05/11

Prep Batch

Prep Date

n/a

Analytical Batch

n/a VJ3787

Run #1 Run #2

Purge Volume

J070766.D

Run #1

5.0 ml

Run #2

Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	6630	100	20	ug/l	
108-88-3	Toluene	9340	100	20	ug/I	
100-41-4	Ethylbenzene	664	100	20	ug/l	
1330-20-7	Xylene (total)	4300	300	52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	399	100	34	ug/l	
91-20-3	Naphthalene	210	500	100	ug/l	J
107-06-2	1,2-Dichloroethane	ND	100	20	ug/l	
108-20-3	Di-Isopropyl ether	ND	100	35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	5000	2500	ug/l	
64-17-5	Ethyl Alcohol	ND	10000	2500	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	100	31	ug/l	
75-85-4	Tert-Amyl Alcohol	24100	2000	500	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	200	39	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	2000	300	ug/l	
762-75-4	Tert-Butyl Formate	ND	2000	500	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	102%		87-1	16%	
17060-07-0	1,2-Dichloroethane-D4	97%		76-1	27%	
2037-26-5	Toluene-D8	97%		86-1	12%	
460-00-4	4-Bromofluorobenzene	90%		84-1	20%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Client Sample ID: MW 2

Lab Sample ID:

F88222-2

Matrix: Method: AQ - Ground Water

SW846 8260B

Date Sampled: 11/23/11

Date Received: 11/29/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

File ID Run #1 J070794.D DF 250

Analyzed 12/06/11

By MM Prep Date n/a

Prep Batch n/a

Analytical Batch

VJ3789

Run #2

Purge Volume

Run #1 5.0 ml

Run #2

Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	20100	250	50	ug/l	
108-88-3	Toluene	23800	250	50	ug/l	
100-41-4	Ethylbenzene	1810	250	50	ug/l	
1330-20-7	Xylene (total)	9030	750	130	ug/l	
1634-04-4	Methyl Tert Butyl Ether	89.8	250	85	ug/I	J
91-20-3	Naphthalene	413	1300	250	ug/l	J
107-06-2	1,2-Dichloroethane	ND	250	50	ug/l	
108-20-3	Di-Isopropyl ether	ND	250	88	ug/I	
624-95-3	3,3-Dimethyl-1-Butanol	ND	13000	6300	ug/l	
64-17-5	Ethyl Alcohol	ND	25000	6300	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	250	78	ug/l	
75-85-4	Tert-Amyl Alcohol	37800	5000	1300	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	500	98	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	5000	750	ug/l	
762-75-4	Tert-Butyl Formate	ND	5000	1300	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	101%		87-1	16%	
17060-07-0	1,2-Dichloroethane-D4	99%		76-1	27%	
2037-26-5	Toluene-D8	96%		86-1	12%	
460-00-4	4-Bromofluorobenzene	89%		84-1	20%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Ву

MM

Prep Date

n/a

Client Sample ID: MW 6

Lab Sample ID:

F88222-3

Matrix:

AQ - Ground Water

Method:

SW846 8260B

Date Sampled: Date Received:

11/22/11 11/29/11

Percent Solids: n/a

Project:

DF

1

Tisdale Quick Stop; Kingston, SC

Analyzed

12/05/11

Prep Batch n/a

Analytical Batch VJ3787

Run #1 Run #2

Purge Volume

File ID

J070748.D

Run #1 5.0 ml

Run #2

### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.34	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/I	
64-17-5	Ethyl Alcohol	ND	100	25	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/I	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	98%		87-1	16%	
17060-07-0	1,2-Dichloroethane-D4	98%		76-1	27%	
2037-26-5	Toluene-D8	99%		86-1	12%	
460-00-4	4-Bromofluorobenzene	90%		84-1	20%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: MW 7

Lab Sample ID:

F88222-4

Matrix: Method: AQ - Ground Water

SW846 8260B

Date Sampled: 11/22/11

Date Received: 11/29/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

File ID Run #1 J070749.D DF 1

Analyzed Ву 12/05/11 MM Prep Date n/a

Prep Batch n/a

Analytical Batch

VJ3787

Run #2

Purge Volume

5.0 ml

Run #1

Run #2

### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/I	
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.62	1.0	0.34	ug/l	J
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	•
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l	
64-17-5	Ethyl Alcohol	ND	100	25	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	103%		87-1	16%	
17060-07-0	1,2-Dichloroethane-D4	101%		76-1	27%	
2037-26-5	Toluene-D8	98%		86-1	12%	
460-00-4	4-Bromofluorobenzene	91%	Ä	84-1	20%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: MW 8 Lab Sample ID:

F88222-5

Matrix:

AQ - Ground Water

Method: Project:

SW846 8260B

Tisdale Quick Stop; Kingston, SC

Date Sampled: Date Received:

11/22/11 11/29/11

Percent Solids:

File ID Ву

Run #1 J070750.D DF 1

Analyzed 12/05/11 MM Prep Date n/a

n/a

Prep Batch

Analytical Batch VJ3787

Run #2

Purge Volume

5.0 ml

Run #1

Run #2

Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	11.6	1.0	0.20	ug/l	
108-88-3	Toluene	1.3	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	8.1	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	7.0	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.34	ug/l	
91-20-3	Naphthalene	19.3	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l	
64-17-5	Ethyl Alcohol	ND	100	25	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l	
75-85-4	Tert-Amyl Alcohol	11.2	20	5.0	ug/l	J
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	95%		87-1	16%	
17060-07-0	1,2-Dichloroethane-D4	100%		76-1	27%	
2037-26-5	Toluene-D8	97%		86-1	12%	
460-00-4	4-Bromofluorobenzene	85%		84-1	<b>20</b> %	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: MW 14 Lab Sample ID:

F88222-6

Matrix:

AQ - Ground Water

SW846 8260B

Date Sampled: Date Received:

11/22/11 11/29/11

Percent Solids: n/a

Method: Project:

Tisdale Quick Stop; Kingston, SC

File ID Run #1 J070790.D DF 2

Analyzed 12/06/11

Ву MM n/a

Prep Date n/a

Analytical Batch Prep Batch

VJ3789

Run #2

Purge Volume

5.0 ml

Run #1

Run #2

Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	79.5	2.0	0.40	ug/l	
108-88-3	Toluene	16.7	2.0	0.40	ug/l	
100-41-4	Ethylbenzene	4.8	2.0	0.40	ug/l	
1330-20-7	Xylene (total)	26.8	6.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	5.8	2.0	0.68	ug/l	
91-20-3	Naphthalene	8.7	10	2.0	ug/l	J
107-06-2	1,2-Dichloroethane	ND	2.0	0.40	ug/l	•
108-20-3	Di-Isopropyl ether	ND	2.0	0.70	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	NĐ	100	50	ug/l	
64-17-5	Ethyl Alcohol	ND	200	50	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.62	ug/l	
75-85-4	Tert-Amyl Alcohol	450	40	10	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	4.0	0.78	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	40	6.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	40	10	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
1868-53-7	Dibromofluoromethane	98%	ě	87-1	16%	
17060-07-0	1,2-Dichloroethane-D4	95%		76-12	27%	
2037-26-5	Toluene-D8	99%		86-1	12%	
460-00-4	4-Bromofluorobenzene	93%		84-12	20%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Ву

MM

Client Sample ID:

MW 15

Lab Sample ID:

F88222-7

Matrix: Method:

SW846 8260B

AQ - Ground Water

DF

1

Date Received: 11/29/11

Date Sampled: 11/22/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

Analyzed

12/05/11

Prep Batch

Prep Date

n/a

Analytical Batch

VJ3787 n/a

Run #1 Run #2

Purge Volume

File ID

5.0 ml

J070751.D

Run #1 Run #2

Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.34	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l	
64-17-5	Ethyl Alcohol	ND	100	25	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	101%		87-1	16%	
17060-07-0	1,2-Dichloroethane-D4	101%		76-1	27%	
2037-26-5	Toluene-D8	96%		86-1	12%	
460-00-4	4-Bromofluorobenzene	94%		84-1	20%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: MW 18

Lab Sample ID:

F88222-8

Matrix:

AQ - Ground Water

Method:

SW846 8260B

Date Sampled: 11/22/11

Date Received: 11/29/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

File ID J070752.D DF 1

Analyzed 12/05/11

MM n/a

By

Prep Date Prep Batch n/a

Analytical Batch

VJ3787

Run #1 Run #2

Purge Volume

Run #1 Run #2 5.0 ml

Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	NĎ	1.0	0.34	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l	
64-17-5	Ethyl Alcohol	ND	100	25	ug/I	
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l	
75-85-4	Tert-Amyl Alcohol	19.2	20	5.0	ug/l	J
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its	
1868-53-7	Dibromofluoromethane	102%		87-1	16%	•
17060-07-0	1,2-Dichloroethane-D4	104%	÷ \$ 7.	76-1	27%	
2037-26-5	Toluene-D8	99%	Ž	86-1	12%	
460-00-4	4-Bromofluorobenzene	99%		84-1	20%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Client Sample ID: MW 19 Lab Sample ID:

F88222-9

Matrix: Method:

AQ - Ground Water

SW846 8260B Tisdale Quick Stop; Kingston, SC Date Sampled: Date Received:

11/22/11 11/29/11

Percent Solids:

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch Run #1 J070753.D 12/05/11 1 MM n/a n/a VJ3787

Run #2

Project:

Purge Volume

Run #1 5.0 ml

Run #2

### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q	
71-43-2	Benzene	ND	1.0	0.20	ug/l		
108-88-3	Toluene	ND	1.0	0.20	ug/I		
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l		
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l		
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.34	ug/l		
91-20-3	Naphthalene	ND	5.0	1.0	ug/l		
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l		
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l		
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l		
64-17-5	Ethyl Alcohol	ND	100	25	ug/l		
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l		
75-85-4	Tert-Amyl Alcohol	5.6	20	5.0	ug/I	J	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l		
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l		
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l		
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its		
1868-53-7	Dibromofluoromethane	98%	87-116%				
17060-07-0	1,2-Dichloroethane-D4	101%		76-1	27%		
2037-26-5	Toluene-D8	97%		86-1	12%		
460-00-4	4-Bromofluorobenzene	92%	84-120%				

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Ву

MM

Analyzed

12/05/11

Client Sample ID:

MW 20 F88222-10

Lab Sample ID: Matrix:

AQ - Ground Water

DF

1

Method:

SW846 8260B

Date Sampled: 11/22/11

Date Received: 11/29/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

n/a

Prep Date

Prep Batch n/a

Analytical Batch VJ3787

Run #1 Run #2

Purge Volume

File ID

 $5.0 \, ml$ 

J070754.D

Run #1

Run #2

Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	2.4	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	6.2	1.0	0.34	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND .	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l	
64-17-5	Ethyl Alcohol	ND	100	25	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l	
75-85-4	Tert-Amyl Alcohol	151	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l	
75-65-0	Tert-Butyl Alcohol	9.3	20	3.0	ug/l	J
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2 Limits		its	
1868-53-7	Dibromofluoromethane	101%		87-1	16%	
17060-07-0	1,2-Dichloroethane-D4	101%		76-1	27%	
2037-26-5	Toluene-D8	98%		86-1	12%	
460-00-4	4-Bromofluorobenzene	90%		84-1	20%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



By

MM

Page 1 of 1

Client Sample ID: MW 21

File ID

5.0 ml

J070791.D

Lab Sample ID:

F88222-11

Matrix: Method: AQ - Ground Water

SW846 8260B

DF

2

Date Sampled: 11/22/11

Date Received: 11/29/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

Analyzed

12/06/11

n/a

Prep Date Prep Batch

Analytical Batch

n/a VJ3789

Run #1 Run #2

Purge Volume

Run #1 Run #2

Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q	
71-43-2	Benzene	108	2.0	0.40	ug/l		
108-88-3	Toluene	4.5	2.0	0.40	ug/l		
100-41-4	Ethylbenzene	ND	2.0	0.40	ug/l		
1330-20-7	Xylene (total)	ND	6.0	1.0	ug/l		
1634-04-4	Methyl Tert Butyl Ether	8.7	2.0	0.68	ug/l		
91-20-3	Naphthalene	ND	10	2.0	ug/l		
107-06-2	1,2-Dichloroethane	ND	2.0	0.40	ug/l		
108-20-3	Di-Isopropyl ether	ND	2.0	0.70	ug/l		
624-95-3	3,3-Dimethyl-1-Butanol	ND	100	50	ug/l		
64-17-5	Ethyl Alcohol	ND	200	50	ug/l		
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.62	ug/l		
75-85-4	Tert-Amyl Alcohol	343	40	10	ug/l		
994-05-8	Tert-Amyl Methyl Ether	1.1	4.0	0.78	ug/l	J	
75-65-0	Tert-Butyl Alcohol	25.0	40	6.0	ug/I	J	
762-75-4	Tert-Butyl Formate	ND	40	10	ug/l		
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	un# 2 Limits			
1868-53-7	Dibromofluoromethane	102%		16%			
17060-07-0	1,2-Dichloroethane-D4	98%		76-1	27%		
2037-26-5	Toluene-D8	97%		86-1	12%		
460-00-4	4-Bromofluorobenzene	93%	84-120%				

ND = Not detected

E = Indicates value exceeds calibration range

RL = Reporting Limit

MDL - Method Detection Limit

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: Lab Sample ID:

MW 22 F88222-12

Matrix: Method: AQ - Ground Water

SW846 8260B

Date Sampled: Date Received: 11/29/11

11/22/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

File ID DF Analyzed

Ву Prep Date Prep Batch Analytical Batch Run #1 J070755.D 12/05/11 1 MMn/a VJ3787 n/a Run #2 J070793.D 2 12/06/11 VJ3789 MM n/a n/a

Purge Volume 5.0 ml

Run #1 Run #2 5.0 ml

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	60.0	1.0	0.20	ug/l	
108-88-3	Toluene	8.3	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	3.4	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	3.1	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	13.8	1.0	0.34	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l	
64-17-5	Ethyl Alcohol	ND	100	25	ug/l	
637-92-3	Ethyl Tert Butyl Ether	0.60	1.0	0.31	ug/l	J
<b>75-85-4</b>	Tert-Amyl Alcohol	1370 a	40	10	ug/l	-
994-05-8	Tert-Amyl Methyl Ether	3.6	2.0	0.39	ug/l	
75-65-0	Tert-Butyl Alcohol	45.3	20	3.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	99%	101%	87-1	16%	
17060-07-0	1,2-Dichloroethane-D4	97%	96%	76-1	27%	
2037-26-5	Toluene-D8	94%	94%	86-1	12%	
460-00-4	4-Bromofluorobenzene	92%	90%	84-1	20%	

(a) Result is from Run# 2

ND = Not detected RL = Reporting Limit MDL - Method Detection Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Client Sample ID: MW 23

Lab Sample ID:

F88222-13

Matrix: Method: AQ - Ground Water

SW846 8260B

Date Sampled: 11/22/11

Date Received: 11/29/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

File ID Run #1 J070792.D DF 5

Analyzed By MM 12/06/11

Prep Date n/a

Prep Batch n/a

Analytical Batch

VJ3789

Run #2

Purge Volume

Run #1 Run #2 5.0 ml

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q	
71-43-2	Benzene	435	5.0	1.0	ug/l		
108-88-3	Toluene	ND	5.0	1.0	ug/l		
100-41-4	Ethylbenzene	ND	5.0	1.0	ug/l		
1330-20-7	Xylene (total)	ND	15	2.6	ug/l		
1634-04-4	Methyl Tert Butyl Ether	140	5.0	1.7	ug/l		
91-20-3	Naphthalene	15.9	25	5.0	ug/l	J	
107-06-2	1,2-Dichloroethane	ND	5.0	1.0	ug/l		
108-20-3	Di-Isopropyl ether	ND	5.0	1.8	ug/l		
624-95-3	3,3-Dimethyl-1-Butanol	ND	250	130	ug/l		
64-17-5	Ethyl Alcohol	ND	500	130	ug/l		
637-92-3	Ethyl Tert Butyl Ether	ND	5.0	1.6	ug/l		
75-85-4	Tert-Amyl Alcohol	3200	100	25	ug/l		
994-05-8	Tert-Amyl Methyl Ether	9.7	10	2.0	ug/l	J	
75-65-0	Tert-Butyl Alcohol	ND	100	15	ug/l		
762-75-4	Tert-Butyl Formate	· ND	100	25	ug/l		
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its		
1868-53-7	Dibromofluoromethane	101%	87-116%				
17060-07-0	1,2-Dichloroethane-D4	97%		76-1	27%		
2037-26-5	Toluene-D8	98%		86-1	12%		
460-00-4	4-Bromofluorobenzene	92%	84-120%				

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

MDL - Method Detection Limit

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Ву

MM

Client Sample ID: MW 24

Lab Sample ID:

F88222-14

Matrix:

AQ - Ground Water

DF

1

Method:

SW846 8260B

Date Sampled: 11/22/11

n/a

Date Received: 11/29/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

Analyzed

12/05/11

Prep Batch

Prep Date

n/a

Analytical Batch VJ3787

Run #1 Run #2

Purge Volume

Run #1 Run #2 5.0 ml

File ID

J070756.D

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.34	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l	
64-17-5	Ethyl Alcohol	ND	100	25	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	99%		87-1	16%	
17060-07-0	1,2-Dichloroethane-D4	99%		76-1	27%	
2037-26-5	Toluene-D8	96%	e G	86-1	12%	
460-00-4	4-Bromofluorobenzene	92%	A			

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



By

ΜM

Client Sample ID:

MW 25

Lab Sample ID:

F88222-15

Matrix: Method: AQ - Ground Water

DF

1

SW846 8260B

Date Sampled: 11/22/11 Date Received: 11/29/11

n/a

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

Analyzed

12/05/11

Prep Batch

Prep Date

n/a

Analytical Batch VJ3787

Run #1 Run #2

Purge Volume

File ID

5.0 ml

J070757.D

Run #1

Run #2

Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q	
71-43-2	Benzene	ND	1.0	0.20	ug/l		
108-88-3	Toluene	ND	1.0	0.20	ug/l		
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l		
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l		
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.34	ug/l		
91-20-3	Naphthalene	ND	5.0	1.0	ug/l		
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l		
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l		
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l		
64-17-5	Ethyl Alcohol	ND	100	25	ug/l		
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l		
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l		
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l		
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l		
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l		
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits			
1868-53-7	Dibromofluoromethane	100%		87-116%			
17060-07-0	1,2-Dichloroethane-D4	102%		76-1	27%		
2037-26-5	Toluene-D8	100%		86-1	12%		
460-00-4	4-Bromofluorobenzene	89%	84-120%				

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



By

MM

Page 1 of 1

Client Sample ID: MW 26

Lab Sample ID:

F88222-16

Matrix: Method: AQ - Ground Water

SW846 8260B

Date Sampled: 11/22/11

Date Received: 11/29/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

Analyzed

12/05/11

DF

1

Prep Batch

Prep Date

n/a

Analytical Batch

VJ3787 n/a

Run #1 Run #2

Purge Volume

File ID

5.0 ml

J070758.D

Run #1

Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.86	1.0	0.34	ug/l	J
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	•
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l	
64-17-5	Ethyl Alcohol	ND	100	25	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	103%		87-1	16%	
17060-07-0	1,2-Dichloroethane-D4	100%		76-1	27%	
2037-26-5	Toluene-D8	97%		86-1	12%	
460-00-4	4-Bromofluorobenzene	90%	å 2	84-1	20%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: MW 27

Lab Sample ID:

F88222-17 AQ - Ground Water

Matrix: Method:

SW846 8260B

Date Sampled: 11/22/11

Date Received: 11/29/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

File ID Run #1 J070759.D DF 1

Analyzed 12/05/11

Ву MM n/a

Prep Date

Prep Batch n/a

Analytical Batch

VJ3787

Run #2

Pur ge Volume

Purgeable Aromatics, MTBE, Naphthalene

5.0 ml

Run #1

Run #2

CAS No.	Compound	Result	RL	MDL	Units	Q	
71-43-2	Benzene	6.2	1.0	0.20	ug/l		
108-88-3	Toluene	ND	1.0	0.20	ug/l		
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l		
1330-20-7	Xylene (total)	0.61	3.0	0.52	ug/l	J	
1634-04-4	Methyl Tert Butyl Ether	2.4	1.0	0.34	ug/l	-	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l		
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l		
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l		
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l		
64-17-5	Ethyl Alcohol	ND	100	25	ug/l		
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l		
75-85-4	Tert-Amyl Alcohol	43.2	20	5.0	ug/l		
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l		
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l		
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l		
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	un# 2 Limits			
1868-53-7	Dibromofluoromethane	100%	87-116%				
17060-07-0	1,2-Dichloroethane-D4	100%		76-1	27%		
2037-26-5	Toluene-D8	99%		86-1	12%		
460-00-4	4-Bromofluorobenzene	89%	84-120%				

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: MW 28 Lab Sample ID:

F88222-18

Matrix: Method: AQ - Ground Water

SW846 8260B

Date Sampled:

11/22/11 Date Received: 11/29/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

File ID Run #1 J070760.D DF 1

Ву Analyzed 12/05/11 MM Prep Date n/a

Prep Batch n/a

Analytical Batch

VJ3787

Run #2

Purge Volume

5.0 ml

Run #1

Run #2

Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q	
71-43-2	Benzene	ND	1.0	0.20	ug/l		
108-88-3	Toluene	ND	1.0	0.20	ug/l		
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l		
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l		
1634-04-4	Methyl Tert Butyl Ether	0.38	1.0	0.34	ug/l	J	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	•	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l		
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l		
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l		
64-17-5	Ethyl Alcohol	ND	100	25	ug/l		
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l		
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l		
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/I		
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l		
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l		
CAS No.	Surrogate Recoveries	Run# 1	Run# 2 Limits		its		
1868-53-7	Dibromofluoromethane	100%	87-116%				
17060-07-0	1,2-Dichloroethane-D4	100%	Ž.	76-1	27%		
2037-26-5	Toluene-D8	98%		86-1	12%		
460-00-4	4-Bromofluorobenzene	92%	84-120%				

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Client Sample ID:

MW 29

Lab Sample ID:

F88222-19

Matrix: Method: AQ - Ground Water

SW846 8260B

Date Sampled: 11/22/11

Date Received: 11/29/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

File ID Run #1 J070761.D

DF 1

Ву MM

Analyzed

12/05/11

Prep Date n/a

Prep Batch

Analytical Batch

VJ3787 n/a

Run #2

Purge Volume

5.0 ml

Run #1

Run #2

Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.34	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l	
64-17-5	Ethyl Alcohol	ND	100	25	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	103%		87-1	16%	
17060-07-0	1,2-Dichloroethane-D4	100%		76-1	27%	
2037-26-5	Toluene-D8	94%		86-1	12%	
460-00-4	4-Bromofluorobenzene	91%		84-1	20%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: MW 30

Lab Sample ID:

F88222-20

Matrix:

AQ - Ground Water

Method:

SW846 8260B

Date Sampled: 11/22/11 Date Received: 11/29/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

File ID Run #1 J070762.D DF 1

Analyzed 12/05/11

Ву MM Prep Date n/a

Prep Batch

Analytical Batch

n/a VJ3787

Run #2

Purge Volume

Run #1 Run #2

5.0 ml

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.34	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l	
64-17-5	Ethyl Alcohol	ND	100	25	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	104%	Ě	87-1	16%	
17060-07-0	1,2-Dichloroethane-D4	101%		76-1	27%	
2037-26-5	Toluene-D8	97%		86-1	12%	
460-00-4	4-Bromofluorobenzene	90%		84-1	20%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Client Sample ID:

MW 31

Lab Sample ID:

F88222-21

Matrix: Method: AQ - Ground Water

SW846 8260B

DF

1

Date Sampled: 11/22/11 Date Received: 11/29/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

Analyzed

12/06/11

Ву

ΜM

Prep Date

n/a

Prep Batch

Analytical Batch

VJ3789 n/a

Run #1 Run #2

Purge Volume

File ID

5.0 ml

J070781.D

Run #1

Run #2

### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.34	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l	
64-17-5	Ethyl Alcohol	ND	100	25	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	101%		87-1	16%	
17060-07-0	1,2-Dichloroethane-D4	98%	Ž	76-1	27%	
2037-26-5	Toluene-D8	95%		86-1	12%	
460-00-4	4-Bromofluorobenzene	90%		84-1	20%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



By

MM

12/06/11

Prep Date

n/a

TW 1 Client Sample ID:

Lab Sample ID:

F88222-22

Matrix: Method: AQ - Ground Water

SW846 8260B

Date Sampled: 11/23/11

Date Received: 11/29/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

File ID DF Analyzed

1

Prep Batch n/a

Analytical Batch VJ3789

Run #1 Run #2

Purge Volume

J070782.D

Run #1 Run #2 5.0 ml

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.34	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l	
64-17-5	Ethyl Alcohol	ND	100	25	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	102%		87-1	16%	
17060-07-0	1,2-Dichloroethane-D4	99%		76-1	27%	
2037-26-5	Toluene-D8	93%	i Z	86-1	12%	
460-00-4	4-Bromofluorobenzene	89%	di E	84-1	20%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



By

MM

Client Sample ID: TW 2

Lab Sample ID:

F88222-23

Matrix:

AQ - Ground Water

Method:

SW846 8260B

DF

1

Date Sampled: 11/22/11 Date Received: 11/29/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

Analyzed

12/06/11

Prep Date

n/a

Analytical Batch

Prep Batch n/a VJ3789

Run #1 Run #2

Purge Volume

File ID

5.0 ml

J070783.D

Run #1

Run #2

Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	7.0	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	1.0	1.0	0.34	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l	
64-17-5	Ethyl Alcohol	ND	100	25	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l	
75-85-4	Tert-Amyl Alcohol	15.9	20	5.0	ug/l	J
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l	Ĭ
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	103%		87-1	16%	
17060-07-0	1,2-Dichloroethane-D4	99%		76-1	27%	
2037-26-5	Toluene-D8	96%		86-1	12%	
460-00-4	4-Bromofluorobenzene	90%		84-1	20%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: WSW 1

Lab Sample ID:

F88222-24

Matrix: Method: AQ - Ground Water

SW846 8260B

Date Sampled: 11/22/11

Date Received: 11/29/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

File ID Run #1 J070784.D DF 1

Analyzed 12/06/11

Ву MM Prep Date n/a

Prep Batch

Analytical Batch

n/a VJ3789

Run #2

Purge Volume

Run #1 Run #2

5.0 ml

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/I	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/I	
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.34	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l	
64-17-5	Ethyl Alcohol	ND	100	25	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
1868-53-7	Dibromofluoromethane	102%		87-11	6%	
17060-07-0	1,2-Dichloroethane-D4	101%		76-12	7%	
2037-26-5	Toluene-D8	95%		86-11	2%	
460-00-4	4-Bromofluorobenzene	89%		84-12	0%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



By

ΜM

Client Sample ID:

WSW 3

F88222-25

Lab Sample ID: Matrix:

AQ - Ground Water

SW846 8260B

Date Sampled: 11/22/11

Date Received: 11/29/11

Percent Solids: n/a

Method: Project:

Tisdale Quick Stop; Kingston, SC

DF 1

Analyzed 12/06/11

Prep Date n/a

Prep Batch n/a

Analytical Batch VJ3789

Run #1 Run #2

Purge Volume

File ID

5.0 ml

J070785.D

Run #1

Run #2

Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.34	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l	
64-17-5	Ethyl Alcohol	ND	100	25	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
1868-53-7	Dibromofluoromethane	98%		87-11	16%	
17060-07-0	1,2-Dichloroethane-D4	104%		76-12	27%	
2037-26-5	Toluene-D8	96%		86-11	2%	
460-00-4	4-Bromofluorobenzene	90%		84-12	20%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Client Sample ID:

MW DUP 1

Lab Sample ID:

F88222-26

Matrix:

AQ - Ground Water

Date Sampled: 11/22/11

Method:

SW846 8260B

Date Received: 11/29/11

Project:

Tisdale Quick Stop; Kingston, SC

1

Percent Solids: n/a

Run #1

File ID J070786.D DF Analyzed 12/06/11

By Prep Date MM n/a

Prep Batch n/a

Analytical Batch VJ3789

Run #2

Purge Volume

Run #1 Run #2 5.0 ml

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	1.3	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.34	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l	
64-17-5	Ethyl Alcohol	ND	100	25	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l	
75-85-4	Tert-Amyl Alcohol	12.5	20	5.0	ug/l	J
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l	•
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	102%		87-1	16%	
17060-07-0	1,2-Dichloroethane-D4	100%		76-1	27%	
2037-26-5	Toluene-D8	97%		86-1	12%	
460-00-4	4-Bromofluorobenzene	92%		84-1	20%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Client Sample ID:

MW DUP 2

Lab Sample ID:

F88222-27 AQ - Ground Water

Matrix: Method:

SW846 8260B

Date Sampled: 11/23/11

Date Received: 11/29/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

File ID J070826.D

DF 250

Analyzed 12/07/11

Ву MM

Prep Date n/a

Prep Batch n/a

Analytical Batch VJ3791

Run #1 Run #2

Pur ge Volume

5.0 ml

Run #1

Run #2

### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	20600	250	50	ug/l	
108-88-3	Toluene	24500	250	50	ug/l	
100-41-4	Ethylbenzene	2030	250	50	ug/l	
1330-20-7	Xylene (total)	10000	750	130	ug/l	
1634-04-4	Methyl Tert Butyl Ether	92.5	250	85	ug/l	J
91-20-3	Naphthalene	620	1300	250	ug/l	J
107-06-2	1,2-Dichloroethane	ND	250	50	ug/l	-
108-20-3	Di-Isopropyl ether	ND	250	88	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	13000	6300	ug/l	
64-17-5	Ethyl Alcohol	ND	25000	6300	ug/l	
637-92-3	Ethyl Tert Butyl Ether a	ND	250	78	ug/l	
75-85-4	Tert-Amyl Alcohol	37000	5000	1300	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	500	98	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	5000	750	ug/l	
762-75-4	Tert-Butyl Formate	ND	5000	1300	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	100%		87-1	16%	
17060-07-0	1,2-Dichloroethane-D4	96%		76-1	27%	
2037-26-5	Toluene-D8	95%		86-1	12%	
460-00-4	4-Bromofluorobenzene	89%	ž	84-1	20%	

(a) Associated BS recovery outside control limits.

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: FIELD BLANK

Lab Sample ID:

F88222-28

Matrix:

AQ - Field Blank Water

Method:

SW846 8260B

Date Sampled: 11/22/11 Date Received: 11/29/11

Percent Solids: n/a

Project: Tisdale Quick Stop; Kingston, SC

Run #1

File ID J070787.D DF 1

Analyzed By MM

12/06/11

Prep Date n/a

Prep Batch

Analytical Batch

n/a VJ3789

Run #2

Purge Volume

Run #1 Run #2 5.0 ml

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.34	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l	
64-17-5	Ethyl Alcohol	ND	100	25	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
1868-53-7	Dibromofluoromethane	102%		87-11	16%	
17060-07-0	1,2-Dichloroethane-D4	97%		76-12	27%	
2037-26-5	Toluene-D8	97%		86-11	2%	
460-00-4	4-Bromofluorobenzene	90%		84-12	20%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: TRIP BLANK

Lab Sample ID:

F88222-29

Matrix: Method:

AQ - Trip Blank Water

SW846 8260B

Date Received: 11/29/11

Date Sampled: 11/22/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

File ID Run #1 a J070788.D

5.0 ml

DF 1

Analyzed Ву 12/06/11 MM Prep Date n/a

Prep Batch n/a

Analytical Batch

VJ3789

Run #2

Purge Volume

Run #1

Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.34	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/1	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l	
64-17-5	Ethyl Alcohol	ND	100	25	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limit	s	
1868-53-7	Dibromofluoromethane	102%		87-11	6%	
17060-07-0	1,2-Dichloroethane-D4	99%		76-12	7%	
2037-26-5	Toluene-D8	98%		86-11	<b>2</b> %	
460-00-4	4-Bromofluorobenzene	91%		84-12	0%	

(a) Sample vial(s) contained significant headspace; reported results are considered minimum values.

ND = Not detected

MDL - Method Detection Limit

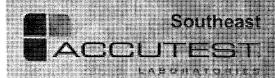
RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank





Misc. Forms

**Custody Documents and Other Forms** 

# Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (SC)
- Chain of Custody



# Parameter Certification Exceptions Job Number: F88222

Account:

GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale Quick Stop; Kingston, SC

The following parameters included in this report are exceptions to NELAC certification. The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
3,3-Dimethyl-1-Butanol	624-95-3	SW846 8260B	AQ	Certified by SOP MS005
i-Isopropyl ether	108-20-3	SW846 8260B	AQ	Certified by SOP MS005
ert-Amyl Alcohol	75-85-4	SW846 8260B	AQ	Certified by SOP MS005
Tert-Butyl Formate	762-75-4	SW846 8260B	AQ	Certified by SOP MS005

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F88222: Chain of Custody Page 1 of 4

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F88222: Chain of Custody Page 2 of 4

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F88222: Chain of Custody

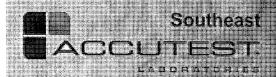
Page 3 of 4

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ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION  ACCUTEST'S JOB NUMBER: \$\overline{\text{LABORATORIES}}\$ CLIENT: \$\overline{\text{Co.}} \text{Resources}\$ PROJECT: \$\overline{\text{Labes}}\$  DATE/TIME RECEIVED: \$\overline{\text{LABORATORIES}}\$ CLIENT: \$\overline{\text{Co.}} \text{Resources}\$ PROJECT: \$\overline{\text{Labes}}\$  METHOD OF DELIVERY: \$\overline{\text{RDEX}}\$ UPS ACCUTEST COURIER GREYHOUND DELIVERY OTHER  ARBILL NUMBERS: \$\overline{\text{LABORATION}}\$ CUSTODY SEAL NOT PRESENT OR NOT INTACT CHAIN OF CUSTODY NOT RECEIVED (COC)  CHAIN OF CUSTODY NOT RECEIVED (COC)  ANALYSIS REQUESTED IS UNCLEAR OR MISSING SAMPLE DATES OR TIMES UNCLEAR OR MISSING SAMPLE PROSENT ON ALL BOTTLES  TEMPERATURE RIFORMATION  TRIP BLANK INFORMATION  TRIP BLANK INFORMATION  TRIP BLANK NOT ON COC  TRIP BLANK NOT ON COC  TRIP BLANK NOT ON COC  TRIP BLANK NOT ON COC  TRIP BLANK NOT INTACT  TRIP BLANK NO
TECHNICIAN SIGNATURE/DATE / William /1-29-1/ REVIEWER SIGNATURE/DATE / 11/29-1/ receipt confirmation 122910.xls

F88222: Chain of Custody

Page 4 of 4



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QC Data Summaries

# Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



### Method Blank Summary

Job Number: F88222

Account:

GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale Quick Stop; Kingston, SC

Sample VJ3787-MB	File ID J070747.D	<b>DF</b> 1	<b>Analyzed</b> 12/05/11	By MM	Prep Date	Prep Batch	Analytical Batch VJ3787
							·

The QC reported here applies to the following samples:

Method: SW846 8260B

 $F88222-1,\ F88222-3,\ F88222-4,\ F88222-5,\ F88222-7,\ F88222-8,\ F88222-9,\ F88222-10,\ F88222-12,\ F88222-14,\$ 15, F88222-16, F88222-17, F88222-18, F88222-19, F88222-20

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.20	ug/l
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l
64-17-5	Ethyl Alcohol	ND	100	25	ug/l
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.34	ug/l
91-20-3	Naphthalene	ND	5.0	1.0	ug/l
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l
108-88-3	Toluene	ND	1.0	0.20	ug/l
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l

CAS No.	Surrogate Recoveries		Limits
17060-07-0	Dibromofluoromethane	102%	87-116%
	1,2-Dichloroethane-D4	101%	76-127%
	Toluene-D8	98%	86-112%
	4-Bromofluorobenzene	91%	84-120%



# Method Blank Summary

Job Number:

F88222

Account: GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale Quick Stop; Kingston, SC

Sample	File ID	DF	<b>Analyzed</b> 12/06/11	By	Prep Date	Prep Batch	Analytical Batch
VJ3789-MB	J070780.D	1		MM	n/a	n/a	VJ3789

#### The QC reported here applies to the following samples:

Method: SW846 8260B

F88222-2, F88222-6, F88222-11, F88222-12, F88222-13, F88222-21, F88222-22, F88222-23, F88222-24, F88222-25, F88222-26, F88222-28, F88222-29

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.20	ug/l
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l
64-17-5	Ethyl Alcohol	ND	100	25	ug/l
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.34	ug/l
91-20-3	Naphthalene	ND	5.0	1.0	ug/l
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l
108-88-3	Toluene	ND	1.0	0.20	ug/l
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	102%	87-116%
17060-07-0	1,2-Dichloroethane-D4	99%	76-127%
2037-26-5	Toluene-D8	99%	86-112%
460-00-4	4-Bromofluorobenzene	91%	84-120%



# Method Blank Summary Job Number: F88222

GRINCC GRI (Geological Resources Inc.) Tisdale Quick Stop; Kingston, SC Account:

Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VJ3791-MB	J070814.D	1	12/07/11	MM	n/a	n/a	VJ3791

The QC reported here applies to the following samples:

Method: SW846 8260B

F88222-27

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.20	ug/l
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l
64-17-5	Ethyl Alcohol	ND	100	25	ug/l
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.34	ug/l
91-20-3	Naphthalene	ND	5.0	1.0	ug/l
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l
108-88-3	Toluene	ND	1.0	0.20	ug/l
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l
	•	2.000 cm caches, or frage 2000 (100	ostoccovo		Ü

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	103%	87-116%
17060-07-0	1,2-Dichloroethane-D4	98%	76-127%
2037-26-5	Toluene-D8	97%	86-112%
460-00-4	4-Bromofluorobenzene	92%	84-120%



# Blank Spike Summary Job Number: F88222

GRINCC GRI (Geological Resources Inc.) Account:

Project:

Tisdale Quick Stop; Kingston, SC

Sample VJ3787-BS	File ID J070744.D	DF 1	<b>Analyzed</b> 12/05/11	By MM	Prep Date	Prep Batch n/a	Analytical Batch VJ3787

The QC reported here applies to the following samples:

Method: SW846 8260B

 $F88222-1,\ F88222-3,\ F88222-4,\ F88222-5,\ F88222-7,\ F88222-8,\ F88222-9,\ F88222-10,\ F88222-12,\ F88222-14,\$ 15, F88222-16, F88222-17, F88222-18, F88222-19, F88222-20

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	26.5	106	83-124
107-06-2	1,2-Dichloroethane	25	24.7	99	76-122
108-20-3	Di-Isopropyl ether	25	24.0	96	75-125
100-41-4	Ethylbenzene	25	25.5	102	87-118
64-17-5	Ethyl Alcohol	500	445	89	67-134
637-92-3	Ethyl Tert Butyl Ether	25	23.9	96	89-130
1634-04-4	Methyl Tert Butyl Ether	25	23.0	92	75-116
91-20-3	Naphthalene	25	25.4	102	59-125
75-85-4	Tert-Amyl Alcohol	250	270	108	71-108
994-05-8	Tert-Amyl Methyl Ether	25	24.2	97	81-116
75-65-0	Tert-Butyl Alcohol	250	236	94	74-106
108-88-3	Toluene	25	24.6	98	86-116
1330-20-7	Xylene (total)	<b>75</b> .	74.9	100	86-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	97%	87-116%
17060-07-0	1,2-Dichloroethane-D4	95%	76-127%
2037-26-5	Toluene-D8	98%	86-112%
460-00-4	4-Bromofluorobenzene	93%	84-120%



# Blank Spike Summary Job Number: F88222

Account:

GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale Quick Stop; Kingston, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VJ3787-BS	J070745.D	1	12/05/11	MM	n/a	n/a	VJ3787

### The QC reported here applies to the following samples:

Method: SW846 8260B

 $F88222-1,\,F88222-3,\,F88222-4,\,F88222-5,\,F88222-7,\,F88222-8,\,F88222-9,\,F88222-10,\,F88222-12,\,F88222-14,\,F8822$  $15,\,F88222\text{-}16,\,F88222\text{-}17,\,F88222\text{-}18,\,F88222\text{-}19,\,F88222\text{-}20$ 

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
624-95-3 64-17-5 762-75-4	3,3-Dimethyl-1-Butanol Ethyl Alcohol Tert-Butyl Formate	1250 500 250	1570 477 335	126 95 134	50-150 <sup>a</sup> 67-134 50-150 <sup>a</sup>
CAS No.	Surrogate Recoveries	BSP	Lim	its	
1868-53-7 17060-07-0 2037-26-5 460-00-4	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	103% 99% 98% 91%	76-1 86-1	116% 127% 112% 120%	

<sup>(</sup>a) Advisory control limits.



# Blank Spike Summary Job Number: F88222

Account:

Project:

GRINCC GRI (Geological Resources Inc.)

Tisdale Quick Stop; Kingston, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VJ3789-BS	J070777.D	1	12/06/11	MM	n/a	n/a	VJ3789

The QC reported here applies to the following samples:

Method: SW846 8260B

F88222-2, F88222-6, F88222-11, F88222-12, F88222-13, F88222-21, F88222-22, F88222-23, F88222-24, F88222-25, F88222-26, F88222-28, F88222-29

CAS No.	Compound	Spike	BSP	BSP	T : :
CAS No.	Compound	ug/l	ug/l	%	Limits
71-43-2	Benzene	25	24.8	99	83-124
107-06-2	1,2-Dichloroethane	25	24.1	96	76-122
108-20-3	Di-Isopropyl ether	25	22.4	90	75-125
100-41-4	Ethylbenzene	25	24.3	97	87-118
64-17-5	Ethyl Alcohol	500	478	96	67-134
637-92-3	Ethyl Tert Butyl Ether	25	22.4	90	89-130
1634-04-4	Methyl Tert Butyl Ether	25	21.2	85	75-116
91-20-3	Naphthalene	25	25.9	104	59-125
75-85-4	Tert-Amyl Alcohol	250	264	106	71-108
994-05-8	Tert-Amyl Methyl Ether	25	22.3	89	81-116
75-65-0	Tert-Butyl Alcohol	250	251	100	74-106
108-88-3	Toluene	25	23.2	93	86-116
1330-20-7	Xylene (total)	<b>7</b> 5	70.8	94	86-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	98%	87-116%
17060-07-0	1,2-Dichloroethane-D4	96%	76-127%
2037-26-5	Toluene-D8	96%	86-112%
460-00-4	4-Bromofluorobenzene	90%	84-120%



Blank Spike Summary

Job Number:

F88222

Account:

GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale Quick Stop; Kingston, SC

Sample	<b>File ID</b>	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VJ3789-BS	J070778.D	1	12/06/11	MM	n/a	n/a	VJ3789

The QC reported here applies to the following samples:

Method: SW846 8260B

F88222-2, F88222-6, F88222-11, F88222-12, F88222-13, F88222-21, F88222-22, F88222-23, F88222-24, F88222-25, F88222-26, F88222-28, F88222-29

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
624-95-3	3,3-Dimethyl-1-Butanol	1250	1570	126	50-150 a
64-17-5 762-75-4	Ethyl Alcohol Tert-Butyl Formate	500 250	540 339	108 136	67-134 50-150 a
CAS No.	Surrogate Recoveries	BSP		nits	30-130
1868-53-7	Dibromofluoromethane	101%	87-	-116%	
17060-07-0	1,2-Dichloroethane-D4	99%	76-	127%	
2037-26-5	Toluene-D8	96%	86-	112%	
460-00-4	4-Bromofluorobenzene	94%	84-	120%	

<sup>(</sup>a) Advisory control limits.



# Blank Spike Summary Job Number: F88222

Account:

GRINCC GRI (Geological Resources Inc.) Tisdale Quick Stop; Kingston, SC

Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VJ3791-BS	J070812.D	1	12/07/11	MM	n/a		VJ3791

The QC reported here applies to the following samples:

Method: SW846 8260B

F88222-27

CACNO	Compound	Spike	BSP	BSP	T 114
CAS No.	Compound	ug/l	ug/l	%	Limits
71-43-2	Benzene	25	24.1	96	83-124
107-06-2	1,2-Dichloroethane	25	22.6	90	76-122
108-20-3	Di-Isopropyl ether	25	21.2	85	75-125
100-41-4	Ethylbenzene	25	23.9	96	87-118
64-17-5	Ethyl Alcohol	500	437	87	67-134
637-92-3	Ethyl Tert Butyl Ether	25	21.5	86*	89-130
1634-04-4	Methyl Tert Butyl Ether	25	20.1	80	75-116
91-20-3	Naphthalene	25	25.0	100	59-125
75-85-4	Tert-Amyl Alcohol	250	254	102	71-108
994-05-8	Tert-Amyl Methyl Ether	25	21.5	86	81-116
75-65-0	Tert-Butyl Alcohol	250	238	95	74-106
108-88-3	Toluene	25	23.6	94	86-116
1330-20-7	Xylene (total)	75	70.4	94	86-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	96%	87-116%
17060-07-0	1,2-Dichloroethane-D4	96%	76-127%
2037-26-5	Toluene-D8	98%	86-112%
460-00-4	4-Bromofluorobenzene	88%	84-120%



# Blank Spike Summary Job Number: F88222

Account:

GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale Quick Stop; Kingston, SC

Sample VJ3791-BS	<b>File ID</b> J070813.D	DF 1	<b>Analyzed</b> 12/07/11	By MM	Prep Date	Prep Batch n/a	Analytical Batch VJ3791

The QC reported here applies to the following samples:

Method: SW846 8260B

F88222-27

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
624-95-3 64-17-5 762-75-4	3,3-Dimethyl-1-Butanol Ethyl Alcohol Tert-Butyl Formate	1250 500 250	1440 541 294	115 108 118	50-150 a 67-134 50-150 a
CAS No.	Surrogate Recoveries	BSP	Lin	nits	
1868-53-7 17060-07-0 2037-26-5 460-00-4	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	102% 99% 98% 91%	76- 86-	116% 127% 112% 120%	

<sup>(</sup>a) Advisory control limits.



# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: F88222

Account: GRINCC GRI

GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale Quick Stop; Kingston, SC

<b>Sample</b> F88222-24MS F88222-24MSD	File ID J070799.D I070800.D	DF 1	Analyzed 12/06/11 12/06/11	<b>By</b> MM MM	Prep Date	Prep Batch	Analytical Batch VJ3789 VI3789
F88222-24	J070784.D	1	12/06/11	MM	n/a n/a	n/a n/a	VJ3789

The QC reported here applies to the following samples:

Method: SW846 8260B

F88222-2, F88222-6, F88222-11, F88222-12, F88222-13, F88222-21, F88222-22, F88222-23, F88222-24, F88222-25, F88222-26, F88222-28, F88222-29

CAS No.	Compound	F88222-24 ug/l Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71 10 0	_	-				**			
71-43-2	Benzene	ND	25	25.3	101	23.0	92	10	83-124/11
107-06-2	1,2-Dichloroethane	ND	25	23.3	93	21.8	87	7	76-122/11
108-20-3	Di-Isopropyl ether	ND	25	21.9	88	20.5	82	7	75-125/10
624-95-3	3,3-Dimethyl-1-Butanol	ND	1250	211	17*	197	16*	7	50-150/30 a
100-41-4	Ethylbenzene	ND	25	24.3	97	23.2	93	5	87-118/10
64-17-5	Ethyl Alcohol	ND	500	448	90	400	80	11	67-134/22
637-92-3	Ethyl Tert Butyl Ether	ND	25	21.7	87*	20.4	82*	6	89-130/10
1634-04-4	Methyl Tert Butyl Ether	ND	25	20.5	82	19.0	76	8	75-116/10
91-20-3	Naphthalene	ND	25	24.5	98	23.8	95	3	59-125/15
75-85-4	Tert-Amyl Alcohol	ND	250	259	104	261	104	1	71-108/12
994-05-8	Tert-Amyl Methyl Ether	ND	25	21.7	87	20.4	82	6	81-116/10
75-65-0	Tert-Butyl Alcohol	ND	250	251	100	248	99	1	74-106/11
762-75-4	Tert-Butyl Formate	ND	250	ND	0*	ND	0*	nc	50-150/30 a
108-88-3	Toluene	ND	25	23.1	92	21.3	85*	8	86-116/10
1330-20-7	Xylene (total)	ND	75	70.0	93	64.1	85*	9	86-120/10
	•				974 847 77399 848		A 5000 0 000 MINISTER	a: -95.009-000-0-00000000000000000000000000	
CAS No.	Surrogate Recoveries	MS	MSD	F88	8222-24	Limits			
1868-53-7	Dibromofluoromethane	99%	100%	102	2%	87-116	% .		
17060-07-0	1,2-Dichloroethane-D4	96%	96%	101	l%	76-127	%		
2037-26-5	Toluene-D8	96%	95%	959	%	86-112°	%		
400 00 4	4.75 67 4	92.22.28							

87%

89%

84-120%

4-Bromofluorobenzene

86%

460-00-4



<sup>(</sup>a) Advisory control limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number:

F88222

Account:

GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale Quick Stop; Kingston, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
F88222-20MS	J070803.D	1	12/06/11	MM	n/a	n/a	VJ3787
F88222-20MSD	J070804.D	1	12/06/11	MM	n/a	n/a	VJ3787
F88222-20	J070762.D	1	12/05/11	MM.	n/a	n/a	VJ3787

The QC reported here applies to the following samples:

Method: SW846 8260B

F88222-1, F88222-3, F88222-4, F88222-5, F88222-7, F88222-8, F88222-9, F88222-10, F88222-12, F88222-14, F88222-15, F88222-16, F88222-17, F88222-19, F88222-20

CAS No.	Compound	F88222-20 ug/l Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	25	25.3	101	25.2	101	0	83-124/11
107-06-2	1,2-Dichloroethane	ND	25	24.2	97	23.8	95	2	76-122/11
108-20-3	Di-Isopropyl ether	ND	25	22.6	90	22.8	91	1	75-125/10
100-41-4	Ethylbenzene	ND	25	24.5	98	25.7	103	5	87-118/10
64-17-5	Ethyl Alcohol	ND	500	355	71	536	107	41*	67-134/22
637-92-3	Ethyl Tert Butyl Ether	ND	25	22.3	89	22.6	90	1	89-130/10
1634-04-4	Methyl Tert Butyl Ether	ND	25	21.1	84	21.1	84	0	75-116/10
91-20-3	Naphthalene	ND	25	24.7	99	26.3	105	6	59-125/15
75-85-4	Tert-Amyl Alcohol	ND	250	279	112*	292	117*	5	71-108/12
994-05-8	Tert-Amyl Methyl Ether	ND	25	22.3	89	22.6	90	1	81-116/10
75-65-0	Tert-Butyl Alcohol	ND	250	258	103	269	108*	4	74-106/11
108-88-3	Toluene	ND	25	23.8	95	24.0	96	1	86-116/10
1330-20-7	Xylene (total)	ND	75	71.5	95	70.6	94	1	86-120/10
*									
CAS No.	Surrogate Recoveries	MS	MSD	F8	8222-20	Limits			
1868-53-7	Dibromofluoromethane	97%	99%	10	4%	87-116	%		
17060-07-0	1,2-Dichloroethane-D4	96%	95%	10	1%	76-127	%		
2037-26-5	Toluene-D8	98%	96%	979	%	86-112	%		
460-00-4	4-Bromofluorobenzene	88%	88%	90	%	84-120	%		



# Matrix Spike/Matrix Spike Duplicate Summary Job Number: F88222

Account:

GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale Quick Stop; Kingston, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
F88312-4MS	J070834.D	1	12/07/11	MM	n/a	n/a	VJ3791
F88312-4MSD	J070835.D	1	12/07/11	MM	n/a	n/a	VJ3791
F88312-4	J070815.D	1	12/07/11	MM	n/a	n/a	VI3791

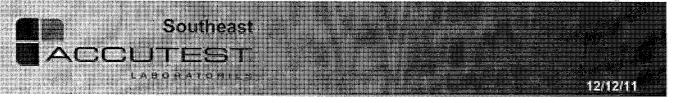
The QC reported here applies to the following samples:

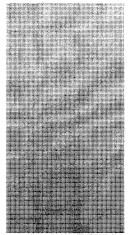
Method: SW846 8260B

F88222-27

CAS No.	Compound	F88312-4 ug/l Q	•		MSD ug/l	MSD %	RPD	Limits Rec/RPD	
71-43-2	Benzene	ND	25	26.2	105	27.7	111	6	83-124/11
107-06-2	1,2-Dichloroethane	ND	25	24.0	96	25.9	104	8	76-122/11
108-20-3	Di-Isopropyl ether	ND	25	22.1	88	23.4	94	6	75-125/10
100-41-4	Ethylbenzene	ND	25	23.9	96	25.2	101	5	87-118/10
64-17 <b>-</b> 5	Ethyl Alcohol	ND	500	340	68	362	72	6	67-134/22
637-92-3	Ethyl Tert Butyl Ether	ND	25	22.0	88*	23.7	95	7	89-130/10
1634-04-4	Methyl Tert Butyl Ether	ND	25	21.6	86	22.9	92	6	75-116/10
91-20-3	Naphthalene	ND	25	22.4	90	26.3	105	16*	59-125/15
75-85-4	Tert-Amyl Alcohol	ND	250	254	102	263	105	3	71-108/12
994-05-8	Tert-Amyl Methyl Ether	ND	25	21.7	87	23.1	92	6	81-116/10
75-65-0	Tert-Butyl Alcohol	ND	250	243	97	253	101	4	74-106/11
108-88-3	Toluene	ND	25	23.7	95	24.8	99	5	86-116/10
1330-20-7	Xylene (total)	ND	75	68.1	91	71.2	95	4	86-120/10
CAS No.	Surrogate Recoveries	MS	MSD	F88312-4		Limits			
1868-53-7	Dibromofluoromethane	98%	97%	101%		87-1169	6		
17060-07-0	1,2-Dichloroethane-D4	93%	94%	100	)%	<b>76-127</b> 9	6		
2037-26-5	Toluene-D8	95%	95%	989	%	86-1129	6		
460-00-4	4-Bromofluorobenzene	86%	86%	899	%	84-1209	6		









## **Technical Report for**

GRI (Geological Resources Inc.)

Tisdale Quick Stop; Kingston, SC

Accutest Job Number: F88355

Sampling Date: 11/30/11

#### Report to:

GRI

2301 F Crown Point EX Dr Charlotte, NC 28207

wsb@geologicalresourcesinc.com; carriekennedy@geologicalresourcesinc.com; johnbrown@geologicalresourcesinc.com

ATTN: Scott Ball

Total number of pages in report: 17



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Harry Behzadi, Ph.D. Laboratory Director

Client Service contact: Muna Mohammed 407-425-6700

Certifications: FL (E83510), LA (03051), KS (E-10327), IA (366), IL (200063), NC (573), NJ (FL002), SC (96038001) DoD ELAP (L-A-B L2229), CA (04226CA), TX (T104704404), AK, AR, GA, KY, MA, NV, OK, UT, VA, WA, WI This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.

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# Sample Summary

GRI (Geological Resources Inc.)

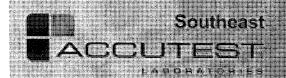
Tisdale Quick Stop; Kingston, SC

Job No:

F88355

Sample Number	Collected		D1	Matrix Received Code Type		Client	
	Date	Time By				Sample ID	
F88355-1	11/30/11	16:12 RQ	12/03/11	AQ	Ground Water	MW 9	
F88355-2	11/30/11	16:00 RQ	12/03/11	AQ	Ground Water	MW 10	
F88355-3	11/30/11	16:40 RQ	12/03/11	AQ	Ground Water	MW 13	
F88355-4	11/30/11	14:29 RQ	12/03/11	AQ	Ground Water	MW 2A	





S						



Page 1 of 1

Client Sample ID: MW 9

Lab Sample ID:

F88355-1

Matrix: Method:

AQ - Ground Water

SW846 8260B

Date Sampled: 11/30/11

Date Received: 12/03/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

File ID Run #1 J070843.D DF 1

Analyzed 12/08/11

By Prep Date MM n/a

Prep Batch n/a

Analytical Batch

VJ3792

Run #2

Purge Volume

5.0 ml

Run #1

Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	1.9	1.0	0.34	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l	
64-17-5	Ethyl Alcohol	ND	100	25	ug/l	
637-92-3	Ethyl Tert Butyl Ether a	ND	1.0	0.31	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	104%		87-1	16%	
17060-07-0	1,2-Dichloroethane-D4	96%		76-1	27%	
2037-26-5	Toluene-D8	99%		86-112%		
460-00-4	4-Bromofluorobenzene	89%		84-1	20%	

(a) Associated BS recovery outside control limits.

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Ву

MM

n/a

Page 1 of 1

Client Sample ID: MW 10

F88355-2

Lab Sample ID: Matrix:

AQ - Ground Water

DF

1

Method: SW846 8260B

File ID

5.0 ml

J070844.D

Date Sampled: 11/30/11 Date Received: 12/03/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

Analyzed

12/08/11

Prep Date Prep Batch Analytical Batch n/a VJ3792

Run #1 Run #2

Purge Volume

Run #1-

Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No. Compound		Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.34	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l	
64-17-5	Ethyl Alcohol	ND	100	25	ug/l	
637-92-3	Ethyl Tert Butyl Ether a	ND	1.0	0.31	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	105%		87-1	16%	
17060-07-0	1,2-Dichloroethane-D4	97%	ž	76-1	27%	
2037-26-5	Toluene-D8	97%	86-112%			
460-00-4	4-Bromofluorobenzene			84-120%		

(a) Associated BS recovery outside control limits.

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Ву

MM

12/08/11

Prep Date

n/a

Client Sample ID: MW 13

Lab Sample ID:

F88355-3

Matrix: Method: AQ - Ground Water

SW846 8260B

1

Date Sampled:

11/30/11 Date Received: 12/03/11

Percent Solids: n/a

Project:

Tisdale Quick Stop; Kingston, SC

File ID DF Analyzed

Prep Batch n/a

Analytical Batch VJ3792

Run #1 Run #2

Purge Volume

J070845.D

Run #1

5.0 ml

Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No. Compound		Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l	
1634-04-4	Methyl Tert Butyl Ether	2.4	1.0	0.34	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25	ug/l	
64-17-5	Ethyl Alcohol	ND	100	25	ug/l	
637-92-3	Ethyl Tert Butyl Ether a	ND	1.0	0.31	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	100%		87-11	6%	
17060-07-0	1,2-Dichloroethane-D4	97%		76-12	27%	
2037-26-5	Toluene-D8	96%	86-112%			
460-00-4	4-Bromofluorobenzene	91%		84-12	20%	

(a) Associated BS recovery outside control limits.

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: MW 2A Lab Sample ID:

F88355-4

Matrix: Method:

Project:

Run #1

Run #2

AQ - Ground Water

DF

10

SW846 8260B

Tisdale Quick Stop; Kingston, SC

Date Sampled: 11/30/11

Date Received: 12/03/11

Percent Solids: n/a

J070862.D

Analyzed 12/08/11

By MM Prep Date n/a

Prep Batch

Analytical Batch

n/a VJ3792

Purge Volume 5.0 ml

File ID

Run #1

Run #2

# Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	260	10	2.0	ug/l	
108-88-3	Toluene	517	10	2.0	ug/l	
100-41-4	Ethylbenzene	37.3	10	2.0	ug/l	
1330-20-7	Xylene (total)	491	30	5.2	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	10	3.4	ug/l	
91-20-3	Naphthalene	70.4	50	10	ug/l	
107-06-2	1,2-Dichloroethane	ND	10	2.0	ug/l	
108-20-3	Di-Isopropyl ether	ND	10	3.5	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	500	250	ug/l	
64-17-5	Ethyl Alcohol	ND	1000	250	ug/l	
637-92-3	Ethyl Tert Butyl Ether <sup>a</sup>	ND	10	3.1	ug/l	
75-85-4	Tert-Amyl Alcohol	83.3	200	50	ug/l	J
994-05-8	Tert-Amyl Methyl Ether	ND	20	3.9	ug/l	•
75-65-0	Tert-Butyl Alcohol	ND	200	30	ug/l	
762-75-4	Tert-Butyl Formate	ND	200	50	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	102%		87-1	16%	
17060-07-0	1,2-Dichloroethane-D4	97%		76-1		
2037-26-5	Toluene-D8	94%		86-1		
460-00-4	4-Bromofluorobenzene	87%		84-1		

(a) Associated BS recovery outside control limits.

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Misc. Forms

**Custody Documents and Other Forms** 

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (SC)
- Chain of Custody

# Parameter Certification Exceptions Job Number: F88355

Account:

GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale Quick Stop; Kingston, SC

The following parameters included in this report are exceptions to NELAC certification. The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
3,3-Dimethyl-1-Butanol	624-95-3	SW846 8260B	AQ	Certified by SOP MS005
i-Isopropyl ether	108-20-3	SW846 8260B	ΑQ	Certified by SOP MS005
Tert-Amyl Alcohol	75-85-4	SW846 8260B	ΑQ	Certified by SOP MS005
Tert-Butyl Formate	762-75-4	SW846 8260B	ΑÕ	Certified by SOP MS005

Page 1 of 1



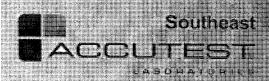
ACCUTEST.  LABORATORIES  Client/Reporting Information	Cha 4405 Vineland TEL. 407-4		Ustod 5 Orlando, AX: 407-425- .com	Southeast ly Fi 32811 -0707		st JOB #		3	1_or
	Project Name  Street  City Project #  Fax #  Citent Purchas  Online Tron  Street  Stre	TISOPLE 989 TV Lung stree	S QUIL	LVE STOP  I Marshal  State Sc.  PROGRAMITY B. 10 10 10 10 10 10 10 10 10 10 10 10 10	Biten	Mrse Boxy	ethurs 8260 12 a.A	rmation	Matrix Codes  DW - Drinking Weiser GW - Ground Waber WW - Water SW - Surface Water SO - Soil SL - Skidge OL - Officer Liquid AIR - AV SOL - Other Soild WP - Wipe
1 MW 9 2 MW 10 3 MW 13 4 MD 2R			X V			RA CONTRACTOR OF THE CONTRACTO			LAB USE ONLY
TURNAROUND TIME (Business Deys)			Data Deliver	able information				Comments / Nemarks	
Approved By: / Rush 10 Days Standard 7 Day RUSH 5 Day RUSH 3 Day EMERGENCY 2 Day EMERGENCY 1 Day EMERGENCY OTHER Emergency or Rush T/A Data Available VIA Email or Lat		<del>-</del>	L "A" (RESULTS L "B" (RESULTS LEV <b>2828</b>	C QUEEN	3 F City 8203	DR S	_	ork)	
Relinquished by Sampler:  Relinquished by Sampler:  Date Time:  Date Time:  Date Time:  Lab Use Only: Custody Seal In Place: Y N Temp	Received By:	e (AUE)	12/2 11:40	Relinquished by: Relinquished by: Relinquished by: 7 Relinquished by: 7		ers: Co	Date Time: 12/2 /5=4c Date Time: oter Temperature	Received By: 8	X

F88355: Chain of Custody

Page 1 of 2

DATE/TIME RECEIVED: 19.3-1( 94:30 (MM/DD/Y)	PROJECT: 1/3DNLF3
COOLER INFORMATION  CUSTODY SEAL NOT PRESENT OR NOT INTACT CHAIN OF CUSTODY NOT RECEIVED (COC) ANALYSIS REQUESTED IS UNCLEAR OR MISSING SAMPLE DATES OR TIMES UNCLEAR OR MISSING TEMPERATURE CRITERIA NOT MET WET ICE PRESENT TRIP BLANK INFORMATION TRIP BLANK NOT PROVIDED TRIP BLANK NOT PROVIDED TRIP BLANK NOT ON COC TRIP BLANK INTACT TRIP BLANK INTACT TRIP BLANK NOT INTACT RECEIVED WATER TRIP BLANK RECEIVED SOIL TRIP BLANK MISC. INFORMATION NUMBER OF 5035 FIELD KITS? NUMBER OF LAB FILTERED METALS?  SUMMARY OF COMMENTS:	TEMPERATURE INFORMATION  IR THERM ID CORR FACTOR LOCC  OBSERVED TEMPS: 3.0  CORRECTED TEMPS: 3.0  SAMPLE INFORMATION  SAMPLE LABELS PRESENT ON ALL BOTTLES INCORRECT NUMBER OF CONTAINERS USED  SAMPLE RECEIVED IMPROPERLY PRESERVED INSUFFICIENT VOLUME FOR ANALYSIS  DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL ID'S ON COC DO NOT MATCH LABEL VOC VIALS HAVE HEADSPACE (MACRO BUBBLES) BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS SAMPLE CONTAINER(S) RECEIVED BROKEN  % SOLIDS JAR NOT RECEIVED  5035 FIELD KIT FROZEN WITHIN 48 HOUR'S RESIDUAL CHLORINE PRESENT  (APPICABLE TO EPA 500 SERIES OR NORTH CAROLINA ORGANICS)
	EVIEWER SIGNATURE/DATE A William 12-3-11

F88355: Chain of Custody Page 2 of 2



		$S \lambda$		

# QC Data Summaries

# Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



# Method Blank Summary

Job Number:

F88355

Account:

GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale Quick Stop; Kingston, SC

Sample	File ID	<b>DF</b>	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VJ3792-MB	J070842.D	1	12/08/11	MM		n/a	VJ3792

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.20	ug/l
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l
108-20-3	Di-Isopropyl ether	ND	1.0	0.35	ug/l
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	25 <sup>-</sup>	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l
64-17-5	Ethyl Alcohol	ND	100	25	ug/l
637-92-3	Ethyl Tert Butyl Ether	ND	1.0	0.31	ug/l
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.34	ug/l
91-20-3	Naphthalene	ND	5.0	1.0	ug/l
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.39	ug/l
75-65-0	Tert-Butyl Alcohol	ND	20	3.0	ug/l
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l
108-88-3	Toluene	ND	1.0	0.20	ug/l
1330-20-7	Xylene (total)	ND	3.0	0.52	ug/l
			eri Nore		Ü

CAS No.	Surrogate Recoveries		Limits
17060-07-0	Dibromofluoromethane	103%	87-116%
	1,2-Dichloroethane-D4	100%	76-127%
	Toluene-D8	96%	86-112%
	4-Bromofluorobenzene	91%	84-120%



Blank Spike Summary Job Number: F88355

Account:

P

GRINCC GRI (Geological Resources Inc.)

Project:	Tisdale	Quick	Stop;	Kingston,	SC
Project:	Tisdale	Onick	Ston:	Kingston	SC
		& arore	otop,	rungoton,	-

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VJ3792-BS	J070840.D	1	12/08/11	MM	n/a	n/a	VJ3792

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	24.0	96	83-124
107-06-2	1,2-Dichloroethane	25	23.2	93	76-122
108-20-3	Di-Isopropyl ether	25	21.4	86	75-125
100-41-4	Ethylbenzene	25	24.1	96	87-118
64-17-5	Ethyl Alcohol	500	482	96	67-134
637-92-3	Ethyl Tert Butyl Ether	25	21.8	87*	89-130
1634-04-4	Methyl Tert Butyl Ether	25	20.3	81	75-116
91-20-3	Naphthalene	25	25.2	101	59-125
75-85-4	Tert-Amyl Alcohol	250	255	102	71-108
994-05-8	Tert-Amyl Methyl Ether	25	21.7	87	81-116
75-65-0	Tert-Butyl Alcohol	250	254	102	74-106
108-88-3	Toluene	25	23.0	92	86-116
1330-20-7	Xylene (total)	75	69.8	93	86-120

CAS No	. Surrogate Recoveries	BSP	Limits
	-7 Dibromofluoromethane	97%	87-116%
17060-0	7-0 1,2-Dichloroethane-D4	95%	76-127%
2037-26	-5 Toluene-D8	96%	86-112%
460-00-4	4 4-Bromofluorobenzene	88%	84-120%



# Blank Spike Summary Job Number: F88355

Account:

GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale Quick Stop; Kingston, SC

Sample VJ3792-BS	File ID J070841.D	<b>DF</b> 1	Analyzed 12/08/11	By MM	Prep Date	Prep Batch n/a	Analytical Batch VJ3792

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
624-95-3 64-17-5 762-75-4	3,3-Dimethyl-1-Butanol Ethyl Alcohol Tert-Butyl Formate	1250 500 250	1480 538 298	118 108 119	50-150 <sup>a</sup> 67-134 50-150 <sup>a</sup>
CAS No.	Surrogate Recoveries	BSP	Lim	its	
1868-53-7 17060-07-0 2037-26-5 460-00-4	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	103% 99% 95% 92%	76-1 86-1	116% 127% 112% 120%	

<sup>(</sup>a) Advisory control limits.



# Matrix Spike/Matrix Spike Duplicate Summary Job Number: F88355

Account:

GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale Quick Stop; Kingston, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
F88328-1MS	J070863.D	1	12/08/11	MM	n/a ¯	n/a ¯	VJ3792
F88328-1MSD	J070864.D	1	12/08/11	MM	n/a	n/a	VJ3792
F88328-1	J070846.D	1	12/08/11	MM	n/a	n/a	VJ3792

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	F88328-1 ug/l Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1. <b>0</b> U	25	28.6	114	27.6	110	4	83-124/11
107-06-2	1,2-Dichloroethane	1.0 U	25	26.4	106	25.5	102	3	76-122/11
108-20-3	Di-Isopropyl ether	1.0 U	25	24.4	98	23.9	96	2	75-125/10
100-41-4	Ethylbenzene	1.0 U	25	25.9	104	25.2	101	3	87-118/10
64-17-5	Ethyl Alcohol	100 U	500	489	98	512	102	5	67-134/22
637-92-3	Ethyl Tert Butyl Ether	1.0 U	25	24.3	97	23.9	96	2	89-130/10
1634-04-4	Methyl Tert Butyl Ether	1.0 U	25	23.4	94	22.7	91	2 3	75-116/10
91-20-3	Naphthalene	5.0 U	25	25.1	100	24.5	98	2	59-125/15
75-85-4	Tert-Amyl Alcohol	20 U	250	284	114*	278	111*	2	71-108/12
994-05-8	Tert-Amyl Methyl Ether	2.0 U	25	23.9	96	23.6	94	1	81-116/10
75-65-0	Tert-Butyl Alcohol	20 U	250	253	101	257	103	2	74-106/11
108-88-3	Toluene	1.0 U	25	25.9	104	24.3	97	6	86-116/10
1330-20-7	Xylene (total)	3.0 U	75	74.5	99	71.9	96	4	86-120/10
CAS No.	Surrogate Recoveries	MS	MSD	F88	3328-1	Limits			
1868-53-7	Dibromofluoromethane	99%	99%	103	<b>1</b> %	87-1169	%		
17060-07-0	1,2-Dichloroethane-D4	95%	96%	100	1%	76-1279	%		
2037-26-5	Toluene-D8	95%	95%	979	6	86-112°	%		
460-00-4	4-Bromofluorobenzene	88%	87%	909	6	84-1209	%		



### APPENDIX B

**Ground Water Sampling Data Sheets** 

Field Personnel:			Facility Name:		TISPAI	.85		
10			Site ID #	18686		Monitoring V	/ell#	MW1
General Weather Conditions:	INNY	_	Well Diameter	(D):		0.167 foc	ot	
Amblant Air Tomporature: 70			Conversion fa	ctor (C): 3.14 X (D	/2)2 for a 2 Inch	well C = 0.163		
Quality Anaurausa  pH Motor Conductivity Motor  nortal no. nortal no.  pH=4.0 Standard  pH=10.0 Standard  Standard  Chair of Gualary			Total Well Dep Lungth of the v 1 casing volum 3 casing volum	nd Water (DGW) th (TWD) vater column (LW re (CV = LWC X C)	c * TWD-DGW)	17.4 20. 2	.8 .8 3 = .9 d purge volum	
Rollingulation by Dato/Time Received by	Date/Time		Total volume of	Water Purged fo	r Post Sampling		0.75	pals otal Purged
	InItlal	Int Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.   Por	st Sampling	Sample
Eunuladyo Volumo Purgod (gallona)	,25	175	2170 101	310 701.	74(1) VOI.	3(f) y(f).   P(f)	· Coamping	Oampio
juio (mfiltary)	1007	1012						
H (s.u.)	C.0	Col	024					
preffe Cond. (umhos/em)	106	109	0-1					
Yalar Taniparatura (daftraan C)	27	26	• ,		· · · · · · · · · · · · · · · · · · ·			
urbidity (subjective: clear, silybtly cloudy, cloudy)	cli	cdy						
	6.07	1.0						
ID roadings, if roquirod omarks:			-					

Date (mm/dd/yy):	-		Facility Name:			150AL65	\$	
Floid Personnel: PC-			Site ID#	18686			ng Well#	MW2
Gunural Wouther Conditions:	N		Woll Dlamotor				7 foot	
Ambient Air Temperature: 72°	F		Conversion fac	tor (C): 3.14 X (E	0/2)2 for a 2 incl for a 4 inch	ı woll C ≂ C woll C ≈ 0,	0.163 052	
pH Meter Conductivity Meterorial no.  pH=4.0 standard pH=7.0 Standard pH=10.0 Standard	r		Total Well Dept Length of the w	id Water (DGW) h (TWD) vater column (LW			25.5° 25.5° 7.3 3.6/3 =	foot foot foot foot
Chultrat Gualady				o (CV × LWC X C o 3 X CV × Water Purged B	,	gals (star	ndard purge volu	_gals
Rollingulation Date/Time Received by	Date/Flme			Water Purged fo			26 be required,	galn Fotal Purgad
								·
շարսեմից Volume Purped (gallona)	InItial , 25	1nt Vol. 114	2nd Vol. 2.6	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Hmo (military)	1014	1218	1021	ppy				
лН (s.u.)	5.9	5.8	5.8					
)poelfic Cond. (umhos/cm)	, ०४	107	107					
Yalor Tomporaturo (dogreos C)	.25	24	24					
urbidity (subjective: clear, sliphtly cloudy, cloudy)	de	cdy	(der	,				
Assolved Oxygen (mg/i)	8.7	1.4	1.4					
'ID roadings, if roguired lemarks:					·			

Field Personnel:	<u>5-11.</u>		Facility Name:		TISOA	LES		
	(0		Site ID #	18686			Ing Well#	MW ZA
,	2014		Woll Dlamotor	(D):		0.16	7 foot	
Ambient Air Temperature:	<u> </u> -		Conversion fac	ctor (C): 3.14 X (D	1/2)2 for a 2 incl for a 4 inch	ı woll C ≈ (		
Quality Anaugaman					JOI A 7 IIICII	wan C × 0.		
PH Meter	er		Total Well Dep	nd Water (DGW)	/C * TWD-DGW)		17.76	foot foot foot foot
Standard  Chala of Gualady			3 casing volum			gals (sta	2/3 gal ndard purge volu	по)
-			•	Water Purged B		·		. Qala
Rollingulation Dato/Flimo Recolved by	Date/Time <sub>.</sub>		1.	Water Purged fo			1,5	gala Total Purgad
	Initial	Int Vol.	2nd Vol.				LD 46 II	C-impale
Հարսեմիթ Volume Քաբլով (gallons)	, 25	,85	115	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
lore (military)	1417	1421	1429	DRY				
rH (o.u.)	5.7	5.8	5.8					
pacific Cond. (umhos/cm)	, 08	,07	.07					
Yalor Tomporaturo (doffroos C)	. 22	22/21	21.					
urbidity (subjective: clear, slightly cloudy, cloudy)	ch	cdy	cdy	,				
ˈˈlaṣolvṇd Oxygoṇ (mg/l)	0.9	1.6	1.6					
ID roadings, if roguirod amarks:								

Date (mm/dd/yy):		7	I	<del></del>		+	<b>3</b>	
Floid Personnel:	0		Facility Name:	13181	TISda		luch >to	R
	<u> </u>		Site ID #	18686	_	Monitori	Ing Well#	MMP
General Wenther Conditions: SUMY		-	Woll Diamotor (	(D):		0.10	7_foot	
Ambient Air Temperature: 74 E			Conversion fac	tor (C): 3.14 X (D/	2)2 for a 2 incl for a 4 inch	well C ≈ ( well C ≈ 0.	0,163 052	
pH Meter Conductivity Meter serial no. pH=4.0 standard pH=7.0 Standard pH=10.0 Standard Chair of Cuatady			1 casing volume 3 casing volume Total volume of	d Water (DGW) h (TWD) ater column (LWC o (CV × LWC X C) n 3 X CV × Water Puryed Be	** 3.4/2 fore Sampling	gals (sta	77.47 26.36 3.4 1.7/3 =	_gals
Rollingulatiod by Dato/Thno Rocolved by Da	to/Tlmo <sub>.</sub>		1	Water Purged for			. 85 be regulred.	_galn _Total Purged
	Initial							
Cumulaliyo Volumo Purpod (pallona)	, 25	Int Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Those (military)	44	1015	DRY					•
	4.4	4.3	VVI					
	22	ما،						
·	22	2921	• .			<del>u_</del> _		
urbidity (subjective: clear, slightly cloudy, cloudy)	clr	cdy						
	1.5	1,2						
Annarko:								

Unite (min/dellyyy):						/		
	26	-	Facility Name: Site ID #	18686	dale	Quick	5-100	24. 77
			א עו שופן	10000		Monttor	ing Well#	my
			Woll Dlamotor (	D):	,	0.16	7_faot	
Amblent Alr Temperature: 74	<u> </u>		Conversion fac	tor (C): 3.14 X (E	0/2)2 for a 2 ln	ich well C = 0	0.463 .052	
Quality Anauguma					101 4 4 1111	II WOIL C A U	_	
pH Meter Conductivity Meter serial no. serial no. pH≈4.0 Standard pH≈7.0 Standard pH≈10.0			* Free Product Depth to Groun Total Well Depth Langth of the w	d Water (DGW)	/C × TWD-DG		17.32- 20.65 3.3	foot foot foot foot
Chalic of Gualady	-		1 casing volume	3 X CA ≈ 3 (CA ≈ FMC X C	1.7	gals (sta	1.7/3 =	3.73
•			Total volume of	Water Purged B	oforo Samplli	ng	-	galo
Received by Date/Three Received by	Dato/Thno	-	Total volume of	٦,	•	•	0,85	gala Total Purgad
	· · foldal ·		Inffree product i			ung will not		
Cumulativa Volume Home 17	_	Ist Vol.	2nd Vol.	3rd Vol.	4th Vol.	. 5th Vol.	Post Sampling	Sample
Cumulatiye Volume Purped (pallona)	125	.85						
hijo (military)	1026	1094	DRY					
H (s.u.)	4.8	4.7						
poellle Cond. (umhos/em)	104	, 03						
alor Tomporaturo (dogreos C)	. 22	22	. ,					
urbidity (subjective: clear, slightly cloudy, cloudy)	edy	odus						
psolvod Oxygon (mg/t)	3.3	3.0						
ID roadings, if rogulrod onarks:								

Dato (monthfullyy): 11-22-11		7	1				-1-010	
Floid Personnel:	<del></del>	_	Facility Name:	10/0/	Tisdale		ick Stop	WALLY O
Goneral Worther Conditions: SU ONG			Site ID #	18686		Monitor	ing Well#	hun O
			Well Dlameter	(D):		0.10	7_faot	
Ambient Air Temperature: 74 Quality Anaugunan	_E		Conversion fac	tor (C): 3.14 X (D	1/2)2 for a 2 inch for a 4 inch	woll C ≈ (	).163 .052	
pH Mater Conductivity Meter sorial no.  pH=4.0 Standard pH=7.0 Standard pH=10.0 Standard			Total Well Dept Longth of the w	id Water (DGW)	) xx		0 17,55 21,64 4.1	foot foot foot foot
Chalit of Cuntarty			3 casing volum		2.1	gals (sta	ndard purge volu	gala
Rollingulahod by Dato/Thno Received by	Dato/Tlme <sub>.</sub>		Total volume of	Water Purged fo In present over L	r Post Sampling		0,95	gals Total Purgad
	1 - 4 - 6 - 6	1				4		i ja is Cabusponisher
Հայրսիվել Volumo Parpod (gallons)	Initial 25	1nt Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
huo (military)		1741						
H (a.u.)	5.9	6.1						
-preffic Cond. (umhos/cm)	,06	,do		4				
Yalor Tomporaturo (dogroos C)	22	21	• ,					
urbidity (subjective: clear, slightly cloudy, cloudy)	de	Cdy						
Jasolvod Oxygon (mg/l)	114	2.3						
ID readings, if required amarks;								

Date (mm/dd/yy): 1/-30-	77		J		FICAR	160		-
Flold Pornomial: Flee			Facility Name: Site ID #	18686	TISOA		Ing Well#	MW 9.
Guneral Weather Conditions: Suns	14		Well Dlamoter				7_faat	
Ambient Air Temperature: 60° Quality Angurance	_F		Conversion fac	tor (C): 3.14 X (D.	/2)2 for a 2 inch for a 4 inch	woll C ≈ 0 woll C ≈ 0.	).163 052	
pH Meter Conductivity Meter serial no. serial no. pH=4.0 Standard pH=7.0 Standard pH=10.0 Standard			I casing volume	d Water (DGW) h (TWD) ater column (LW > (CV × LWC X C)	Д.			foot foot foot foot
Chult of Gualody			l I	Water Purged Be		т -	ndard purge volu	yals
Rollingulahod by Dato/Thno Received by	Date/Time			Water Purged for a present over 17			, 85 be regulted,	galn Total Purgad
ેવામુવી <b>ત્તીપ્રક Volume</b> Parged (gallona)	Initial , 25	Int Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Juna (militark)		<u>-</u>						
भ (s.u.)	5.8	5,8	prey	-				·
preffle Cond. (umhos/cm)	,08	,09						
Yalor Tomporaturo (dogroos C)	. 21	21	,					
urbidity (subjective: clear, slightly cloudy, cloudy)	Oli	chy		-				
dagolynd Oxygon (mg/l)								
ID readings, if required amarks:								

Date (mm/dd/yy):		7	I		-1600	17.		
Floid Personnel: LO			Facility Name:	10101	TISOA			
			Site ID#	18686		Monitori	ing Well#	mulo
			Well Dlameter (	D):		0.16	7 foot	
Ambient Air Temperature: 60* Stuality Anaucause	F		Conversion fac	tor (C): 3.14 X ([	0/2)2 for a 2 incl for a 4 inch	ı woll C = ( woll C = 0,	).163 .052	
pli Meter Conductivity Meter serial no. serial no. pli=4.0 Standard pli=7.0 Standard pli=10.0 Standard			* Free Product Depth to Groun Total Well Depth Longth of the w	d Water (DGW) h (TWD) ater column (LV	`] #		0 19.73 24.70 5.3 2.7/3 =	foot foot foot oot
Chaln of Gualculy			3 casing volume Total volume of	93 X CV == Water Purged B	2, 1 Sefore Sampling	<b>7</b> 1	ndard purge volu	gals
Rollingulation by Dato/Time Rocelved by	Date/Tlme		Total volume of				/./ bo required,	gala Total Purgad
	Initial	Int Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulatiyo Volumo Purgod (gallona)	, 25	1.1						
laro (military)	1554	1600	ORY					
H (s.u.)	511	5.1						
pacific Cond. (umbos/cm)	106	.05						
Valor Tomporaturo (dogroos C)	.21	21	. ,					
urbidity (subjective: clear, slightly cloudy, cloudy)	cle	edy						
lagolyad Oxygon (mg/l)	2.9	32						
ID roadings, if roquirod onarks;					·			

Floid Porsonnol: RG	· · · · · · · · · · · · · · · · · · ·		Facility Name:	*	TISPAL	65		
			Site ID #	18686			ing Well#	mw13
Goneral Woather Conditions: Synn 4			Woll Dlamotor	(D):	<del></del>	0.46	7 foot	
Ambient Air Temperature: 60° Quality Anaucausa	F		Conversion fac	tor (C): 3.14 X (E	0/2)2 for a 2 luch for a 4 luch	well C = (	— ).163	
pH Motor Conductivity Motor sorial no. pH=4.0 Standard pH=7.0 Standard pH=10.0 Standard			Total Well Dept Longth of the w	id Water (DGW)	·		0 18.57 23.34 4.8 2.4/3 =0	
Chalical Gualady			Total volume of	Water Purged B	ofore Sampling		ndard purge volu	ិពិទ្យា
Relinquished by Date/Time Received by	Date/Time			Water Purged fo	×		1.05 be required,	_gala _Total Purgad
								,
	InItial	Int Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Zamulatiye Volume Parged (galloma)	,25	1.05						
lino (military)	1634	1640	ory					
과 (s.u.)	5.8	5.7	N'.	-				
Specific Cond. (umhos/cm)	.06	ع٥,						
Aufat Lambarufnio (qaftioon C)	-21	21	. ,	A	7.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2			
urbidity (subjective: clear, slightly cloudy, cloudy)	elr	cdy						
վեսութում Օxygon (mg/l)	1-(	2.3						
ID readings, if required ionarks:			· · · · · · · · · · · · · · · · · · ·		·			

Date (min/dd/yy): 122-1 Tisdate 1.	<u> </u>		ļ		1/ 0			
Floid Porsonnol: 122 11 Tisdale (	WCK.		Facility Name:	715 18686	dole Q	- H	Stoy	Mw 14.
General Weather Conditions: SUNRY	1		Site ID # Well Dlameter				Ing Well# 7-foot	1 100 TT.
Amblont Air Tomporature: 79 Quality Anguranca	F		Conversion fac	etor (C): 3.14 X (D	1/2)2 for a 2 incl for a 4 inch			
pH Meter  serial no.  pH=4.0  pH=7.0  pH=10.0  Clinit of Guatady			Total Well Dep Length of the v I casing volum I casing volum Total volume of	nd Water (DGW) th (TWD) vater column (LW e (CV ~ LWC X C e 3 X CV ~	) * 3./5 efore Sampling	gals (sta	2 1772 23.95 6.3 1.05 ndard purge volu	_galo
Rollingulation by Dato/Time Received by	Date/Tlme			Water Purped fo			1,3 be required.	_galn _Total Purgod
	biltlal	Int Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumuladyo Volumo Purgod (gallona)	, 25	1,3	4'			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	, , , , , , , , , , , , , , , , , , , ,	_
Umo (mlitary)	1042	1047	DRY	•				
H (o.u.)	5.4	5.5						
ipoellle Cond. (umbos/cm)	, 18	,19						
Yalor Toniperature (dogrees C)	.23	22	• .				`	·
urbidity (subjective: clear, slightly cloudy, cloudy)	oll	de			30 ASA		*	
Jagolvad Oxygan (mg/l)	0.9	3./						
'ID roadings, if rogulrod Comarko:				*	1997			

Date (mm/dd/yy):	1				=	~~~~		
Floid Pornonnol: 20	•		Facility Name:		risdale			MW-15
Ganeral Weather Conditions: 5401			Site ID # Well Dlameter				ing Well# 7-faat	MW- 13
Amblent Alr Temperature:	Ē			ctor (C): 3.14 X (E	0/2)2 for a 2 inch for a 4 inch	well C = (	 ),163	
pH Motor Conductivity Motor  nortal no.			Total Well Dept Longth of the w	id Water (DGW)	) = <25/2	gals (sta	9,15 24,35 5,25 243 = ndard purgo volo	foot foot foot foot fuot
Rollingulahod by Datofflino Received by	Date/Time_		Total volume of	Water Purged B Water Purged fo	or Post Sampling		1,4	_yals _yals _ Total Purgad
			I II Hou produce	la prosent over 1	<u>10 inch, sampiin</u>	g will not	150 radinadi.	
	InItlai	Int Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Supulatiye Volume Purged (gallom)	,25	1.4		·				
[ma (mflt(ary)	1051	1058	ORY					
H (a.u.)	55	5.4						
ipoeffic Cond. (umhos/cm)	11.	1/0						
Yalor Tamporaturo (dogroos C)	.21	21	- 1					
urbidity (subjective: clear, slightly cloudy, cloudy)	c\/	cdy		•				
llseolved Օхуџец (այլ/l)	2.9	4.5						
'ID roadings, if roguirod omarks:				·				

					11.0000			
Field Personnel: 11-22-3	<u></u>		Facility Name:	1000	TISDALES			A: 18
Constant			Site ID #	18680	<del>)</del>	Monitor	ing Well#	MW 18
	14		Well Dlameter	(D):		0.40	37 foot	
Amblent Air Temperature: 74  Quality Anaugunga	F		Conversion fa	ctor (C): 3.14 X (E	0/2)2 for a 2 inc for a 4 incl	li woll C ≍ i woll C ≈ 0	0.163 .052	
pH Motor Conductivity Motor sorial no. pH=4.0 Standard pH=7.0 Standard pH=10.0 Standard			Total Well Dep Langth of the v	nd Waler (DGW) th (TWD) waler column (LW		/)	20,20 23,94 3,7 1,85/3	foot foot foot foot
Chala of Gualady			Total volume o	10 (CV × LWC X C 10 3 X CV × I Water Purged B	efore Sampling	}	ndard purge volu	gals
Rollingulatiod by Dato/Time - Received by	Dato/Tlmo <sub>.</sub>			f Water Purged fo Is present over 1			/, 5 be required.	gala Total Purgad
	Inklal	Int Vol.	2nd Vol.	3rd Vol.	Ath Vol.	5th Vol.	Post Sampling	Sample
Հայանանից Volume Puryed (gallona)	,25	,9	1,5	Jid VOI.	741701.	5th you.	Post Samping	Ottinpio
lme (military)	1114	1120	1128	pky				
H (s.u.)	5,3	4.2	5,)	101-9				
pacific Cond. (umbos/cm)	.06	10.5	.05					
Yator Tomporature (dogreos C)	-23	24	24					
urbidity (subjective: clear, slightly cloudy, cloudy)	cdr	chr	cdvo			-		
llasolvad Oxygon (mg/l)	1,0	1.3	1,4					
ID roadings, if regulred omarks:					,			
****								

11-22-1			J					<u></u>
Field Personnel: RCQ			Facility Name:	10,00	SDALE			mu 1 10
Carrie	A.		Sito ID#	8686		Monitor	ing Well #	mw 19
	14		Woll Dlamotor	(D):		0.46	7 foot	
Amblent Alr Temperature: 74  Stuality Anauguma	l;		Conversion fa	ctor (C): 3.14 X (E	0/2}2 for a 2 incl for a 4 inch	ı woll C ≈ l woll C ≈ 0	0,163 .052	
pH Meter Conductivity Meter  normal no. pH=4.0 Standard  pH=7.0 Standard  pH=10.0 Standard			Total Well Dep Length of the v	nd Water (DGW)	•		0 24.93 24.70 3.8 1.9/3 = ndard purga volu	foot foot foot foot foot
Chuln of Gualady  Rollingulation by Dato/Three Received by			Total volume o	f Water Purged B f Water Purged fo	ofore Sampling	<i>m</i>		Naja - Anja
Received by Date/Time Received by	Dato/Time		1.	la present over 1			1.6 be required.	Total Purged
	'. Initial '							
ેપાણપોતાપુર Volume Purged (gallona)	,25	Int Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
luro (military)	1138	1140	1,6	DRY				-
H (s.u.)	72	5.2	5.2					
preffle Cond. (umhor/em)	.68	603	,08					
Yalor Tomporaturo (dogreos C)	.22	22	22.					
urbidity (subjective: clear, slightly cloudy, cloudy)	cV	cder	Cdu					
lanolvod Oxygon (mg/l)	3,3	3.3	3.3		<u> </u>			
ID roadings, if roguired							× ·	

- LZ -			· · · · · · · · · · · · · · · · · · ·					
Floid Personnel:			Facility Name:		TISDAL	£S		
			Site ID #	18686			Ing Woll#	Mude
General Weather Conditions: 54nny	1	_	Well Dlameter	(D):		0.40	7 foot	
Amblant Alr Tomporature: $\gamma +$	F		Conversion fac	etor (C): 3.14 X (E	1/2)2 for a 2 leeb	wall C T	ear o	
Quality Anaugatusa				~~~ (0). 0.14 X (L	for a 4 Inch	woll C ≈ 0	.052	
pH Meter Conductivity Meter  nerial no. pH=4.0 standard pH=7.0 standard pH=10.0 standard Clinical Cuntifuly			Total Well Dept Longth of the w 1 casing volum 3 casing volum	nd Water (DGW) th (TWD) vater column (LW e (CV ~ LWC X C e 3 X CV ~	1"5,6/2		(8,02) 23.65 5.6 2,8/2 = 1	
		j	ş	Water Purged B			-	_Uals
Rollingulatiod by Dato/Time Received by	Date/Flme	~		Water Purged fo			7.1	_gals _Total Purgad
			I ii noo product	la present over 1	18 tuch, samplin	g will not	ba raquirad,	
	Initial	Int Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Supulative Volume Purged (gallona)	125	1.2	2+21		-			
hno (military)	1154	1158	120	oke				
/H (o.u.)	5.3	5.3	5.3					
poeffic Cond. (umhos/em)	105	105	105					
Yalor Tomporaturo (dogregos C)	.21	21	21					
urbidity (subjective: clear, slightly cloudy, cloudy)	cV	cdy	ody	,				
ไรยงโขตd Oxygon (เกฏ/I)	2.2	3.1	3.1					
ID readings, if regulard emarks:		-						

Dato (mm/dd/yy): 11-22-11			I			<b>**</b>		
Fluid Pornouncel:	· · · · · · · · · · · · · · · · · · ·		Facility Name:		1SOALE	<u>S</u>		
Clause			Site ID #	18696		Monitor	ing Well#	mw 21
General Weather Conditions:	1		Well Dlameter	(D):		0.16	7_faot	
Amblent Air Temperature:  Quality Anauguma	F		Conversion fa	ctor (C): 3.14 X (E	0/2)2 for a 2 inc for a 4 inch	lı woll C ≈ 0	0,463 .652	
pH Motor Conductivity Motor norlal no. verbal no. pH=4.0 Standard pH=7.0 Standard pH=10.0 Standard Chalical Gualady			Total Well Dep Longth of the v I casing volum I casing volum Total volume o	nd Waler (DGW) th (TWD) vater column (LW te (CV × LWC X C e 3 X CV ×	) ** 3.2   2 efore Tampling	gals (sta	ndard purge volu	_Aula
Rollingulation by Dato/Time Received by	Dato/Thno			Water Purged fo			1.4	galn Total Purgad
the state of the s	InItlal	Int Vol.	2nd Vol.	1 0 111			To 10 !! !	C. in the
Cumulatiyo Volumo Purgod (galloma)	,25	· B	1.4	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
luio (military)	1412	1416	1920	OPS				
H (a.u.)	5.3	5.4	5.4					
poellle Cond. (umhos/em)	,03	.04	.υφ					
Yalor Tomporaturo (dogroos C)	24	23	23					
urbidity (subjective: clear, slightly cloudy, cloudy)	dr	cdy	cder					
lagolvod Oxygon (mg/t)	4.7	3.3	3,3					
D roadhyp, if rogulrod omarke:								

Date (mm/dd/yy):   -22-	· · · · · · · · · · · · · · · · · · ·				HICAN			
	20	_	Facility Name: Site ID #	18686	TISOAL			MW 22
General Weather Conditions: 54nh	14	_	Well Dlameter				ing Well# 7_feet	7000 2-
Ambient Air Temperature: 71  Quality Anaucausa	E		Conversion fac	:tor (C): 3.14 X (E	0/2)2 for a 2 incl for a 4 inch			4
pH Meter Conductivity Meter serial no. pH=4.0 Standard pH=7.0 Standard pH=10.0 Standard			Total Well Dept Longth of the w	rd Water (DGW)			0 17.75 23.55 5.8 2.9/3 ≈	_foot _foot _foot _foot _foot
Chult of Guntady			Total volume of	e 3 X CV =  Water Purged B  Water Purged fo	efore Sampling	galv (sta	ndard purge volu	mo) _yala gala
Rollingulation by Dato/Timo Recolved by	Date/Time		1.	la present over d			3. L be required.	Total Purgad
	Initial	Int Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
ेपामणीत्रप्रिक Voluma Purgad (प्रचीलाम)	125	1.25	2,25	3.1				
hno (millary)	1257	1254	1256	1300				
H (5.u.)	5.4	5.5	5.5	5.5				
preffle Cond. (umhos/cm)	40,	105	,05	,05				
Yator Tomporaturo (dogroos C)	.27	21	21	21				
urbidity (subjective: clear, silybity cloudy, cloudy)	clr	cdy	cdy	cdy				
llagolvad Oxygon (mg/l)	3.1	1.8	365	1,9				·
TD roadings, if rogulrod omarks:			1.81					

Date (mm/dd/yy): 11-22 -1/					+1CM	11 50	
Floid Porsonnol:	•		Facility Name: Site ID #	18686	1 IDUF	Monitoring Well #	MW 23
General Weather Conditions:	<b>y</b>		Well Dlamotor			0.467 foot	1.44
Amblent Air Temperature:	E		Conversion fac	ctor (C): 3.14 X (E	0/2)2 for a 2 inch for a 4 inch	woll C ≈ 0.163 woll C ≈ 0.652	
PH Motor Conductivity Motor  sorial no.  pH=4.0 Standard  pH=7.0 Standard  pH=10.0 Standard  Standard			Total Well Dep Longth of the v	nd Water (DGW)	√C × TWD-DGW)	0 17.28 22.50 5.3 2.7/3	foot foot foot foot  = 0.9
Chalical Guntarly  Rollingulation by Dato/Time Received by	Date/Time		Total volume of	f Water Purged B f Water Purged fo	ofore Sampling	gals (standard purge)	Daja Daja
			*if free product	Is present over 1	/8 luch, sampling	g will not be required.	Total Purgad
	Initial	Int Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol. Post Sampl	Ing Sample
Sumulatiye Volume Purged (gallona)	125	1.2	2.1	2.9			_
line (mill(gry)	1549	1552	1556	1600			
H (s.u.)	5.9	5.9	5.9	5.9			
Specific Cond. (umhos/cm)	104	,04	.04	cot			
Yalor Toniporaluro (dogreoo C)	27	2(	7)	21			
urbidity (subjective: clear, slightly cloudy, cloudy)	CV	cdn	cdy	coly			
ปละolved Oxygen (mg/l)	.7	1.8	1,9	1.9			
'ID roudings, if rogulrod tomarks:							

Date (mm/dd/yy): 11-22-11		_					
Floid Personnel:	-		Facility Namo:		LIZOAL	F2	
Constant			Sito ID#	18686	<del></del>	Monitoring Well#	mv 24
	M	_	Well Dlameter	(D):		0.167 foot	
Ambient Air Temperature: 74  Quality Angurause	F		Conversion fac	ctor (C): 3.14 X (D	/2)2 for a 2 incl for a 4 inch	well C = 0.163 well C = 0.052	
pli Meter Conductivity Meter serial no. pli=4.0 Standard pli=7.0 Standard pli=10.0 Standard			Total Well Dept Length of the v	nd Water (DGW)	c×TWD-DGW)	0  S.28  21.15  S.	
Chalical Guntarly					•	gals (standard purg	je volume)
•	,		4	l Water Purged Be			alny
Rollingulation by Dato/Time Received by	Date/Thre		1.	Water Purged fo		1.2	~
		-4	I n nvo produce	in probbit over 1/	o inch, sampiin	g will not be require	
	Initial	Int Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol. Post San	npling Sample
Zunidadyo Volumo Puryod (प्रामीलाम)	,25	1.25	10KY				_
[hna (mfl(dix)	1518	1521					
म (a.u.)	6.2	6,0			11		
spæffle Cond. (umho#em)	.04	103					
Yalor Tomporaturo (dogroos C)	27	27	* /				
urbidity (subjective: clear, slightly cloudy, cloudy)	de	edy					
ן lagolvad Oxygan (אוןן)	2.9	3.1					
'ID roadings, if roquirod omarks:							

Dato (mm/dd/yy): 11-22-11	•				7/01/		
Illabet to	26		Facility Name:   Site ID #	18686	ISVALS	<u> </u>	ANW 25
Goneral Weather Conditions: 54 n			Well Dlameter			Monitoring Wall # 0.167_feet	PPION 0-3
Ambient Air Temperature: T	F		Conversion fa	ctor (C): 3.14 X (	D/2)2 for a 2 inc for a 4 inch	lı woll C ≈ 0.163 woll C ≈ 0.052	
pH Meter Conductivity Meter serial no. serial no. pH≈4.0 Standard pH≈7.0 Standard pH≈10.0 Standard Chain of Ch			Total Well Dep Length of the v 1 casing volum 3 casing volum Total volume o	nd Water (DGW) th (TWD) vater column (LV ie (CV × LWC X (	-) * 4.9/2 Before Sampling	$2.5/3 = \frac{2.5}{3}$ gals (standard purge v	feet foot foot feet 84,85 olume) gala
reamquialied by Date/Thire Received by	Dato/Time_					ng will not be required.	Total Purgad
	Initial	Int Vol.	2nd Vol.	3rd Vol.	4th Vol.	Lett V. I. Deet Cornell	ng Sample
Zunulatiya Voluma Purgati (gallona)	125	1.1	1.9	2.5	4th vol	5th Vol. Post Sampl	пу запри
lmo (military)	1338	1241	1344	1347			
/H (o.u.)	5.6	5.2	52	3.2			
pacific Cond. (umhos/cm)	,03	ره,	,07	,03			
Yator Toniporaturo (dogroos C)	.22	22	22	22			
urbidity (subjective: clear, slightly cloudy, cloudy)	dr	cdy	edy	cdy			
lagolygd Oxygon (mg/l)	40	4.7	4:7	4.7	_2		
ID roadings, if roquirod omarks:			*.				

Date (mm/dd/yy): 1/-22-1/					C A A 1			
Floid Porgonnol:	21-		Facility Namo:		TISDAL	とろ		
	Lle		Site ID #	18686		Monitori	ing Well#	MW26
General Weather Conditions: SUMY			Well Dlameter	(D):		0.16	7 foot	
Ambient Air Temperature:	E		Conversion fac	ctor (C): 3.14 X (D	1/2)2 for a 2 inch			
Quality Anauransa				•	for a 4 Inch	wall C ≈ 0.	052	
pH Mater Conductivity Mater			* Free Product Depth to Grou	Thickness: ad Water (DGW)			0 1492	_foot foot
pH=4.0 Standard			Total Well Dep				19,50	foot
pH=7.0 Standard		_	Longth of the v	vator column (LW	C × TWD-DGW)	~	416	foot
pH=10.0 Standard			1 casing volum	ю (CV × LWC X C) о 3 X CV л	) × 1660		2.3/3 =	,8
Chuln of Guntarly			3 casing volum	0 3 X CV =	4,612	gals (sta	ndard purge volu	110)
			Total volume of	f Water Purged Be	oforo Sampling			gals
Relinquiahed by Date/Time Received by			Total volume of	Water Purged fo	r Post Sampling	j		galn
Received by Date/Time Received by	Dato/Time		Olf For				1,8	Total Purged
			Lu moo brodner	In present over 1/	/B luch, samplin	g will not i	bo roquirod.	
								48) -
	Initial	Int Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
ेप्पाणीवर्षिष्ठ Voluma Purged (प्रचीलाङ)	.25	1.0	1.8					
huo (military)	1717	1321	1324	Dry				
41 (a.u.)	5.5	3.5	5.5					
poellic Cond. (umhos/cm)	,05	-05	,05					·
Yalor Tumporature (dogrees C)	.21	21	21.					
urbidity (subjective: clear, slightly cloudy, cloudy)	dr	cdy	cdy					
lasolvod Oxygon (mg/l)	2.4	3.6	3.6	1				

ID roadings, if rogulted amarks:

Date (mm/dd/yy): 11-22-1	<i>.</i>		<u> </u>		0000			
Floid Personnel:	76		Facility Name:		SUALS	z >		
General Weather Conditions: SUAY			SIto ID#	18686		Monitor	Ing Well #	Mw 27
0-1/1.	19		Well Dlameter	(D):		0.16	7 foot	
Amblent Air Temperature: 74  Quality Anaugung	15		Conversion fa	ctor (C): 3.14 X ([	0/2)2 for a 2 incl for a 4 inch	ı well C ≈ ( well C ≖ 0	0.163 .052	
pH Motor Conductivity Moto sorial no. sorial no. pH=4.0 Standard pH=7.0 Standard pH=10.0 Standard	r		Total Well Dep Longth of the v	nd Water (DGW)	VC×TWD-DGW)		19.30 24.75 5.4 2.7/3 =	feet feet feet feet
Chulu of Guatody			Total volume o	f Water Purged B	' Jefore Sampling	-	ndard purge volu	galo
Rollingulation by Dato/Thiro Received by	Dato/Thne		1.	f Water Purged fo Is present over 1			be required,	_galn _Total Purged
	Initial	Int Vol.						
Տարսեւկւթ Volume Purged (gallons)		THE VOI.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
luio (military)	1225	1229	1234	1237	·			
H (2.u.)	5.4	5.3	5.3	5.3				
poeffic Cond. (umhos/cm)	107	,07	107	107				
Aufor Lambarufnio (qattioor C)	22	22	92.	22				
urbidity (subjective: clear, slightly cloudy, cloudy)	CV	cdy	(dy	cdy				
pasolvod Oxygon (mg/l)	2.5	2.8	2.8	2.8				
ID roadings, if rogulrod omarks:					·			

Unto (mm/dd/yy): 11/12-11		7	1					
Floid Portonnoi:	· · · · · · · · · · · · · · · · · · ·		Facility Name:	TIS	DALES			. 04
General Weather Conditions: SUNA	· · · · · · · · · · · · · · · · · · ·		Site ID #	18686		Monitor	ing Well#	Mw 28
11111	9		Well Dlameter	(D):		0.46	7_foot	
Amblent Alt Temperature: 74  Quality Anauguma	F		Conversion fac	:tor (C): 3.14 X (E	0/2)2 for a 2 incl for a 4 inch	ı well C = ( well C = 0,	0.463 .652	
pH Motor Conductivity Motor sorial no. sorial no. pH=4.0 Standard pH=7.0 Standard pH=10.0 Standard			Total Well Dept Longth of the v	nd Water (DGW)		2	.6/3 2 1,	
Chalical Gualady						~	ndard purge volur	
P. II				Water Purged B Water Purged fo				្សារាគ ព្រះព្រះ
Rollingulatiod by Date/Time Received by	Dato/Tlmo			lu prosont over 1			2.6	Total Purgad
	:		THIN PIOUSE	A Proport Over 1	70 HIGH, BAIHPHI	ig wii noc	no roquirou.	
	Initial	Int Vol.	2nd Vol.	3rd Vol.	Ath Vol.	5th Vol.	Post Sampling	Sample
Հարսենկց Volume Puryed (yallona)	,25	1.4	2.6	373.10%	, rai you	34, 70,	Tostouning	
lino (military)	1215	1218	1221	ops				
H (a.u.)	4.9	5.0	5.0		- Ad			
pacille Cond. (umhoa/cm)	116	18	118					
Aufar Lambarufnro (qallroos C)	22	22	22					
urbidity (subjective: clear, slightly cloudy, cloudy)	cV		color					
lsgolvad Oxygon (mg/l)	4.7	5.5	5.5			****		
ID roadings, if regulred amarks:								
•							4	

Date (mm/del/yy): 11-22-(1		7	Facility Name:		CONIE	<u> </u>		
11:101:1117	ZQ		Sito ID #	12696	SOALE		Ing Well #	mw 29.
Goneral Weather Conditions:	174		Woll Dlamotor		<del></del>		7 foot	11001
Amblent Air Temperature: 74  Quality Anauguma	F			ctor (C): 3.14 X (E	0/2)2 for a 2 inc for a 4 inch	lı well C ≍ (		37
pH Meter Conductivity Meter serial no.  pH=4.0 Standard pH=7.0 Standard pH=10.0 Standard			Total Well Dep Longth of the v	nd Water (DGW) th (TWD) vater column (LV		)	1826 23.75 po45 9:	_foot _foot <b>S</b> foot <b>,</b> 9
Chalcul Gualady			Total volume o	io (CV × LWC X C io 3 X CV × f Wator Purgod B	ofore Sampling	- <b>א</b>	ndard purge volu	imo) gals
Rollingulation by Dato/Thire Received by	Date/Time	_		f Water Purped fo			Q.7	_galn _Total Purgad
	1 - 1 - 1							الله المالية المالية المالية المالية المالية المالية المالية المالية المالية المالية المالية المالية المالية ا
Sumulatiyo Volumo Purgod (gallona)	Initial .25	Int Vol.	2nd Vol. 2. 0	3rd Vol. 2.7	4th Vol.	5th Vol.	Post Sampling	Sample
hno (military)	1616	1618	1621	1624				
개 (ơ.u.)	5,5	5.5	5.3	5.3				
Specific Cond. (umhos/cm)	.06	,08	608	,68				
Aufar Laufbarufnia (qattaan C)	1.21	21	21.	21				
urbidity (subjective: clear, slightly cloudy, cloudy)	cV	Cdy	edy	edd				
ημασικός Οχληδό (υλής)	4,7	5.2	<b>5</b> .3	6.3			**	

ID roudings, if rogulrod omarks:

11-22-1					4000			
Fleld Personnel:			Facility Name:		T150ALS			
General Weather Conditions:			Site ID#	18686	<del></del>	Monitor	Ing Well #	MW30.
) U	nnj		Well Dlamotor	(D):		0.16	7 foot	
Amblent Air Temperature: 74 Quality Anauguma	<u>[</u> -		Conversion fac	ctor (C): 3.14 X (E	0/2)2 for a 2 incl for a 4 inch	ı well C ≈ ( well C ≈ 0	0,163 .052	
pH Motor Conductivity Motor sorial no. sorial no. pH=4.0 Standard pH=7.0 Standard pH=10.0 Standard Chain of Cualady	-		Total Well Dep Lungth of the v 1 casing volum 3 casing volum	nd Water (DGW) th (TWD) vater column (LW no (CV × LWC X C n 3 X CV ×	) = 1,5/2		7.76 18.82 1.5 .75/3 = ndard purge volu	
				f Water Purged B				_yals
Rollingulahod by Dato/Time Received by	Date/Time	-		f Water Purged fo In present over 1			0,5	gala Total Purgad
			1 W T T T T T T T T T T T T T T T T T T	- Proport (VVIII )	ro toen, sampani	y wii tiot	Do roganoa.	
	Inltlal	Int Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumuladyo Volumo Purgod (gallona)	125	,5						
lino (mlitary)	1710	1712	ORY					
H (s.u.)	5.5	5.5						
preffe Cond. (umhos/em)	,03	,03						
Yalor Toniporaturo (dogreos C)	.21	21	- ,,					
urbidity (subjective: clear, silyhtty cloudy, cloudy)	d	cdy						
lanolvad Oxygon (mg/l)	5.5	63	~					
ID readings, if required								

Date (mm/dd/yy): [[-22-1]		7	1					
Flold Porsonnol: Rle			Facility Name:		TISOAL			041.01
Casa tag			Sito ID #	18686		Monltorl	ng Well#	MW31
3417113	1		Well Dlameter (	D <b>):</b>		0.16	7 foot	
Ambient Air Temperature: 74 ) Quality Anguranga	F		Conversion fact	or (C): 3.14 X (D	/2)2 for a 2 incl for a 4 inch	ı woll C ≈ 0 woll C ≈ 0.	.163 052	
pH Meter Conductivity Meter serial no. pH=4.0 standard pH=7.0 Standard pH=10.0 Standard Chult of Gunlady			* Free Product Tooling to Ground Total Well Depth Length of the wall casing volume Total volume of Total volume of	i Water (DGW) i (TWD) iter column (LW (CV * LWC X C) 3 X CV *  Water Puryed Be	" 2,04/2	galv (stai	0 19.29 207 1,02/3 2 ndard purge volu	_Uala
Rollingulation by Dato/Thire Received by	Date/Thre		Total volume of the state of th				6,7 so required,	galn Total Purgad
	Initial	Int Vol.	2nd Vol.	3rd Vol.	4th Vol.	I EN VII	Post Sampling	Sample
Հարսեմկա Volumo Purged (gallona)	.25	.5	Ziid voi.	31tt VOI.	4tti voi.	5th Vol.	Post sumpung	
line (military)	1647	DRY						
H (a.u.)	5.4	5.8						
preffe Cond. (unhos/em)	.04	,04				-		
alar Tanjparatura (dagraas C)	22							
urbidity (subjective: clear, slightly cloudy, cloudy)	a/	22 edy	• ,					
saolvad Οχγμοή (mg/t)	5.7	5.8						
ID roadings, if rogulrod omarks:								

Date (mm/dd/yy):	-13/11	1	1				<u> </u>
Floid Personnel:	VO-		Facility Name:		Tisda	les	
General Weather Conditions:	S A.		Sito ID #	18686		Monitoring Well#	TW-1
***************************************	Sunny		Woll Diamotor	(D):		0.467 foot	
Amblent Air Temperature:	To · F		Conversion fa	ctor (C): 3.14 X (I	0/2)2 for a 2 inc for a 4 incl	li well C = 0.163 i well C = 0.052	
ull Mat	Uvity Motor	-	Total Well Dep Length of the v	nd Water (DGW) th (TWD) vater column (LV ie (CV × LWC X C			foot foot foot foot + ,7
Rethrendal	Ived by Date/Time		Total volume o	f Water Purged B f Water Purged fo	sefore Sampling or Post Samplir	14.25	yala gala Total Purgad
		1	["H free product	la present over 1	/8 loch, sampli	ng will not be required.	
	Initlai	Int Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.   Post Samplin	ng Sample
ेव्याचीत्रीर्व Volume Parged (gallona)	.25	4.9	9,6	14			
hno (military)	9/9	929	936	945			
·H (a.u.)	6,0	60	6.0	6.0			
preffe Cond. (umhor/em)	, 58	, ०४	108	108			
Yalor Tomporaturo (dogroon C)	.26	22	22	22			
urbidity (subjective: clear, slightly cloudy, cl		de	clr	clr			
Jaaolynd Oxyflon (mfl])	3.7	1.4	1.2	2412			
ID roadings, if rogulrod			-				

11-22-1			T	~				
Floid Porgonnol:		Facility Name		TISOALS	<u> </u>			
	lle		Site ID#	18686			ring Well#	TW2
Goneral Weather Conditions:	MY		Well Dlameter	(D):		0.10	87 faot	
Amblent Air Temperature: 74 Quality Ansurausa	F		Conversion fa	ctor (C): 3.14 X (D	/2)2 for a 2 inc for a 4 incl	lı woll C = ı woll C = (	0,163 ).052	
pli Meter Conductivity Mete serial no. serial no. pli=4.0 Standard pli=7.0 Standard pli=10.0 Standard	r		Total Well Dep Longth of the v	nd Water (DGW) th (TWD) vater column (LW ie (CV × LWC X C)	ж	 	0 16.63 \$1. 24.0	_foot _foot _foot _foot
Chuln of Gualudy			3 casing volum		17	— <del>ya</del>	ındard purge volu	mo)
	•	1.		f Water Purged Be			-	_Nuls
Rollingulahod by Dato/Thro Received by	Dato/Flmo		1.	f Water Purged for læpresent over 1/			17,25 be required.	galn Total Purgad
	Initial	Int Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulatiye Yolumo Purged (gallona)	.25	5.9	11.6	17,25	4(1) VOI.	3111 701.	Post Samping	Sampe
իուս (որկիքառ)	1431	1437	1444	1457				
H (3.u.)	6.4	6.5	4.7	6.7				
poeffic Cond. (umhos/em)	,10	.15	,15	.15				
/alor Tomporaturo (dagreos C)	.22	20	20	20				
urbidity (oubjective: clear, slightly cloudy, cloudy)	dr	cV	CIF	dr				
Jasolvod Oxygon (mg/l)	3.2	. 9	.7	.7				
ID roudings, if required								
							<u> </u>	

APPENDIX C
Disposal Manifest

# **NON-HAZARDOUS WASTE MANIFEST**

		NON-HAZARDOUS WASTE MANIFEST		Manllest Document No.	2.Page 1			
1		3 Génerator's Name and Malline Addresse					· · · · · · · · · · · · · · · · · · ·	1/ 51 /
and the same		TiBoleles Quiele 51	John					
		4. Generalofu Phone ( )						
		6. Transporter 1 Company Name	6. US EPA ID Number		A. State Trans			
THE STATE OF THE S		7. Transporter 2 Company Name	t Zac	8. US EPA ID Number		B. Transporter C. Stelle Trans		45-4010
				1	1	D. Transports		·
		9. Designeted Facility Name and Site Address		10. US EPA ID Number		E. State Facili	ty's ID	
		HERR, The		•	-	F. Facility's Pi	DOM N	Carly hard the property of the
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NON-HAZARDOUS WASTE								
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		16. GENERATOR'S CERTIFICATION: I hereby co in proper condition for transport. The materials i	rilly that the contents of thi Rescribed on this markfest	s staipment are lutly and accurately described a ere not subject to tederal hazardous waste reg	and are in Julations.	ali respects		
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Ì	7	19. Discrepency Indication Space			(	······		
	A							
1	Ç	20. Facility Owner or Operator, Certification of recei	pt of the waste materials c	ovated by this manifest, except as potential ter-	m 19.		TENNEN OF THE SECTION	
	1				ANDROS ANTIQUARIOS	-		Date
	Y	Printed/Typed Name  Manual Cox	-	Signature			Mon	th Day Year

F-14 @2002 LABELI ASTEK® (800) 821-5808 www.lebsimaster.com

Rev. 095

Appendix D

Contractor Checklist

Title: Programmatic QAPP Revision Number: 0

Revision Date: October 2011

#### **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	on must be provided.

Item #	Item	Yes	No	N/A
1	Is Facility Name, Permit #, and address provided?	X		
2	Is UST Owner/Operator name, address, & phone number provided?	X		
3	Is name, address, & phone number of current property owner provided?	X		
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?			X
6	Is the name, address, telephone number, and certification number of the certified laboratory(ies) performing analytical analyses provided?	Х		
7	Has the facility history been summarized?	X		
8	Has the regional geology and hydrogeology been described?			X
9	Are the receptor survey results provided as required?			X
10	Has current use of the site and adjacent land been described?	X		
11	Has the site-specific geology and hydrogeology been described?			X
12	Has the primary soil type been described?			X
13	Have field screening results been described?			X
14	Has a description of the soil sample collection and preservation been detailed?			X
15	Has the field screening methodology and procedure been detailed?			X
16	Has the monitoring well installation and development dates been provided?			X
17	Has the method of well development been detailed?			X
18	Has justification been provided for the locations of the monitoring wells?			X
19	Have the monitoring wells been labeled in accordance with the UST QAPP guidelines?			X
20	Has the groundwater sampling methodology been detailed?	X		
21	Have the groundwater sampling dates and groundwater measurements been provided?	Х		
22	Has the purging methodology been detailed?	Х		
23	Has the volume of water purged from each well been provided along with measurements to verify that purging is complete?	Х		
24	If free-product is present, has the thickness been provided?	X		
25	Does the report include a brief discussion of the assessment done and the results?	Х		
26	Does the report include a brief discussion of the aquifer evaluation and results?			X
27	Does the report include a brief discussion of the fate & transport models used?			Х

Title: Programmatic QAPP Revision Number: 0 Revision Date: October 2011

Item #	Item	Yes	No	N/A
28	Are the site-conceptual model tables included? (Tier 1 Risk Evaluation)			X
29	Have the exposure pathways been analyzed? (Tier 2 Risk Evaluation)			X
30	Have the SSTLs for each compound and pathway been calculated? (Tier 2 Risk Evaluation)			X
31	Have recommendations for further action been provided and explained?	Х		
32	Has the soil analytical data for the site been provided in tabular format? (Table 1)			Х
33	Has the potentiometric data for the site been provided in tabular format? (Table 2)	Х		
34	Has the current and historical laboratory data been provided in tabular format?	Х		
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)			X
37	Has the topographic map been provided with all required elements? (Figure 1)	Х		
38	Has the site base map been provided with all required elements? (Figure 2)	X		
39	Have the CoC site maps been provided? (Figure 3 & Figure 4)	Х		
40	Has the site potentiometric map been provided? (Figure 5)	Х		
41	Have the geologic cross-sections been provided? (Figure 6)			X
42	Have maps showing the predicted migration of the CoCs through time been provided? (Tier 2 Risk Evaluation)			X
43	Has the site survey been provided and include all necessary elements? (Appendix A)			Х
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?	Х	1	
46	Has the tax map been included with all necessary elements? (Appendix C)			X
47	Have the soil boring/field screening logs been provided? (Appendix D)			X
48	Have the well completion logs and SCDHEC Form 1903 been provided?  (Appendix E)			X
49	Have the aquifer evaluation forms, data, graphs, equations, etc. been provided? (Appendix F)			Х
50	Have the disposal manifests been provided? (Appendix G)	X		
51	Has a copy of the local zoning regulations been provided? (Appendix H)			X
52	Has all fate and transport modeling been provided? (Appendix I)			X
53	Have copies of all access agreements obtained by the contractor been provided? (Appendix J)			Х
54	Has a copy of this form been attached to the final report and are explanations for any missing or incomplete data been provided?	Х		

South Carolina Underground Storage Tank Program Tisdales Quick Stop

Title: Programmatic QAPP Revision Number: 0 Revision Date: October 2011

Explanation for missing or incomplete information.

Item 44: UST permit # not included on COC or in sample identification numbers; site name included on COC and well numbers used as sample identification numbers. Sample type (grab or composite) not included on COC; no space provided; all samples were grab. Program area not shown on COC; SC work indicated on COC.



# Catherine B. Templeton, Director Promoting and protecting the health of the public and the environment

MR MARTY EASLER 196 RICHBURG ROAD GREELEYVILLE SC 29056

JUL 1 3 2012



Re:

Four AFVR Event Directive

Tisdales Quick Stop, 1989 Thurgood Marshall Blvd, Kingstree, SC

UST Permit # 18686, CA#43031 Release reported March 30, 2001

Monitoring Report received December 30, 2011

Williamsburg County

Dear Mr. Easler

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) recognizes your commitment to continue work at this site using Geological Resources, Inc. as your contractor. The next appropriate scope of work is to continue aggressive fluid and vapor recovery (AFVR) events to remove residual free-phase product and reduce concentrations of chemicals of concern (CoC). Please have your contractor conduct four events on MW-3, MW-1A, MW-3A, and MW-4A simultaneously. The events should be spaced a minimum of twenty days apart to allow equilibrium conditions to reestablish, and must be conducted in accordance with the UST Quality Assurance Program Plan (QAPP). A copy of the QAPP is available at http://www.dhec.sc.gov/environment/lwm/html/ust.htm.

Cost Agreement #43031 has been approved in the amount shown on the enclosed cost agreement form for the AFVR events. AFVR activities may proceed immediately upon receipt of this letter, and must be performed by a South Carolina-Certified Underground Storage Tank Site Rehabilitation Contractor. All applicable South Carolina certification requirements apply to preparation of an AFVR report.

An AFVR report and invoice must be submitted to the Division within <u>90</u> days from the date of this letter. Your contractor may directly bill the State Underground Petroleum Environmental Response Bank (SUPERB) Account. Interim invoices may be submitted for this scope of work. If the invoice is 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 from the Agency is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the Agency for the cost to be paid. Agency 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, Agency 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.

The Division grants pre-approval for transportation of up to 5,000 gallons of free-phase product and petroleum-contaminated groundwater from the referenced facility to a permitted treatment facility for disposal. The transport and disposal must be conducted in accordance with the QAPP.

On all correspondence concerning this facility, please reference UST Permit #18686. If there are any questions concerning this project, feel free to contact me by telephone at (803) 896-4085, by fax at (803) 896-6245, or by e-mail at martinjm@dhec.sc.gov.

Sincerely,

Jim Martin, Hydrogeologist

Corrective Action Section

7: N.D

Underground Storage Tank Management Division

Bureau of Land and Waste Management

enc: Approved cost agreement form

cc: Scott Ball, Geological Resources, Inc., 2301 Crown Point Executive Dr. Suite F Charlotte,

NC 28227 (w/ enc) Technical File (w/ enc)

# Approved Cost Agreement 43031

Facility: 18686 TISDALES QUICK STOP

MARTINJM PO Number:

Task / Description Categories	Item Description	Qty / Pct	Unit Price	<u>Amount</u>
04 MOB/DEMOB				
	A EQUIPMENT	4.0000	575.00	2,300.00
	B PERSONNEL	4.0000	290.00	1,160.00
17 DISPOSAL				
	A WASTEWATER	5,000.0000	0.80	4,000.00
19 RPT/PROJECT MNGT & COORDINA	ATIO			
	PCT PERCENT	0.1500	20,580.00	3,087.00
23 EFR				
	A 8 HOUR EVENT	4.0000	3,000.00	12,000.00
	C OFF GAS TREATMENT	32.0000	35.00	1,120.00
		Total Amo	unt	23,667.00



# Geological Resources, Inc.

August 21, 2012

Mr. Jim Martin
South Carolina Department of Health
and Environmental Control
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management



Re:

Aggressive Fluid Vapor Recovery Event

Tisdales Quick Stop

1989 Thurgood Marshall Blvd

Kingstree, Williamsburg County, South Carolina

UST Permit No. 18686

CA No. 43031

Dear Mr. Martin:

Geological Resources, Inc. (GRI) has completed the first of four aggressive fluid vapor recovery (AFVR) events at the above referenced site in Kingstree, South Carolina. The AFVR event was conducted on August 9, 2012. A copy of the AFVR Report and an interim invoice are attached. Please contact Scott Ball at (704) 845-4010 with any questions.



enclosure

cc: file

2301 Crown Point Executive Drive Suite F Charlotte, NC 28227 Phone: (704) 845-4010 / (888) 870-4133 Fax: (704) 845-4012



#### HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Thursday, Aug 16, 2012

Scott Ball
Geological Resources, Inc.
2301-F Crown Point Executive Dr.
Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on August 9, 2012. Included is the documentation for the event. The 8 hour event was conducted on monitoring well MW-3. If you have any questions, please do not hesitate to contact our office.

Sincerely.

Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC August 9, 2012

#### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 08/09/12. The ambient temperature was 78 deg F and weather conditions were sunny/fair. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event. The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is

#### Pollutant Mass Removal

capable of providing 325 CFM at 25 inches of mercury.

Total weight of 0.676 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### **Liquid Disposal**

Approximately 678 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

# **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

# APPENDIX A AFVR FIELD NOTES

# HERR, Inc.

# AFVR - Field Notes

Site Name: Tradole 5	Location: Kurga Tree JC
AFVR Contractor: HERR INC - Steve	Personnel: Gni -
Date: 9-7-12 Ambient Air Temperature	and General Weather Condition: 78° Sury-Fau
Start Time 1: 7.35 Stop Time 1: 3-30	_ Start Time 2: Stop Time 2:
Total volume of water removed during the 8-hour AFVR Even	nt:678 goe
Total volume of product removed during the 8-hour AFVR Ev	vent:
Product Recovery Rate:	

Monitoring Well	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft. below TOC)	Estimated volume of water removed during this event	Relevant Observations
mu3	- 0	17.03		/9.3/	678 95km	

# TISDALES - 8/9/12

# **Aggressive Fluid/Vapor Recovery Notes**

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

	MW-3	MW-	MW-	Stinger Placement					
7.70 Time	Vacuum at Targeted Well (in. Hg)		Vacuum at Targeted Well (in. Hg)	Stinger Depth	Product Depth	Water Level	Notes		
Mw3	1945	(	(	19'		18.05			
8.30	20								
9.30	20								
9.30	20								
11.30	20								
1230	20								
1.30	20								
1.30 2.31 3.30	20								
3.30	20								
					- c-	19.31			
			•						
				1					

Vacuum at Pump: 02' Pup

# TIJDALE'S - 8/9/12

# **Aggressive Fluid/Vapor Recovery Notes**

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

Í	vacuum conversion. (inches of water x 0.07355 = inches of mercury)							
	M	w- [	M	W-	N	IW-	M	W-
7.30 Time 8:30 9:30 10:30 11:30 10:30	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)
8.30	18.4	0						
930		0						
10.30		0						٠
11:30		0						ļ
12.30		0						
1.30		0						
2:90		0						
3:30	18.4	0						

# TISO ALES - 8/9/12

# **Aggressive Fluid/Vapor Recovery Notes**

Time 7:3°	PID <u>at stack</u> (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature	Relative Humidity (%)	Other
8.00	263	155	6/9	81	46	
8,20	294	274	745	78	46	
9:00	272	257	751	1/2	46	
9:30	355	237	748	1/7	47	
/0:00	350	231	743	/23	47	
10:34	347	224	755	/27	48	
11:00	323	208	752	136	48	
11:36	301	(73	758	144	48	
12:00	296	168	756	146	48	
/2:.3	291	15L	763	148	48	
1:00	284	149	760	149	49	
/:30	278	142	766	149	48	
2:00	269	136	763	149	48	
2:3.	266	124	768	149	43	
3:00	259	128	769	149	48	
3:30	254	123.	771	149	48	· · ·
			:			
					··	

# APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site:

Tisdale's Quick Stop

UST Permit #:

18686

Calculations - Flow at DSCFM									
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)		
8/9/12	7:30		•				0.00		
8/9/12	8:00	619	0.022	89	46	0.013514822	12.92		
8/9/12	8:30	745	0.022	98	46	0.017976328	15.23		
• 8/9/12	9:00	751	0.022	112	46	0.027578612	14.83		
8/9/12	9:30	748	0.022	119	47	0.034726589	14.49		
8/9/12	10:00	743	0.022	123	47	0.039047480	14.23		
8/9/12	10:30	755	0.022	127	48	0.044861487	14.27		
8/9/12	11:00	752	0.022	136	48	0.058112248	13.80		
8/9/12	11:30	758	0.022	144	48	0.072941929	13.51		
8/9/12	12:00	756	0.022	146	48	0.077185306	13.37		
8/9/12	12:30	763	0.022	148	48	0.081669427	13.39		
8/9/12	1:00	760	0.022	149	49	0.085998502	13.25		
8/9/12	1:30	766	0.022	149	48	0.084006393	13.38		
8/9/12	2:00	763	0.022	149	48	0.084006393	13.33		
8/9/12	2:30	768	0.022	149	48	0.084006393	13.42		
8/9/12	3:00	769	0.022	149	48	0.084006393	13.44		
8/9/12	3:30	771	0.022	149	48	0.084006393	13.47		
Averages		749.19	0.022	133.50	47.56	0.060852793	12.961		

Site:

Tisdale's Quick Stop

**UST Permit #: 18686** 

	Calculations - Pollutant Mass Removal in pounds									
Marg. Elap. Time	Elapsed Time (min)	Flow (DSCFM) (Qstd)	PPM measured (ppm)	K (#C- gas)	PPMg	Cg:m (mg/dsm^3)	Cg (lb/dscf)	PMRg (lb/hr)	PMR	
0	, ,	0.00	<b>1</b>						0.000	
30	30	12.92	263	1	263	1398.59	0.000087314	0.068	0.034	
30	60	15.23	394	1	394	2095.22	0.000130805	0.120	0.060	
30	90	14.83	372	1	372	1978.23	0.000123501	0.110	0.055	
30	120	14.49	355	1	355	1887.83	0.000117857	0.102	0.051	
30	150	14.23	350	1	350	1861.24	0.000116197	0.099	0.050	
30	180	14.27	347	1	347	1845.28	0.000115201	0.099	0.049	
30	210	13.80	323	1	323	1717.66	0.000107233	0.089	0.044	
30	240	13.51	301	1	301	1600.66	0.000099929	0.081	0.041	
30	270	13.37	. 296	1	296	1574.08	0.000098270	0.079	0.039	
30	300	13.39	291	1	291	1547.49	0.000096610	0.078	0.039	
30	330	13.25	284	1	284	1510.26	0.000094286	0.075	0.037	
30	360	13.38	278	1	278	1478.35	0.000092294	0.074	0.037	
30	390	13.33	269	1	269	1430.49	0.000089306	0.071	0.036	
30	420	13.42	266	1_	266	1414.54	0.000088310	0.071	0.036	
30	450	13.44	259	1	259	1377.32	0.000085986	0.069	0.035	
30	480	13.47	254	1	254	1350.73	0.000084326	0.068	0.034	
Averages		13.77	306.38	1.00	306.38	1629.25	0.000101714	0.085	0.042	

Total Emission in pounds:

0.676

#### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K Cg:m = PPMg \* (Mg/K3) Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3 PMRg = Cg \* Qstd \* 60 min/hr PMR = PMRg \* ((T2 -T1)/60)

Qstd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer) Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

K3 = 24.07 dsm<sup>3</sup>/1E6 mg-mole, mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

#### **NON-HAZARDOUS WASTE MANIFEST**

Ple		Quick STOP		Manifest Document No.		2. Page 1	
	1989 THURGOUD MARSUALL B 4. Generator's Phono ( ) 5. Transporter 1 Company Name HERIG Inc.	8. US EPA ID Number   NCR-000 17981					
	7. Transporter 2 Company Name	8. US EPA ID Number		C. State Trans D. Transporter	<u> </u>	144.4 P.	
	9. Designated Facility Name and Site Address	10. US EPA ID Number		E. State Facili	<del></del>		
	HERVY TAC.			F. Facility's Pi		·	
	HERRY, Inc. 217 N. 701 BYPATS TABOR CITY, NR 28463	NCR-00017981	6		10-657-63	7550	
	11. WASTE DESCRIPTION		12. Co	tainers	13. Total	14. Unit WL/Vol.	
	8		No.	Туре	Quantity	WIT/VOI.	
	Non-Res. Petroleum Cart	et Webn Mil	HZ	VT	678	GAL	
GEN							
Į F			i				
A							
WASTE	d.						
MA	G. Additional Descriptions for Materials Listed Above		_l	H. Handling C	Lodes for Wastes Listed Abo	rve	
20							
ğ	H. T.						
H							
NZ/	15. Special Hending Instructions and Additional Information						
ON-HAZARDOUS							
Ž					T/149		
	<ol> <li>GENERATOR'S CERTIFICATION: I hereby certify that the contents of in proper condition for transport. The materials described on this manife-</li> </ol>	this shipment are fully and accurately describe st are not subject to lederal hazardous waste r	d and are in a egulations.	all respects	· · · · · · · · · · · · · · · · · · ·	Date	
	Printed/Typed Namp	Signature			Mod	***************************************	
F	17. Transporter 1 Acknowledgement of Receipt of Materials					<u>l</u>	
I R		Signature	Pul	1	Mo	Date Day Year	
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RTER	Printed/Typed Name	Signature	***************************************		Мо	Date  Tith Day Year	
F	19. Discrepancy Indication Space						
	20. Facility Owner or Operator, Ceruitoation of receipt of the waste materials	covered by this manifest, except as noted in i	tem 19.	· · · · · · · · · · · · · · · · · · ·		e de la companya de la companya de la companya de la companya de la companya de la companya de la companya de	
T Y	Printed/Typed Nams	Signature 1	14	Pr.		Date th Cay Year	

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#### Geological Resources, Inc.

September 17, 2012

Mr. Jim Martin
South Carolina Department of Health
and Environmental Control
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management





Re:

Aggressive Fluid Vapor Recovery Event

Tisdales Quick Stop

1989 Thurgood Marshall Blvd

Kingstree, Williamsburg County, South Carolina

UST Permit No. 18686 CA No. 4303

#### Dear Mr. Martin:

Geological Resources, Inc. (GRI) has completed the second of four aggressive fluid vapor recovery (AFVR) events at the above referenced site in Kingstree, South Carolina. The AFVR event was conducted on August 29, 2012. A copy of the AFVR Report and an interim invoice are attached. Please contact Scott Ball at (704) 845-4010 with any questions.

Sincerely,

cc:

enclosure

file

2301 Crown Point Executive Drive Suite F Charlotte, NC 28227 Phone: (704) 845-4010 / (888) 870-4133 Fax: (704) 845-4012



## HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Friday, September 14, 2012

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on August 29, 2012. Included is the documentation for the event. The 8 hour event was conducted on monitoring wells MW-1A, MW-3A, and MW-4A.

If you have any questions, please do not hesitate to contact our office.

Sincerely,

Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC August 29, 2012

#### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 08/29/12. The ambient temperature was 72 deg F and weather conditions were partly cloudy. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event. The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### Pollutant Mass Removal

Total weight of 2.638 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### Liquid Disposal

Approximately 600 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

#### **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

# APPENDIX A AFVR FIELD NOTES

## HERR, Inc.

## AFVR – Field Notes

Site Name: TISOALE'S QUIEL STOP Loc	ation: KINBSTREE, SC
AFVR Contractor: HERR, Inc Steve Per	sonnel: GRI - Honach
· · · · · · · · · · · · · · · · · · ·	eral Weather Condition: Part Charly - 72°
Start Time 1: 430 Stop Time 1: 4.30 Start	Time 2: Stop Time 2:
Total volume of water removed during the 8-hour AFVR Event:	600gel
Total volume of product removed during the 8-hour AFVR Event:	•
Product Recovery Rate:	•

Monitoring Well	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft. below TOC)	Estimated volume of water removed during this event	Relevant Observations
MW4A	18.10	18.54	~ ~ ~	18.72	1:00 206	
NW 1A	17.30	18.89		14.26	600 gol	
MW 3A	17.35	179.0		18.37		
				<u> </u>		
	•			•		

# TISOALE'S QUICK STOP - 8/29/12

## **Aggressive Fluid/Vapor Recovery Notes**

	vacuum conversion:	nches of water X 0.07355 = inches	of mercury)
--	--------------------	-----------------------------------	-------------

•	MW- 4A	MW- / >	mw. 3A	Stinger Placement				
8:30 Time	Vacuum at Targeted Well (in. Hg)		Vacuum at Targeted Well (in. Hg)	Stinger Depth	Product Depth	Water Level	Notes	
44	200	20	2	15.0	18.10	18.54	/18.72	
IA	20	20/	20	19,2	17.30	18.89	1 19.24	
<i>)</i>	20	100	20	18'2"	カ35	1750	1834	
	- AS	20	No.					
9.30	ခ်ဝ	20	20					
10,30	26	20	20					
11.30	٦º	20	. 20					
12.30	70	20	80					
1.30	20	20	20					
2.30	20	80	70					
3.30	90	20	20					
4.30	20	20	00					
							Ť	
			•					
•								

Vacuum at Pump: QQ' & Pup

# TISOALES QUICR STOP - 8/28/12

## Aggressive Fluid/Vapor Recovery Notes

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

	vacuum conversion: (inches of water X 0.07355 = inc						лгу)	
	M	w. 2	M	w. 8	M	w-	M	<b>W</b> -
6.3⊃ Time	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)
	17.92		17.80/18.2					
		<i>D</i>						
930		0		.5				
1430		0		.8				
11.30		0		.5				
12.30		0		. 5 . 5 . 5	_			
130		0						
2,30		0		·5 ·5				
330		O		·5				
4.30	17.92	. <i>O</i>	1820	.5				
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# TISDALE'S QUICK STOP- 8/29/12

# Aggressive Fluid/Vapor Recovery Notes

Time	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / mln.)	Temperature (Celsius)	Relative Humidity (%)	Other
5.,90	672	434	14.20	84	43	
930	647	408	1434	98	63	_
10.80	428	384	1451	117	<i>ل</i> ع	
加多	614	374	1466	124	63	
11-80	594	371	1482	134	63	
1130	591	364	1496	137	63	
12.00	586	552	1489	138	<b>43</b>	
12.30	585	548	1807	138	43	
). 00	581	5 45	1824	138	43	
1.30	577	542	1548	138	13	•
2.00	575	539	1559	138	42	
2.30	571	536	1621	138	62	
3.06	544	529	1637	139	62	
3.30	552	503	1639	139	62	
11.00	547	49.2	1642	138	62	
4.30	542	787	1648	138	62	
			-			•

# $\frac{\text{APPENDIX B}}{\text{POLLUTANT MASS REMOVAL DATA SHEETS}}$

Site:

Tisdale's Quick Stop 18686

UST Permit #:

	Calculations - Flow at DSCFM										
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)				
8/29/12	8:30										
8/29/12	9:00	1420	0.022	84	63	0.015844277	29.84				
8/29/12	9:30	1434	0.022	98	63	0.024885550	29.11				
8/29/12	10:00	1451	0.022	117	63	0.044679685	27.91				
8/29/12	10:30	1466	0.022	126	63	0.058477208	27.36				
8/29/12	11:00	1482	0.022	134	63	0.074075829	26.83				
8/29/12	11:30	1496	0.022	137	63	0.080910349	26.75				
8/29/12	12:00	1489	0.022	138	63	0.083323369	26.51				
8/29/12	12:30	1507	0.022	138	63	0.083323369	26.83				
8/29/12	1:00	1526	0.022	138	63	0.083323369	. 27.17				
8/29/12	1:30	1548	0.022	138	63	0.083323369	27.56				
8/29/12	2:00	1559	0.022	138	62	0.081826783	27.81				
8/29/12	2:30	1621	0.022	138	62	0.081826783	28.91				
8/29/12	3:00	1637	0.022	139	62	0.084260915	29.07				
8/29/12	3:30	1639	0.022	139	62	0.084260915	29.11				
8/29/12	4:00	1642	0.022	138	62	0.081826783	29.29				
8/29/12	4:30	1648	0.022	138	62	0.081826783	29.39				
Averages		1535.31	0.022	129.88	62.63	0.070499708	28.091				

Site: Tisdale's Quick Stop UST Permit #: 18686

	<b>.</b>	Calcul	<u>ations -</u> Po	llutant	Mass R	emoval in p	ounds		
Marg. Elap.	Elapsed Time	Flow (DSCFM)	PPM measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR
Time	(min)	(Qstd)	· (ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)
0	0			-					
30	30	29.84	672	1	672	3573.58	0.000223098	0.399	0.20
30	60	29.11	647	1	647	3440.63	0.000214799	0.375	0.18
30	90	27.91	628	1	628	3339.59	0.000208491	0.349	0.17
30	120	27.36	614	1	614	3265.14	0.000203843	0.335	0.16
30	150	26.83	596	1	596	3169.42	0.000197867	0.319	0.15
30	180	26.75	591	1	591	3142.83	0.000196207	0.315	0.15
30	210	26.51	586	1	586	3116.24	0.000194547	0.309	0.15
30	240	26.83	585	1	585	3110.93	0.000194215	0.313	0.15
30	270	27.17	581	1	581	3089.66	0.000192887	0.314	0.15
30	300	27.56	577	1	577	3068.38	0.000191559	0.317	0.15
30	330	27.81	· 575	1	575	3057.75	0.000190895	0.318	0.15
30	360	28.91	571	1	571	3036.48	0.000189567	0.329	0.16
30	390	29.07	566	1	566	3009.89	0.000187907	0.328	0.16
30	420	29.11	552	1	552	2935.44	0.000183259	0.320	0.16
30	450	29.29	547	1	547	2908.85	0.000181599	0.319	0.16
30	480	29.39	542	1	542	2882.26	0.000179939	0.317	0.15
Averages	•	28.09	589.38	1.00	589.38	3134.19	0.000195668	0.330	0.18
						Total Er	mission in pound	is:	2.63

#### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K Cg;m = PPMg \* (Mg/K3) Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3 PMRg = Cg \* Qstd \* 60 min/hr PMR = PMRg \* ((T2-T1)/60)

Ostd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer) Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

K3 = 24.07 dsm<sup>3</sup>/1E6 mg-mole, mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

## **NON-HAZARDOUS WASTE MANIFEST**

É	Juan	print or type (Form designed for use on elite (12 pitch) typewriter)	M. A.L.				<u> </u>
		NON-HAZARDOUS 1. Generator's US EPAI WASTE MANIFEST	IU 190.	:	Manifest Document No	).	2. Page 1
	t	3. Generator's Name and Malling Address					Q1
		TISDALE'S BULGE STOP					
ľ	4	KINGSTREE, SC	•				
		4. Generator's Phone ( )					
ŀ	4		6. US EPA ID Number		A. State Tran	_ <del></del>	
	$\mathbf{A}$	HELL Inc. 7. Transporter 2 Company Namo	NCR-000139816		B. Transporte	r 1 Phone 910 r 65	7-(3/5
		7. Transporter 2 Company Namo	8. US EPA ID Number		C. State Tran		
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#### Geological Resources, Inc.

October 4, 2012

Mr. Jim Martin
South Carolina Department of Health
and Environmental Control
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management





Re:

Aggressive Fluid Vapor Recovery Event

Tisdales Quick Stop

1989 Thurgood Marshall Blvd

Kingstree, Williamsburg County, South Carolina

UST Permit No. 18686

CA No. 43031

Dear Mr. Martin:

Geological Resources, Inc. (GRI) has completed the third of four aggressive fluid vapor recovery (AFVR) events at the above referenced site in Kingstree, South Carolina. The AFVR event was conducted on September 20, 2012. A copy of the AFVR Report and an interim invoice are attached. Please contact Scott Ball at (704) 845-4010 with any questions.

enclosure

cc: file



#### HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Wednesday, October 3, 2012

Scott Ball
Geological Resources, Inc.
2301-F Crown Point Executive Dr.
Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on September 20, 2012, Included is the documentation for the event. The 8 hour event was conducted on monitoring well MW-3.

If you have any questions, please do not hesitate to contact our office.

Sincerely,

Marc Cox

Serving North & South Carolina

HERR Project Manager

Tisdale's Quick Stop Kingstree, SC September 20, 2012

#### <u>AFVR</u>

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 09/20/12. The ambient temperature was 68 deg F and weather conditions were fair. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event.

The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### **Pollutant Mass Removal**

Total weight of 0.354 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### **Liquid Disposal**

Approximately 528 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

#### **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

# APPENDIX A AFVR FIELD NOTES

# HERR, Inc.

## AFVR - Field Notes

Site Name: TISDACE'S QUICK STOP	Location: KINGSTREE, 5c.	
AFVR Contractor: HERR, In - Steve	Personnel: GRI - Russell	
Date: 9/24//2 Ambient Air Temperature and	d General Weather Condition: 68° Fair	
Start Time 1: 7.30 Stop Time 1: 3.30 S	Start Time 2: Stop Time 2:	
Total volume of water removed during the 8-hour AFVR Event:_	528 gce	
Total volume of product removed during the 8-hour AFVR Event:	:Steen	
Product Recovery Rate:		

Monitoring Well	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft. below TOC)	Estimated volume of water removed during this event	Relevant Observations
MW3	17.59	17.65		18.3.1		
					528 gd	
					2009	
•	<u> </u>		•			•
					•	

# TISOALE'S QUICK STOP - 9/20/12

## **Aggressive Fluid/Vapor Recovery Notes**

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

		MW-	MW-	Stinger Placement			
7.30 Time	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Stinger Depth	Product Depth	Water Level	Notes
Mw3					17.59	1765	
8.30	22	٠					
9.30	22						
1630	22						
11.30	22		•				
13.30	22						
1.30	9.2						
270	22						
334	22				~~	18.31	
							•
		•					
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			•				
•							
							•

Vacuum at Pump: 34 @ Ruys

# TISDACES QUICK STIP - 9/20/12

## **Aggressive Fluid/Vapor Recovery Notes**

vacuum conversion: (inches of water X 0.07355 = inches of mercury) MW- / MW-MW-MW-Vacuum Vacuum Vacuum Vacuum Water Influence Water Influence Influence Water Influence Water 230 Level at Well at Well at Well at Well Level Level Level Time (in. Hg) (in. Hg) (in. Hg) (in. Hg) 17.68 8.30 930 10.30 11.30 17.70 1.30 2.30 22 3.30 17.750

24 PMP

# TISOACE'S QUICK STOP - 9/20/12

# **Aggressive Fluid/Vapor Recovery Notes**

7.30 Time	PID <u>at stack</u> (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Calcius)	Relative Humidity (%)	Other
8.00	297		357	88	54	
8.30	315		362	97	5-4	
9.100	308		358	106	5 4	
9.30	310		362	110	54	
10.00	3/2		364	121	51	
1030	309		345	128	54	
11.00	314		368	132	54	•
11.30	320		37/	132	54	
12.00	321 .		375	/32	51	<u> </u>
17.30	324		378	135	54	
1:00	325		379	135	54	•
1.30	323		382	135	54	
2.60	321		385	135	5-4	
2.30	319		383	135	5~4	
3.00	315		387	133	5-4	
J:39	314	•	390	133	57	
					,	
					. —	
•						
	•					•

# APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site:

Tisdale's Quick Stop 18686

UST Permit #:

Calculations - Flow at DSCFM									
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)		
9/20/12	7:30								
9/20/12	8:00	357	0.022	88	54	0.015418351	7.45		
9/20/12	8:30	362	0.022	99	54	0.021884450	7.36		
9/20/12	9:00	358	· 0.022	106	54	0.027182906	7.15		
9/20/12	9:30	362	0.022	110	54	0.030710228	7.15		
9/20/12	10:00	364	0.022	121	54	0.042690257	6.97		
9/20/12	10:30	365	0.022	128	54	0.052438654	6.83		
9/20/12	11:00	368	0.022	132	54	0.058914643	6.80		
9/20/12	11:30	371	0.022	132	54	0.058914643	6.85		
9/20/12	12:00	· 375	0.022	132	54	0.058914643	6.92		
9/20/12	12:30	378	0.022	135	54	0.064264287	6.91		
9/20/12	1:00	379	0.022	135	54	0.064264287	6.92		
9/20/12	1:30	382	0.022	135	54	0.064264287	6.98		
9/20/12	2:00	385	0.022	135	54	0.064264287	7.03		
9/20/12	2:30	383	0.022	135	54	0.064264287	7.00		
9/20/12	3:00	387	· 0.022	133	54	0.060648668	7.12		
9/20/12	3:30	390	0.022	133	54	0.060648668	7.18		
Averages		372.88	0.022	124,31	54.00	0.050605471	7.038		

Site:

Tisdale's

**UST Permit #: 18686** 

Calculations - Pollutant Mass Removal in pounds									
Marg. Elap. Time	Elapsed Time (min)	Flow (DSCFM) (Qstd)	PPM measured (ppm)	K (#C- gas)	PPMg	Cg:m (mg/dsm^3)	Cg (lb/dscf)	PMRg (lb/hr)	PMR (lb)
0	0								
30	30	7.45	297	1	297	1579.39	0.000098602	0.044	0.02
30	60	7.36	315	1	315	1675.11	0.000104577	0.046	0.02
30	90	7.15	308	1	308	1637.89	0.000102253	0.044	0.02
· 30	120	7.15	310	1	310	1648.53	0.000102917	0.044	0.02
30	150	6.97	312	1	312	1659.16	0.000103581	0.043	0.02
30	180	6.83	309	1	309	1643.21	0.000102585	0.042	0.02
30	210	6.80	314	1	314	1669.80	0.000104245	0.043	0.02
30	240	6.85	320	1	320	· 1701.70	0.000106237	0.044	0.02
30	270	6.92	321	1	321	1707.02	0.000106569	0.044	0.02
30	300	6.91	324	1	324	1722.97	0.000107565	0.045	0.02
30	330	6.92	325	1	325	1728.29	0.000107897	0.045	0.02
30	360	6.98	323	1	323	1717.66	0.000107233	0.045	0.02
30	390	7.03	321	1	321	1707.02	0.000106569	0.045	0.02
30	420	7.00	319	1	319	1696.39	0.000105905	0.044	0.02
30	450	7.12	315	1	315	1675.11	0.000104577	0.045	0.02
- 30	480	7.18	316	1	316	1680.43	0.000104909	0.045	0.02
Averages		7.04	315.56	1.00	315.56	1678.11	0.000104764	0.044	0.02

Total Emission in pounds:

0.354

#### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K Cg:m = PPMg \* (Mg/K3) Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3 PMRg = Cg \* Qstd \* 60 min/hr PMR = PMRg \* ((T2 -T1)/60)

Ostd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer) Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

K3 = 24.07 dsm<sup>3</sup>/1E6 mg-mole, mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

# NON-HAZARDOUS WASTE

#### **NON-HAZARDOUS WASTE MANIFEST**

Pleas	e print or type (Form designed for use on elite (1	2 pitch) typewriter)									
	NON-HAZARDOUS WASTE MANIFEST	Manifest Document No.		2. Page 1 of							
Н	3. Generator's Name and Mailing Address TISDACEY QUICK										
	KINGSTREED JC 4. Generator's Phone ( )	·									
	5. Transporter 1 Company Name	A. State Transporter's ID									
	HERG Inc. 7. Transporter 2 Company Name		NCR-0001398	16	B. Transporter 1 Phone 9/0 - 657-6399						
	7. Transporter 2 Company Name	C. State Trans		· · · · · · · · · · · · · · · · · · ·							
		D. Transporte	r 2 Phone								
	9. Designated Facility Name and Site Address		E. State Facility's ID								
	307 5. MAULTSBY WHITELIUS, NC	52 2,9472	•		F. Facility's Phone 9/0-(523-5012						
	11, WASTE DESCRIPTION	2011		12. Co	Containers 13. 14.						
	<b>a.</b>		. The sounds of the sound of th	No.	Туре	13. Total Ouantity	Unit WL/Vol.				
6	Non-Reg. Petrol	eun Co	ntat Wor Mr	H2	77	528	GAL				
GWZER	<b>.</b>			000000000000000000000000000000000000000			:				
R	C.										
A T O R	d.						is it				
ſ	:										
	G. Additional Descriptions for Materials Listed Above	<u> </u>			H. Handling Codes for Wastes Listed Above						
	15. Special Handling Instructions and Additional Information										
	16. GENERATOR'S CERTIFICATION; I hereby cert in proper condition for transport. The materials of	lify that the contents of this escribed on this manifest a	s shipment are fully and accurately described are not subject to lederal hazardous waste re	and are in gulations.	all respects	1000 / 12 e , 7 : // - 7					
N	P. C. L. C.	-					Date				
	Printed/Typed Name		Signature			Mor	nth Day Year				
I	17. Transporter 1 Acknowledgement of Receipt of M	aleriais					Date				
TRAZOPORT-MR	Printed Specificane Ve Birth	bank	Signature	烈	M	Mor					
Įģ	18. Transporter 2 Acknowledgement of Receipt of M	atorials					Date				
FR	Printed Typed Name		Signature			Mor	nth Day Year				
FAC	19. Discrepancy Indication Space										
Ļ	20. Facility Owner or Operator, Certification of receip	ot of the waste materials co	overed by this manifest, except as noted in it	em 19			Date				
Ţ	Printed Daned Name Kyan Cox		Signature	- (	20	· 9	" pa /r				
F-14	60 2002 LAREL MASTER 9 (ARM) #21-5876 warm in	halmaster oven		_&	_ (	erse*	Day 2005				





#### Geological Resources, Inc.

October 26, 2012

Mr. Jim Martin, Hydrogeologist South Carolina Department of Health and Environmental Control 2600 Bull Street Columbia, South Carolina 29201-1708

Re: AFVR Report

Tisdales Quick Stop 1989 Thurgood Marshall Blvd. Kingstree, Williamsburg County

UST Permit #: 18686

CA #: 43031

#### Dear Mr. Martin:

This report presents the results of four aggressive fluid-vapor recovery (AFVR) activities conducted on August 9, August 29, September 20, and October 11, 2012 at the above referenced site. The activities were conducted in accordance with the requirements outlined in correspondence from the SCDHEC dated July 13, 2012 and addressed to Mr. Marty Easler. The purpose of the activities was to remove residual free-phase product and reduce dissolved phase contaminant concentrations in monitoring wells MW-1A, MW-3, MW-3A and MW-4A. The following Figures, Tables and Appendix have been included:

Figure 1: Site Location Map

Figure 2: Site Map

Table 1A: AFVR Event Chronology – August 9, 2012
Table 1B: AFVR Event Chronology – August 29, 2012
Table 1C: AFVR Event Chronology – September 20, 2012
Table 1D: AFVR Event Chronology – October 11, 2012
Table 2: Summary of Monitoring Well Gauging Data

Appendix A: AFVR Reports, Calculations, Disposal Manifests

2301 Crown Point Executive Drive Suite F Charlotte, NC 28227 Phone: (704) 845-4010 / (888) 870-4133 Fax: (704) 845-4012

UST 19 kch Creting

Tisdales Quick Stop AFVR Report UST Permit # 18686

GRI personnel and the AFVR contractor, Hazmat Emergency Response and Remediation, Inc. (HERR) arrived on-site on August 9, 2012 for the first of four AFVR events. The first event was conducted on monitoring well MW-3. General weather conditions were sunny with an ambient air temperature of approximately 78°F at the time of system start-up. No free product was detected in MW-3 prior to system startup. AFVR activities were conducted for eight (8) hours on MW-3 using a vacuum truck with a maximum vacuum rating of 25 in. Hg and a capacity of 325 cubic feet per minute. During the course of the event, the vacuum at the well remained steady at 20 in. Hg throughout the day. Please note that the vacuum truck was equipped with a charcoal-activated filter for off-gas treatment of vapor phase hydrocarbons. A total of 678 gallons of liquid were removed during the event. No measurable free product was present in MW-3 at the conclusion of the event. Based on data collected during the AFVR event, an estimated total of 0.676 pounds (approximately 0.108 gallons) of vapor phase hydrocarbons were calculated to have been removed during the event.

GRI personnel and HERR arrived on-site on August 29, 2012 for the second of four AFVR events. The second event was conducted on monitoring wells MW-1A, MW-3A and MW-4A. General weather conditions were partly cloudy with an ambient air temperature of approximately 72°F at the time of system start-up. Approximately 1.59, 0.55 and 0.44 feet of free product were measured in MW-1A, MW-3A and MW-4A, respectively, prior to system startup. AFVR activities were conducted for eight (8) hours on MW-1A, MW-3A and MW-4A using a vacuum truck with a maximum vacuum rating of 25 in. Hg and a capacity of 325 cubic feet per minute. During the course of the event, the vacuum at the wells remained steady at 20 in. Hg throughout the day. Please note that the vacuum truck was equipped with a charcoal-activated filter for off-gas treatment of vapor phase hydrocarbons. A total of 600 gallons of liquid were removed during the event however, there was no measureable amount of liquid phase free product. No measurable free product was present in MW-1A, MW-3A or MW-4A at the conclusion of the event. Based on data collected during the AFVR event, an estimated total of 2.638 pounds (approximately 0.422 gallons) of vapor phase hydrocarbons were calculated to have been removed during the event.

GRI personnel and HERR arrived on-site on September 20, 2012 for the third of four AFVR events. The third event was conducted on monitoring well MW-3. General weather conditions were fair with an ambient air temperature of approximately 68°F at the time of system start-up. Approximately 0.06 feet of free product was measured in MW-3 prior to system startup. AFVR activities were conducted for eight (8) hours on MW-3 using a vacuum truck with a maximum vacuum rating of 25 in. Hg and a capacity of 325 cubic feet per minute. During the course of the event, the vacuum at the well remained steady at 22 in. Hg throughout the day. Please note that the vacuum truck was equipped with a charcoal-activated filter for off-gas treatment of vapor phase hydrocarbons. A total of 528 gallons of liquid were removed during the event however, there was no measureable amount of liquid phase free product. Product sheen was visible on the extracted liquid. No measurable free product was present in MW-3 at the conclusion of the event. Based on data collected during the AFVR event, an estimated total of 0.354 pounds (approximately 0.057 gallons) of vapor phase hydrocarbons were calculated to have been removed during the event.

GRI personnel and HERR arrived on-site on October 11, 2012 for the fourth of four AFVR events. The fourth event was conducted on monitoring wells MW-1A, MW-2A, MW-3A and MW-4A. General weather conditions were sunny with an ambient air temperature of approximately 56°F at the time of system start-up. Free product thicknesses of 1.05, 1.06, 0.78 and 0.09 feet were measured in MW-1A, MW-2A, MW-3A and MW-4A, respectively, prior to system startup. AFVR activities were conducted for eight (8) hours on MW-1A, MW-2A, MW-3A and MW-4A using a vacuum truck with a maximum vacuum rating of 25 in. Hg and a capacity of 325 cubic feet per minute. During the course of the event, the vacuum at the wells remained steady at 22 in. Hg throughout the day. Please note that the vacuum truck was equipped with a charcoal-activated filter for off-gas treatment of vapor phase hydrocarbons. A total of 647 gallons of

Tisdales Quick Stop AFVR Report UST Permit # 18686

liquid were removed during the event however, there was no measureable amount of liquid phase free product. Product sheen was visible on the extracted liquid. No measurable free product was present in MW-1A, MW-2A, MW-3A or MW-4A at the conclusion of the event. Based on data collected during the AFVR event, an estimated total of 2.052 pounds (approximately 0.328 gallons) of vapor phase hydrocarbons were calculated to have been removed during the event.

Based on this information, it appears that the AFVR events were successful in removing free product from the monitoring wells at the site. GRI recommends returning to the site in December 2012 to gauge and/or sample the monitoring wells addressed during the last four AFVR events.

If you have any comments or questions concerning this project, please do not hesitate to contact the undersigned at (704) 845-4010.

Sincerely,

Scott Ball

Project M

cc:

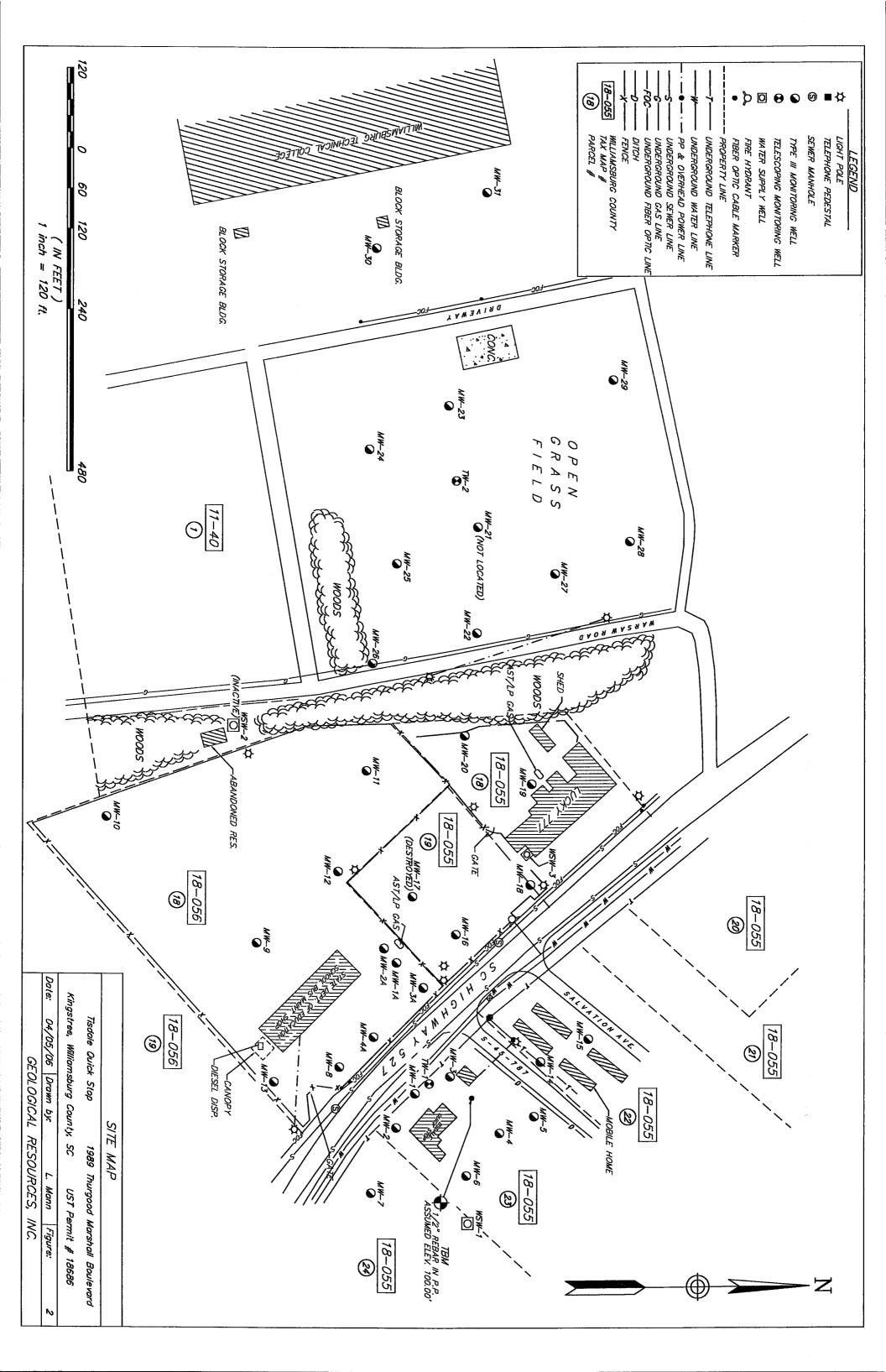
enclosures

Mr. Marty Easler

file



Name: KINGSTREE Date: 2/11/2009 Scale: 1 inch equals 2000 feet



# TABLE 1A AFVR EVENT CHRONOLOGY AUGUST 9, 2012 TISDALE'S QUICK STOP UST PERMIT #18686

Task	Hours	Personnel	Equipment	Company
Gauge Liquid Levels in MW-3	7:15	Vacuum Truck Operator	Interface Probe	HERR
Vacuum Truck Setup for Fluid Removal in MW-3	7:15 - 7:30	Vacuum Truck Operator	Vacuum Truck	HERR
Supervise Startup of AFVR	7:55 - 8:34	GRI	NA	GRI
Fluid Recovery in MW-3	7:30-15:30	Vacuum Truck Operator	Vacuum Truck	HERR
Gauge Liquid Level in MW-3	15:45	Vacuum Truck Operator	Interface Probe	HERR

# TABLE 1B AFVR EVENT CHRONOLOGY AUGUST 29, 2012 TISDALE'S QUICK STOP UST PERMIT #18686

Task	Hours	Personnel	Equipment	Company
Gauge Liquid Levels in MW-1A, MW-3A, MW-4A	8:15	GRI	Interface Probe	GRI
Vacuum Truck Setup for Fluid Removal in MW-1A, MW-3A, MW- 4A	8:15 - 8:30	Vacuum Truck Operator	Vacuum Truck	HERR
Supervise Startup of AFVR	7:37 - 9:02	GRI	NA	GRI
Fluid Recovery in MW-1A, MW-3A, MW-4A	8:30 - 16:30	Vacuum Truck Operator	Vacuum Truck	HERR
Gauge Liquid Level in MW-1A, MW-3A, MW-4A	16:45	Vacuum Truck Operator	Interface Probe	HERR

# TABLE 1C AFVR EVENT CHRONOLOGY SEPTEMBER 20, 2012 TISDALE'S QUICK STOP UST PERMIT #18686

Task	Hours	Personnel	Equipment	Company
Gauge Liquid Levels in MW-3	7:15	GRI	Interface Probe	GRI
Vacuum Truck Setup for Fluid Removal in MW-3	7:15 - 7:30 Vacuum Truck Operator		Vacuum Truck	HERR
Supervise Startup of AFVR	7:15 - 9:00	GRI	NA	GRI
Fluid Recovery in MW-3	7:30 - 15:30	Vacuum Truck Operator	Vacuum Truck	HERR
Gauge Liquid Level in MW-3	15:45	Vacuum Truck Operator	Interface Probe	HERR

# TABLE 1D AFVR EVENT CHRONOLOGY OCTOBER 11, 2012 TISDALE'S QUICK STOP UST PERMIT #18686

Task	Hours	Personnel	Equipment	Company
Gauge Liquid Levels in MW-1A, MW-2A, MW-3A, MW-4A	9:00	GRI	Interface Probe	GRI
Vacuum Truck Setup for Fluid Removal in MW-1A, MW-2A, MW-3A, MW-4A	9:00 - 9:15	Vacuum Truck Operator	Vacuum Truck	HERR
Supervise Startup of AFVR	7:48 - 9:46	GRI	NA	GRI
Fluid Recovery in MW-1A, MW-2A, MW-3A, MW-4A	9:15 - 17:15	Vacuum Truck Operator	Vacuum Truck	HERR
Gauge Liquid Level in MW-1A, MW-2A, MW-3A, MW-4A	17:30	Vacuum Truck Operator	Interface Probe	HERR

#### TABLE 2 SUMMARY OF MONITORING WELL GAUGING DATA TISDALE'S QUICK STOP UST PERMIT #18686

Well No.	Date	Time	Depth to Free Product	Depth to Ground Water	Free Product Thickness
MW-3	08/09/12	7:15		18.05	
101 00 - 3	08/09/12	15:45		19.31	
MW-3	09/20/12	7:15	17.59	17.65	0.06
147 44 -2	09/20/12	15:45		18.31	
MW-1A	08/29/12	8:15	17.30	18.89	1.59
WW-IA	08/29/12	16:45		19.26	
MW-1A	10/11/12	9:00	16.78	17.83	1.05
WW-IA	10/11/12	17:30		18.39	
MW-2A	10/11/12	9:00	16.93	17.99	1.06
IVI VV -ZA		17:30		18.60	
MW-3A	08/29/12	8:15	17.35	17.90	0.55
IVI W-5A	08/29/12	16:45		18.34	
MW-3A	10/11/10	9:00	16.75	17.53	0.78
IVI W-5A	10/11/12	17:30		17.93	
NATIV 4 A	08/20/12	8:15	18.10	18.54	0.44
MW-4A	08/29/12	16:45		18.72	
3437.44	10/11/10	9:00	17.46	17.55	0.09
MW-4A	10/11/12	17:30		18.54	

Note:

• Data reported in feet.

#### APPENDIX A

 ${\bf AFVR}\ {\bf Reports}, {\bf Calculations}, {\bf Disposal}\ {\bf Manifests}$ 



#### HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Thursday, Aug 16, 2012

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on August 9, 2012. Included is the documentation for the event. The 8 hour event was conducted on monitoring well MW-3. If you have any questions, please do not hesitate to contact our office.

Sincerely.

Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC August 9, 2012

#### <u>AFVR</u>

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 08/09/12. The ambient temperature was 78 deg F and weather conditions were sunny/fair. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event. The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### Pollutant Mass Removal

Total weight of 0.676 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### Liquid Disposal

Approximately 678 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

#### **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

### APPENDIX A AFVR FIELD NOTES

#### HERR, Inc.

#### AFVR - Field Notes

Site Name: Tradole 5	Location: Kuga Tree JC
AFVR Contractor: HERR INC - Steve	Personnel: Gri -
Date: 9-9-12 Ambient Air Temperature	and General Weather Condition: 78° Sury-Faci
Start Time 1: 7.35 Stop Time 1: 3-30	Start Time 2: Stop Time 2:
Total volume of water removed during the 8-hour AFVR Ever	nt: <u>678 90</u> e
Total volume of product removed during the 8-hour AFVR Ev	/ent:
Product Recovery Rate:	

Monitoring Well	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft. below TOC)	Estimated volume of water removed during this event	Relevant Observations
11113		19.05	- 6	/9.3/	Shap	•
					178 2	
		/			0	
			. Habbleson			

#### TISDALES - 8/9/12

#### **Aggressive Fluid/Vapor Recovery Notes**

vacuum conversion: (inches of water X 0.07355 = inches of mercury) MW-3 MW-MW-Stinger Placement Vacuum at Vacuum at Vacuum at **Targeted** Targeted **Targeted** Stinger Product Water 7.70 Well Well Well Depth Depth Level Notes Time (in. Hg) (in. Hg) (in. Hg) 1995 191 18.05 Mw3 ---8.30 20 20 9.30 20 10.30 11.30 20 1230 20 1.30 20 2.31 20 3.30 20 19.31

Vacuum at Pump: 22' Purp

### TISDALE'S - 8/9/12

#### **Aggressive Fluid/Vapor Recovery Notes**

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

İ	vacuum conversion. (inches of water x 0.07355 = Inches t					one or mero	<i></i>	
	M	W- (	M	W	M	W-	M	W
7.30 Time 8:30 7:30 10:30	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)
8.30	18.4	0						
9.30	· · · · · · · · · · · · · · · · · · ·	0						
10.30		0						•
11.30		0						
12.30		0						
1:30		0					_	
2:90		0						
3:30	18.4	0						
			-					
							·	
			-					
					-			
					-			

### TISOALES - 8/9/12

#### Aggressive Fluid/Vapor Recovery Notes

Time	PID <u>at stack</u> (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature	Relative Humidity (%)	Other
8.00	263	155	6/9	81	46	
\$,76	294	276	745	78	46	
9:00	372	257	751	1/2	46	
9:30	355	237	748	1/7	47	
10:00	350	231	743	/23	47	
10:31	347	224	755	127	48	
11:00	323	208	752	134	48	
11:30	301	(73	758	144	48	
12:00	296	168	756	146	48	
12:30	291	15L	763	148	48	
1:04	284	149	760	149	49	
/:38	278	142	766	149	48	•
2:00	269	136	763	149	48	
5:3.	266	124	768	149	43	
3:00	259	128	769	149	48	
3:3.	254	123.	771	149	48	
						· · · · · · · · · · · · · · · · · · ·
						· · · · · · · · · · · · · · · · · · ·
			<del></del>			<del></del> -

## APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site:

Tisdale's Quick Stop 18686

UST Permit #:

			Calculat	ions - Flow a	t DSCFM		
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rei. Humidity	Water Vapor (%)	Qstd (flow)
8/9/12	7:30		·				0.00
8/9/12	8:00	619	0.022	89	46	0.013514822	12.92
8/9/12	8:30	745	0.022	98	46	0.017976328	15.23
• 8/9/12	9:00	751	0.022	112	46	0.027578612	14.83
8/9/12	9:30	748	0.022	119	47	0.034726589	14.49
8/9/12	10:00	743	0.022	123	47	0.039047480	14.23
8/9/12	10:30	755	0.022	127	48	0.044861487	14.27
8/9/12	11:00	752	0.022	136	48	0.058112248	13.80
8/9/12	11:30	758	0.022	144	48	0.072941929	13.51
8/9/12	12:00	756	0.022	146	48	0.077185306	13.37
8/9/12	12:30	763	0.022	148	48	0.081669427	13.39
8/9/12	1:00	760	0.022	149	49	0.085998502	13.25
8/9/12	1:30	766	0.022	149	48	0.084006393	13.38
8/9/12	2:00	763	0.022	149	48	0.084006393	13.33
8/9/12	2:30	768	0.022	149	48	0.084006393	13.42
8/9/12	3:00	769	0.022	149	48	0.084006393	13.44
8/9/12	3:30	771	0.022	149	48	0.084006393	13.47
Averages		749.19	0.022	133.50	47.56	0.060852793	12.961

Site:

Tisdale's Quick Stop

UST Permit #: 18686

		Calcul	ations - Po	llutant	Mass R	emoval in po	ounds		
Marg. Elap.	Elapsed Time	Flow (DSCFM)	PPM measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMF
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)
0	0	0.00							0.000
30	30	12.92	263	1	263	1398.59	0.000087314	0.068	0.03
30	60	15.23	394	1	394	2095.22	0.000130805	0.120	0.06
30	90	14.83	372	1	372	1978.23	0.000123501	0.110	0.05
30	120	14.49	355	1	355	1887.83	0.000117857	0.102	0.05
30	150	14.23	350	1	350	1861.24	0.000116197	0.099	0.05
30	180	14.27	347	1	347	1845.28	0.000115201	0.099	0.04
30	210	13.80	323	1	323	1717.66	0.000107233	0.089	0.04
30	240	13.51	301	1	301	1600.66	0.000099929	0.081	0.04
30	270	13.37	. 296	1	296	1574.08	0.000098270	0.079	0.03
30	300	13.39	291	1	291	1547.49	0.000096610	0.078	0.03
30	330	13.25	284	1	284	1510.26	0.000094286	0.075	0.03
30	360	13.38	278	1	278	1478.35	0.000092294	0.074	0.03
30	390	13.33	269	1	269	1430.49	0.000089306	0.071	0.03
30	420	13.42	266	1	266	1414.54	0.000088310	0.071	0.03
30	450	13.44	259	1	259	1377.32	0.000085986	0.069	0.03
30	480	13.47	254	1	254	1350.73	0.000084326	0.068	0.03
Averages		13.77	306.38	1.00	306.38	1629.25	0.000101714	0.085	0.04

Total Emission in pounds:

0.676

#### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K
Cg:m = PPMg \* (Mg/K3)
Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3
PMRg = Cg \* Qstd \* 60 min/hr
PMR = PMRg \* ((T2-T1)/60)

Qstd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer) Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

 $K3 = 24.07 \text{ dsm}^3/1E6 \text{ mg-mole}$ , mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

## APPENDIX C LIQUID DISPOSAL MANIFEST

#### **NON-HAZARDOUS WASTE MANIFEST**

	asse print or type (Form designed for use on elite (12 pillon) typewriter)  NON-HAZARDOUS 1. Generator's US EI  WASTE MANIFEST	PAID No.	Manifest Document N	<b>b.</b>	Z Page 1
F	3. Generator's Name and Multing Address TISDALE 5	Quick STOP		, typ typ	
	1989 THURSON MARSHALL &	3CUD. KINGSTRE	e re		
	B. Transporter 1 Company Name	6. US EPA ID Number		nsporter's ID	<u> </u>
	HERG Inc.	INCR-00017981			57-6255
	7. Transporter 2 Company Name	8. US EPA ID Number		insporter's ID	Salai.
		1.	D. Transpor	ter 2 Phone	All and the second second
	9. Designated Facility Name and Site Address HERW, TAC -	19. US EPA ID Number	E. Stato Far	cBiy's ID	
	ZIT N. 701 BYPATS		F. Facility's	Phone	
	TABOR CITY, NE 28467	INCR-00017981		910-657-63	755A
	11, WASTE DESCRIPTION		12. Containers	13.	14
			No. Type	Total Ozantity	Mr.Nor Nus
	Non-Rea Petroleum Can	led who Mix	HZ UT	678	GAL
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2					
<b>\$</b>	G. Additional Descriptions for Materials Listed Above		H. Handling	Codes for Wastes Listed Abo	we
ON-HAZARDOUS WASTE	Superior Control of the Control of t		ļ		
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<u>Ö</u>	· · · · · · · · · · · · · · · · · · ·		·		
AF					
Z	15. Special Handling Instructions and Additional Information				
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F	18. GENERATOR'S CERTIFICATION: I hemby certify that the contents of improper condition for transport. The materials described on this mand	I this shipment are fully and accurately describe	d and are in all respects		<u></u>
	m proper contain tor transport. The materials described on this mand	test are not subject to lederal hazardous waste	regulations.		į
	* · · · · · · · · · · · · · · · · · · ·				Date
	Printed/Typed Name	Signature		Mac	uh Day Your
F	17. Transporter 1 Acknowledgement of Receipt of Materials				1 1
ļ	Printed/Typed Name	Signatura (	<u> </u>		Date
1	Steve BivenbArk	2611	and d	Ma G	7 7 12
Š	18. Transporter 2 Acknowledgement of Receipt of Materials				Date
	Printed Typed Name	Signature		Мо	nth Day Year
Æ				······································	
1					
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	20. Facility Owner or Operator, Certification of receipt of the waste material	is covered by this manifest, excent as noted in	tem 19.		- 1 to 1 to 1 to 1 to 1 to 1 to 1 to 1 t
		——— — — — — — — — — — — — — — — — — —			Date
[7	Printed/Typed Name	Signature 1	110	// ///	n Day Year
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#### HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Friday, September 14, 2012

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on August 29, 2012. Included is the documentation for the event. The 8 hour event was conducted on monitoring wells MW-1A, MW-3A, and MW-4A.

If you have any questions, please do not hesitate to contact our office.

Sincerely,

Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC August 29, 2012

#### <u>AFVR</u>

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 08/29/12. The ambient temperature was 72 deg F and weather conditions were partly cloudy. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event. The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### Pollutant Mass Removal

Total weight of 2.638 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### Liquid Disposal

Approximately 600 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

#### **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

## APPENDIX A AFVR FIELD NOTES

#### HERR, Inc.

#### AFVR – Field Notes

Site Name: TISOACE'S QUIEK STOP	Location: KINGSTRE	e,su
AFVR Contractor: HERR, Inc Steve	Personnel: GRI - He	nah
<b>,</b>	and General Weather Condition: Par	
Start Time 1: 430 Stop Time 1: 4.30	Start Time 2:	Stop Time 2:
Total volume of water removed during the 8-hour AFVR Event	1: 600gd	_
Total volume of product removed during the 8-hour AFVR Eve	ent:•	_
Product Recovery Rate:		

Monitoring Well	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft. below TOC)	Estimated volume of water removed during this event	Relevant Observations
MWYA	18.10	18.54	w 2	18.72	1000	<i>i</i>
NW 14	17.30	18.89		17.26	600 900	
MW 3A	17.35	179.0		18.34		
	<u> </u>					
	l	<u></u>		•		

### TISOALES QUICK STOP - 8/29/12

#### Aggressive Fluid/Vapor Recovery Notes

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

•	MW- 4A	MW- 1A	MW- 3A	Stinger Placement				
8.30 Time	Vacuum at Targeted Well (in, Hg)	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Stinger Depth	Product Depth	Water Level	Notes ·	
4A	300	20	2	15.0	18.10	18.54	18.72	
IA	20	20/	20	19,2	17.30	18.89	19.24	
)A	20	20	20	18'2"	カコケ	1750	1834	
	200	20	No.			,		
9.30	Эo	20	20					
10,30	26	20	20					
11.30	20	20	. 20					
12.30	20	20	g-o					
1:30	20	20	20	•				
2.30	20	80	70					
3.30	90	20	20					
4.30	20	20	00					
					1001000			
		•						
							·	
***************************************								

Vacuum at Pump: QQ'' & Pry

#### TISOALES QUICK STOP - 8/28/12

#### **Aggressive Fluid/Vapor Recovery Notes**

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

1	B.		sion. (inches	or water X U.	0/333 = Inc	nes or merci	лгу)	-
	M	W. 2	M	w. 8	WW-		MW-	
ら3つ Time	Water Level	Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)
	17.92		17.80/18.2	7				
9.30		0		-5				
1430		0	·	.5		·		
11.30		0		الما الما الما الما				
12.30		0		.5				
130		0		٠,٢				
2,30		0		.5				
3.30		O		.5				
4.30	17.92	. <i>O</i>	1820	.5				
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### TISDALE'S QUICK STOP- 8/29/12

#### Aggressive Fluid/Vapor Recovery Notes

Time	PID <u>at stack</u> (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Celsius)	Relative Humidity (%)	Other
7.'20	672	434	14.20	84	43	
930	647	408	1\$34	98	63	
10.80	428	384	1451	117	<i>L</i> 3	
加罗	614	374	1466	124	63	
11-80	596	371	1482	134	43	
1+30	591	364	1496	137	63	
12.00	586	552	1489	138	<b>L</b> 3	
12.30	585	548	1807	/38	43	
). 00	581	5 45	1824	138	43	
1.30	577	542	1548	138	63	•
2.00	575	539	1559	138	62	
2.30	571	536	1621	138	62	
3.00	544	529	1637	139	62	
3.30	552	503	1639	139	62	
11.00	547	49.2	1642	138	62	
4.30	542	487	1648	138	62	
					_	
	•					
						•

## APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site:

Tisdale's Quick Stop 18686

UST Permit #:

Calculations - Flow at DSCFM											
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)				
8/29/12	8:30										
8/29/12	9:00	1420	0.022	84	63	0.015844277	29.84				
8/29/12	9:30	1434	. 0.022	98	63	0.024885550	29.11				
8/29/12	10:00	1451	0.022	117	63	0.044679685	27.91				
8/29/12	10:30	1466	0.022	126	63	0.058477208	27.36				
8/29/12	11:00	1482	0.022	134	63	0.074075829	26.83				
8/29/12	11:30	1496	0.022	137	63	0.080910349	26.75				
8/29/12	12:00	1489	0.022	138	63	0.083323369	26.51				
8/29/12	12:30	1507	0.022	138	63	0.083323369	26.83				
8/29/12	1:00	1526	0.022	138	63	0.083323369	. 27.17				
8/29/12	1:30	1548	0.022	138	63	0.083323369	27.56				
8/29/12	2:00	1559	0.022	138	62	0.081826783	27.81				
8/29/12	2:30	1621	0.022	138	62	0.081826783	28.91				
8/29/12	3:00	1637	0.022	139	62	0.084260915	29.07				
8/29/12	3:30	1639	0.022	139	62	0.084260915	29.11				
8/29/12	4:00	1642	0.022	138	62	0.081826783	29.29				
8/29/12	4:30	1648	0.022	138	62	0.081826783	29.39				
Averages		1535.31	0.022	129.88	62,63	0.070499708	28.091				

Site:

Tisdale's Quick Stop

UST Permit #: 18686

Calculations - Pollutant Mass Removal in pounds											
Marg. Elap.	Elapsed Time	Flow (DSCFM)	PPM measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR		
Time	(min)	(Qstd)	· (ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)		
0	0										
30	30	29.84	672	1	672	3573,58	0.000223098	0.399	0.200		
30	60	29.11	647	1	647	3440.63	0.000214799	0.375	0.188		
30	90	27.91	628	1	628	3339.59	0.000208491	0.349	0.175		
30	120	27.36	614	1	614	3265.14	0.000203843	0.335	0.167		
30	150	26.83	596	1	596	3169.42	0.000197867	0.319	0.159		
30	180	26.75	591	1	591	3142.83	0.000196207	0.315	0.157		
30	210	26.51	586	1	586	3116.24	0.000194547	0.309	0.155		
30	240	26.83	585	1	585	3110.93	0.000194215	0.313	0.156		
30	270	27.17	581	1	581	3089.66	0.000192887	0.314	0.157		
30	300	27.56	577	1	577	3068.38	0.000191559	0.317	0.158		
30	330	27.81	575	1	575	3057.75	0.000190895	0.318	0.159		
30	360	28.91	571	1	571	3036.48	0.000189567	0.329	0.164		
30	390	29.07	566	1	566	3009.89	0.000187907	0.328	0.164		
30	420	29.11	552	1	552	2935.44	0.000183259	0.320	0.160		
. 30	450	29.29	547	1	547	2908.85	0.000181599	0.319	0.160		
30	480	29.39	542	1	542	2882.26	0.000179939	0.317	0.159		
Averages		28.09	589.38	1.00	589.38	3134.19	0.000195668	0.330	0.165		

Total Emission in pounds:

2.638

#### Pollutant Mass Removal Calculations

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K Cg;m = PPMg \* (Mg/K3) Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3 PMRg = Cg \* Qstd \* 60 min/hr PMR = PMRg \* ((T2 -T1)/60)

Ostd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer)

Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

 $K3 = 24.07 \text{ dsm}^3/1E6 \text{ mg-mole}$ , mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

## $\frac{\textbf{APPENDIX C}}{\textbf{LIQUID DISPOSAL MANIFEST}}$

#### NON-HAZARDOUS WASTE MANIFEST

17	Wast	print or type (Form designed for uso on elite (12 pitch) typewriter).	1				
		NON-HAZARDOUS  1. Generator's US EPAT WASTE MANIFEST	D No.		Manifest Document No		2 Page 1 of
	1	2. Generator's Name and Masino Address		1	·····	<u></u>	
		TISDALE'S BULCU STOP	•	1			
	1	KIN (STIZE 5, 50 4. Generator's Phone					
I			8. US EPA ID Number		A. State Trans	poder's ID	
1		HERR Jac. 7. Transporter 2 Company Namo	NCR-000139816		B. Transporte	1 Phone 910 - 65	7-(319
	4	7. Transporter 2 Confpany Name	B. US EPA ID Number		C. Stete Trans	aporter's ID	
		9. Designated Facility Name and Site Address	19. US EPA ID Number		D. Transporte E. State Facil	····	
	4	Chs					
		303 5. MAULTERY 57.	•		F. Facility's P		266
	٠	VHITEOUCE MC  11. WASTE DESCRIPTION		12, Cor	Malapre	910-657-6	5 77 14.
				No.	Туре	Total Quantity	Unit Wt./Vol.
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WASTE	J	G. Additional Descriptions for Materials Listed Above		-	H. Handling C	ades for Wastes Listed Above	
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			7/17/17/17/17	7/		7/37/27	
		16. GENERATOR'S CENTIFICATION: I hereby certify that the contents of this in proper condition for transport. The materials described on this manifest a	shipment are fully and accurately described are not subject to federal hazardous waste re	l and are in a	all respects		
	J			•		<del></del>	Date
		PrintedTyped Name	Signature			Month	
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1	Ř.	17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Types Name	Signature 1			Munti	Date
	NS	Steve Bruenbark	SEZK	2	ન	5	127 1/2
	ÖR.	18. Transporter 2 Acknowledgement of Receipt of Materials					Date
	TRANSPORTER	Printed/Typed Name	Signature			Monti	Day Year
İ		19. Discrepancy Indication Space					
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	Ç	28. Facility Owner or Operator; Conflication of receipt of the waste materials or	wered by this manifest, except as noted in it	em 19.			
l	-						Date
ĺ	Ţ	Printed Type I Name	Signature // /	P	Ω	Month	Day Year
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#### HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Wednesday, October 3, 2012

Scott Ball
Geological Resources, Inc.
2301-F Crown Point Executive Dr.
Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on September 20, 2012, Included is the documentation for the event. The 8 hour event was conducted on monitoring well MW-3.

If you have any questions, please do not hesitate to contact our office.

Sincerely,

Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC September 20, 2012

#### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 09/20/12. The ambient temperature was 68 deg F and weather conditions were fair. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event.

The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off

The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### Pollutant Mass Removal

Total weight of 0.354 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### Liquid Disposal

Approximately 528 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

## **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

## APPENDIX A AFVR FIELD NOTES

## HERR, Inc.

### AFVR - Field Notes

Site Name: TISDACE'S QUICK STOP L	Location: KINGSTREE, 5	·
AFVR Contractor: HERR, Inc Steve P	Personnel: GRI - Russe	el .
Date: 9/24/12 Ambient Air Temperature and Ge	eneral Weather Condition: 68°	Fai
Start Time 1: 7:30 Stop Time 1: 3:30 Start	rt Time 2:	Stop Time 2:
Total volume of water removed during the 8-hour AFVR Event:	528 gcc	_
Total volume of product removed during the 8-hour AFVR Event:	Steen	
Product Recovery Rate:		

Monitoring Well	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft. belgw TOC)	Estimated volume of water removed during this event	Relevant Observations
MW3	17.55	17.65		18.3.1		
					528 gel	
					3007	
•			•			•
		•			•	

## TISOAUE'S QUICK STOP - 9/20/12

## **Aggressive Fluid/Vapor Recovery Notes**

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

	7	MW-	MW-		Stinger	Placement	
7.30 Time	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Stinger Depth	Product Depth	Water Level	Notes
MW3					17.59	1745	
8.30	22						
9.30	22					-	
1630	22						
11.30	22			·			
13.30	22						
1.30	9.2						
270	22						
334	22				J. V	18.31	
							•
							•
		•					
				0			
•							

Vacuum at Pump: 24 Rays

## TISDACES QUICK STIP - 9/20/12

### **Aggressive Fluid/Vapor Recovery Notes**

vacuum conversion: (inches of water X 0.07355 = inches of mercury) MW- / MW-MW-MW-Vacuum Vacuum Vacuum Vacuum Water influence Water Influence Water influence Water Influence 230 at Well Level at Well at Well at Well Level Level Level Time (in. Hg) (in. Hg) (in. Hg) (in. Hg) 17.68 8.30 930 10.30 11.30 17.30 1.30 22 2.30 0 3.30 17.750 A SH

2400 PMP

## TISOACE'S QUICK STOP - 9/20/12

## **Aggressive Fluid/Vapor Recovery Notes**

7.30 Time	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature	Relative Humidity (%)	Other
8.00	297		357	88	54	
8.30		•	362	99	57	
9.100	308		358	106	5 4	
9.30	310		362	110	54	
10.00	3/2		364	121	51	
1030	309		345	128	54	
11.00	314		348	132	54	1
11.30	320		371	132	54	•
12.00	321.		375	132	54	
17.30	321		378	135	54	
1:00	325		379	135	54	•
1.30	323		382	135	5-4	
2.60	321		385	135	5°Y	
2.30	319		383	135	5~4	
3:00	315		387	133	5-4	
2:39	316	•	390	133	57	
•						
	•					

## $\frac{\text{APPENDIX B}}{\text{POLLUTANT MASS REMOVAL DATA SHEETS}}$

Site:

Site: Tisdale's Quick Stop UST Permit #: 18686

		<del></del>	Calculat	ions - Flow a	t DSCFM		
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)
9/20/12	7:30						
9/20/12	8:00	357	0.022	88	54	0.015418351	7.45
9/20/12	8:30	362	0.022	99	54	0.021884450	7.36
9/20/12	9:00	358	· 0.022	106	54	0.027182906	7.15
9/20/12	9:30	362	0.022	110	54	0.030710228	7.15
9/20/12	10:00	364	0.022	121	54	0.042690257	6.97
9/20/12	10:30	365	0.022	128	54	0.052438654	6.83
9/20/12	11:00	368	0.022	132	54	0.058914643	6.80
9/20/12	11:30	371	0.022	132	54	0.058914643	6.85
9/20/12	12:00	· 375	0.022	132	54	0.058914643	6.92
9/20/12	12:30	378	0.022	135	54	0.064264287	6.91
9/20/12	1:00	379	0.022	135	54	0.064264287	6.92
9/20/12	1:30	382	0.022	135	54	0.064264287	6.98
9/20/12	2:00	385	0.022	135	54	0.064264287	7.03
9/20/12	2:30	383	0.022	135	54	0.064264287	7.00
9/20/12	3:00	387	. 0.022	133	54	0.060648668	7.12
9/20/12	3:30	390	0.022	133	54	0.060648668	7.18
Averages		372.88	0.022	124.31	54.00	0.050605471	7.038

Site:

Tisdale's

UST Permit #: 18686

H	Calculations - Pollutant Mass Removal in pounds											
Marg. Elap.	Elapsed Time	Flow (DSCFM)	PPM measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR			
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)			
0	0											
30	30	7.45	297	1	297	1579.39	0.000098602	0.044	0.022			
30	60	7.36	315	1	315	1675.11	0.000104577	0.046	0.023			
30	90	7.15	308	1	308	1637.89	0.000102253	0.044	0.022			
· 30	120	7.15	310	1	310	1648.53	0.000102917	0.044	0.022			
. 30	150	6.97	312	1	312	1659.16	0.000103581	0.043	0.022			
30	180	6.83	309	1	309	1643.21	0.000102585	0.042	0.021			
30	210	6.80	314	1	314	1669.80	0.000104245	0.043	0.021			
30	240	6.85	320	1	320	1701.70	0.000106237	0.044	0.022			
30	270	6.92	321	1	321	1707.02	0.000106569	0.044	0.022			
30	300	6.91	324	1	324	1722.97	0.000107565	0.045	0.022			
30	330	6.92	325	1	325	1728.29	0.000107897	0.045	0.022			
30	360	6.98	323	1	323	1717.66	0.000107233	0.045	0.022			
30	390	7.03	321	1	321	1707.02	0.000106569	0.045	0.022			
30	420	7.00	319	1	319	1696.39	0.000105905	0.044	0.022			
30	450	7.12	315	1	315	1675.11	0.000104577	0.045	0.022			
. 30	480	7.18	316	1	316	1680.43	0.000104909	0.045	0.023			
Averages		7.04	315.56	1.00	315.56	1678.11	0.000104764	0.044	0.022			

Total Emission in pounds:

0.354

#### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K Ćg:m = PPMg \* (Mg/K3) Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3 PMRg = Cg \* Qstd \* 60 min/hr PMR = PMRg \* ((T2 -T1)/60)

Ostd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer) Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

K3 = 24.07 dsm<sup>3</sup>/1E6 mg-mole, mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

### **NON-HAZARDOUS WASTE MANIFEST**

Pleas	e print or type Form designed for use on effite ( NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA I	D.No.	<del></del>	Manifest Document No.		2. Page 1
	3. Generator's Namio and Mailing Address TISDACES QUICKE KINGSTREES 5C 4. Generator's Phone (	STOP					
ŀ	Generator's Priorie ( )     Transporter 1 Company Name		3. US EPA ID Number		A. Stato Trans	porter's ID	kir
	HEAL Inc. 7. Transporter 2 Company Name		NCR-000139	816	B. Transporter	<u> </u>	57-6799
	7. Transporter 2 Company Name		B. US EPA ID Number	1 600	C. State Trans		
					D. Transporter	2 Phone	
	Designated Facility Name and Site Address		10. US EPA ID Number		E. State Facili	sy's ID	
	307 5. MANUTSBY WHITEUILUE, NC 11. WASTE DESCRIPTION	52 28472		_	F. Facility's Pi	9/0-6 <del>23</del> -	<b>ジミュ</b>
	11. WASTE DESCRIPTION			12. Co	mlainers	13. Total	14.
				No.	Туре	Quantity	Unii Wit./Vol.
	Non-Reg. Petro	leun Co	ntest With MA	H2	VT	528	GAL
GHZL	<b>b</b> <sub>e</sub>					<b>%</b> ()	
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R	u.					1 1 1	
US WAS IE	G. Additional Descriptions for Materials Listed Above	ve		<b>f</b>	H. Handling C	odes for Wastes Listed Abov	ve
					The state of the s		
NOINTERNATION OF THE PROPERTY	15. Special Hendling instructions and Additional Inl	ormation					
	16 CEMEDATOP'S CENTIFICATIONS I Demos on	A first the exertence of the		<u> </u>	7. /		
	<ol> <li>GENERATOR'S CERTIFICATION: I hereby de in proper condition for transport. The materials</li> </ol>	described on this manifest a	ue not subject to federal hazardous was	te regulations.	<del>ቀ</del> ቀቀቀ ተ <i>ያ</i> ቀቀው ተ		Date
	Printed/Typed Name		Signaturë			Mon	
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R4ZSPORTER	Printed Find frame Bive Biven	Abank	Signature C	烈	,ll	"7	Day Yea
ģ	18. Transporter 2 Acknowledgement of Receipt of I	Materials					Cate
ËR	Printed/Typed Name		Signature			Mar	th Day Yea
F A C	19. Discrepancy Indication Space						
1	20. Facility Owner or Operator, Certification of rece	ipt of the waste materials co	wered by this marifest, except as noted	in item 18.		1	Date
T	Printed Tuned Name  Kyan Cat		Signature	/	20	**	th Day Year

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#### HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Tuesday, October 16, 2012

Scott Ball
Geological Resources, Inc.
2301-F Crown Point Executive Dr.
Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on October 11, 2012. Included is the documentation for the event. The 8 hour event was conducted on monitoring wells MW-1A, MW-2A, MW-3A, and MW-4A.

If you have any questions, please do not hesitate to contact our office.

Sincerely,

Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC October 11, 2012

#### <u>AFVR</u>

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 10/11/12. The ambient temperature was 56 deg F and weather conditions were sunny/fair. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event. The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### Pollutant Mass Removal

Total weight of 2.052 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### Liquid Disposal

Approximately 647 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

### **APPENDICES**

- . A. AFVR FIELD NOTES
  - B. POLLUTANT MASS REMOVAL DATA SHEET
  - C. LIQUID DISPOSAL MANIFEST

## APPENDIX A AFVR FIELD NOTES

## HERR, Inc.

Swal Bus Muge

### AFVR - Field Notes

Site Name: TISDACES QUICE STOP	Location: KINGSTREE, 50
	Personnel: GRI - Kanbeling
	General Weather Condition: 56° Secury - Fori
Start Time 1: 9.15 Stop Time 1: 5.15 Sta	art Time 2: Stop Time 2:
Total volume of water removed during the 8-hour AFVR Event:	647.gal
Total volume of product removed during the 8-hour AFVR Event:_	Free Product : Sheer
Product Recovery Rate:	

Monitoring Well	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft. below TOC)	Estimated volume of water removed during this event	Relevant Observations
MWIA 159	14.78	17.83	\ \ \ -	18.39		
MW27 184	1693	17.95	-6-	18.60	1.1-	
MW5A 170	14.75	17.53	~,~	17.93	69/90	
MUUM	17.46	17.55	~~	18.54		
		•			•	
	•			•		

## Aggressive Fluid/Vapor Recovery Notes

	m W4/1				161 / 0.07 333	= inches of me	Ý	
	9.15 Time	Vacuum at Targeted Well (in. Hg)	MW- 2-A Vacuum at Targeted Well (In. Hg)	MW-3A Vacuum at Targeted Well (in. Hg)	Stinger Depth	Product Depth	Water Level	Notes
	MNIA				18.6	14.78	17.83	18.39
Į	m waj-			<u>'</u>	18.4	14.93	1755/	/ 18.60
ŀ	M w3A			•	18.2	1675	1753/	17.93
	MUCIA				18	12.46	11.55	18.54
	1015	22	27	22				
	1):15	27	22	22				
İ	12-15	22	20	12				
Ì	1.15	07	22	22	· · · · · · · · · · · · · · · · · · ·			
	2.15	22	27	22				
ľ	3.15	22	22	22				
	4.15	22	27	22				
	5-15	22	72	22				
							1	
	•							
	-							
						,		
	Vacuur	m at Pump:	2417	& PM	P			

## Aggressive Fluid/Vapor Recovery Notes

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

• 1	Vac	dulli Collecto	ion. (inches	Of Water A C.	0/355 - IIIC	nes of mercu	ny)	
		W-8						•
	Mi.	W- 8	M	W-	M	W-	MW-	
7.15 Time	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)
	17.39			:		,		•
	•							
1015 11.15 12.15 1.15 2.15 3.15		.24						
11.15		. 29						·
12-15		. 36						
7.15		. 38	•					
2.15		. 41						
315		- 20						
4.15		,5°						
5.15.	17.37	150						
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Schol Ben

## Aggressive Fluid/Vapor Recovery Notes

Time 9.15	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature	Relative Humidity (%)	Other
9945	5.19	372	11.24	74	42%	
1015	415	384	1224	87	42	
10.45	608	380	1/31	94	42	•
11.15	594	312	1128	108	42	
11.45	595	370	1125	113	1/2	
1215	593	37/	1127	119	42	
12.45	591	370	1128	126	42	•
1.15	587	366	1131	128	<i>y</i> 2	
1.45	585	362	1134	129	42	
215	581	359	1137	129	12	
245	577	355	1132	129	Y2	
315	573	351.	1130	129	42	
345	571	348	1129	129	92	
4.15	568	345	1125	129	42	
4.45	564	341	1128	129	42	_
5.15.	510	334	1134	129	Y2_	
•						•
		,	,			
			-			
						•

## APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site:

Tisdale's Quick Stop 18686

UST Permit #:

Calculations - Flow at DSCFM									
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)		
10/11/12	9:15								
10/11/12	9:45	1126	0.022	76	42	0.008031567	24.21		
10/11/12	10:15	1124	0.022	87	42	0.011547389	23.59		
10/11/12	10:45	1131	0.022	96	42	0.015379978	23.27		
10/11/12	11:15	1128	0.022	108	42	0.022246147	22.56		
10/11/12	11:45	1125	0.022	113	42	0.025842457	22.22		
10/11/12	12:15	1127	0.022	119	42	0.030849046	21.91		
10/11/12	12:45	1128	0.022	126	. 42	0.037800212	21.51		
10/11/12	1:15	1131	0.022	128	42	0.040035562	21.45		
10/11/12	1:45	1134	0.022	129	42	0.041198476	, 21.44		
10/11/12	2:15	1137	0.022	129	42	0.041198476	21.50		
10/11/12	2:45	1132	. 0.022	129	42	0.041198476	21.41		
10/11/12	3:15	1130	0.022	129	42	0.041198476	21.37		
10/11/12	3:45	1129	0.022	129	42	0.041198476	21.35		
10/11/12	4:15	1125	0.022	129	42	0.041198476	21.27		
10/11/12	4:45	1128	0.022	129	42	0.041198476	21.33		
10/11/12	5:15	1134	0.022	129	42	0.041198476	21.44		
Averages		. 1129.31	0.022	117.81	42.00	0.032582511	21.989		

Site: Tisdale's Quick Stop UST Permit #: 18686

Calculations - Pollutant Mass Removal in pounds									
Marg. Elap.	Elapsed Time	Flow (DSCFM)	PPM measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)
. 0	0								
30	30	24.21	599	1	599	3185.38	0.000198863	0.289	0.144
30	60	23.59	615	1	615	3270.46	0.000204175	0.289	0.145
30	90	23.27	608	1	608	3233.24	0.000201851	0.282	0.141
30	120	22.56	594	1	594	3158.79	0.000197203	0.267	0.133
30	150	22.22	595	1_	595	3164.10	0.000197535	0.263	0.132
30	180	21.91	593	1	593	3153.47	0.000196871	0.259	0.129
30	210	21.51	591	1	591	3142.83	0.000196207	0.253	0.127
30	240	21.45	587	1	587	3121.56	0.000194879	0.251	0.125
30	270	21.44	585	1	585	3110.93	0.000194215	0.250	0.125
30	300	21.50	581	1	581	3089.66	0.000192887	0.249	0.124
30	330	21.41	577	1	577	3068.38	0.000191559	0.246	0.123
. 30	360	21.37	573	1	573	3047.11	0.000190231	0.244	0.122
30	390	21.35	571	1	571	3036.48	0.000189567	0.243	0.121
30	420	21.27	568	1	568	3020.52	0.000188571	0.241	0.120
30	450	21.33	564	1	564	2999.25	0.000187243	0.240	0.120
30	480	21.44	560	1	560	2977.98	0.000185915	0.239	0.120
Averages		21.99	585.06	1.00	585.06	3111.26	0.000194236	0.256	0.128

Total Emission in pounds:

2.052

#### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K Cg:m = PPMg \* (Mg/K3) Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3 PMRg = Cg \* Qstd \* 60 min/hr PMR = PMRg \* ((T2-T1)/60)

#### Ostd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer) Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

 $K3 = 24.07 \text{ dsm}^3/1E6 \text{ mg-mole}$ , mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

## APPENDIX C LIQUID DISPOSAL MANIFEST

### **NON-HAZARDOUS WASTE MANIFEST**

100	-	s print of type   (Form designed for use on elite (12 ptch) (ypewiter)							
	1	NON-HAZARDOUS 1. Generator's US EPAID No.			Menifest Document No		2. Pag	pė 1	
	4	WASTE MANIFEST		od od					
		3. Generator's Name and Mailing Address TISOACES QUICK STOP KINGSTREE, JC 4. Generator's Phone (							
K		KINISEREE TO							
		4. Generator's Phone (							
		5. Transporter 1 Company Name 6.	A. State Trans	porter's ID					
		HEAR Inc. NO	118981000-57		B. Transporte		57-6	395	
		7: Transporter 2 Company Name B.		C. State Trans	······································				
	1			D. Transporte	r 2 Phone				
		9. Designated Facility Name and Site Address 10.	E. State Facil	ty's ID					
		RAS S. MALLETCHY ST				···			
		1000,000 111111111111111111111111111111	F. Facility's P	10-625-5	6.ja .				
	1	303 S. MAULTSBY ST. WHITEVILLE NC 28472	ntainers	13.	1	14,			
				No.	Турв	Total Ouzntity		14, Unit WL/Vol.	
	4	e.							
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l.			1/1/1/4		1/7/	$-1/\sqrt{J/L}$			
		16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipme in proper condition for transport. The materials described on this manifest are not s	nt are fully and accuretaly described a ubject to federal hazardous waste reg	and are in julations.	all respects				
			•			<del> </del>			
	d	Printed/Typed Name	Signature				Dat onth Di		
						150			
<u>ַ</u>	<u>,</u>	17. Transporter 1 Acknowledgement of Receipt of Materials					Dat	le l	
ż		Printed/Typed Name	Signatures LS	<b>3</b>	_5		anth D	•	
THE	3	Steve Rivenbruk	120-17	-	<u> </u>	<u> </u>	0 1	1/2	
E	3  -	18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name	Signature				Dai anth Di	······	
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1	-1	<ol> <li>Facility Owner or Operator; Certification of receipt of the weate materials covered b</li> </ol>	y uus mannest, except as noted in dei	m 19.		Г	Dat	100	
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F-14 5/2002 LABELI MASTER 6 (800) 621-5808 www.labelmaster.com





## Catherine B. Templeton, Director Promoting and protecting the health of the public and the environment

NOV 0 7 2012

MR MARTY EASLER 196 RICHBURG ROAD GREELEYVILLE SC 29056

Re: Four AFVR Event and Gauging Directive

Tisdales Quick Stop, 1989 Thurgood Marshall Blvd, Kingstree, SC

UST Permit # 18686, CA#44799 Release reported March 30, 2001

AFVR Report received October 29, 2012

Williamsburg County

Dear Mr. Easler

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) recognizes your commitment to continue work at this site using Geological Resources, Inc. as your contractor. The next appropriate scope of work is to continue aggressive fluid and vapor recovery (AFVR) events to remove residual free-phase product and reduce concentrations of chemicals of concern (CoC). Please have your contractor conduct four events on MW-3, MW-1A, MW-3A, and MW-4A simultaneously. The events should be spaced a minimum of twenty days apart to allow equilibrium conditions to reestablish, and must be conducted in accordance with the UST Quality Assurance Program Plan (QAPP). Approximately one month after the final event, please gauge the afore mentioned wells for free product. A copy of the QAPP is available at <a href="http://www.scdhec.gov/environment/lwm/usthome/Qapp.htm">http://www.scdhec.gov/environment/lwm/usthome/Qapp.htm</a>.

Cost Agreement #44799 has been approved in the amount shown on the enclosed cost agreement form for the AFVR events. AFVR activities may proceed immediately upon receipt of this letter, and must be performed by a South Carolina-Certified Underground Storage Tank Site Rehabilitation Contractor. All applicable South Carolina certification requirements apply to preparation of an AFVR report.

An AFVR report and invoice must be submitted to the Division within 120 days from the date of this letter. Your contractor may directly bill the State Underground Petroleum Environmental Response Bank (SUPERB) Account. Interim invoices may be submitted for this scope of work. If the invoice is 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 from the Agency is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the Agency for the cost to be paid. Agency 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, Agency 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.

The Division grants pre-approval for transportation of up to 5,000 gallons of free-phase product and petroleum-contaminated groundwater from the referenced facility to a permitted treatment facility for disposal. The transport and disposal must be conducted in accordance with the QAPP.

On all correspondence concerning this facility, please reference UST Permit #18686. If there are any questions concerning this project, feel free to contact me by telephone at (803) 896-4085, by fax at (803) 896-6245, or by e-mail at martinjm@dhec.sc.gov.

Sincerely,

Jim Martin, Hydrogeologist Corrective Action Section

Underground Storage Tank Management Division

Bureau of Land and Waste Management

enc: Approved cost agreement form

cc: Scott Ball, Geological Resources, Inc., 2301 Crown Point Executive Dr. Suite F Charlotte,

NC 28227 (w/ enc)

Technical File (w/ enc)

### Approved Cost Agreement 44799

Facility: 18686 TISDALES QUICK STOP

MARTINJM PO Number:

Task / Description	Categories	Item Description	Qty / Pct	Unit Price	<u>Amount</u>
04 MOB/DEMOB				V	
		A EQUIPMENT	4.0000	575.00	2,300.00
		B PERSONNEL	5.0000	290.00	1,450.00
10 SAMPLE COLLE	CTION			<u>, , , , , , , , , , , , , , , , , , , </u>	1 -
		E GAUGE WELL ONLY	4.0000	20.00	80.00
17 DISPOSAL			· · · · · · · · · · · · · · · · · · ·		
		A WASTEWATER	5,000.0000	0.80	4,000.00
19 RPT/PROJECT	MNGT & COORDIN	ATIO			
		PCT PERCENT	0.1500	20,950.00	3,142.50
23 EFR					
		A 8 HOUR EVENT	4.0000	3,000.00	12,000.00
		C OFF GAS TREATMENT	32.0000	35.00	1,120.00
			Total Amount		24,092.50

November 6, 2012 Page 1 of 1 suprcait.rdf Rev: 1.15



## Geological Resources, Inc.



January 15, 2013

Mr. Jim Martin
South Carolina Department of Health
and Environmental Control
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management



Re:

Aggressive Fluid Vapor Recovery Event

Tisdales Quick Stop

1989 Thurgood Marshall Blvd

Kingstree, Williamsburg County, South Carolina

UST Permit No. 18686 CA No. 44799

#### Dear Mr. Martin:

Geological Resources, Inc. (GRI) has completed three of four aggressive fluid vapor recovery (AFVR) events at the above referenced site in Kingstree, South Carolina. The AFVR events were conducted on November 30, 2012, December 21, 2012 and January 10, 2013. Copies of the AFVR Reports and an interim invoice are attached. Please contact Scott Ball at (704) 845-4010 with any questions.

cc: file



## HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Wednesday, December 5, 2012

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on November 30, 2012. Included is the documentation for the event. The 8 hour event was conducted on monitoring well MW-3

If you have any questions, please do not hesitate to contact our office.

Sincerely.

Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC November 30, 2012

#### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 11/30/12. The ambient temperature was 36 deg F and weather conditions were sunny/fair. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event. The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### Pollutant Mass Removal

Total weight of 0.223 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### **Liquid Disposal**

Approximately 632 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

## **APPENDICES**

- A. AFVR FIELD NOTES
- . B. POLLUTANT MASS REMOVAL DATA SHEET
  - C. LIQUID DISPOSAL MANIFEST

## APPENDIX A AFVR FIELD NOTES

## HERR, Inc.

### AFVR – Field Notes

Site Name: TISDACE'S QUICK STOP	Location: KINGSTR	ee, Je
AFVR Contractor: HERR, Inc Stave	Personnel: GRI - H	
Date: ///24/12 Ambient Air Temperature and	d General Weather Condition:_	36 " Join Denny
Pro ·	Start Time 2:	Stop Time 2:
Total volume of water removed during the 8-hour AFVR Event:	63272	
Total volume of product removed during the 8-hour AFVR Even	ni: milism	
Product Recovery Rate:		
Depth to		

Monitoring Well	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft. below TOC)	Estimated volume of water removed during this event	Relevant Observations
mw3	17.84	17.94		18.70	100	
					105490	
					3	

vacuum conversion: (inches of water X 0.07355 = inches of mercury) MW-MW-MW-**Stinger Placement** Vacuum at Vacuum at Vacuum at 8.70 **Targeted Targeted Targeted** Stinger **Product** Water Well Well Well Depth Depth Level Notes Time (in. Hg) (in. Hg) (in. Hg) 1870 MWZ 1784 18.4" 17.74 20 7.30 10.30 20 11.30 20 12.30 20 1.30 20 2.30 ن چ 3,30 ت بر 4.30 ے (

Vacuum at Pump: 27 (4/2)

vacuum conversion: (inches of water X 0.07355 = inches of mercury) NW- 4 MW-MW-MW-Vacuum Vacuum Vacuum Vacuum Water Influence Water 8.30 Influence Water influence Water Influence Level at Weil Level at Well Level at Well at Well Level Time (in. Hg) (in. Hg) (in. Hg) (in. Hg) MOI 17.85 7.30 O 030 0 0 11.30 12.30 0 0 1. 0 13 2.00 ð 30 D 1 4.30

Time	PID <u>at stack</u> (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Farenheit)	Relative Humidity (%)	Other
9:00	204	128	379	94	39	
9:30	205	128	3 <b>v</b>	//8	39	
/6:,64	207	129	392	124	39	
10.30	201	124	401	131	39	
11:00	196	119	405	139	39	
11:34	192	114	409	146	39	
12,00	/89	109	401	145	39	
12:34	186	108	407	145	39	······································
1:63	180	101	412	145	39	
1:30	178	94	415	145	39	*
2:00	176	92	416	145	31	
2:30	/77	92	415	145	39	
3:01	175	89	418	144	31	
3:30	172	85	423	144	39	
4:00	168	81	425	144	39	
4:30	165	79	428	143	31	
•			·		- Industrial	
		THE COLOR				

# APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site:

Tisdale's Quick Stop 18686

UST Permit #:

			Calculat	ions - Flow at	DSCFM		
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)
11/30/12	8:30						
11/30/12	9:00	379	0.022	84	39	0.009714096	8.01
11/30/12	9:30	388	0.022	118	39	0.027722511	7.58
11/30/12	10:00	392	0.022	124	39	0.032996605	7.54
11/30/12	10:30	406	0.022	131	39	0.040301300	7.66
11/30/12	11:00	405	0.022	139	39	0.050466674	7.46
11/30/12	11:30	409	0.022	146	39	0.061287078	7.36
11/30/12	12:00	401	0.022	145	39	0.059616992	7.24
11/30/12	12:30	407	0.022	145	· 39	0.059616992	7.35
11/30/12	1:00	412	0.022	145	39	0.059616992	7.44
11/30/12	1:30	415	0.022	145	39	0.059616992	7.49
11/30/12	2:00	416	0.022	145	39	0.059616992	7.51
11/30/12	2:30	415	0.022	145	39	0.059616992	7.49
11/30/12	3:00	418	0.022	144	39	0.057990221	7.57
11/30/12	3:30	423	0.022	144	39	0.057990221	7.66
11/30/12	4:00	425	0.022	144	39	0.057990221	7.70
11/30/12	4:30	428	0.022	143	39	0.056405602	7.78
Averages		408.69	0.022	136.69	39.00	0.050660405	7.553

Site:

Tisdale's Quick Stop

UST Permit #: 18686

Elapsed								
Time	Flow (DSCFM)	PPM measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR
(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)
0								
30	8.01	204	1	204	1084.84	0.000067726	0.033	0.01
60	7.58	205	1	205	1090.15	0.000068058	0.031	0.01
90	7.54	207	1	207	1100.79	0.000068722	0.031	0.01
120	7.66	201	1	201	1068.88	0.000066730	0.031	0.01
150	7.46	196	1	196	1042.29	0.000065070	0.029	0.01
180	7.36	192	1	192	1021.02	0.000063742	0.028	0.01
210	7.24	188	1_	188	999.75	0.000062414	0.027	0.01
240	7.35	186	1	186	989.12	0.000061750	0.027	0.01
270	7.44	180	1	180	957.21	0.000059759	0.027	0.01
300	7.49	178	1	178	946.57	0.000059095	0.027	0.01
330	7.51	176	1	176	935.94	0.000058431	0.026	0.01
360	7.49	177	1	177	941.25	0.000058763	0.026	0.01
390	7.57	175	1	175	930.62	0.000058099	0.026	0.01
420	7.66	172	1	172	914.67	0.000057103	0.026	0.01
450	7.70	168	1	168	893.39	0.000055775	0.026	0.01
480	7.78	165	1	165	877.44	0.000054779	0.026	0.01
	7.55	185.63	1.00	185.63	987.12	0.000061626	0.028	0.01
	(min)  0  30  60  90  120  150  180  210  240  270  300  330  360  390  420  450	(min)         (Qstd)           0         30         8.01           60         7.58           90         7.54           120         7.66           150         7.46           180         7.36           210         7.24           240         7.35           270         7.44           300         7.49           330         7.51           360         7.49           390         7.57           420         7.66           450         7.70           480         7.78	(min)         (Qstd)         (ppm)           0         30         8.01         204           60         7.58         205           90         7.54         207           120         7.66         201           150         7.46         198           180         7.36         192           210         7.24         188           240         7.35         186           270         7.44         180           300         7.49         178           330         7.51         176           360         7.49         177           390         7.57         175           420         7.66         172           450         7.70         168           480         7.78         165	(min)         (Qstd)         (ppm)         (#C-gas)           0         30         8.01         204         1           60         7.58         205         1           90         7.54         207         1           120         7.66         201         1           150         7.46         196         1           180         7.36         192         1           210         7.24         188         1           240         7.35         186         1           270         7.44         180         1           300         7.49         178         1           330         7.51         176         1           390         7.57         175         1           420         7.66         172         1           450         7.70         168         1           480         7.78         165         1	(min)         (Qstd)         (ppm)         (#C-gas)           0         30         8.01         204         1         204           60         7.58         205         1         205           90         7.54         207         1         207           120         7.66         201         1         201           150         7.46         196         1         196           180         7.36         192         1         192           210         7.24         188         1         188           240         7.35         186         1         186           270         7.44         180         1         180           300         7.49         178         1         178           330         7.51         176         1         177           390         7.57         175         1         175           420         7.66         172         1         172           450         7.70         168         1         168           480         7.78         165         1         165	(min)         (Qstd)         (ppm)         (#C-gas)         (mg/dsm^3)           0         30         8.01         204         1         204         1084.84           60         7.58         205         1         205         1090.15           90         7.54         207         1         207         1100.79           120         7.66         201         1         201         1068.88           150         7.46         196         1         196         1042.29           180         7.36         192         1         192         1021.02           210         7.24         188         1         188         999.75           240         7.35         186         1         186         989.12           270         7.44         180         1         180         957.21           300         7.49         178         1         178         946.57           330         7.51         176         1         176         935.94           360         7.49         177         1         177         941.25           390         7.57         175         1         175	(min)         (Qstd)         (ppm)         (#C-gas)         (mg/dsm^3)         (lb/dscf)           30         8.01         204         1         204         1084.84         0.000067726           60         7.58         205         1         205         1090.15         0.000068058           90         7.54         207         1         207         1100.79         0.000068722           120         7.66         201         1         201         1068.88         0.000065730           150         7.46         198         1         196         1042.29         0.000065070           180         7.36         192         1         192         1021.02         0.000063742           210         7.24         188         1         188         999.75         0.000063742           240         7.35         186         1         186         989.12         0.000062414           240         7.35         186         1         180         957.21         0.000059759           300         7.49         178         1         178         946.57         0.000059095           330         7.51         176         1         176 <td>(min)         (Qstd)         (ppm)         (#C-gas)         (mg/dsm^3)         (lb/dscf)         (lb/hr)           30         8.01         204         1         204         1084.84         0.000067726         0.033           60         7.58         205         1         205         1090.15         0.000068058         0.031           90         7.54         207         1         207         1100.79         0.000068722         0.031           120         7.66         201         1         201         1068.88         0.000066730         0.031           150         7.46         196         1         196         1042.29         0.000065070         0.029           180         7.36         192         1         192         1021.02         0.000063742         0.028           210         7.24         188         1         188         999.75         0.000063742         0.028           240         7.35         186         1         186         989.12         0.000061750         0.027           270         7.44         180         1         180         957.21         0.000059759         0.027           330         7.51</td>	(min)         (Qstd)         (ppm)         (#C-gas)         (mg/dsm^3)         (lb/dscf)         (lb/hr)           30         8.01         204         1         204         1084.84         0.000067726         0.033           60         7.58         205         1         205         1090.15         0.000068058         0.031           90         7.54         207         1         207         1100.79         0.000068722         0.031           120         7.66         201         1         201         1068.88         0.000066730         0.031           150         7.46         196         1         196         1042.29         0.000065070         0.029           180         7.36         192         1         192         1021.02         0.000063742         0.028           210         7.24         188         1         188         999.75         0.000063742         0.028           240         7.35         186         1         186         989.12         0.000061750         0.027           270         7.44         180         1         180         957.21         0.000059759         0.027           330         7.51

### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K Cg:m = PPMg \* (Mg/K3) Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3 PMRg = Cg \* Qstd \* 60 min/hr PMR = PMRg \* ((T2-T1)/60)

Ostd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer)

Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

K3 = 24.07 dsm<sup>3</sup>/1E6 mg-mole, mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

## **NON-HAZARDOUS WASTE MANIFEST**

1 -≆	NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EP	A ID No.		Manifest Document No.	*** . 141	2. Page 1
M	3. Gerendaria Nearro and Melling Address	TISDALEL	BUICK STOP				<u> </u>
		1989 -	G4102 3 107				
		POL IMOR	-000 MARSHALL	_ Bevo.		•	
L	4. Generator's Phone ( )	RINGSTREE	GG GD MARZSKALL  SC  6. US EPA ID Numbe				
Ч	5. Transporter I Company Name		6. US EPA ID Numbe	f ·	A. State Trans	poners ID	
١,	HERR, Inc.	V	NCR-000139	क्षा 6	B. Transporter	1 Phone 910-657	- 6399
	7. Transporter 2 Company Name		8. US EPA ID Mumbe	ī	C. State Trans		
<b>,</b>					D. Transporter	2 Phone	
	9. Designated Facility Name and Site Address  CWS		10. US EPA ID Numbe	ir	E. State Facilit	y's ID	
	303 5 MAULT	CAL <7					
			1	**	F. Facility's Ph		•
	WHITEVILLE, A	<u> </u>		1 43 0	ntainers	916-625-50	
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7	G. Additional Descriptions for Materials Listed Al	bove			H. Handling C	odes for Wastes Listed Abovi	<del></del> }
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	15. Special Handling Instructions and Additional	l (nformation		h-do-soda-ha-			
	15. Special Handling Instructions and Additional	l (riformation		de de Santonia de la Companione de la Companione de la Companione de la Companione de la Companione de la Comp			
	15. Special Handling Instructions and Additional	l (ntormation		- All Annual Inc.			
	15. Special Handling Instructions and Additional	l (information		de all feelings and the second			
	15. Special Handling Instructions and Additional	l information					
			his shipment are fully and accustates	y described and are in	all respects		
	15. Special Handling Instructions and Additional  16. GENERATOR'S CERTIFICATION: I hereby in proper condition for transport. The material		his shipment are fully and accurates at are not subject to federal hazardo	y described and are in us waste regulations.	all respects		
			his shipment are fully and accurates are not subject to lederal hazondo	y described and are in us waste regulations.	all respects		Date
			his shipment are fully and accurately at are not subject to federal hazando Signature	y described and are in us waste regulations.	all respects	Mon	
	16. GENERATOR'S CENTIFICATION: I hereby in proper condition for transport. The material			y described and are in us waste regulations.	all respects	Mon	
-	16. GENERATOR'S CENTIFICATION: I hereby in proper condition for transport. The material	r certify that the contents of traits described on this manifes		y described and are in us waste regulations.	all respects		lh Day Year Date
TA22	16. GENERATOR'S CERTIFICATION: I hereby in proper condition for transport. The medical Printed/Typed Name  17. Transporter 1 Acknowledgement of Receipt	certify that the contents of the als described on this manifest of Materials				Mon	Date The Day Year
dozen-	16. GENERATOR'S CERTIFICATION: I hereby in proper condition for transport. The muterial Printed/Typed Name  17. Transporter 1 Acknowledgement of Receipt	certify that the contents of the als described on this manifest of Materials	Signature	y described and are in us waste regulations.			Date Day Year Date Day Year
AZSPO	16. GENERATOR'S CERTIFICATION: I hereby in proper condition for transport. The material Printed/Typed Name  17. Transporter 1 Acknowledgement of Receipt Printed/Typed Name  18. Transporter 2 Acknowledgement of Receipt	of Materials	Signature Signature			tton ]/	th Day Year  Date th Day Year  30/2  Date
ANSPORT	16. GENERATOR'S CERTIFICATION: I hereby in proper condition for transport. The malant Printed/Typed Name  17. Transporter 1 Acknowledgement of Receipt Printed/Typed Name  5. 1. 2. 1. 2. 1. 3. 1. 2. 1. 3. 1. 2. 1. 3. 1. 3. 1. 2. 1. 3.	of Materials	Signature			<u></u>	Date Date Date Date Date
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AZOPORTER F	16. GENERATOR'S CERTIFICATION: I hereby in proper condition for transport. The material Printed/Typed Name  17. Transporter 1 Acknowledgement of Receipt Printed/Typed Name  18. Transporter 2 Acknowledgement of Receipt Printed/Typed Name  19. Discrepancy Indication Space	of Materials	Signature Signature Signature	ERN		Mon ]/	th Day Year  Date th Day Year  30/2  Date
AZMPORTER FA	16. GENERATOR'S CERTIFICATION: I hereby in proper condition for transport. The material Printed/Typed Name  17. Transporter 1 Adanowledgement of Receipt Printed/Typed Name  18. Transporter 2 Adanowledgement of Receipt Printed/Typed Name	of Materials	Signature Signature Signature	ERN		Mon ]/	th Day Year  Date th Day Year  30/2  Date





### HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Thursday, December 27, 2012

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on December 21, 2012. Included is the documentation for the event. The 8 hour event was conducted on monitoring wells MW-1A, MW-3A, and MW-4A.

If you have any questions, please do not hesitate to contact our office.

Sincerely.

Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC December 21, 2012

#### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 12/21/12. The ambient temperature was 43 deg F and weather conditions were sunny/fair. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event. The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

### **Pollutant Mass Removal**

Total weight of 0.280 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### Liquid Disposal

Approximately 572 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

### **APPENDICES**

- A. AFVR FIELD NOTES
- **B. POLLUTANT MASS REMOVAL DATA SHEET**
- C. LIQUID DISPOSAL MANIFEST

# APPENDIX A AFVR FIELD NOTES

## HERR, Inc.

## AFVR – Field Notes

Site Name: TISDACE'S GUICK STOP	Location:	KINGSTREE	50	
AFVR Contractor: HERR, Inc Steve	Personnel:	GRI - H	owner	•
Date: 12/21/12 Ambient Air Temperature an	d General Weather	Condition: 43	2 Dung-Jon:	
Start Time 1: 9:00 Stop Time 1: 5:00	Start Time 2:		Stop Time 2:	·····
Total volume of water removed during the 8-hour AFVR Event:	572	Jol	_	,
Total volume of product removed during the 8-hour AFVR Even	nt:		_	
Product Recovery Rate:				

Monitoring Well	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft. below TOC)	Estimated volume of water removed during this event	Relevant Observations
1310 / ps	17.14	17.78		13.23 1758 1551	5729	i C
		· · · · · · · · · · · · · · · · · · ·				



15.73

### **Aggressive Fluid/Vapor Recovery Notes**

vacuum conversion: (inches of water X 0.07355 = inches of mercury) MW- /A MW- 3A MW- YA Stinger Placement Vacuum at Vacuum at Vacuum at **Targeted Product** Water **Targeted** Targeted Stinger 9.00 Well Well Well Depth Level **Notes** Depth (in. Hg) Time (in. Hg) (in. Hg) 1998 18:03 178 161 MWA 178" NW3A 17.53 1773 17.14 15:51 18.76 18.71 NW YY 1882 80 20 10.60 20 70 70 11.00 00 90 20 12.60 20 20 20 20 1.00 20 3.60 20 20 20 20 300 20 20 20 20 4-60 20 20 20 5.00

Vacuum at Pump: 22 @ Pugo

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

	M	N- 5	M	w-2-A	M	W-	M	W-
9.00 Time	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)
	<i>*</i> * * * * * * * * * * * * * * * * * *		Thy	- 1				
1000 1100 1200 1700		t'		. 7. /				
11 00		, . L		. 2-3				
1200	<u> </u>	, レン		.23	***************************************			
1000		2		.30				
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4.00		3		90 .30				
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		:						3

Time	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Farenheit)	Relative Humidity (%)	Other
930	234	154	389	12	41	
1000	241	159	352	86	41	
10,30	249	164	398	94	4/	•
11.00	245	160	402	103	41	
11.30	238	155	404	126	41	
1200	240	158	409	135	4/	
1230	234	153	412	13.5	41	
1.00	231	150	416	138	41	
1.30	226	144	420	138	41	
200	211	134	425	138		
8.30	205	131	424	138	41	
3.00	207	135	426	138	41	
3.30	203	132	430	138	411	
4100	194	126	496	138	41	
430	191	124	442	136.	41	
500	186	120	447	133	41	
S.		<b>₹</b> ··		المراز		
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	:					

# APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site:

Tisdale's Quick Stop

UST Permit #: 18686

		·	Calculat	ions - Flow a	DSCFM		
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)
12/21/12	9:00						ļ
12/21/12	9:30	389	0.022	72	41	0.006842956	8.44
12/21/12	10:00	392	0.022	86	41	0.010908335	8.25
12/21/12	10:30	398	0.022	94	41	0.014090345	8.23
12/21/12	11:00	402	0.022	103	41	0.018638786	8.14
12/21/12	11:30	406	0.022	126	41	0.036846891	7.75
12/21/12	12:00	409	0.022	135	41	0.047609072	7.60
12/21/12	12:30	412	0.022	135	41	0.047609072	7.66
12/21/12	1:00	416	0.022	138	41	0.051802985	7.66
12/21/12	1:30	420	0.022	138	41	0.051802985	7.74
12/21/12	2:00	425	0.022	138	41	0.051802985	7.83
12/21/12	2:30	424	0.022	138	41	0.051802985	7.81
12/21/12	3:00	426	0.022	138	41	0.051802985	7.85
12/21/12	3:30	430	0.022	138	41	0.051802985	7.92
12/21/12	4:00	436	0.022	138	41	0.051802985	8.03
12/21/12	4:30	442	0.022	138	41	0.051802985	8.14
12/21/12	5:00	447	0.022	138	41	0.051802985	8.23
Averages		417.13	0.022	124.56	41.00	0.040548270	7.955

Site:

Tisdale's Quick Stop

**UST Permit #: 18686** 

		Calcul	ations - Po	liutant	Mass R	emoval In po	ounds		
Marg. Elap.	Elapsed Time	Flow (DSCFM)	PPM measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)
. 0	0			_					
30	30	8.44	236	1	236	1255.01	0.000078350	0.040	0.020
30	60	8.25	241	1	241	1281.60	0.000080010	0.040	0.020
30	90	8.23	249	1	249	1324.14	0.000082666	0.041	0.020
30	120	8.14	245	1_	245	1302.87	0.000081338	0.040	0.020
30	150	7.75	238	. 1	238	1265.64	0.000079014	0.037	0.018
30	180	7.60	240	1	240	1276.28	0.000079678	0.036	0.018
30	210	7.66	234	1	234	1244.37	0.000077686	0.036	0.018
30	240	7.66	231	1	231	1228.42	0.000076690	0.035	0.018
30	270	7.74	226	1_	226	1201.83	0.000075030	0.035	0.017
30	300	7.83	211	1	211	1122.06	0.000070050	0.033	0.016
30	330	7.81	205	1	205	1090.15	0.000068058	0.032	0.016
30	360	7.85	207	1	207	1100.79	0.000068722	0.032	0.016
30	390	7.92	203	1	203	1079.52	0.000067394	0.032	0.016
30	420	8.03	194	1	194	1031.66	0.000064406	0.031	0.016
30	450	8.14	191	1	191	1015.70	0.000063410	0.031	0.015
30	480	8.23	186	1	186	989.12	0.000061750	0.031	0.015
Averages		7.95	221.06	1.00	221.06	1175.57	0.000073391	0.035	0.018

Total Emission in pounds:

0.280

#### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K Cg:m = PPMg \* (Mg/K3) Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3 PMRg = Cg \* Qstd \* 60 min/hr PMR = PMRg \* ((T2-T1)/60)

Qstd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer)

Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

 $K3 = 24.07 \text{ dsm}^3/1E6 \text{ mg-mole}$ , mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

### **NON-HAZARDOUS WASTE MANIFEST**

WASTE MANIFEST	S EPA ID No.	Manifest Document N		2. Page 1 cl
3. Generator's Name and Mailing Address TISDACE'S	5 QUICK STOP	•		Byen
1989 74	OR GOOD MARSHALL BO REE JUSEPAID Number			Arrigini
4. Generator's Prone ( ) KIAI (• ST	- The Table 1	JVD.		Ť.
5. Transporter 1 Company Name	CEE, J C			<b>V</b>
HERR Inc.	NCB-000139	A. State Tra		2.726
7. Transporter 2 Company Name	8. US EPA ID Number		1.45	-637
se sensebraines er granishansk samsett	1	C. State Tra		
9. Designated Facility Name and Site Address	10. US EPA ID Number	D. Transpor		<u>radio 84.</u> Programa
		E. State Fac	SRY 5 ID	
707 J. MAULTSBY ST.		F. Facility's	Phono	·····
INMITCHE LIC ME	1		910-625-5617	,
703 S. MAULTSBY ST. WHITEVILLE NC  11. WASTE DESCRIPTION		12. Containers	13.	100
•		No. Type	Total Quantity	Uni Uni WLA
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Non-Reg Petroleum	Cented Webs	HZ VT	572	G
<b>b.</b> African (1997)				
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G. Additional Descriptions for Materials Listed Above		H. Handing	Codes for Wastes Lieted Above	
15. Special Handling Instructions and Additional Information				
16. GENERATOR'S CERTIFICATION-1 hareby reartify that the continue	a of this shipment are talk and areavalable describ	ed and are in all exeners		
16. GENERATOR'S CERTIFICATION: I hereby carrify that the contents in proper condition for transport. The materials described on this ma	s of this shipment are fully and accurately describ nifest are not subject to federal hazardous waste	ed and are in all respects regulations.		
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SOVINK



### HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Tuesday, January 15, 2013

Scott Ball
Geological Resources, Inc.
2301-F Crown Point Executive Dr.
Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on January 10, 2013. Included is the documentation for the event. The 8 hour event was conducted on monitoring well MW-3.

If you have any questions, please do not hesitate to contact our office.

Sincerely

Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC January 10, 2013

#### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 1/10/13. The ambient temperature was 61 deg F and weather conditions were sunny/fair. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event. The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### **Pollutant Mass Removal**

Total weight of 2.627 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### Liquid Disposal

Approximately 426 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

### **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

# APPENDIX A AFVR FIELD NOTES

## HERR, Inc.

### AFVR - Field Notes

Site Name: TISDALE'S QUICK STOP	Location: KINGSTREE	<u>5</u> 2
AFVR Contractor: HERR, Inc Steve	Personnel: GRI - Rus	nel
Date: 1/10/13 Ambient Air Temperature an	nd General Weather Condition: 61	· Sung-Fori
Start Time 1: 9-00 Stop Time 1: 5-00	Start Time 2:	Stop Time 2:
Total volume of water removed during the 8-hour AFVR Event:	42696	_
Total volume of product removed during the 8-hour AFVR Ever	nt:	<del>-</del>
Product Recovery Rate:		

Monitoring Weli	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft. below TOC)	Estimated volume of water removed during this event	Relevant Observations
11143		18.15		19.34		
					1116,12	
					777	
	<u> </u>					

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

		MW-	MW-	Stinger Placement				
9.00 Time	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Stinger Depth	Product Depth	Water Level	Notes	
MUB		, , , , ,	, ,	77		18.15		
10.00	20							
11.00	De							
12.00	20 20 20							
1.40	20							
2.00								
. 3.60	20							
4.00	20							
5.00	20			-		19.34		
••								

Vacuum at Pump: 27 Pmp

vacuum conversion: (inches of water X 0.07355 = inches of mercury) MW-MW-MW-MW-Vacuum Vacuum Vacuum Vacuum Influence Water Influence Water Influence Water influence Water 9.00 Level at Well Level at Well Level at Well at Well Level Time (in. Hg) (in. Hg) (in. Hg) (in. Hg) 18.23 0 1000 0 11.30 0 0 0 1).ou 0 1.00 0 0 2.60 0 3.00 0 D 6 eco. 0 Ь 18.03 5-00

Time	PID <u>at stack</u> (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Farenheit)	Relative Humidity (%)	Other
9.30	905	752	936	92	38	
1000	1012	848	915	105	38	
1030	1081	894	921	112	39	
11-50	11 34	941	908	196	39	
11.90	1171	1031	912	134	39	
12.00	1208	1059	879	145	39	
1230	1235	1890	856	159	38	
1.00	1270	1128	835	163	35	
1.30	1275	1125	862	165	38	
2.00	1225	1084	865	165	38	
2.30	1176	1021	863	165	38	•
3.00	952	815	866	165	78	
330	678	726	869	165	38	
4.00	804	658	871	165	38	
4.90	351	608	875	165	38	
5-01	708	562	873	165	38	
					-	

# APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site:

Tisdale's Quick Stop 18686

UST Permit #:

· · · · · · · · · · · · · · · · · · ·	Calculations - Flow at DSCFM										
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)				
1/10/13	9:00		<u></u>		,						
1/10/13	9:30	936	0.022	92	38	0.012239006	19.46				
1/10/13	10:00	915	0.022	105	38	0.018320169	18.47				
1/10/13	10:30	921	0.022	112	39	0.023225162	18.27				
1/10/13	11:00	908	0.022	126	39	0.034948490	17.37				
1/10/13	11:30	912	0.022	134	39	0.043866306	17.05				
1/10/13	12:00	879	0.022	145	39	0.059616992	15.87				
1/10/13	12:30	. 856	0.022	159	38	0.084994727	14.70				
1/10/13	1:00	835	0.022	163	38	0.094761554	14.09				
1/10/13	1:30	862	0.022	165	38	0.100055714	14.42				
1/10/13	2:00	865	0.022	165	38	0.100055714	14.47				
1/10/13	2:30	863	0.022	165	38	0.100055714	14.43				
1/10/13	3:00	866	0.022	165	38	0.100055714	14.48				
1/10/13	3:30	869	0.022	165	38	0.100055714	14.53				
1/10/13	4:00	871	0.022	165	38	0.100055714	14.57				
1/10/13	4:30	875	0.022	165	38	0.100055714	14.64				
1/10/13	5:00	873	0.022	165	38	0.100055714	14.60				
Averages		881.63	0.022	147.25	38.25	0.073276133	15.714				

Site:

Tisdale's Quick Stop

UST Permit #: 18686

Marg.	Elapsed	Flow	PPM						
Elap.	Time	(DSCFM)	measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)
0	0								•
30	30	19.46	905	1	905	4812.63	0.000300452	0.351	0.17
30	60	18.47	1012	1	1012	5381.64	0.000335976	0.372	0.18
30	90	18.27	1086	1	1086	5775.16	0.000360543	0.395	0.19
30	120	17.37	1136	1	1136	6041.05	0.000377143	0.393	0.19
30	150	17.05	1171	1	1171	6227.17	0.000388762	0.398	0.19
30	180	15.87	1208	1	1208	6423.93	0.000401046	0.382	0.19
30	210	14.70	1235	. 1	1235	6567.51	0.000410010	0.362	0.18
30	240	14.09	1270	1	1270	6753.64	0.000421629	0.357	0.17
30	270	14.42	1275	1	1275	6780.22	0.000423289	0.366	0.18
30	300	14.47	1225	1	1225	6514.33	0.000406690	0.353	0.17
30	330	14.43	1176	1	1176	6253.76	0.000390422	0.338	0.16
30	360	14.48	952	1	952	5062.57	0.000316056	0.275	0.13
30	390	14.53	878	1	878	4669.05	0.000291489	0.254	0.12
. 30	420	14.57	804	1	804	4275.53	0.000266921	0.233	0.11
30	450	14.64	751	11_	751	3993.69	0.000249326	0.219	0.10
30	480	14.60	708	1	708	3765.02	0.000235050	0.206	0.10
Averages	•	15.71	1049.50	1.00	1049.50	5581.06	0.000348425	0.328	0.16

#### **Pollutant Mass Removal Calculations**

```
Qstd = (1-water vapor) * velocity * (PI * (diameter/24)^2) * (528degrees R/(Temp + 460) PPMg = PPM measured * K
Cg:m = PPMg * (Mg/K3)
Cg = Cg:m * 62.43E-09 lb-m^3/mg-ft^3
PMRg = Cg * Qstd * 60 min/hr
PMR = PMRg * ((T2 -T1)/60)
```

Ostd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer) Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

 $K3 = 24.07 \text{ dsm}^3/1E6 \text{ mg-mole}$ , mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

### **NON-HAZARDOUS WASTE MANIFEST**

	Pleas	e print or type (Form designed for use on elife (	2 pilch) typewriter)					
		NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA (C			Manifest Document No.	1	2. Page 1 of
	$\exists$	Generator's Name and Mailing Address     T	150ALE'S C	OVICK STOP  ON MARSHALL BY  SC  US EPA ID Number				
		J.	989 THURSE	MARSHALL BY	LVD.			
		4. Generator's Phone ( )	CINGSTREE	50		:		
	4	5. Transporter 1 Company Name	6	. US EPA ID Number		A. State Transporter's ID		
1		HERR, Inc.		NCR-0001391	316	B. Transporter		- 4799
	4	7. Transporter 2 Company Name	s f	US EPA ID Number		C. State Trans D. Transporte		
	1	B. Designated Facility Name and Site Address	1	Q. US EPA ID Number	······································	E. State Facili		
		Cus						
		303 S. MAVETSBY S	₹.			F. Facility's Pi	710-625-501	2_
		11. WASTE DESCRIPTION			12 Co	ritainers	13. Total Quantity	14. Unit WLVOL
					No.	Туре	Quantity	WITVOL
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WASTE	4							
	H	G. Additional Descriptions for Materials Listed Above	H. Handling Codes for Wastes Listed Above					
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	Y	<ol> <li>GENERATOR'S CERTIFICATION: I hereby cert in proper condition for transport. The materials of</li> </ol>	tily that the contents of this lescribed on this manifest ar	shipment are fully and accurately de re not subject to lederal hazardous w	scribed and are in raste regulations.	all respects		, sa ann <del>i an</del>
	4							Date
		Printed/Typed Name		Signature			Month	Day Year
	爿	17, Transporter 1 Acknowledgement of Receipt of N	Interviole					<u> </u>
	Ŕ	Printed/Typed Name	•	Signature   No.	<b>7</b> 5		Month	Date Day Year
	TRAZSPORT	Steve Mirur	about	1262	-15-	n		19 V3
	B.	18. Transporter 2 Acknowledgement of Receipt of N	laterials					Dale
	Ė	Primed/Typed Name		Signature			Manth	Day Year
	F	19. Discrepancy Indication Space					*	
	AC							
	ĭŀ	20. Facility Owner or Operator, Certification of receip	of of the waste materials cov	vered by this manifest, except as not	ed in item 19			
	Ţ.							Date
	Y	Printed Typed Nam ZYAN Co	L	Signature	· -	C	C. Month	Day Year

**ESCYNA** 







February 8, 2013

Mr. Jim Martin
South Carolina Department of Health
and Environmental Control
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

Re: Aggressive Fluid Vapor Recovery Event

Tisdales Quick Stop

1989 Thurgood Marshall Blvd

Kingstree, Williamsburg County, South Carolina

UST Permit No. 18686

CA No. 44799

#### Dear Mr. Martin:

Geological Resources, Inc. (GRI) has completed the fourth of four aggressive fluid vapor recovery (AFVR) events at the above referenced site in Kingstree, South Carolina. The AFVR event was conducted on January 30, 2013. A copy of the AFVR Report and an interim invoice are attached. A final report will be submitted after the March 4, 2013 post-AFVR gauging activities are completed. Please contact Scott Ball at (704) 845-4010 with any questions.

Sincerely,

License

enclosure

cc:

file



### HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Thursday, February 7, 2013

Scott Ball
Geological Resources, Inc.
2301-F Crown Point Executive Dr.
Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

· Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on January 30, 2013. Included is the documentation for the event. The 8 hour event was conducted on monitoring wells MW-1A, MW-2A, MW-3A, and MW-4A.

If you have any questions, please do not hesitate to contact our office.

Sincerely.

Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC January 30, 2013

### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 1/30/13. The ambient temperature was 68 deg F and weather conditions were overcast. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event. The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### **Pollutant Mass Removal**

Total weight of 3.055 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

### Liquid Disposal

Approximately 478 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

### **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

## APPENDIX A AFVR FIELD NOTES

## HERR, Inc.

### AFVR - Field Notes

Site Name: TITOALE'S BUICK STOP	Location: KINGSTREE	5 5 6
AFVR Contractor: HERR, Inc Steve	Personnel: GRI - Ruse	ell
Date: 1/3 v /13 Ambient Air Temperature and	General Weather Condition: <u>68</u>	Cloudy Onerest
A		Stop Time 2:
Total volume of water removed during the 8-hour AFVR Event:_	478 gcl	-
Total volume of product removed during the 8-hour AFVR Event	Sheen	
Product Recovery Rate:		

Monitoring Well	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft. below TOC)	Estimated volume of water removed during this event	Relevant Observations
NO 14	17.46	18.49		18.74		
nw 3A	17.34	17.49		17.82	1304 90	
AV 4A		18.18	~ 6-	18.73	7//	
m 2,3	17-71	17.80		18.30		
			٠.			

vacuum conversion: (inches of water X 0.07355 = inches of mercury) 4 A MW-1A MW- 2A AC.WM **Stinger Placement** Vacuum at Vacuum at Vacuum at **Product** Water **Targeted Targeted** Targeted Stinger Depth Depth Level Well Well **Notes** Well (in. Hg) (in. Hg) Time (in. Hg) 18-49 191 MUIA 1746 MW3A 181 13.36 17.47 18.5' 18.18 18-73 AY W M 1780 AG WM 18,5 1778 9.15 ೩ 20 20 20 20 20 20 16.15 20 20 20 11-15 20 20 00 ക 8 B 20 12.15 20 20 20 1.15 20 20 20 20 2.15 20 <del>ع</del>ى 315 20 Bo 20 20 20 4 15 مو 00 20 20 515 20 DU

Vacuum at Pump: 27 Opup

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

	W	N- 8	M	W-	M	W-	M	W-
715 Time	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)
10.18	17.98	0						
11.15		0						
1215		. 8						
1.15		1.2						
215		. 8						
3.15		2.5						
415		3. 6						
5.15	17.48	4.2						
		-						
		· · -						
								:••
	-							

Time	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Farenheit)	Relative Humidity (%)	Other
945	858	615	1189	87	49	
10.15	865	627	1176	24	ч	
1045	893	664	1141	105	48	
11.15	944	712	1155	111	48	
18.45	969	734	11 49	119	48	
12 45	912	758	1143	. 124	48	
12.45	886	742	1132	134	48	
1.15	984	745	1126	148	49	
1.45	975	752	1134	154	49	
D-15	979	738	1128	164	W	
2.45	947	710	1143	165	Y#	
3.15	937	703	1134	165	48	
345	951	728	1127	164	44	
415-	924	692	1134	164	49	
4.45	915	683	1130	164	48	
5.15	921	690	1134	164	47	

Co. Salah

.

## APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site:

Tisdale's Quick Stop

UST Permit #:

18686

<u></u>			Calculat	ions - Flow a	t DSCFM		
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)
1/30/13	9:15						
1/30/13	9:45	1189	0.022	89	48	0.014115758	24.80
1/30/13	10:15	1176	0.022	96	48	0.017639427	24.14
1/30/13	10:45	1141	0.022	105	48	0.023322035	22.91
1/30/13	11:15	1155	0.022	111	48	0.027979622	22.84
1/30/13	11:45	1149	0.022	119	48	0.035507632	22.23
1/30/13	12:15	1143	0.022	126	48	0.043578579	21.67
1/30/13	12:45	1132	0.022	134	48	0.054882508	20.92
1/30/13	1:15	1126	0.022	148	48	0.081669427	19.76
1/30/13	1:45	1136	0.022	156	48	0.102330526	19.23
1/30/13	2:15	1128	0.022	164	48	0.128281835	18.30
1/30/13	2:45	1143	0.022	165	48	0.131972828	18,44
1/30/13	3:15	1134	0.022	165	48	0.131972828	18.29
1/30/13	3:45	1127	0.022	164	48	0.128281835	18.29
1/30/13	4:15	1136	0.022	164	48	0.128281835	18.43
1/30/13	4:45	1130	0.022	164	48	0.128281835	18.34
1/30/13	5:15	1134	0.022	164	48	0.128281835	18.40
Averages		1142.44	0.022	139.63	48.00	0.081648772	20.437

Site:

Tisdale's Quick Stop

UST Permit #: 18686

•		Calcul	ations - Po	llutant	Mass R	emoval in p	ounds		
Marg. Elap.	Elapsed Time	Flow (DSCFM)	PPM measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)
0	0								
30	30	24.80	858	1	858	4562.69	0.000284849	0.424	0.212
30	60	24.14	865	1	865	4599.92	0.000287173	0.416	0.208
30	90	22.91	893	1	893	4748.82	0.000296469	0.408	0.204
30	120	22.84	946	1	946	5030.66	0.000314064	0.430	0.215
30	150	22.23	969	1	969	5152.97	0.000321700	0.429	0.215
30	180	21.67	992	1	992	5275.28	0.000329336	0.428	0.214
30	210	20.92	986	1	986	5243.37	0.000327344	0.411	0.205
30	240	19.76	984	1	984	5232.74	0.000326680	0.387	0.194
30	270	19.23	975	1	975	5184.88	0.000323692	0.373	0.187
30	300	18.30	979	1	979	5206.15	0.000325020	0.357	0.178
30	330	18.44	947	1	947	5035.98	0.000314396	0.348	0.174
30	360	18.29	937	1	937	4982.80	0.000311076	0.341	0.171
30	390	18.29	951	1	951	5057.25	0.000315724	0.346	0.173
30	420	18.43	924	1	924	4913.67	0.000306760	0.339	0.170
30	450	18.34	915	1	915	4865.81	0.000303772	0.334	0.167
30	480	18.40	921	1_	921	4897.71	0.000305764	0.338	0.169
Averages	1	20.44	940.13	1.00	940.13	4999.42	0.000312114	0.382	0.191

Total Emission in pounds:

3.055

#### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K Cg:m = PPMg \* (Mg/K3) Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3 PMRg = Cg \* Qstd \* 60 min/hr PMR = PMRg \* ((T2 -T1)/60)

Ostd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer) Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/PID at the blower discharge piping

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

K3 = 24.07 dsm<sup>3</sup>/1E6 mg-mole, mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

## APPENDIX C LIQUID DISPOSAL MANIFEST

### **NON-HAZARDOUS WASTE MANIFEST**

Ī	T	NON-HAZARDOUS  1. Generator's US EPA	ND No.	Manifes Docum		2. Page 1		
	ŀ	3. Generator's Name and Mailing Address "TITOACIE'S	QUICK STOP			e)		
		1996 74	de de la company	<b>6</b>				
	1	4. Generator's Phone ( ) LIN ( STEAL &	4. Generator's Phone ( ) KIN GSTPLE SC 5. Transparter 1 Company Name 6. US EPA ID Number					
	1	5. Transporter 1 Company Name	6. US EPA ID Number	A. State	A. State Transporter's ID			
	١.	HERR, Inc.	NCR-000135816	B. Tran	B. Transporter 1 Phone 7/6-653-6375			
}	4	7. Transporter 2 Company Name	8. US EPA ID Number		C. State Transporter's ID D. Transporter 2 Phone			
	1	B. Designated Facility Name and Site Address	10. US EPA ID Number		Facility's ID			
	1	CWS	.5	1	***			
		303 S. MAULTSBY ST.	1	F. Facil	ity's Phone 910 - 625 - 5	6/1_		
ſ	1	11. WASTE DESCRIPTION		12. Containers	13. Total	14. Unit WL/Val.		
	ŀ	2.		No. Typ		WEAVOL.		
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	N N	Steve Rivenbark	Signature	Buto	(	Month Day Year		
	ğ	18. Transporter 2 Acknowledgement of Receipt of Materials				Date		
	TRANSPORTER	Printed/Typed Name	Signature			Month Day Year		
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	֡֡֡֡֡֡֡֡֡֡֡֡֡֡֡	20. Facility Owner or Operator, Certification of receipt of the waste materials	covered by this manifest, except as noted in it	tom 19.	r			
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Rev. 3/95





Geological Resources, Inc.



March 11, 2013

Mr. Jim Martin, Hydrogeologist South Carolina Department of Health and Environmental Control 2600 Bull Street Columbia, South Carolina 29201-1708

Re: AFVR Report

Tisdales Quick Stop 1989 Thurgood Marshall Blvd. Kingstree, Williamsburg County

UST Permit #: 18686

CA #: 44799

#### Dear Mr. Martin:

This report presents the results of four aggressive fluid-vapor recovery (AFVR) activities conducted on November 30, 2012, December 21, 2012, January 10, 2013 and January 30, 2013 at the above referenced site. The activities were conducted in accordance with the requirements outlined in correspondence from the SCDHEC dated November 7, 2012 and addressed to Mr. Marty Easler. The purpose of the activities was to remove residual free-phase product and reduce dissolved phase contaminant concentrations in monitoring wells MW-1A, MW-3, MW-3A and MW-4A. The following Figures, Tables and Appendix have been included:

Figure 1: Site Location Map

Figure 2: Site Map

Table 1A: AFVR Event Chronology – November 30, 2012
Table 1B: AFVR Event Chronology – December 21, 2012
Table 1C: AFVR Event Chronology – January 10, 2013
Table 1D: AFVR Event Chronology – January 30, 2013
Table 2: Summary of Monitoring Well Gauging Data

Appendix A: AFVR Reports, Calculations, Disposal Manifests

Tisdales Quick Stop AFVR Report UST Permit # 18686

GRI personnel and the AFVR contractor, Hazmat Emergency Response and Remediation, Inc. (HERR) arrived on-site on November 30, 2012 for the first of four AFVR events. The first event was conducted on monitoring well MW-3. General weather conditions were sunny with an ambient air temperature of approximately 36°F at the time of system start-up. Approximately 0.10 feet of free product were measured in MW-3 prior to system startup. AFVR activities were conducted for eight (8) hours on MW-3 using a vacuum truck with a maximum vacuum rating of 25 in. Hg and a capacity of 325 cubic feet per minute. During the course of the event, the vacuum at the well remained steady at 20 in. Hg throughout the day. Please note that the vacuum truck was equipped with an activated charcoal filter for off-gas treatment of vapor phase hydrocarbons. A total of 632 gallons of liquid were removed during the event. A petroleum sheen was noted on the recovered ground water. No measurable free product was present in MW-3 at the conclusion of the event. Based on data collected during the AFVR event, an estimated total of 0.223 pounds (approximately 0.036 gallons) of vapor phase hydrocarbons were calculated to have been removed during the event.

GRI personnel and HERR arrived on-site on December 21, 2012 for the second of four AFVR events. The second event was conducted on monitoring wells MW-1A, MW-3A and MW-4A. General weather conditions were sunny with an ambient air temperature of approximately 43°F at the time of system start-up. Approximately 0.30, 0.59 and 0.05 feet of free product were measured in MW-1A, MW-3A and MW-4A, respectively, prior to system startup. AFVR activities were conducted for eight (8) hours on MW-1A, MW-3A and MW-4A using a vacuum truck with a maximum vacuum rating of 25 in. Hg and a capacity of 325 cubic feet per minute. During the course of the event, the vacuum at the wells remained steady at 20 in. Hg throughout the day. Please note that the vacuum truck was equipped with an activated charcoal filter for off-gas treatment of vapor phase hydrocarbons. A total of 572 gallons of liquid were removed during the event however, there was no measureable amount of liquid phase free product. No measurable free product was present in MW-1A, MW-3A or MW-4A at the conclusion of the event. Based on data collected during the AFVR event, an estimated total of 0.280 pounds (approximately 0.045 gallons) of vapor phase hydrocarbons were calculated to have been removed during the event.

GRI personnel and HERR arrived on-site on January 10, 2013 for the third of four AFVR events. The third event was conducted on monitoring well MW-3. General weather conditions were sunny with an ambient air temperature of approximately 61°F at the time of system start-up. No free product was measured in MW-3 prior to system startup. AFVR activities were conducted for eight (8) hours on MW-3 using a vacuum truck with a maximum vacuum rating of 25 in. Hg and a capacity of 325 cubic feet per minute. During the course of the event, the vacuum at the well remained steady at 20 in. Hg throughout the day. Please note that the vacuum truck was equipped with an activated charcoal filter for off-gas treatment of vapor phase hydrocarbons. A total of 426 gallons of liquid were removed during the event however, there was no measureable amount of liquid phase free product. No measurable free product was present in MW-3 at the conclusion of the event. Based on data collected during the AFVR event, an estimated total of 2.627 pounds (approximately 0.42 gallons) of vapor phase hydrocarbons were calculated to have been removed during the event.

GRI personnel and HERR arrived on-site on January 30, 2013 for the fourth of four AFVR events. The fourth event was conducted on monitoring wells MW-1A, MW-2A, MW-3A and MW-4A. General weather conditions were overcast with an ambient air temperature of approximately 68°F at the time of system start-up. Free product thicknesses of 1.03, 0.02 and 0.13 feet were measured in MW-1A, MW-2A and MW-3A, respectively, prior to system startup. No measurable amount of free product was noted in MW-4A. AFVR activities were conducted for eight (8) hours on MW-1A, MW-2A, MW-3A and MW-4A using a vacuum truck with a maximum vacuum rating of 25 in. Hg and a capacity of 325 cubic feet per minute. During the course of the event, the vacuum at the wells remained steady at 20 in. Hg throughout the day.

Tisdales Quick Stop AFVR Report UST Permit # 18686

Please note that the vacuum truck was equipped with an activated charcoal filter for off-gas treatment of vapor phase hydrocarbons. A total of 478 gallons of liquid were removed during the event however, there was no measureable amount of liquid phase free product. Product sheen was visible on the extracted liquid. No measurable free product was present in MW-1A, MW-2A, MW-3A or MW-4A at the conclusion of the event. Based on data collected during the AFVR event, an estimated total of 3.055 pounds (approximately 0.49 gallons) of vapor phase hydrocarbons were calculated to have been removed during the event.

GRI returned to the site on March 4, 2013 to gauge monitoring wells MW-3, MW-1A, MW-2A, MW-3A and MW-4A. No free product was observed in MW-3 or MW-4A. Free product was measured in monitoring wells MW-1A, MW-2A and MW-3A at thicknesses of 0.76, 0.10 and 0.89 feet, respectively. GRI recommends continued free product removal activities be conducted at the site.

If you have any comments or questions concerning this project, please do not hesitate to contact the undersigned at (704) 845-4010.

Sincerely,

Scott Ball

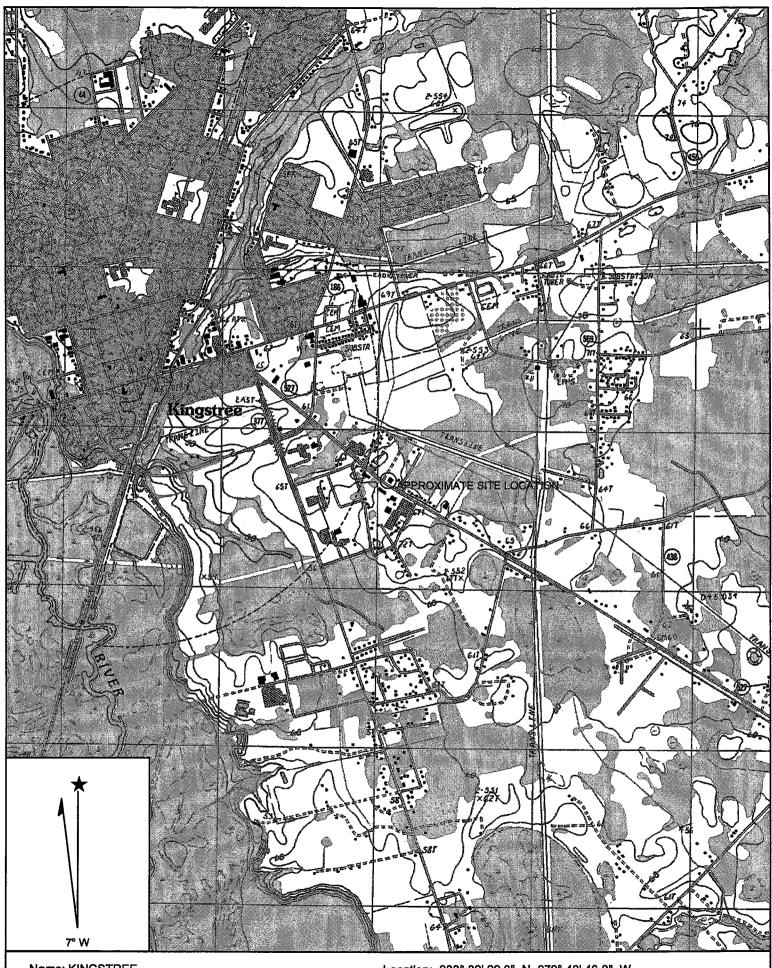
Project Managering

Enclosures

License

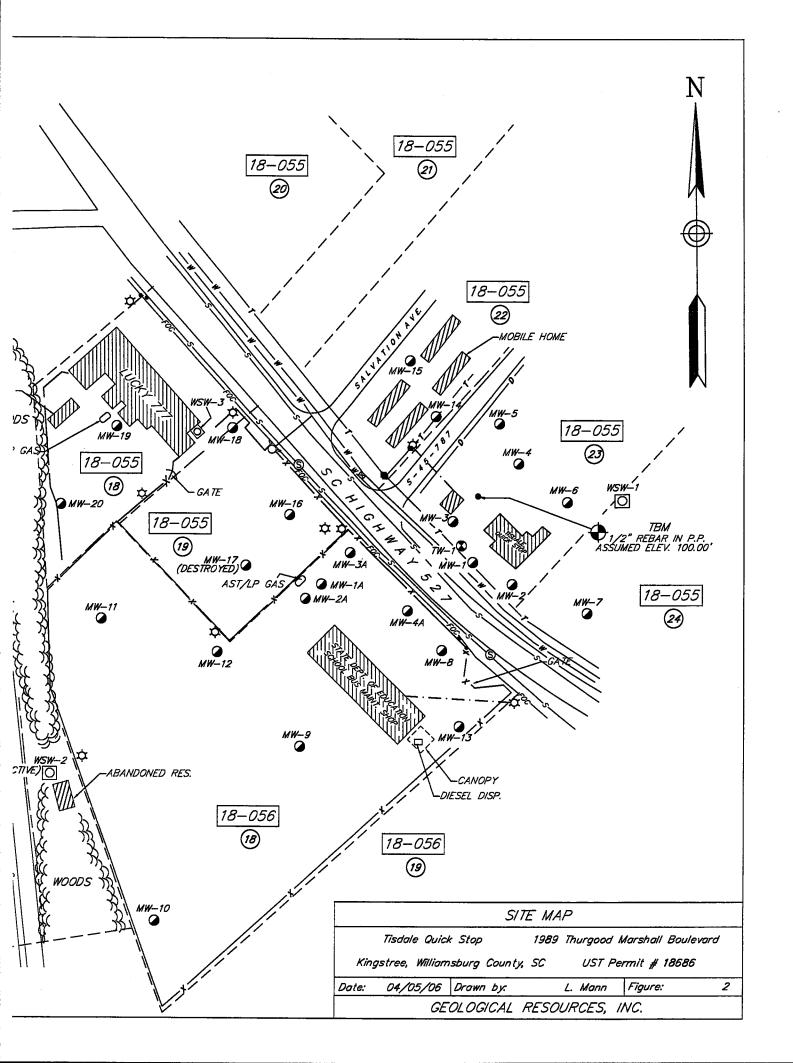
cc: Mr. Marty Easler

File



Name: KINGSTREE Date: 2/11/2009 Scale: 1 inch equals 2000 feet

Location: 033° 39' 29.0" N 079° 48' 46.8" W Caption: Site Location Map
Tisdales Quick Stop
Figure 1 UST Permit # 18686



# TABLE 1A AFVR EVENT CHRONOLOGY NOVEMBER 30, 2012 TISDALE'S QUICK STOP UST PERMIT #18686

Task	Hours	Personnel	Equipment	Company
Gauge Liquid Levels in MW-3	8:15	Vacuum Truck Operator	Interface Probe	HERR
Vacuum Truck Setup for Fluid Removal in MW-3	8:15 - 8:30	Vacuum Truck Operator	Vacuum Truck	HERR
Supervise Startup of AFVR	8:12 - 8:52	GRI	NA	GRI
Fluid Recovery in MW-3	8:30-16:30	Vacuum Truck Operator	Vacuum Truck	HERR
Gauge Liquid Level in MW-3	16:45	Vacuum Truck Operator	Interface Probe	HERR

# TABLE 1B AFVR EVENT CHRONOLOGY DECEMBER 21, 2013 TISDALE'S QUICK STOP UST PERMIT #18686

Task	Hours	Personnel	Equipment	Company
Gauge Liquid Levels in MW-1A, MW-3A, MW-4A	8:30	GRI	Interface Probe	GRI
Vacuum Truck Setup for Fluid Removal in MW-1A, MW-3A, MW- 4A	8:45 - 9:00	Vacuum Truck Operator	Vacuum Truck	HERR
Supervise Startup of AFVR	7:49 - 9:15	GRI	NA	GRI
Fluid Recovery in MW-1A, MW-3A, MW-4A	9:00 - 17:00	Vacuum Truck Operator	Vacuum Truck	HERR
Gauge Liquid Level in MW-1A, MW-3A, MW-4A	17:15	Vacuum Truck Operator	Interface Probe	HERR

# TABLE 1C AFVR EVENT CHRONOLOGY JANUARY 10, 2013 TISDALE'S QUICK STOP UST PERMIT #18686

Task	Hours	Personnel	Equipment	Company
Gauge Liquid Levels in MW-3	8:30	GRI	Interface Probe	GRI
Vacuum Truck Setup for Fluid Removal in MW-3	8:45 - 9:00	Vacuum Truck Operator	Vacuum Truck	HERR
Supervise Startup of AFVR	8:40 - 9:45	GRI	NA	GRI
Fluid Recovery in MW-3	9:00 - 17:00	Vacuum Truck Operator	Vacuum Truck	HERR
Gauge Liquid Level in MW-3	17:15	Vacuum Truck Operator	Interface Probe	HERR

# TABLE 1D AFVR EVENT CHRONOLOGY JANUARY 30, 2013 TISDALE'S QUICK STOP UST PERMIT #18686

Task	Hours	Personnel	Equipment	Company
Gauge Liquid Levels in MW-1A, MW-2A, MW-3A, MW-4A	9:00	GRI	Interface Probe	GRI
Vacuum Truck Setup for Fluid Removal in MW-1A, MW-2A, MW-3A, MW-4A	9:00 - 9:15	Vacuum Truck Operator	Vacuum Truck	HERR
Supervise Startup of AFVR	8:15 - 9:49	GRI	NA	GRI
Fluid Recovery in MW-1A, MW-2A, MW-3A, MW-4A	9:15 - 17:15	Vacuum Truck Operator	Vacuum Truck	HERR
Gauge Liquid Level in MW-1A, MW-2A, MW-3A, MW-4A	17:30	Vacuum Truck Operator	Interface Probe	HERR

### TABLE 2 SUMMARY OF MONITORING WELL GAUGING DATA TISDALE'S QUICK STOP UST PERMIT #18686

Well No.	Well No. Date		Depth to Free	Depth to	Free Product
			Product	Ground Water	Thickness
MW-3	11/30/12	08:15	17.84	17.94	0.10
		16:45		18.70	
MW-1A	12/21/12	08:30	17.68	17.98	0.30
	12/21/12	17:15		18.23	
MW-3A	12/21/12	08:30	17.14	17.73	0.59
1,1,1,1,1,1	12/21/12	17:15		17.88	
MW-4A	12/21/12	08:30	18.26	18.31	0.05
112 (1 12 1	12,21,12	17:15		18.81	
MW-3	01/10/13	08:30		18.15	
	01/10/13	17:15	202	19.34	
MW-1A	01/30/13	09:00	17.46	18.49	1.03
WW-IA		17:30		18.76	wie th
MW-2A	01/30/13	09:00	17.78	17.80	0.02
IVI W-ZA		17:30		18.30	
MW-3A	01/30/13	09:00	17.36	17.49	0.13
		17:30		17.82	
MW-4A	01/30/13	09:00		18.18	
171 77		17:30		18.73	
MW-3	03/04/13	13:40		17.50	
MW-1A	03/04/13	13:45	17.05	17.81	0.76
MW-2A	03/04/13	13:50	17.32	17.42	0.10
MW-3A	03/04/13	13:55	17.04	17.93	0.89
MW-4A	03/04/13	14:00		17.61	

Note:

• Data reported in feet.

### APPENDIX A

AFVR Reports, Calculations, Disposal Manifests



## HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Wednesday, December 5, 2012

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on November 30, 2012. Included is the documentation for the event. The 8 hour event was conducted on monitoring well MW-3.

If you have any questions, please do not hesitate to contact our office.

Sincerely.

Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC November 30, 2012

### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 11/30/12. The ambient temperature was 36 deg F and weather conditions were sunny/fair. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event. The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

### Pollutant Mass Removal

Total weight of 0.223 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

### Liquid Disposal

Approximately 632 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

### **APPENDICES**

- A. AFVR FIELD NOTES
- . B. POLLUTANT MASS REMOVAL DATA SHEET
  - C. LIQUID DISPOSAL MANIFEST

## APPENDIX A AFVR FIELD NOTES

## HERR, Inc.

### AFVR – Field Notes

Site Name: TISDACE'S QUICK STOP	Location: KINGSTREE	36
AFVR Contractor: HERR Inc Stove	Personnel: GRI - Home	-l
	d General Weather Condition: 36	Jon Denny
C:2.3	Start Time 2:	Stop Time 2:
Total volume of water removed during the 8-hour AFVR Event:	632 gal	_
Total volume of product removed during the 8-hour AFVR Even	1: Sheen	-
Product Recovery Rate:		

Monitoring Well	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft. below TOC)	Estimated volume of water removed during this event	Relevant Observations
MW3	17.84	17.94		18.70	400	
					(0) t 90	
					•	

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

	3			Star Weishood - Indired of Hierotry)				
	IAIAA- MIAA-		MW-	Stinger Placement				
8.30 Time	Targeted Well (in. Hg)	Targeted Well	Targeted Well	Stinger Depth	Product Depth	Water Level	Notes	
	(III. IIG)	(in. Hg)	(in. Hg)	1 00		\	1 /2	
MWJ				18.4"	1784	17.74	18.70	
9.30	20			· · · · · · · · · · · · · · · · · · ·				
10.30	70							
11.30	20							
12.30	d o							
1.70	20							
2.30	9				·			
3.30								
4.30	ے کی							
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							to an energy of the energy of	
		• • •						

Vacuum at Pump: Ja (F)

		£ 1	on: (inches of water X 0.07355 = inches of merci			iry)		
	M	w- /	M	w- 4	N	iw-	N	IW-
8.3 <i>⊙</i> Time	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)
Mel	17.85	_	Day He					
MY								
9.30	(	0		0				
9.30		0		0				
11.30		C	-	0				
12.30		e		0				
1.30 2.00		0		6				
2.30		P		67				
3.30		D		6				:
4.30	1785	D.	Day Hole.	E				
X.			-					
			-		<b>4</b>			
					,			
							-	
:								
	,							

Time	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Farenheit)	Relative Humidity (%)	Other
9:00	204	128	379	84	39	
9:30	205	129	32	118	39	
/0:,01	207	129	392	/24	39	
10:30	201	124	401	131	39	
11:00	196	1/9	405	/39	39	
11:34	192	114	409	146	39	
12:00	/89	109	401	145	34	
12:36	186	108	407	145	39	
1:03	180	101	412	145	39	•
1:30	178	94	415	145	39	
2:00	176	92	416	145	39	
2130	177	92	415	145	39	
3:01	175	89	418	144	39	
3:30	172	85	423	144	39	
4:00	165	81	425	144	39	
4:30	165	79	428	143.	39	
•		·				
						•

# APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site:

Tisdale's Quick Stop 18686

UST Permit #:

Calculations - Flow at DSCFM										
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)			
11/30/12	8:30									
11/30/12	9:00	379	0.022	84	39	0.009714096	8.01			
11/30/12	9:30	388	0.022	118	39	0.027722511	7.58			
11/30/12	10:00	392	0.022	124	39	0.032996605	7.54			
11/30/12	10:30	406	0.022	131	39	0.040301300	7.66			
11/30/12	11:00	405	0.022	139	39	0.050466674	7.46			
11/30/12	11:30	409	0.022	146	39	0.061287078	7.36			
11/30/12	12:00	401	0.022	145	39	0.059616992	7.24			
11/30/12	12:30	407	0.022	145	· 39	0.059616992	7.35			
11/30/12	1:00	412	0.022	. 145	39	0.059616992	7.44			
11/30/12	1:30	415	0.022	145	39	0.059616992	7.49			
11/30/12	2:00	416	0.022	145	39	0.059616992	7.51			
11/30/12	2:30	415	0.022	145	39	0.059616992	7.49			
11/30/12	3:00	418	0.022	144	39	0.057990221	7.57			
11/30/12	3:30	423	0.022	144	39	0.057990221	7.66			
11/30/12	4:00	425	0.022	144	39	0.057990221	7.70			
11/30/12	4:30	428	0.022	143	39	0.056405602	7.78			
Averages		408.69	0.022	136.69	39.00	0.050660405	7.553			

Site:

Tisdale's Quick Stop

UST Permit #: 18686

Marg.	Elapsed	Flow	PPM			emoval in po			
Elap.	Time	(DSCFM)	measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)
0	0								
30	30	8.01	204	1	204	1084.84	0.000067726	0.033	0.01
30	60	7.58	205	1	205	1090.15	0.000068058	0.031	0.01
30	90	7.54	207	1	207	1100.79	0.000068722	0.031	0.01
30	120	7.66	201	1	201	1068.88	0.000066730	0.031	0.01
30	150	7.46	196	1	196	1042.29	0.000065070	0.029	0.01
30	180	7.36	192	1	192	1021.02	0.000063742	0.028	0.01
30	210	7.24	188	1_	188	999.75	0.000062414	0.027	0.01
30	240	7.35	186	1	186	989.12	0.000061750	0.027	0.01
30	270	7.44	180	1	180	957.21	0.000059759	0.027	0.01
30	300	7.49	178	1	178	946.57	0.000059095	0.027	0.01
30_	330	7.51	176	1	176	935.94	0.000058431	0.026	0.01
30	360	7.49	177	1	177	941.25	0.000058763	0.026	0.01
30	390	7.57	175	1	175	930.62	0.000058099	0.026	0.01
30	420	7.66	172	1	172	914.67	0.000057103	0.026	0.01
30	450	7.70	168	1	168	893.39	0.000055775	0.026	0.01
30	480	7.78	165	1	165	877.44	0.000054779	0.026	0.01
		7.55	185.63	1.00	185.63	987.12	0.000061626	0.028	0.01

#### **Pollutant Mass Removal Calculations**

```
Qstd = (1-water vapor) * velocity * (PI * (diameter/24)^2) * (528degrees R/(Temp + 460) PPMg = PPM measured * K Cg:m = PPMg * (Mg/K3) Cg = Cg:m * 62.43E-09 lb-m^3/mg-ft^3 PMRg = Cg * Qstd * 60 min/hr PMR = PMRg * ((T2 -T1)/60)
```

Qstd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer)

Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

K3 = 24.07 dsm<sup>3</sup>/1E6 mg-mole, mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

	WASTE MANIFEST	. Generator's US EPA				Manifest Document No.		2. Page 1
	3 Generating Name and Mailing Address T/	SDALES	ه الارديد الم	576P	9.			
	4. Generator's Phone ( )	NGSTREE.	Sc	ATIZITICAL I	ecvo.			
4				W 467 FT (M 1988/846/68: 1		A. State Transp	onter's ID	
`\	HERE, Inc. 7. Transporter 2 Company Name			000139816		B. Transporter		57-67
1	The second secon		o. u.	S EPA ID Number		C. State Transp  D. Transporter 2	·	- who are
ſ	9. Designated Facility Name and Site Address		10. U	S EPA ID Number		E. State Facility		
	CWS 303 J: MAULTERY	<b>5</b> 7.			U# N1	F. Facility's Pho		og muter filmede i gradi og fallingsgy gradi og fallingsgy gradi og fallingsgy
4	11. WASTE DESCRIPTION				1 10 0-		110-625-5	
					No.	ntainers Type	13. Total Quantity	U VV
1	8. # 1. # 1. # 1. # 1. # 1. # 1. # 1. #			*1				
	Non-Reg. Petrola	eva Co	at et	Moder	HZ	<b>V</b> て	132	ઉ∗
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	d.							
	· F							
	G. Additional Descriptions for Materials Listed Above			······································		H. Handling Co.	des for Westes Listed Af	evec
	: . :							
4								
Y						<u> </u>		-
	15. Special Handling Instructions and Additional Informa	uon						
	* 1							
			7/7/7			7-7-7-7		
J	16. GENERATOR'S CERTIFICATION: I hereby certify to in proper condition for transport. The materials described in the condition of transport.	hat the contents of the	is shipment are h	By and accurately described the second of the second secon	ibed and are in to regulations.	all respects		
	as proposi decimants to talk parts the same and						Г	Date
ŀ	Printed/Typed Name	,	Signa	tiure				Aonth Day
					<del>-</del>			
	17. Transporter 1 Acknowledgement of Receipt of Mate	ials	1.0					Date
AZMO ORF	Steve Riverbur	K	Signa	TE E	R	LL	ŧ	Month Day
;	18. Transporter 2 Acknowledgement of Receipt of Mate	<del>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</del>						Daite
3	Printed/Typed Name		Sign	nture				Wonth Day
1	19. Discrepancy Indication Space		1					
. 1								
FAC								
١	20. Facility Owner or Operator, Certification of receipt of	the waste materials o	covered by this m	anifest, except as noted	l in item 19.			Dato

Amme



### HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Thursday, December 27, 2012

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on December 21, 2012. Included is the documentation for the event. The 8 hour event was conducted on monitoring wells MW-1A, MW-3A, and MW-4A.

If you have any questions, please do not hesitate to contact our office.

Sincerely,

Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC December 21, 2012

#### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 12/21/12. The ambient temperature was 43 deg F and weather conditions were sunny/fair. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event. The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### Pollutant Mass Removal

Total weight of 0.280 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### Liquid Disposal

Approximately 572 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

# APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

## HERR, Inc.

## AFVR – Field Notes

Site Name: TISDALES GUICK STOP	Location: KING	STREE SC	
AFVR Contractor: HERR, Inc Steve	Personnel: GRI	- Hommool	
Date: /2/ズ/パン Ambient Air Temperature and	General Weather Condit	ion: 433 Dung-Jan:	
Start Time 1: 9 00 Stop Time 1: 55.00	Start Time 2:	Stop Time 2:	
Total volume of water removed during the 8-hour AFVR Event:_	572 Jul		,
Total volume of product removed during the 8-hour AFVR Event		NORMANISMO Anni	. *
Product Recovery Rate:			•

Monitoring Well	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft. below TOC)	Estimated volume of water removed during this event	Relevant Observations
BW 4/1	17.14	17.73		1758	5129	i.C



15.5.5

## **Aggressive Fluid/Vapor Recovery Notes**

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

		mw- 3A	MW- 4/7		Stinger	Placement	
5.00 Time	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Stinger Depth	Product Depth	Water Level	Notes <i>J</i>
MWIA				161	178	1958	1, 18:23
NW3/1				178"	17.14	1773	17.53
MW'45				178"	18.24	18.71	115.51
10.60	20	· 80	20				
11.00	1	30	70	•	•		
12.60	20	80	90		·		
1.00	20	20	70	i ·			•
2.60	20	20	<sup>ن</sup> ۾				•
3.00	20	20	20				
4-00	20	20	20				
5.00	20	20	20				
******							
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					•		
				•			*
							•
				_			

Vacuum at Pump: 22 @ Pup

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

	M\	N- 57	M	w-7-A	M	<b>W-</b>	M	W-
9.00 Time	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (în. Hg)	Water Level	Vacuum Influence at Well (in. Hg)
	1.5/2		Long					
10.00				. 21				
1200	-	1		, 2-3				
1200		, 2		73				
1800		2		.30				
B.00		. 03		.30				
3.00		<b>.</b> 3		-30				
4.00		3		70 30			ŧ.	
5.00	15.12		De	30		`	-	ν,
	£;							
•								
						,		
								•
	<b></b>							

Time	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Farenheit)	Relative Humidity (%)	Other
530	234	154	389	12.	41	
1000	241	159	352	84	41	
10,30	249	164	398	94	4/	
11.00	245	160	402	103	41	
11.30	238	155	404	124	41 -	
1200	240	158	409	135	4/	
1230	234	153	412	13.5	41	
1.00	231	150	416.	138	41	
1.30	226	144	420	1339	41	
200	211	134	425	138	γ/	
8.30	205	131	424	138	41	
3.00	207	135	426	/38	41	
3.30	203	132	430	138	41/	
4,00	194	126	496	138	4(	
4.30	191	124	442	136.	41	
500	186	120	447	133	41	
F		(		<b>مسر</b>		•
						*
				,		

### **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

Site:

Tisdale's Quick Stop

**UST Permit #:** 18686

		<del></del>	Calculat	ions - Flow at	DSCFM		
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rei. Humidity	Water Vapor (%)	Qstd (flow)
12/21/12	9:00						
12/21/12	9:30	389	0.022	72	41	0.006842956	8.44
12/21/12	10:00	392	0.022	86	41	0.010908335	8.25
12/21/12	10:30	398	0.022	94	41	0.014090345	8.23
12/21/12	11:00	402	0.022	103	41	0.018638786	8.14
12/21/12	11:30	406	0.022	126	41	0.036846891	7.75
12/21/12	12:00	409	0.022	135	41	0.047609072	7.60
12/21/12	12:30	412	0.022	135	41	0.047609072	7.66
12/21/12	1:00	416	0.022	138	41	0.051802985	7.66
12/21/12	1:30	420	0.022	138	41	0.051802985	7.74
12/21/12	2:00	425	0.022	138	41	0.051802985	7.83
12/21/12	2:30	424	0.022	138	41	0.051802985	7.81
12/21/12	3:00	426	0.022	138	41	0.051802985	7.85
12/21/12	3:30	430	0.022	138	41	0.051802985	7.92
12/21/12	4:00	436	0.022	138	41	0.051802985	8.03
12/21/12	4:30	442	0.022	138	41	0.051802985	8.14
12/21/12	5:00	447	0.022	138	41	0.051802985	8.23
Averages		417.13	0.022	124.56	41.00	0.040548270	7.955

Site:

Tisdale's Quick Stop

**UST Permit #: 18686** 

		Calcul	ations - Po	ilutant	Mass R	emoval in p	ounds		
Marg. Elap.	Elapsed Time	Flow (DSCFM)	PPM measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)
. 0	0								
30	30	8.44	236	1	236	1255.01	0.000078350	0.040	0.020
30	60	8.25	241	1	241	1281.60	0.000080010	0.040	0.020
30	90	8.23	249	1	249	1324.14	0.000082666	0.041	0.020
30	120	8.14	245	1	245	1302.87	0.000081338	0.040	0.020
30	150	7.75	238	. 1	238	1265.64	0.000079014	0.037	0.018
30	180	7.60	240	1	240	1276.28	0.000079678	0.036	0.018
30	210	7.66	234	1	234	1244.37	0.000077686	0.036	0.018
30	240	7.66	231	1	231	1228.42	0.000076690	0.035	0.018
30	270	7.74	226	1	226	1201.83	0.000075030	0.035	0.017
30	300	7.83	211	1	211	1122.06	0.000070050	0.033	0.016
30	330	7.81	205	1	205	1090.15	0.000068058	0.032	0.016
30	360	7.85	207	1	207	1100.79	0.000068722	0.032	0.016
30	390	7.92	203	1	203	1079.52	0.000067394	0.032	0.016
30	420	8.03	194	1	194	1031.66	0.000064406	0.031	0.016
30	450	8.14	191	1	191	1015.70	0.000063410	0.031	0.015
30	480	8.23	186	1	186	989.12	0.000061750	0.031	0.015
Averages		7.95	221.06	1.00	221.06	1175.57	0.000073391	0.035	0.018
						Total Er	nission in pound	is:	0.280

#### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K
Cg:m = PPMg \* (Mg/K3)
Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3
PMRg = Cg \* Qstd \* 60 min/hr
PMR = PMRg \* ((T2 -T1)/60)

Qstd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer) Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

 $K3 = 24.07 \text{ dsm}^3/1E6 \text{ mg-mole}$ , mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

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4 ( )   4	<b>HAZARDOUS WASTE MANIF</b>	F
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į	1025	a print or type (Form designed for use on elite (	12 pltch) typewriter)				March 19 1 September 19 19 19 19 19 19 19 19 19 19 19 19 19	
		NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No.			Manifest Document No.	2	. Page 1
	$\exists I$	3. Generator's Name and Mailing Address —	150ACE'S QUIC 1989 THUR GOOD KINGSTREE, 50	L Stop				W.
1			989 THUR GOOD	MARSHALL BL	vo -			· · :
		4. Generator's Phone ( )	KINGSTREE 5	C	***		#+	
	. [	5. Transporter 1 Company Name	6.	US EPA ID Number		A. State Trans	parter's ID	
	1	TIEIGH, the		1015-0001368	316	B. Transporter	1 Phone 910 - 657	-(399
	4	7. Transporter 2 Company Name	<b>β.</b> 1	US EPA ID Number	··· -	C. State Trans		
	$\forall$	9. Designated Facility Name and Site Address	10.	US EPA ID Number		D. Transporte		7
	4	CWS					- <b>,</b>	
		203 J. MAU	ग्रिक्ष इर.		Ī	F, Facility's Pr		
	-	WHITEUILLE NO	<u> </u>		12. Cont		916-625-5617 13.	
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		<ol> <li>GENERATOR'S CERTIFICATION: I nereby ce in proper condition for transport. The materials</li> </ol>	tary may the coments of this shipmer described on this manifest are not st	ni and runy and accurately described object to federal hazardous waste re	and are in a egulations.	a respects		
l	4							Date
		Printed/Typed Name		Signature			Month	Day Year
Î	7	17. Transporter 1 Acknowledgement of Pieceipt of I	dateriais					Date
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	MH-THO TO THE	18. Transporter 2 Acknowledgement of Receipt of I Printed/Typed Name	WELDT LIES	Signature	· 		Month:	Date  Day Year
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	F A	19. Discrepancy Indication Space						
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#### HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Tuesday, January 15, 2013

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on January 10, 2013. Included is the documentation for the event. The 8 hour event was conducted on monitoring well MW-3.

If you have any questions, please do not hesitate to contact our office.

Sincerely.

Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC January 10, 2013

#### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 1/10/13. The ambient temperature was 61 deg F and weather conditions were sunny/fair. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event. The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### Pollutant Mass Removal

Total weight of 2.627 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### Liquid Disposal

Approximately 426 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

### **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

# APPENDIX A AFVR FIELD NOTES

## HERR, Inc.

### AFVR – Field Notes

Site Name: TISDALE'S QUICK 570P	Location: KINGSTREE S	ح
AFVR Contractor: HERR, Inc Steve	Personnel: GRI - Rus	مو
Date: 1/10/13 Ambient Air Temperature a	and General Weather Condition: 6/5	Deg-Fori
Start Time 1: 9.00 Stop Time 1: 5.00	Start Time 2: Sto	op Time 2:
Total volume of water removed during the 8-hour AFVR Even	1: 476 g el	
Total volume of product removed during the 8-hour AFVR Even	ent:	
Product Recovery Rate:		

Monitoring Well	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft. below TOC)	Estimated volume of water removed during this event	Relevant Observations
11143		18.15		19.34		
					1176,100	
					7 67 7	

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

		MW-	MW-	Stinger Placement					
9.00 Time		Vacuum at Targeted Well (in. Hg)		Stinger Depth	Product Depth	Water Level	Notes		
MUB				17/	· · · · ·	18.15			
10.00	20								
11.00	20								
12.00	20								
1.40	20								
2.00	20								
. 3.00	20								
4.00	20								
5.00	20					19.34			
							-		
		_							
•									

Vacuum at Pump: 27 & Page

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

1	Vac	uurii Convers	ion. (inches	OI WALE! A U.	07300 - IIIC	nes or mercu	иу,	
•	M\		M	w- 4	N	W-	M	w-
9.00 Time	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)
1000	18.23	0	Duy	0				
11.30		0		0				
12.00		0		Ą				
100	-	0		0				
2.60		0		0				
3'00		Ø		Ð				
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5-00	18.93	Ь	Dry	4				
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Time 9.06	PID <u>at stack</u> (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Farenheit)	Relative Humidity (%)	Other
9.30	905	752	<i>934</i>	92	38	
1000	1012	848	915	105	38	
1030	1081	894	921	112	39	
11.00	11 36	941	908	196	39	
11-90	1171	1071	912	134	39	
12.00	1208	1059	879	145	39	
1230	1235	1090	856	159	38	
1.00	1270	1128	835	163	35	
1.30	1275	1125	862	145	38	
2.00	1225	1084	865	165	38	
2.30	1176	1021	863	165	38	
3.00	952	815	866	165	38	
330	878	726	869	165	38	
4-00	804	658	871	165	38	
4.90	751	608	875	165	38	
5-04	708	562	873	165	38	
•						
					•	

# APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site:

Tisdale's Quick Stop

**UST Permit #:** 18686

Calculations - Flow at DSCFM										
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)			
1/10/13	9:00									
1/10/13	9:30	936	0.022	92	38	0.012239006	19.46			
1/10/13	10:00	915	0.022	105	38	0.018320169	18.47			
1/10/13	10:30	921	0.022	112	39	0.023225162	18.27			
1/10/13	11:00	908	0.022	126	39	0.034948490	17.37			
1/10/13	11:30	912	0.022	134	39	0.043866306	17.05			
1/10/13	12:00	879	0.022	145	39	0.059616992	15.87			
1/10/13	12:30	· 856	0.022	159	38	0.084994727	14.70			
1/10/13	1:00	835	0.022	163	38	0.094761554	14.09			
1/10/13	1:30	862	0.022	165	38	0.100055714	14.42			
1/10/13	2:00	865	0.022	165	38	0.100055714	14.47			
1/10/13	2:30	863	0.022	165	38	0.100055714	· 14.43			
1/10/13	3:00	866	0.022	165	38	0.100055714	14.48			
1/10/13	3:30	869	0.022	165	38	0.100055714	14.53			
1/10/13	4:00	871	0.022	165	38	0.100055714	14.57			
1/10/13	4:30	875	0.022	165	38	0.100055714	14.64			
1/10/13	5:00	873	0.022	165	38	0.100055714	14.60			
Averages		881.63	0.022	147.25	38.25	0.073276133	15.714			

Site:

Tisdale's Quick Stop

**UST Permit #: 18686** 

Calculations - Pollutant Mass Removal in pounds											
Marg. Elap.	Elapsed Time	Flow (DSCFM)	PPM measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR		
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)		
0	0										
30	30	19.46	905	1	905	4812.63	0.000300452	0.351	0.175		
30	60	18.47	1012	1	1012	5381.64	0.000335976	0.372	0.186		
• 30	90	18.27	1086	1	1086	5775.16	0.000360543	0.395	0.198		
30	120	17.37	1136	1	1136	6041.05	0.000377143	0.393	0.197		
30	150	17.05	1171	1	1171	6227.17	0.000388762	0.398	0.199		
30	180	15.87	1208	1	1208	6423.93	0.000401046	0.382	0.191		
30	210	14.70	1235	. 1	1235	6567.51	0.000410010	0.362	0.181		
30	240	14.09	1270	1_	1270	6753.64	0.000421629	0.357	0.178		
30	270	14.42	1275	1	1275	6780.22	0.000423289	0.366	0.183		
30	300	14.47	1225	1	1225	6514.33	0.000406690	0.353	0.17		
30	330	14.43	1176	1	1176	6253.76	0.000390422	0.338	0.169		
30	360	14.48	952	1	952	5062.57	0.000316056	0.275	0.13		
30	390	14.53	878	1	878	4669.05	0.000291489	0.254	0.127		
. 30	420	14.57	804	1	804	4275.53	0.000266921	0.233	0.117		
• 30	450	14.64	751	1	751	3993.69	0.000249326	0.219	0.109		
30	480	14.60	708	1	708	3765.02	0.000235050	0.206	0.103		
Averages		15.71	1049.50	1.00	1049.50	5581.06	0.000348425	0.328	0.164		

Total Emission in pounds:

2.627

#### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K
Cg:m = PPMg \* (Mg/K3)
Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3
PMRg = Cg \* Qstd \* 60 min/hr
PMR = PMRg \* ((T2 -T1)/60)

Ostd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer) Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

K3 = 24.07 dsm<sup>3</sup>/1E6 mg-mole, mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

### **NON-HAZARDOUS WASTE MANIFEST**

	1000	e print or type (Form designed for use on elile (12 pitch) typewriter)								
		NON-HAZARDOUS 1. Generator's US EPA ID No. WASTE MANIFEST			Manifest Document No		2, Page 1 of			
	J	3. Generator's Name and Mailing Address TISDACE'S QUICE 1989 THURGUED								
	Ч	1989 THURGUES								
		4. Generator's Phone ( ) KINGTINEE SC								
l	4	5. Transporter 1 Company Name 6.	US EPA ID Number	ļ	A. State Trans		1766			
		HERR Inc. NO	US EPA ID Number		B. Transporter C. State Trans		7.6717			
	1				D. Transporte	<u> </u>				
		9. Designated Facility Name and Site Address 10.	US EPA ID Number		E. State Facili	ty's ID				
		303 S. MAYLASBY ST.	ŀ	F. Facility's Pi						
	4	WHITEVICE NC  11. WASTE DESCRIPTION		لـــــا		910-625-50	12_			
		11. WASTE DESCRIPTION		12. Cor No.	tainers Type	13. Total Quantity	14. Unit WL/Vol.			
		<b>a</b> .				- 4				
		Non-Reg. Petroleum Cont.	nd Water	HZ	VT	424	GAL			
	GE	<b>b</b> .			·					
	N									
	E R A	c.								
	Î									
	R	d.								
E										
ON-HAZARDOUS WASTE	3	G. Additional Descriptions for Materials Listed Above	H. Handling Codes for Wasles Listed Above							
S										
3										
2										
ZAI										
H	3	15. Special Handling Instructions and Additional Information								
2										
2										
_						7/7/7	FIL			
	٦	16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipmen in proper condition for transport. The materials described on this manifest are not su	are fully and accurately described bject to lederal hazardous waste reg	and are in a gulations.	il respects	Profits	•			
	4						Date			
	À	Printed/Typed Name	Signature			Mon	····			
	T	17, Transporter 1 Acknowledgement of Receipt of Materials					Date			
	RAN	Printed Typed Name	Mon	<del> </del>						
1	AZSPORT	18 Townsedor 2 Astronous of Boson of Marian	1200	<u> </u>	n		19 /3			
	F	18. Transporter 2 Acknowledgement of Receipt of Materials  Printed/Typed Name	Signature	<del></del>		Mon	Date th Day Yoar			
	Ė						<u> </u>			
	FA	19. Discrepancy Indication Space								
	ç	20. Facility Owner or Operator; Certification of receipt of the waste meterials covered by	this manifest, except as noted in ne	m 19.	<del></del> -		<del></del>			
	<u> </u>						Date			
	Y	Printed/Typed Name Z YAN Cot	Signature		C	Cz Man	th Day Year			
Ł		. 1.11. 0.1.2					1 1/ 2			



### HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Thursday, February 7, 2013

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 8 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on January 30, 2013. Included is the documentation for the event. The 8 hour event was conducted on monitoring wells MW-1A, MW-2A, MW-3A, and MW-4A.

If you have any questions, please do not hesitate to contact our office.

Sincerely.

Marc Cox

HERR Project Manager



Tisdale's Quick Stop Kingstree, SC January 30, 2013

#### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 1/30/13. The ambient temperature was 68 deg F and weather conditions were overcast. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event. The 8 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### **Pollutant Mass Removal**

Total weight of 3.055 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 8 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### Liquid Disposal

Approximately 478 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

### **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

# APPENDIX A AFVR FIELD NOTES

## HERR, Inc.

## AFVR - Field Notes

Site Name: TISOALE'S QUICK STOP	Location:	KINGSTREE 5C
AFVR Contractor: HERR, Inc Steve	Personnel:	GRI - Rusell
Date: 1/3 v /13 Ambient Air Temperature a	ınd General Weat	ther Condition: 68 Cloudy Onercast
Start Time 1: 7:15 Stop Time 1: 5:15	Start Time 2:	•
Total volume of water removed during the 8-hour AFVR Event		
Total volume of product removed during the 8-hour AFVR Eve	ent: Sheen	
Product Recovery Rate:		

Monitoring Well	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft. below TOC)	Estimated volume of water removed during this event	Relevant Observations
mu 1/f	17.46	18.49		18.74	4	1
MW 3/7	17. 34	17.49		17.82	1104 90	
AU 4A		18.18	~	18.73	711/	
mu 2,3	17-71	17.80		18.30		
			•	<del>_</del>		

MW-1A	MW- 2A	AC.WM		Stinger	Placement	
		Vacuum at Targeted Well	Stinger Depth	Product Depth	Water Level	Notes
IA			191	1744	18-49	
3A			181	13.36	17.47	
AP			18.5	-6	18.18	18.73
AS			18.5	17.18	טנקו	
0 20	20	30				
0 20	20	20				
50	20	30				
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00	20	20				
20	20	20				
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			.==-			
						7
	Targeted Well (in. Hg) IA  3A 7A  0 20 0 20 0 20 0 20 0 20 0 20 0 20 0	Targeted Well (in. Hg)  1A  3A  7A  0 20 20  0 2	Targeted Well (in. Hg)  1A  3A  7A  0 20 20 20  0 20 20  0 20 20 20  0 20 20 20  0 20 20  0 20 20 20  0 20 2	Targeted Well (in. Hg)  (in. Hg)  Targeted Well (in. H	Vacuum at Targeted Well (in. Hg)         Vacuum at Targeted Well (in. Hg)         Vacuum at Targeted Well (in. Hg)         Stinger Depth         Product Depth           JA         /9/	Vacuum at Targeted Well (in. Hg)

Vacuum at Pump: 27 Offurp

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

·	MW- 8			W-	MW-		MW-	
715 Time	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)
10.18	17.98	0						
11.15		0						
1215		۱۶						
1.15		1.2				·		
215		. 8						
3.15		2.5						
415		3.6						
415 5.15	17.48	4.2						
					· · · · · · · · · · · · · · · · · · ·			
		,						

Time <i>§.</i> /3 <sup>—</sup>	PID <u>at stack</u> (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Farenheit)	Relative Humidity (%)	Other
945	858	615	1189	89	49	
10.17	865	627	1174	24	५४	
1045	893	664	1141	105	49	
11.15	944	712	1155	111	ሃዋ	
16.45	969	734	11 49	119	47	
1215	972	758	1143	. 124	48	
12.45	886	742	1132	134	48	
1.15	984	745	1126	148	49	
1.45	975	732	1134	154	49	
D-15	979	738	1127	164	V	
2.45	947	710	1143	165	Y#	
3.15	937	703	1134	165	48	
3 45	951	728	1127	164	49	
415-	924	692	1134	164	49	
11-85	915	693	1130	164	48	
5-15	921	690	1134	14.4	4/	
						*
			-			
	·					

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# APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site:

Tisdale's Quick Stop

**UST Permit #:** 18686

	Calculations - Flow at DSCFM										
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)				
1/30/13	9:15										
1/30/13	9:45	1189	0.022	89	48	0.014115758	24.80				
1/30/13	10:15	1176	0.022	96	48	0.017639427	24.14				
1/30/13	10:45	1141	0.022	105	48	0.023322035	22.91				
1/30/13	11:15	1155	0.022	111	48	0.027979622	22.84				
1/30/13	11:45	1149	0.022	119	48	0.035507632	22.23				
1/30/13	12:15	1143	0.022	126	48	0.043578579	21.67				
1/30/13	12:45	1132	0.022	134	48	0.054882508	20.92				
1/30/13	1:15	1126	0.022	148	48	0.081669427	19.76				
1/30/13	1:45	1136	0.022	156	48	0.102330526	19.23				
1/30/13	2:15	1128	0.022	164	48	0.128281835	18.30				
1/30/13	2:45	1143	0.022	165	48	0.131972828	18.44				
1/30/13	3:15	1134	0.022	165	48	0.131972828	18.29				
1/30/13	3:45	1127	0.022	164	48	0.128281835	18.29				
1/30/13	4:15	1136	0.022	164	48	0.128281835	18.43				
1/30/13	4:45	1130	0.022	164	48	0.128281835	18.34				
1/30/13	5:15	1134	0.022	164	48	0.128281835	18.40				
Averages		1142.44	0.022	139.63	48.00	0.081648772	20.437				

Site:

Tisdale's Quick Stop

UST Permit #: 18686

		Calcul	ations - Po	llutant	Mass R	emoval in po	ounds		
Marg. Elap.	Elapsed Time	Flow (DSCFM)	PPM measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)
0	0								
30	30	24.80	858	1	858	4562.69	0.000284849	0.424	0.212
30	60	24.14	865	1	865	4599.92	0.000287173	0.416	0.208
30	90	22.91	893	1	893	4748.82	0.000296469	0.408	0.204
30	120	22.84	946	1	946	5030.66	0.000314064	0.430	0.215
30	150	22.23	969	1	969	5152.97	0.000321700	0.429	0.215
30	180	21.67	992	1	992	5275.28	0.000329336	0.428	0.214
30	210	20.92	986	1	986	5243.37	0.000327344	0.411	0.205
30	240	19.76	984	1	984	5232.74	0.000326680	0.387	0.194
30	270	19.23	975	1	975	5184.88	0.000323692	0.373	0.187
30	300	18.30	979	1	979	5206.15	0.000325020	0.357	0.178
30	330	18.44	947	1	947	5035.98	0.000314396	0.348	0.174
30	360	18.29	937	1	937	4982.80	0.000311076	0.341	0.171
30	390	18.29	951	1	951	5057.25	0.000315724	0.346	0.173
30	420	18.43	924	1	924	4913.67	0.000306760	0.339	0.170
30	450	18.34	915	1	915	4865.81	0.000303772	0.334	0.167
30	480	18.40	921	1	921	4897.71	0.000305764	0.338	0.169
Averages		20.44	940.13	1.00	940.13	4999.42	0.000312114	0.382	0.19

Total Emission in pounds:

3.055

#### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K Cg:m = PPMg \* (Mg/K3) Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3 PMRg = Cg \* Qstd \* 60 min/hr PMR = PMRg \* ((T2 -T1)/60)

Ostd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer) Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/PID at the blower discharge piping

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

 $K3 = 24.07 \text{ dsm}^3/1E6 \text{ mg-mole}$ , mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

#### **NON-HAZARDOUS WASTE MANIFEST**

130	3120	print or type (Form designed for use on elite (12 pilch) typermiter)					
	T	NON-HAZARDOUS  1. Generator's US EPA WASTE MANIFEST	ID No.		Manifest Document N	ð.	2. Page 1 of
	1	3. Generator's Name and Mailing Address TISDACE'S	QUICK ST	6P			
		1989 THUM	LGOLD MARSH	er Bevo.	ļ		
	]	4. Generator's Phone ( ) KIN (. STRILE	5C				
	┢	5. Transporter 1 Company Name	A. State Treat	esporter's ID	area, ut u		
	1	HERR Inc. 7. Transporter 2 Company Name	NCR-000	39816	B. Transport	er 1 Phone 7/0-6	53-6399
		7. Transporter 2 Company Name	B. US EPA ID N	lumber	C. State Tra	nsporter's ID	
	1				D. Transport		
	1	Designated Facility Name and Site Address     CW S	10. US EPA ID	Aumoer	E. State Fac	Mity's ID	
	1	303 5. MAULTSBY ST.			F. Facility's I	Phone	
		303 5. MAULITBY ST., WHITEVILLED NC				910-625-5	
<b>-</b>	J	11. WASTE DESCRIPTION		i -	Containers	13. Total Quantity	14. Unit WLVOL
	]-	B.		No.	Туре	Quantity	WL/Val.
		Non-Reg. Petroleum Conta	or history	Ha	VT	478	GAL
9		b.					
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E	<u>.</u>  -	C.			<del> </del>		
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l F	3	d.					
ST							
WASTE	ŀ	G. Additional Descriptions for Materials Listed Above			H. Handling	Codes for Wastes Listed #	ibove
Ä			•				
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ON-HAZARDOUS							
AZ	ľ	15. Special Handling Instructions and Additional Information					
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Z.							
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K			J/J/J/J	$\mathcal{I}/\mathcal{I}/\mathcal{I}$	1/1/		11
	$\dashv$	16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of the in proper condition for transport. The materials described on this marilest	is shipment are fully and acc are not subject to federal ha	curately described and are exardous waste regulations	in all respects i.		and the second of the second
	1					Г	Dam
	r	Printed Typed Name	Signature		***		Month Day Year
	4						
F	3  -	17. Transporter 1 Acknowledgement of Receipt of Materials	8		4		Dale
Í	Î	Steve Divenbark	Signature	hOD	SOL	•	Month Day Year 1 30 Q
	5	18. Transporter 2 Acknowledgement of Receipt of Materials					Date
7		Printed/Typed Name	Signature				Month Day Year
Ė	Т	18. Discrepancy Indication Space		***************************************			
1	۹						
	?	20. Facility Owner or Operator, Certification of receipt of the waste materials	covered by this manifest ow	cent as noted in item 19			
	-1	THE PROPERTY OF THE PROPERTY O				Γ	- Date
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## Catherine B. Templeton, Director Promoting and protecting the health of the public and the environment

MR MARTY EASLER 196 RICHBURG ROAD GREELEYVILLE SC 29056

APR 04 2013



Re:

Three 12hr. AFVR Event and Gauging Directive
Tisdales Quick Stop, 1989 Thurgood Marshall Blvd, Kingstree, SC
UST Permit # 18686, CA#45593
Release reported March 30, 2001
AFVR Report received March 13, 2013
Williamsburg County

Dear Mr. Easler

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) recognizes your commitment to continue work at this site using Geological Resources, Inc. as your contractor. The next appropriate scope of work is to continue aggressive fluid and vapor recovery (AFVR) events to remove residual free-phase product and reduce concentrations of chemicals of concern (CoC). Please have your contractor conduct three twelve-hour events on MW-1A, MW-3A, and MW-4A simultaneously. The events should be spaced a minimum of twenty days apart to allow equilibrium conditions to reestablish, and must be conducted in accordance with the UST Quality Assurance Program Plan (QAPP). Approximately one month after the final event, please gauge MW-3, MW-1A, MW-2A, MW-3A, and MW-4A for free product. available copy the **QAPP** is http://www.scdhec.gov/environment/lwm/usthome/Qapp.htm.

Cost Agreement #45593 has been approved in the amount shown on the enclosed cost agreement form for the AFVR events. AFVR activities may proceed immediately upon receipt of this letter, and must be performed by a South Carolina-Certified Underground Storage Tank Site Rehabilitation Contractor. All applicable South Carolina certification requirements apply to preparation of an AFVR report.

An AFVR report and invoice must be submitted to the Division within 120 days from the date of this letter. Your contractor may directly bill the State Underground Petroleum Environmental Response Bank (SUPERB) Account. Interim invoices may be submitted for this scope of work. If the invoice is 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 from the Agency is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the Agency for the cost to be paid. Agency 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, Agency 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.

The Division grants pre-approval for transportation of up to 5,000 gallons of free-phase product and petroleum-contaminated groundwater from the referenced facility to a permitted treatment facility for disposal. The transport and disposal must be conducted in accordance with the QAPP.

On all correspondence concerning this facility, please reference UST Permit #18686. If there are any questions concerning this project, feel free to contact me by telephone at (803) 896-4085, by fax at (803) 896-6245, or by e-mail at martinjm@dhec.sc.gov.

Sincerely,

Jim Martin, Hydrogeologist Corrective Action Section

7: W/D

Underground Storage Tank Management Division

Bureau of Land and Waste Management

enc: Approved cost agreement form

cc: Scott Ball, Geological Resources, Inc., 2301 Crown Point Executive Dr. Suite F Charlotte,

NC 28227 (w/ enc) Technical File (w/ enc)

# Approved Cost Agreement 45593 Facility: 18686 TISDALES QUICK STOP

MARTINJM PO Number:

Task / Description Categories	Item Description	Qty / Pct	Unit Price	<u>Amount</u>
04 MOB/DEMOB		····		
	A EQUIPMENT	3.0000	575.00	1,725.00
	B PERSONNEL	4.0000	290.00	1,160.00
10 SAMPLE COLLECTION				1, 11
	E GAUGE WELL ONLY	5.0000	20.00	100.00
17 DISPOSAL			•	
	A WASTEWATER	5,000.0000	0.80	4,000.00
19 RPT/PROJECT MNGT & COORDINATIO			<del></del>	
	PCT PERCENT	0.1500	19,693.00	2,953.95
23 EFR	\\			
	A 8 HOUR EVENT	3.0000	3,000.00	9,000.00
	B ADDITIONAL HOUR	12.0000	204.00	2,448.00
	C OFF GAS TREATMENT	36.0000	35.00	1,260.00

**Total Amount** 

22,646.95



### Geological Resources, Inc.



April 24, 2013

Mr. Jim Martin
South Carolina Department of Health
and Environmental Control
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management



Re:

Aggressive Fluid Vapor Recovery Event
Tisdales Quick Stop
1989 Thurgood Marshall Boulevard
Kingstree, Williamsburg County, South Carolina
LIST Pormit No. 18686

UST Permit No. 18686

CA No. 45593

Dear Mr. Martin:

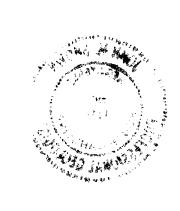
Geological Resources, Inc. (GRI) has completed the first of three 12-hour aggressive fluid vapor recovery (AFVR) events at the above referenced site in Kingstree, South Carolina. The AFVR event was conducted on April 18, 2013. A copy of the AFVR Report and an interim invoice are attached. Please contact Scott Ball at (704) 845-4010 with any questions.



cc:

file

2301 Crown Point Executive Drive Suite F Charlotte, NC 28227 Phone: (704) 845-4010 / (888) 870-4133 Fax: (704) 845-4012





#### HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Monday, April 22, 2013

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott.

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 12 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on April 18, 2013. Included is the documentation for the event. The 12 hour event was conducted on monitoring wells MW-1A, MW-3A, and MW-4A.

If you have any questions, please do not hesitate to contact our office.

Sincerely,

Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC April 18, 2013

#### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 4/18/13. The ambient temperature was 77 deg F and weather conditions were sunny/fair. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event. The 12 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### **Pollutant Mass Removal**

Total weight of 6.373 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 12 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### Liquid Disposal

Approximately 1,041 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

### **APPENDICES**

- A. AFVR FIELD NOTES
- **B. POLLUTANT MASS REMOVAL DATA SHEET**
- C. LIQUID DISPOSAL MANIFEST

# APPENDIX A AFVR FIELD NOTES

## HERR, Inc.

### AFVR - Field Notes

Site Name: TISOALES QUICK STOP	Location: KINGSTRE	is, sc					
AFVR Contractor: HERR, Inc Steve	Personnel: GRI - MICH	45					
Date: 4/19/13 Ambient Air Temperature and	General Weather Condition: 77	Join Sung					
Start Time 1: 9.30 Stop Time 1: 9.30 S	Start Time 2:	Stop Time 2:					
Total volume of water removed during the 8-hour AFVR Event:_	1041 gal	···					
Total volume of product removed during the 8-hour AFVR Event:							
Product Recovery Rate:							

Monitoring Well	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft. below TOC)	Estimated volume of water removed during this event	Relevant Observations
110/11	15.56	16.55		17.47		
3A	15.80	16.03		17:28	, all al	,
YA-	15.80 15.56 MB	16.12	~ i	18.15	10117	
9.A	T	15.87			' /	
⋖	٠	15.85				

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

	MW- 17		MW- 4/1-			<b>5</b> 1	
7. 3.0 Time	Vacuum at Targeted Well (in. Hg)	MW- 3 A Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Stinger Depth	Product Depth	Water Level	Notes
14				77.8"	1556	1655	
SA				14.8"	15.80	16,00	
· YA				15.8 "		1412	-
1030	22	22	22	· -		•	
1432	22	~2	72	•			•
1290	22	22	72				
1-30	22	72	72				
1-30 230 330	92	22	22				
	22	22	22				
(130	22	22	22				
1: 3-	92	22	22	-			
6.30	22	72	22				
7.30	92	22	22				
8.30	ಎ	22	02				
5.30	92	22	22				
					·		

Vaçuum at Pump: 24" Puys

vacuum conversion: (inches of water X 0.07355 = inches of mercury) 8 MW- 2A MW-MW-MW-Vacuum Vacuum Vacuum Vacuum Influence influence Water Water influence Water Influence Water 5.30 at Well at Well Level at Well Level at Well Level Level Time (in. Hg) (in. Hg) (in. Hg) (in. Hg) 16.85 102 10.30 .08 11.30 غری .12 1270 .12 .10 1.30 10 .12 12 290 .61 7.70 .11 12 430 .,2 11 5.70 .12 ./2 430 ./2 ファッ ./2 .12 8.30 1/2 1/2 .12 5.30 ,12

Ţime 9:3°	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Farenheit)	Relative Humldity (%)	Other
10:00	1159	894	959	102	46	
./0:30	1175	915	973	189	46	
11:00	1267	1026	984	117	46.	
11:36	1384	1143	992	126	46	
12:00	1411	1179	1805	120	46	
12:30	1472	/271	1012	135	46	
1:34	1436	1209	1674	148	46	
2:36	1379	1152	1896	156	46	
3;36	1771	1/24	1215	157	46	
4:30	1247	1038	1314	157	46	
5:30	1/28	912	1416	156	46	
4:30	1162	891	1479	156	41	
7:20	1077	854	1492	156	46	
9:20	103 h	817	1544	157	46	
9:30	1042	824	1556	156	46	
•						
					•	
		_				
						***********
						-
						<del></del>

# APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site:

Tisdale's Quick Stop

UST Permit #:

18686

Calculations - Flow at DSCFM										
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)			
4/18/13	9:30									
4/18/13	10:00	959	0.022	102	46	0.020352094	19.42			
4/18/13	10:30	973	0.022	109	46	0.025198935	19.36			
4/18/13	11:00	984	0.022	117	46	0.032002939	19. <b>1</b> 8			
4/18/13	11:30	992	0.022	126	46	0.041641244	18.85			
4/18/13	12:00	1005	0.022	130	46	0.046733350	18.86			
4/18/13	12:30	1012	0.022	135	46	0.053918351	18.69			
4/18/13	· 1:30	1034	0.022	148	46	0.077840677	18.22			
· 4/18/13	2:30	1096	0.022	156	46	0.097399089	18.65			
4/18/13	3:30	1215	0.022	157	46	0.100164820	20.58			
4/18/13	4:30	1314	0.022	157	46	0.100164820	22.26			
4/18/13	5:30	1466	0.022	156	46	0.097399089	24.95			
4/18/13	6:30	1479	0.022	156	46	0.097399089	25.17			
4/18/13	7:30	1492	0.022	156	46	0.097399089	25.39			
4/18/13	8:30	1544	0.022	157	46	0.100164820	26.16			
4/18/13	9:30	1556	0.022	156	46	0.097399089	26.48			
Averages		1208.07	0.022	141.20	46.00	0.072345166	21.482			

Site:

Tisdale's Quick Stop

UST Permit #: 18686

Calculations - Pollutant Mass Removal in pounds  Marg. Elapsed Flow PPM											
Marg. Elap.	Time	(DSCFM)	measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR		
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(ib/hr)	(lb)		
0	0										
30	30	19.42	1159	1	1159	6163.36	0.000384778	0.448	0.22		
30	60	19.36	1175	1	1175	6248.44	0.000390090	0.453	0.22		
30	90	19.18	1267	1	1267	6737.68	0.000420633	0.484	0.24		
30	120	18.85	1384	1	1384	7359.87	0.000459477	0.520	0.26		
30	150	18.86	1411	1	1411	7503.45	0.000468440	0.530	0.26		
30	180	18.69	1472	1	1472	7827.84	0.000488692	0.548	0.27		
60	240	18.22	1436	1	1436	7636.39	0.000476740	0.521	0.52		
60	300	18.65	1379	1	1379	7333.28	0.000457817	0.512	0.51		
60	360	20.58	1336	1	1336	7104.61	0.000443541	0.548	0.54		
60	420	22.26	1247	1	1247	6631.33	0.000413994	0.553	0.55		
60	480	24.95	1128	1	1128	5998.50	0.000374487	0.561	0.56		
60	540	25.17	1102	1	1102	5860.24	0.000365855	0.553	0.5		
60	600	25.39	1077	1	1077	5727.30	0.000357555	0.545	0.54		
60	660	26.16	1036	1	1036	5509.26	0.000343943	0.540	0.54		
60	720	26.48	1042	1	1042	5541.17	0.000345935	0.550	0.5		
\verages		21.48	1243.40	1.00	1243.40	6612.18	0.000412798	0.524	0.42		

#### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K Cg:m = PPMg \* (Mg/K3) Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3 PMRg = Cg \* Qstd \* 60 min/hr PMR = PMRg \* ((T2 -T1)/60)

**Qstd** = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer)

Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

 $K3 = 24.07 \text{ dsm}^3/1E6 \text{ mg-mole}$ , mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

#### **NON-HAZARDOUS WASTE MANIFEST**

		NON-HAZARDOUS 1. Generator's US EPA ID N WASTE MANIFEST	ło.		Manifest Document No	) <b>.</b>	2. Page 1			
		3. Generator's Name and Mailing Address TISON 6'5 8	" (INDA 6° A A							
		1981 THUR	RI VO		<u></u>					
		4. Generator's Phone ( ) KINGSTRIEE	. The same							
		5. Transporter 1 Company Name 6.	US EPA ID Number		A. State Trans					
	1	HERR, Inc. 7. Transporter 2 Company Name 8.	NCR-600137816		B. Transporte		3-6799			
		c,	US EFA ID NUMBE		C. State Tran					
		Designated Facility Name and Site Address     10.	US EPA ID Number		E. State Facil					
		CWS CONTROL ET								
		303 S. MAUCTSBY ST. WHITEVILLE NC			F. Facility's P	916 - CZ5 -	5012			
	4	11. WASTE DESCRIPTION		12. Co		13. Total	14. Unit WL/Vol.			
	4	8.		Nes.	Туре	Quantity	ANTAGE			
		Non-Res. Petroleum Cont	ed weder	H2	TT	1041	GAL			
	GE	b.								
	N E									
	R	c.								
	A									
	R R	d.								
E										
VA	J	G. Additional Descriptions for Materials Listed Above		L	H. Handling C	odes for Wastas Listed Above	1			
S										
8	7									
ON-HAZARDOUS WASTE	4									
Z	ŀ	15. Special Handling Instructions and Additional Information			×					
Ŧ										
O	4									
Z				7	, , , ,					
	Y	16. GENERATOR'S CERTIFICATION: I negety certify that the contents of this shi	ment an fully and accurately described	and are in	oll respects	<u> </u>				
		<ol> <li>GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shi in proper condition for transport. The materials described on this manifest are re-</li> </ol>	ot subject to federal hazardous waste re	gulations.	•					
	7	Printed/Typed Name	Beating				Date			
		Finaew Lypeo Name	Signature			Mont	h Day Year			
	T.	17. Transporter 1 Acknowledgement of Receipt of Materials					Date			
1.4	RAZMPO	Steve Dived bart	Signature	AR		Monti Lj	1/8/1/3			
	o O	18. Transporter 2 Acknowledgement of Receipt of Materials					Date			
	R T E R	Printed/Typed Name	Signature	, ,,		Mont	Day Year			
	F	19. Discrepancy Indication Space				:	_11			
8 3.	A									
	ĬÌ	20. Facility Owner or Operator, Certification of receipt of the waste materials cover	ed by this manifest, except as noted in ite	m 19.						
	Ţ	Printed/Typed Name	Signature				Date			
	Ÿ	TRYAN COL	Signature //		C	Cy G	Day Year    /8 /7			

**ESCYLANG** 





### Geological Resources, Inc.

May 13, 2013

Mr. Jim Martin
South Carolina Department of Health
and Environmental Control
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management



Re: Aggressive Fluid Vapor Recovery Event

Tisdales Quick Stop

1989 Thurgood Marshall Boulevard

Kingstree, Williamsburg County, South Carolina

UST Permit No. 18686

CA No. 45593

Dear Mr. Martin:

Geological Resources, Inc. (GRI) has completed the second of three 12-hour aggressive fluid vapor recovery (AFVR) events at the above referenced site in Kingstree, South Carolina. The AFVR event was conducted on May 9, 2013. A copy of the AFVR Report and an interim invoice are attached. Please contact Scott Ball at (704) 845-4010 with any questions.

Sincerely,

n 6

John M. License No.

enclosure

cc:

file



## HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Monday, May 13, 2013

Scott Ball
Geological Resources, Inc.
2301-F Crown Point Executive Dr.
Charlotte, NC 28227

· Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 12 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on May 9, 2013. Included is the documentation for the event. The 12 hour event was conducted on monitoring wells MW-1A, MW-3A, and MW-4A.

. If you have any questions, please do not hesitate to contact our office.

Sincerely,

/ Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC May 9, 2013

#### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 5/9/13. The ambient temperature was 72 deg F and weather conditions were sunny/fair. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event. The 12 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### **Pollutant Mass Removal**

Total weight of 2.666 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 12 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### **Liquid Disposal**

Approximately 962 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

#### **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

# APPENDIX A AFVR FIELD NOTES

## HERR, Inc.

#### AFVR - Field Notes

Site Name: TITOACE'S QUICK STOP	Location: KINGSTR	EE, SU
AFVR Contractor: HERRY Inc - Stare	Personnel: GRI	Ting
Date: $\frac{5/9//3}{}$ Ambient Air Temperature an	d General Weather Condition:	Sung-Ton 123
	Start Time 2:	Stop Time 2:
Total volume of water removed during the 8-hour AFVR Event:	962 gel	
Total volume of product removed during the 8-hour AFVR Ever	t:Shen	
Product Recovery Rate:		

Monitoring Well	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft. below TOC)	Estimated volume of water removed during this event	Relevant Observations
AW A	15.00	15.75 /	15-0-	17,48		
MU3A	1521	15.39 /	-0-	16.71		
MW 4A	1500	1525/	## -0°	14.62	762566	
					/- /	

vacuum conversion: (inches of water X 0.07355 = inches of mercury) MW- 3A MW- 1A MW-4/ Stinger Placement Vacuum at Vacuum at Vacuum at Targeted **Targeted Targeted Product** Stinger Water Well Well Well Depth Depth Level Notes (in. Hg) Time (in. Hg) (in. Hg) MYYA 17.48 15.58 15.65 3A-15.75 15.21 IA 15.25 15-20 20 20 20 20 10 20 11.00 20 20 20 20 10 12.00 ൂാ 20 20 2.00 3-00 9.00 5-00 6.00 7.00 8:00 ,00 4.00 20 20

Vacuum at Pump: 18'6 Prep

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

•		w-8		MW-2A MW-				w-
Time	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)
700	15.3	P	15-37	HATE				
10.00		0		0				•
11-00		0		0				
1200		0		.02				
1.00		6		.02				
2-00		10		102				
3.00		0		.04				
4.00		0		-09				
5-00		0		.64				
6.00		0		.04			<u> </u>	
6:00 7.00 9.00		0		.04				
9.00		6		.04				
9.00		0		.04				
188								
	-							
			•					
	· ·							
•								

Time	PID <u>at stack</u> (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Farenheit)	Relative Humidity (%)	Other
9.30	866	632	971	76	38	
1900	752	528	1024	108	38	
10.30	684	477	1073	115	79	
11.00	642	436	1134	125	78	
11.30	592	374	1198	148	97	
12.00	562	381	1258	154	38	
· 17 .90	SOL	329	1302	160	38	
1.00	471	278	1355	162	38	
200	458	245	1371	163	38	
3.00	452	238	1377	143	38	
4.00	438	202	1384	163	38	
3-00	421	194	1392	162	38	
600	412	152	1398	162	78	
700	404	187	1407	162	78	•
8.00	394	184	1411	161	91	
7.600	395	184	1415	161	39	
,						

# APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site:

Tisdale's Quick Stop

UST Permit #:

18686

		•	Calculat	ions - Flow a	t DSCFM		
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Rel. Water Humidity Vapor		Qstd (flow)	
5/9/13	9:00						
5/9/13	9:30	971	0.022	96	38	0.013882526	20.00
5/9/13	10:00	1026	0.022	108	38	0.020059140	20.56
5/9/13	10:30	1073	0.022	115	38	0.024707158	21.14
5/9/13	11:00	1134	0.022	126	38	0.034003387	21.71
5/9/13	11:30	1198	0.022	148	38	0.062933454	21.45
5/9/13	12:00	1258	0.022	156	38	0.078327031	21.86
5/9/13	12:30	1302	0.022	160	38	0.087338800	22.26
5/9/13	1:00	1355	0.022	162	38	0.092220250	22.97
5/9/13	2:00	1371	0.022	163	38	0.094761554	23.14
5/9/13	3:00	1377	0.022	163	38	0.094761554	23.24
5/9/13	4:00	1384	0.022	163	38	0.094761554	23.36
5/9/13	5:00	1392	0.022	162	38	0.092220250	23.60
5/9/13	6:00	1398	0.022	162	38	0.092220250	23.70
5/9/13	7:00	1407	0.022	162	38	0.092220250	23.85
5/9/13	8:00	1411	0.022	161	38	0.089746665	24.02
5/9/13	9:00	1415	0.022	161	38	0.089746665	24.09
Averages		1279.50	0.022	148.00	38.00	0.072119405	22.561

Site:

Tisdale's Quick Stop

UST Permit #: 18686

<del></del>		Calcul	ations - Po	llutant	Mass R	emoval in pe	ounds		
Marg. Elap.	Elapsed Time	Flow (DSCFM)	PPM measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(ib/hr)	(lb)
0	0								
30	30	20.00	866	1	866	4605.23	0.000287505	0.345	0.173
30	60	20.56	752	1	752	3999.00	0.000249658	0.308	0.154
30	90	21.14	684	1	684	3637.39	0.000227082	0.288	0.144
30	120	21.71	642	1	642	3414.04	0.000213139	0.278	0.139
. 30	150	21.45	592	1	592	3148.15	0.000196539	0.253	0.126
30	180	21.86	562	1	562	2988.62	0.000186579	0.245	0.122
30	210	22.26	506	1	506	2690.82	0.000167988	0.224	0.112
30	240	22.97	471	1	471	2504.69	0.000156368	0.216	0.108
60	300	23.14	458	1	458	2435.56	0.000152052	0.211	0.211
60	360	23.24	452	1	452	2403.66	0.000150060	0.209	0.209
60	420	23.36	438	1	438	2329.21	0.000145412	0.204	0.204
60	480	23.60	421	1	421	2238.80	0.000139769	0.198	0.198
60	540	23.70	412	1	412	2190.94	0.000136781	0.195	0.195
60	600	23.85	404	1	404	2148.40	0.000134125	0.192	0.192
60	660	24.02	396	1	396	2105.86	0.000131469	0.190	0.190
60	720	24.09	395	1	395	2100.54	0.000131137	0.190	0.190
*Averages		22.56	528.19	1.00	528.19	2808.81	0.000175354	0.234	0.167

2.666

Total Emission in pounds:

#### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K
Cg:m = PPMg \* (Mg/K3)
Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3
PMRg = Cg \* Qstd \* 60 min/hr
PMR = PMRg \* ((T2 -T1)/60)

Ostd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer)

Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

K3 = 24.07 dsm<sup>3</sup>/1E6 mg-mole, mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

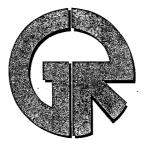
PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

#### **NON-HAZARDOUS WASTE MANIFEST**

Pt	ease print or type (Form designed for use on elite		· · · · · · · · · · · · · · · · · · ·	1			<u> </u>
	NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No	<b>),</b>		Manifest Document No.		2. Page 1 of
	3. Generator's Name and Mailing Address	TISDALES QU	nck stop				
Į,		1989 THURE	sood Marshall 1	BLVD.			
	4. Generator's Phone ( )	KINGTRUE	US EPA ID Number				
k	5. Transporter 1 Company Name	6.	US EPA ID Number		A. State Trans	porter's ID	
	HERR, Inc.		1CR-000139811	6	B. Transporter	1 Phone 910-65	7-6399
	7. Transporter 2 Company Name	8. t	US EPA ID Number	ļ.	C. State Trans		
	9. Designated Facility Name and Site Address	10.	US EPA ID Number		D. Transporter  E. State Facilit		
	Cws	-		l	C. Diese i acus	, 510	
	363 5. MAULTS	BY 57.		Ī	F. Facility's Pr	TORRE .	
k	WHITEVILLE, A	JC				910-625-	
	11. WASTE DESCRIPTION			12. Con No.	Type	13. Total Quantity	14. Unit WL/Vol.
	a. :					_	
	Non- Reg. Petrol	eun Conta	y Wdv	HZ	TT	962	GAL
E	b.						
١N							
E							
1							
C				-			
2							
WASTE							
	G. Additional Descriptions for Materials Listed Abo	vei			H. Handling C	odes for Wastes Listed Abov	0
ON-HAZARDOUS				İ			
8							
5							
Ŋ	15. Special Handling Instructions and Additional in	formation					
Ŧ							
Ż							
2							
				7/ 7		7/ 7/ 7	
b	16. GENERATOR'S CERTIFICATION: I hereby on in proper condition for transport. The materials				Il respects		
k							Date
	Printed/Typed Name		Signature			Mon	
<u> </u>							
F			Signature	7/2		·	Date h Day Year
	Steve Dive	ubarte		15-	é	Mon	n Day Year アンファ
Ę	18. Transporter 2 Acknowledgement of Receipt of			-3			Date
FTER	Printed/Typed Name		Signature			Mon	th Day Year
	19. Discrepancy Indication Space			i			
9		one a decision atoms of the test	d by this manifest around no nated in	for 12			::
	20. Facility Owner or Operator: Certification of reci	ahi m kis asaa warata coasig	о од 1000 низниској, вхемра из нејео п	ाध्यम् <i>थि</i> ः			Date
	Printed/Typed Namo		Signature //			O Mani	
١)	1 RYAN CAL		1 - 100	<b>y</b>	( -	<u>ت</u> ٢	191/7

**ERWIN** 



## Geological Resources, Inc.



June 10, 2013

Mr. Jim Martin
South Carolina Department of Health
and Environmental Control
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management



Re: Aggressive Fluid Vapor Recovery Event

Tisdales Quick Stop

1989 Thurgood Marshall Boulevard

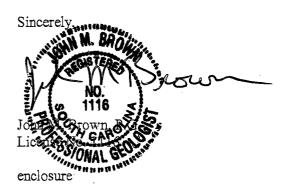
Kingstree, Williamsburg County, South Carolina

UST Permit No. 18686

CA No. 45593

Dear Mr. Martin:

Geological Resources, Inc. (GRI) has completed the third of three 12-hour aggressive fluid vapor recovery (AFVR) events at the above referenced site in Kingstree, South Carolina. The AFVR event was conducted on June 4, 2013. A copy of the AFVR Report and an interim invoice are attached. Please contact Scott Ball at (704) 845-4010 with any questions.



cc: file

2301 Crown Point Executive Drive Suite F Charlotte, NC 28227 Phone: (704) 845-4010 / (888) 870-4133 Fax: (704) 845-4012



### HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Monday, June 10, 2013

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

· Re: Site Name: Tisdale's Quick Stop

Kingstree, SC UST Permit #: 18686

Scott.

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 12 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on June 4, 2013. Included is the documentation for the event. The 12 hour event was conducted on monitoring wells MW-1A, MW-3A, and MW-4A.

If you have any questions, please do not hesitate to contact our office.

Sincerely,

Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC June 4, 2013

#### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 6/4/13. The ambient temperature was 77 deg F and weather conditions were sunny/fair. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event.

The 12 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### **Pollutant Mass Removal**

Total weight of 5.405 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 12 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### Liquid Disposal

Approximately 1,520 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

### **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

# APPENDIX A AFVR FIELD NOTES

#### HERR, Inc.

#### AFVR - Field Notes

Site Name: TISDACE'S QUICK STOP	Location: KINGSTRE	<u>e</u> ,50
AFVR Contractor: HERF, Inc Steve	Personnel: GRI Fin	<u> </u>
Date: 6/4//3 Ambient Air Temperature and	d General Weather Condition: 72	Duy-70i
Start Time 1: 8.75 Stop Time 1: 8.75	Start Time 2:	Stop Time 2:
Total volume of water removed during the 8-hour AFVR Event:_	1520 gal	-
Total volume of product removed during the 8-hour AFVR Even	t:	
Product Recovery Rate:		

Monitoring Well	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft. below TOC)	Estimated volume of water removed during this event	Relevant Observations
MUIA	14.88	14.50	_	17.62		<i>*</i>
					-2090	
11 W 3/4	14.87	14.55	-	17.36	50/	
					/	
MW 4/7	15.29	15.31	-	18.32		
•						

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

					- mones of the		· · · · · · · · · · · · · · · · · · ·
	MW- /A	MW- 3A	MW- YA	:	Stinger	Placement	
Time	Vacuum at Targeted Well (in. Hg)		Vacuum at Targeted Well (in. Hg)	Stinger Depth	Product Depth	Water Level	Notes
ו שוח				15.5'	14.88	14.90	117.62
MUB			**************************************	18.89	14.87	14.95	117.36
MWLI				1. <b>5.5</b> '	18.29	14.95	118.32
015	40	20	20			·	
0.11	20	70	20				
8.15 5.15 10.15 11.15 12.15	20	20	30				
10.75	20	20	20				
11.75	90	20	20				
12.15	20	20	20				
1.15	30	20	80	1			
2.15	20	20	28	,			
315	20	20	20				
4.15	20	20	20				
5.15	20	20	20			•	
	80	20	20				4
6.15	90	20	20				
815	20	20	20				
		3 30.50 pr					

Vacuum at Pump: 22" (C) Purps

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

	*40	daist dollacte		ion. (inches of water X 0.07555 - inches o			or mercury,		
:	M	w-24	M	w. 8	M	W-	M	W-	
8.15 Time	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	
	1499		15.00						
8:15		.02		.04		-			
1015		.02		۶٥٠,					
1015		2-	-	Á					
17-15		.02	-	04					
1-15		ـ2 د ـ		یکن.					
8:15 10:15 11:15 12:15 1:15 2:15 3:15 4:15		UZ		.84					
315		-22		- 08					
4.17		-2		40.					
5-15		-02		٠٥٢			·		
6-15		ال ت		.ol					
7.15 8.15		.u~		,01					
8.15	14.97	·~	15-00	.61					
				,					
						-			
						_			
								·	
•									
						•			

	Time	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Farenheit)	Relative Humidity (%)	Other
	8.45	1952	785	145	92	4/2	
	9.15	1055	788	978	109	42	
	9.45	1073	808	991	,17	<del>/</del> 3	
	1015	1098	827	1034	125	43	
	194)	1132	868	1056	135	43	
	11:15	1148	892	1079	145	42	
	1217	1153.	904	1094	147	42	
	'411'	1178,	732	1108	155	42	
	2.11	1259	1011	1117	167	42	
	3.15	1292	1055	1139	148	42	
	4.75 1	1284	1042	1142	167	42	
4	418 4	1256	1017	1164	168	42	
1	4:15	1232	994	1135	168	42	
١	725	1221	983	1194	167	42	
	8.15	1205	961	1218	168	42	
l	•						
					4		
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# APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site:

Tisdale's Quick Stop

**UST Permit #: 18686** 

			Calculat	ions - Flow a	t DSCFM		•
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)
6/4/13	8:15				•		
6/4/13	8:45	965	0.022	92	42	0.013555399	20.032
6/4/13	9:15	978	0.022	109	42	0.022926955	19.508
6/4/13	9:45	991	0.022	117	43	0.029815743	19.356
· 6/4/13	10:15	1036	0.022	125	43	0.037653607	19.797
6/4/13	10:45	1056	0.022	136	43	0.051557130	19.520
6/4/13	11:15	1079	0.022	145	42	0.064679790	19.377
6/4/13	12:15	1096	0.022	167	42	0.118893162	17.891
6/4/13	1:15	1108	0.022	166	42	0.115647588	18.182
6/4/13	2:15	1117	0.022	167	42	0.118893162	18.234
6/4/13	3:15	1129	0.022	168	42	0.122232476	18.330
6/4/13	4:15	1142	0.022	168	42	0.122232476	18.541
6/4/13	5:15	1166	0.022	168	42	0.122232476	18.931
6/4/13	6:15	1135	0.022	168	42	0.122232476	18.428
6/4/13	7:15	1194	0.022	167	42	0.118893162	19.490
,6/4/13	8:15	1218	0.022	168	42	0.122232476	19.775
'Averages		1094.00	0.022	148.73	42.20	0.086911872	19.026

Tisdale's Quick Stop

**UST Permit #: 18686** 

		Calcul	ations - Po	ollutant	Mass Re	emoval in po	ounds		
Marg. Elap.	Elapsed Time	Flow (DSCFM)	PPM measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)
. 0	0								
. 30	30	20.03	1052	1	1052	5594.35	0.000349255	0.420	0.210
. 30	60	19.51	1055	1	1055	5610.30	0.000350251	0,410	0.205
30	90	19.36	1073	1	1073	5706.02	0.000356227	0.414	0.207
30	120	19.80	1098	1	1098	5838.97	0.000364527	0.433	0.216
30	150	19.52	1132	1	1132	6019.78	0.000375815	0.440	0.220
30	180	19.38	1146	1	1146	6094.23	0.000380462	0.442	0.221
60	240	17.89	1153	1	1153	6131.45	0.000382786	0.411	0.411
60	300	18.18	1178	1	1178	6264.40	0.000391086	0.427	0.427
60	360	18.23	1287	1	1287	6844.04	0.000427273	0.467	0.467
60	420	18.33	1292	1	1292	6870.63	0.000428933	0.472	0.472
60	480	18.54	1284	1	1284	6828.08	0.000426277	0.474	0.474
· 60	540	18.93	1256	1	1256	6679.19	0.000416982	0.474	0.474
. 60	600	18.43	1232	1	1232	6551.56	0.000409014	0.452	0.452
. 60	660	19.49	1221	1	1221	6493.06	0.000405362	0.474	0.474
60 <sup>.</sup>	720	19.78	1205	1	1205	6407.98	0.000400050	0.475	0.475
Averages		19.03	1177.60	1.00	1177.60	6262.27	0.000390953	0.446	0.360
						Total En	nission in pound	ls: ,	5.405

#### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460))

PPMg = PPM measured \* K

Cg:m = PPMg \* (Mg/K3)

Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3

PMRg = Cg \* Qstd \* 60 min/hr

PMR = PMRg \* ((T2 -T1)/60)

Qstd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer)

Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

K3 = 24.07 dsm^3/1E6 mg-mole, mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

### **NON-HAZARDOUS WASTE MANIFEST**

		NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No.			Manifest Document No.		2. Page 1			
			TISDACE'S QUIC	k Stip							
	Ų		1989 THURGO	100 MARSHALL BU	LUD.			i			
		4. Generator's Phone ( )	KINGSTREE,5	``							
		5. Transporter 1 Company Name	6. I A	US EPA ID Number	,	A. State Trans		53-6399			
	ŀ	7. Transporter 2 Company Name	8.	US EPA ID Number	•	B. Transporter C. State Trans		77-6377			
						D. Transporte	2 Phone				
		Designated Facility Name and São Address     CW 5	10.	US EPA ID Number		E. State Fecili	ny's ID				
	$\sim$	9. Designated Facility Names and Sac Address  CWS  303 5. MAULTSBYTT.  WHITEVILLENC  11. WASTE DESCRIPTION  12. Co				F. Facility's Pi					
	4	11. WASTE DESCRIPTION 12. COL					9/0 - 675-50/1 Intainers 13. 14.				
		II. WAS IE DESCAIPTION			12. Co	Type	13. Total Quantity	14, Unit WI./Vol.			
	7	a.									
		Non-Reg. Pet	roleum Co	who took	HZ	てて	1520	GAL			
	G	<b>b</b> .									
	NE.										
	R	C.									
	Ä										
ш	O R	d.									
WASTE											
¥ S	G. Additional Descriptions for Materials Listed Above H. Handling Codes for Wastes Listed Ab										
	4										
ğ											
ON-HAZARDOUS											
AZ	J	15. Special Handling Instructions and Additional Information									
Ŧ	$\exists$										
_	4										
Z											
		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.									
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	SP	Steve Nivell		18621)	ر. زمسمدیر	<i>~</i>	<u>      6        6                     </u>	14/3			
	AZWP-ORT-ER	18. Transporter 2 Acknowledgement of Receipt of N Printed/Typed Namo	1811/1915	Signature	***************************************		Mont	Date h Day Year			
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ĺ	FA	19. Discrepancy Indication Space									
	ĉ.	20 English Ormans as December Condition of the state of t	of ad the courts materials	ne this nearling assessed as a second	- 10						
		20. Facility Owner or Operator, Certification of receip	or on whe waste materials covered t	ny mis manuesi, except as noted in ite	77 19.			Date			
	Ť	Printed/Typed Name		Signature		C	C Mont				
		KYAN COL		1 - 100%		<u> </u>	- 6	17 /3			

F-14 © 2002 LABELI ASTER © (800) 621-5808 www.labolmaster.com







US 28 kel

July 16, 2013

Mr. Jim Martin, Hydrogeologist South Carolina Department of Health and Environmental Control 2600 Bull Street Columbia, South Carolina 29201-1708



Re: AFVR Report

Tisdales Quick Stop 1989 Thurgood Marshall Blvd. Kingstree, Williamsburg County UST Permit #: 18686 CA #: 45593

Dear Mr. Martin:

This report presents the results of three aggressive fluid-vapor recovery (AFVR) events conducted on April 18, May 9 and June 4, 2013 at the above referenced site. The activities were conducted in accordance with the requirements outlined in correspondence from the SCDHEC dated April 4, 2013 and addressed to Mr. Marty Easler. The purpose of the activities was to remove residual free-phase product and reduce dissolved phase contaminant concentrations in monitoring wells MW-1A, MW-3A and MW-4A. Approximately one month after the third AFVR event, monitoring wells MW-1A, MW-2A, MW-3A, MW-4A and MW-3 were gauged on July 10, 2013. The following Figures, Tables and Appendix have been included:

Figure 1:

Site Location Map

Figure 2:

Site Map

Table 1A:

AFVR Event Chronology – April 18, 2013

Table 1B:

AFVR Event Chronology - May 9, 2013

Table 1C:

AFVR Event Chronology – June 4, 2013

Table 2:

Summary of Monitoring Well Gauging Data

Appendix A:

AFVR Reports, Calculations, Disposal Manifests

2301 Crown Point Executive Drive Suite F Charlotte, NC 28227 Phone: (704) 845-4010 / (888) 870-4133 Fax: (704) 845-4012

Tisdales Quick Stop AFVR Report UST Permit # 18686

GRI personnel and the AFVR contractor, Hazmat Emergency Response and Remediation, Inc. (HERR) arrived on-site on April 18, 2013 for the first of three AFVR events. The first event was conducted on monitoring wells MW-1A, MW-3A and MW-4A. Monitoring wells MW-2A and MW-8 were utilized as observation wells during the event. General weather conditions were sunny with an ambient air temperature of approximately 77°F at the time of system start-up. Approximately 0.99 feet and 0.23 feet of free product were measured in MW-1A and MW-3A, respectively, prior to system start-up. No free product was measured in MW-4A prior to system start-up. AFVR activities were conducted for twelve (12) hours on MW-1A, MW-3A and MW-4A using a vacuum truck with a maximum vacuum rating of 25 in. Hg and a capacity of 325 cubic feet per minute. During the course of the event, the vacuum at the well remained steady at 22 in. Hg throughout the day. Please note that the vacuum truck was equipped with an activated charcoal filter for off-gas treatment of vapor phase hydrocarbons. A total of 1,041 gallons of liquid were removed during the event. However, there was no measureable amount of liquid phase free product noted in the tanker. No measurable free product was present in any of the vacuum wells (MW-1A, MW-3A and MW-4A) at the conclusion of the event. Based on data collected during the AFVR event, an estimated total of 6.373 pounds (approximately 1.02 gallons) of vapor phase hydrocarbons were calculated to have been removed during the event.

GRI personnel and HERR arrived on-site on May 9, 2013 for the second of three AFVR events. The second event was conducted on monitoring wells MW-1A, MW-3A and MW-4A. Monitoring wells MW-2A and MW-8 were utilized as observation wells during the event. General weather conditions were sunny with an ambient air temperature of approximately 72°F at the time of system start-up. Approximately 0.05, 0.18 and 0.07 feet of free product were measured in MW-1A, MW-3A and MW-4A, respectively, prior to system startup. AFVR activities were conducted for twelve (12) hours on MW-1A, MW-3A and MW-4A using a vacuum truck with a maximum vacuum rating of 25 in. Hg and a capacity of 325 cubic feet per minute. During the course of the event, the vacuum at the wells remained steady at 20 in. Hg throughout the day. Please note that the vacuum truck was equipped with an activated charcoal filter for offgas treatment of vapor phase hydrocarbons. A total of 962 gallons of liquid were removed during the event. However, there was no measureable amount of liquid phase free product noted in the tanker. No measurable free product was present in MW-1A, MW-3A or MW-4A at the conclusion of the event. Based on data collected during the AFVR event, an estimated total of 2.666 pounds (approximately 0.43 gallons) of vapor phase hydrocarbons were calculated to have been removed during the event.

GRI personnel and HERR arrived on-site on June 4, 2013 for the third of three AFVR events. The third event was conducted on monitoring wells MW-1A, MW-3A and MW-4A. Monitoring wells MW-2A and MW-8 were utilized as observation wells during the event. General weather conditions were sunny with an ambient air temperature of approximately 77°F at the time of system start-up. Approximately 0.02, 0.08 and 0.02 feet of free product were measured in MW-1A, MW-3A and MW-4A, respectively, prior to system startup. AFVR activities were conducted for twelve (12) hours on MW-1A, MW-3A and MW-4A using a vacuum truck with a maximum vacuum rating of 25 in. Hg and a capacity of 325 cubic feet per minute. During the course of the event, the vacuum at the wells remained steady at 20 in. Hg throughout the day. Please note that the vacuum truck was equipped with an activated charcoal filter for offgas treatment of vapor phase hydrocarbons. A total of 1,520 gallons of liquid were removed during the event. However, there was no measureable amount of liquid phase free product noted in the tanker. No measurable free product was present in MW-1A, MW-3A or MW-4A at the conclusion of the event. Based on data collected during the AFVR event, an estimated total of 5.405 pounds (approximately 0.86 gallons) of vapor phase hydrocarbons were calculated to have been removed during the event.

Tisdales Quick Stop AFVR Report UST Permit # 18686

GRI returned to the site on July 10, 2013 to gauge monitoring wells MW-8, MW-1A, MW-2A, MW-3A and MW-4A. No free product was observed in any of the wells gauged. Based on this information, it appears that the AFVR events were successful in reducing free product levels at the subject site. GRI recommends continued ground water monitoring and, if needed, free product removal activities be conducted at the site.

If you have any comments or questions concerning this project, please do not hesitate to contact the undersigned at (704) 845-4010.

Sincerely,

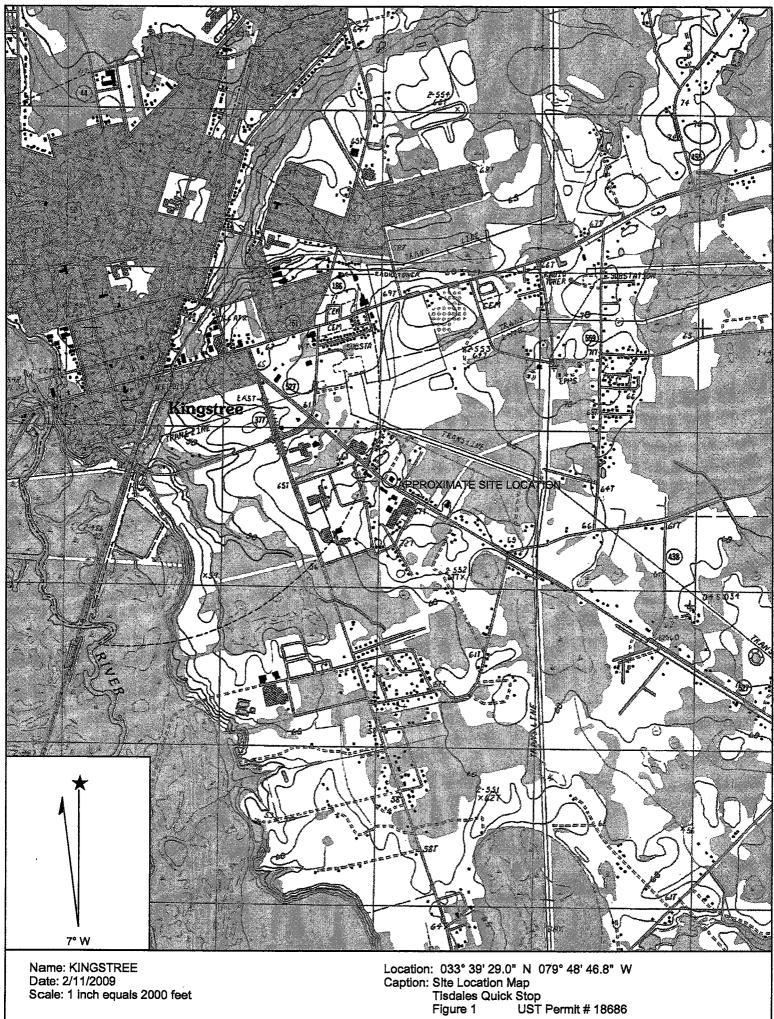
W. Scott Ball

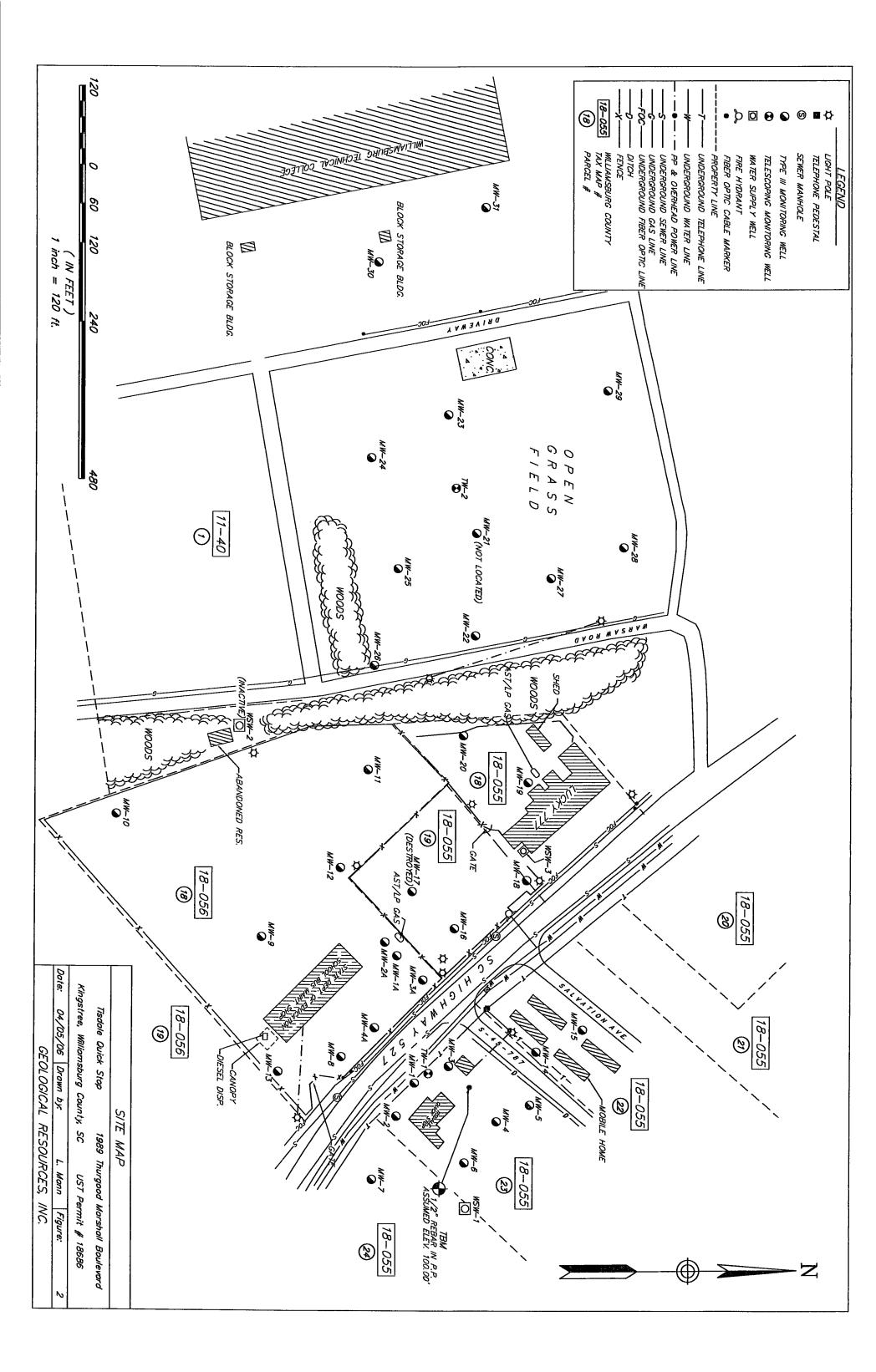
Project Manager

cc:

Mr. Marty Easler

File





# TABLE 1A AFVR EVENT CHRONOLOGY APRIL 18, 2013 TISDALE'S QUICK STOP UST PERMIT #18686

Task	Hours	Personnel	Equipment	Company
Gauge Liquid Levels in MW-1A, MW-2A, MW-3A, MW-4A and MW-8	9:00	GRI Interface Probe		GRI
Vacuum Truck Setup for Fluid Removal in MW-1A, MW-3A and MW-4A	I Vacilim Imick I		HERR	
Supervise Startup of AFVR	9:00 - 10:15	GRI	NA	GRI
Fluid Recovery in MW-1A, MW-3A and MW-4A	9:30-21:30	Vacuum Truck Operator  Vacuum Truck		HERR
Gauge Liquid Levels in MW-1A, MW-2A, MW-3A, MW-4A and MW-8	21:35	Vacuum Truck Operator	Interface Probe	HERR

# TABLE 1B AFVR EVENT CHRONOLOGY MAY 9, 2013 TISDALE'S QUICK STOP UST PERMIT #18686

Task	Hours	Personnel	Equipment	Company	
Gauge Liquid Levels in MW-1A, MW-2A, MW-3A, MW-4A, MW-8	8:30	GRI	Interface Probe	GRI	
Vacuum Truck Setup for Fluid Removal in MW-1A, MW-3A, MW- 4A	8:45 - 9:00	Vacuum Truck Operator	Vacuum Truck	HERR	
Supervise Startup of AFVR	7:50 - 9:15	GRI	NA	GRI	
Fluid Recovery in MW-1A, MW-3A, MW-4A	9:00 - 21:00	Vacuum Truck Operator	Vacuum Truck	HERR	
Gauge Liquid Levels in MW-1A, MW-2A, MW-3A, MW-4A, MW-8	21:05	Vacuum Truck Operator	Interface Probe	HERR	

# TABLE 1C AFVR EVENT CHRONOLOGY JUNE 4, 2013 TISDALE'S QUICK STOP UST PERMIT #18686

Task	Hours	Personnel	Equipment	Company
Gauge Liquid Levels in MW-1A, MW-2A, MW-3A, MW-4A, MW-8	7:40	GRI	Interface Probe	GRI
Vacuum Truck Setup for Fluid Removal in MW-1A, MW-3A, MW-4A	7:45 - 8:15	Vacuum Truck Operator		HERR
Supervise Startup of AFVR	8:00 - 8:45	GRI	NA	GRI
Fluid Recovery in MW-1A, MW-3A, MW-4A	8:15 - 20:15	Vacuum Truck Operator	Vacuum Truck	HERR
Gauge Liquid Levels in MW-1A, MW-2A, MW-3A, MW-4A, MW-8	20:20	Vacuum Truck Operator	Interface Probe	HERR

#### TABLE 2 SUMMARY OF MONITORING WELL GAUGING DATA TISDALE'S QUICK STOP UST PERMIT #18686

Well No.	Date	Time	Depth to Free Product	Depth to Ground Water	Free Product
		09:00	15.56	16.55	0.99
MW-1A		21:35		17.67	0,55
	4	09:00		15.87	
MW-2A		21:35		Not gauged	
	1	09:00	15.80	16.03	0.23
MW-3A	04/18/13	21:35	15.80	17.28	0.23
	┪	09:00		16.12	
MW-4A		21:35		18.15	
	-	09:00		15.85	
MW-8		21:35			
	<del></del>		15.00	Not gauged	0.05
MW-1A		08:30	15.20	15.25	0.05
	-	21:05		17.48	
MW-2A		08:30		15.32	
	_	21:05		Not gauged	
MW-3A	05/09/13	08:30	15.21	15.39	0.18
		21:05		16.71	
MW-4A		08:30	15.58	15.65	0.07
		21:05		16.62	****
MW-8		08:30		15.30	
111110		21:05		Not gauged	
MW-1A		07:40	14.88	14.90	0.02
MW-IA		20:20		17.62	
MW-2A		07:40		14.99	
IVI W -2A		20:20		15.00	
MT 2 A	06/04/13	07:40	14.87	14.95	0.08
MW-3A	06/04/13	20:20		17.36	
) (NY 44		07:40	15.29	15.31	0.02
MW-4A		20:20		18.32	
) MY C	1	07:40		14.99	
MW-8		20:20		15.00	<del>for harden</del>

#### TABLE 2 SUMMARY OF MONITORING WELL GAUGING DATA TISDALE'S QUICK STOP UST PERMIT #18686

Well No.	Date	Time	Depth to Free Product	Depth to Ground Water	Free Product
MW-3		13:25		13.39	
MW-1A		13:25		13.62	
MW-2A	07/10/13	13:25		13.71	
MW-3A		13:25		13.81	
MW-4A		13:25		13.75	

#### Note:

• Data reported in feet.

# APPENDIX A AFVR Reports, Calculations, Disposal Manifests



## HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Monday, April 22, 2013

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 12 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on April 18, 2013. Included is the documentation for the event. The 12 hour event was conducted on monitoring wells MW-1A, MW-3A, and MW-4A.

If you have any questions, please do not hesitate to contact our office.

Sincerely,

Marc Cox

HERR Project Manager



Tisdale's Quick Stop Kingstree, SC April 18, 2013

### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 4/18/13. The ambient temperature was 77 deg F and weather conditions were sunny/fair. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event. The 12 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### **Pollutant Mass Removal**

Total weight of 6.373 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 12 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### Liquid Disposal

Approximately 1,041 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

## **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

# APPENDIX A AFVR FIELD NOTES

## HERR, Inc.

### AFVR - Field Notes

Site Name: TISOALES QUICK STOP	Location: KINGSTRE	is, sc
AFVR Contractor: HERR, Inc 5 feve	Personnel: GRI - MICH	AEL
Date: 4//8//3 Ambient Air Temperature and	General Weather Condition: 77	Join Sung
Start Time 1: <u>7.32</u> Stop Time 1: <u>7.30</u> S	Start Time 2:	Stop Time 2:
Total volume of water removed during the 8-hour AFVR Event:_	1041 gal	-
Total volume of product removed during the 8-hour AFVR Events	: Shew	-
Product Recovery Rate:		

Monitoring Well	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft. below TOC)	Estimated volume of water removed during this event	Relevant Observations
110/11	15.56	16.55		17.47		
317	15.80	16.03		17:28	Laul al	
44	15-56 200	16.12		18.15	1011	
7.A	1	15.87				
⋖	<u> </u>	15.85				
	·					

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

		<u> </u>	. (mones of the	10. 7. 0.07 000	= inches of me	ioury)	
			MW- YA		Stinger	Placement	
7. 3.0 Time	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Stinger Depth	Product Depth	Water Level	Notes
IA	1			77.8 "	1556	1655	
SA				165"	15.80	16.00	
·YA				15.8"	1	14.12	
10,30	12	22	22			•	
1430	12	3-2	72	•			•
1290	22	22	72				
130 230 330	22	72	72				
236	92	22	22				
330	22	22	22		_		
(130	22	22	22				
1: 7-	92	72	22				
6.30	22	72	22				
7.30	92	2-2	22				
8.30	22	22	02				
5.30	92	22	12				
						•	-
				1			

Vaçuum at Pump: 24" Puys

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

·	MW- 2A		M	w. 87	M	W-	M	w-
'5.30 Time	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Weil (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum influence at Well (in. Hg)
10.30	15:33	102	16.85	. D.Y				
11.30	. 64	لمرق .		.12				
1270	100	.10		.12				
1.30		.10		.12				
290		.61	<u>.                                    </u>	.12			-	
3.30		.11		.12				
×3.		11/		.,2_				
5.70		.12		.12				
430 7.7° 8.30 5.30	•	./2		./2				
ブワコ		./2		./2				
8.30		./2		1/2			-	
5.30		,12		.12				
•								
							•	
	•			·				
							-	
•								

Ţime	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Farenheit)	Relative Humidity (%)	Other
10:00	1159	894	959	102	46	
./0:30	1175	915	973	189	46	
11:00	1267	1026	984	117	46.	
11:36	1384	1143	992	126	46	
12:00	1411	1179	1805	120	46	
12:30	1472	/271	1012	135	46	
1:34	1436	1209	1674	148	46	
2:36	1379	1152	1096	156	46	
3,36	1371	1/24	1215	157	46	
4:30	1247	1038	1314	157	46	
.2:31	1/28	912	1466	156	46	
6:30	1/62	291	1479	156	41	
7:20	1077	854	1492	156	46	
4:30	1031	817	1544	157	46	
9:36	1042	824	1556	156	46	
`					•	

# APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site:

Tisdale's Quick Stop

UST Permit #:

18686

			Calculat	ions - Flow a	t DSCFM		
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)
4/18/13	9:30					·	
4/18/13	10:00	959	0.022	102	46	0.020352094	19.42
4/18/13	10:30	973	0.022	109	46	0.025198935	19.36
4/18/13	11:00	984	0.022	117	46	0.032002939	19.18
4/18/13	11:30	992	0.022	126	46	0.041641244	18.85
4/18/13	12:00	1005	0.022	130	46	0.046733350	18.86
4/18/13	12:30	1012	0.022	135	46	0.053918351	18.69
4/18/13	· 1:30	1034	0.022	148	46	0.077840677	18.22
· 4/18/13	2:30	1096	0.022	156	46	0.097399089	18.65
4/18/13	3:30	1215	0.022	157	46	0.100164820	20.58
4/18/13	4:30	1314	0.022	157	46	0.100164820	22.26
4/18/13	5:30	1466	0.022	156	46	0.097399089	24.95
4/18/13	6:30	1479	0.022	156	46	0.097399089	25.17
4/18/13	7:30	1492	0.022	156	46	0.097399089	25.39
4/18/13	8:30	1544	0.022	157	46	0.100164820	26.16
4/18/13	9:30	1556	0.022	156	46	0.097399089	26.48
Averages		1208.07	0.022	141.20	46.00	0.072345166	21.482

Tisdale's Quick Stop

UST Permit #: 18686

		Calcul	ations - Po	llutant	Mass Re	emoval in po	ounds		
Marg. Elap.	Elapsed Time	Flow (DSCFM)	PPM measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(ib/hr)	(lb)
0	0								
30	30	19.42	1159	1	1159	6163.36	0.000384778	0.448	0.224
30	60	19.36	1175	1	1175	6248.44	0.000390090	0.453	0.227
30	90	19.18	1267	1	1267	6737.68	0.000420633	0.484	0.242
30	120	18.85	1384	1	1384	7359.87	0.000459477	0.520	0.260
30	150	18.86	1411	1	1411	7503.45	0.000468440	0.530	0.265
30	180	18.69	1472	1	1472	7827.84	0.000488692	0.548	0.274
60	240	18.22	1436	1	1436	7636.39	0.000476740	0.521	0.521
60	300	18.65	1379	1	1379	7333.28	0.000457817	0.512	0.512
60	360	20.58	1336	1	1336	7104.61	0.000443541	0.548	0.548
60	420	22.26	1247	1	1247	6631.33	0.000413994	0.553	0.553
60	480	24.95	1128	1	1128	5998.50	0.000374487	0.561	0.561
60	540	25.17	1102	1	1102	5860.24	0.000365855	0.553	0.553
60	600	25.39	1077	1	1077	5727.30	0.000357555	0.545	0.545
60	660	26.16	1036	1	1036	5509.26	0.000343943	0.540	0.540
60	720	26.48	1042	1	1042	5541.17	0.000345935	0.550	0.550
Averages		21.48	1243.40	1.00	1243.40	6612.18	0.000412798	0.524	0.425
						Total En	nission in pound	is:	6.373

#### Pollutant Mass Removal Calculations

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K Cg:m = PPMg \* (Mg/K3) Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3 PMRg = Cg \* Qstd \* 60 min/hr PMR = PMRg \* ((T2-T1)/60)

Qstd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer) Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

 $K3 = 24.07 \text{ dsm}^3/1\text{E}6 \text{ mg-mole}$ , mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

## **NON-HAZARDOUS WASTE MANIFEST**

200	440	e print or type (Form designed for use on elde (1	2 pitch) typewiller)					
		NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No.			Manilest Document No	).	2. Page 1 of
	1		TISOALE'S OU	ICV. STAP				
k	4		1989 THURG	OOD MARSHALL TC US EPA ID Number	Ri vo			
		4. Generator's Prone ( )	KINGSTREE J	المراجعة الم	JC 13.			
	4	5. Transporter 1 Company Name	6.* 1 -	US EPA ID Number		A. State Tran	· · · · · · · · · · · · · · · · · · ·	4
		HERL Inc.		US EPA ID Number	-	B. Transporte C. State Tran		3 - 6799
			1			D. Transporte		
		9. Designated Facility Name and Site Address	10.	US EPA ID Number		E. State Faci	ay's ID	
		CMS 303 S. MAUCTS	O. 5-				····	
		WHITEVICLE AT	64 31. C			F. Facility's P	116 - CZ5 -1	5012
		11. WASTE DESCRIPTION			12. Co	tainers	13. Total	14.
		8.		· · · · · · · · · · · · · · · · · · ·	No.	Туре	Quantity	Unit WL/Vol.
		Non-Res. Petrol.	con Contac	f wdr	HZ	TT	1041	GAL
1	3	<b>b</b> .						
	2							
Ī	3	C.				·		
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	}	<b>d</b> .						
	d							
	4	G. Additional Descriptions for Materials Listed Above			<u></u>	N. Handing C	land of the stand	
. 100		or Legisland populations of the state see Figure 1990.	•			rt. riancing (	Codes for Wastes Listed Above	•
3								
	4	15. Special Handling Instructions and Additional Info	rmation		<u> </u>			
	H							
	4							
	٦				7	, , , , ,		
	1	16. GENERATOR'S CERTIFICATION: I hereby cert	ify that the contents of this shipme	m are fully and accurately described	end are in a	ill respects		
		in proper condition for transport. The malerials d	escribed on this manifest are not s	ubject to federal hazardoùs waste rej	gulations.	•		
-	7	Printed/Typed Name		Signature				Date
L		, , , , , , , , , , , , , , , , , , , ,		G.B.min.E			Моли	h Day Year
Ī		17. Transporter 1 Acknowledgement of Receipt of M	aterials					Date
	1	Steve Dived by	a/T	Signature	L		Monti.	18 13
	5	18. Transporter 2 Acknowledgement of Receipt of M.			,			Date
		Printed/Typed Name		Signature			Month	Day Year
Г	╗	19. Discrepancy Indication Space		<u> </u>				11
-17		,						j
9	١ľ	20. Facility Owner or Operator; Certification of receip	of the waste materials covered by	v this manifest errord ar noted in he	m 19	<u> </u>		
	1		The second secon	, orange as turisa il is			, ,	Date
1		Printed/Typed Name  TCM AN Col		Signature /Zy		0	C Month	Day Year
L		10-14N COL			_		(M) 7	1/8/12

F-14 0 2002 LABEL ASTER (600) 621-5808 www.labelmaster.com





## HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Monday, May 13, 2013

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

· Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 12 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on May 9, 2013. Included is the documentation for the event. The 12 hour event was conducted on monitoring wells MW-1A, MW-3A, and MW-4A.

. If you have any questions, please do not hesitate to contact our office.

Sincerely,

/Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC May 9, 2013

#### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 5/9/13. The ambient temperature was 72 deg F and weather conditions were sunny/fair. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event. The 12 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

### Pollutant Mass Removal

Total weight of 2.666 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 12 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### Liquid Disposal

Approximately 962 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

### **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

# APPENDIX A AFVR FIELD NOTES

## HERR, Inc.

### AFVR - Field Notes

Site Name: TITOACE'S QUICK STOP	Location: KINGSTREE SU	
AFVR Contractor: HERRY Inc - Steve	Personnel: GRI Teny	
Date: 5/9//3 Ambient Air Temperature and	d General Weather Condition: Sung - Zai 12	
Start Time 1: 7.00 Stop Time 1: 7-00	Start Time 2: Stop Time 2:	
Total volume of water removed during the 8-hour AFVR Event:_	962 g-l	
Total volume of product removed during the 8-hour AFVR Even	1:_Shen	
Product Recovery Rate:		

Monitoring Well	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft. below TOC)	Estimated volume of water removed during this event	Relevant Observations
AWI A	15:00	15.25 /	O-	17,48	<b>7</b>	
MW3H	1571	15.37 /	-0-	16.71	_ /	
MW 4A	1500	15251	-0 ·	11.62	76256	
		7			1017	
					<u> </u>	

vacuum conversion: (inches of water X 0.07355 = inches of mercury) MW- 3A MW- 1A MW-4/ Stinger Placement Vacuum at Vacuum at Vacuum at Targeted Targeted **Targeted** Product Stinger Water Well Well Well Depth Depth Level Notes (in. Hg) (in. Hg) Time (in. Hg) MWYA 17.48 161 15.58 15.65 3A 1471 15.75 15.21 1A-15.25 16.62 1500 20 20 20 20 20 20 20 11.00 20 20 20 12.00 20 4 g s 20 2.00 3-00 9.00 5-00 6:00 7.00 8:00 , 20 9.00 20 20

Vacuum at Pump: 00'6 Pmp

vacuum conversion: (inches of water X 0.07355 = inches of mercury)

•	MW- M		w.2A		W-	MW-		
Time	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)	Water Level	Vacuum Influence at Well (in. Hg)
7.00	15.3	P	15.37	HASE				
10.00		0						
10.00		0		0				
1200		0		.02				
1.00		6		.02				
2.00		10		102				
g.000 g.00		0		.04				
4.00		0		-09				
5-00	•	0	<del></del>	.04				
6.00		0		.04	-			
9.00		0		104		-		
9.00		6		.04				
.9.ce		0		.04	•			
1680			· · · · · · · · · · · · · · · · · · ·				•	
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								-
			<u> </u>					

Time	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Farenheit)	Relative Humidity (%)	Other
9.30	866	632	971	96	38	
1000	752	528	1024	108	38	
10.30	684	477	1073	115	39	
11.00	642	436	1134	12-5	78	
11.30	592	374	1198	148	97	
12.00	562	381	1258	156	38	
. ld . 20	50L	329	1302	160	38	
1.00	471	278	1355	162	38	
2-00	458	245	1371	163	38	
3.00	452	238	1377	143	38	
4.00	438	202	1384	163	38	
.3-00	421	194	1392	162	38	
600	412	152	1398	162	38	
700	404	187	1407	162	78	
8.00	394	184	1411	161	91	
7.00	345	184	1415	161	39	
•						
•						

# $\frac{\text{APPENDIX B}}{\text{POLLUTANT MASS REMOVAL DATA SHEETS}}$

Site:

Tisdale's Quick Stop 18686

UST Permit #:

Calculations - Flow at DSCFM									
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)		
5/9/13	9:00								
5/9/13	9:30	971	0.022	96	38	0.013882526	20.00		
5/9/13	10:00	1026	0.022	108	38	0.020059140	20.56		
5/9/13	10:30	1073	0.022	115	38	0.024707158	21.14		
5/9/13	11:00	1134	0.022	126	38	0.034003387	21.71		
5/9/13	11:30	1198	0.022	148	38	0.062933454	21.45		
5/9/13	12:00	1258	0.022	156	38	0.078327031	21.86		
5/9/13	12:30	1302	0.022	160	38	0.087338800	22.26		
5/9/13	1:00	1355	0.022	162	38	0.092220250	22.97		
5/9/13	2:00	1371	0.022	163	38	0.094761554	23.14		
5/9/13	3:00	1377	0.022	163	38	0.094761554	23.24		
5/9/13	4:00	1384	0.022	163	38	0.094761554	23.36		
5/9/13	5:00	1392	0.022	162	38	0.092220250	23.60		
5/9/13	6:00	1398	0.022	162	38	0.092220250	23.70		
5/9/13	7:00	1407	0.022	162	38	0.092220250	23.85		
5/9/13	8:00	1411	0.022	161	38	0.089746665	24.02		
5/9/13	9:00	1415	0.022	161	38	0.089746665	24.09		
Averages		1279.50	0.022	148.00	38.00	0.072119405	22.561		

Site:

Tisdale's Quick Stop

**UST Permit #: 18686** 

Calculations - Pollutant Mass Removal in pounds										
Marg. Elap. Time	Elapsed Time (min)	Flow (DSCFM)	PPM measured (ppm)	K (#C- gas)	PPMg	Cg:m (mg/dsm^3)	Cg (lb/dscf)	PMRg (lb/hr)	PMR (lb)	
0	0								<u> </u>	
30	30	20.00	866	1	866	4605.23	0.000287505	0.345	0.173	
30	60	20.56	752	1	752	3999.00	0.000249658	0.308	0.154	
30	90	21.14	684	1	684	3637.39	0.000227082	0.288	0.144	
30	120	21.71	642	1	642	3414.04	0.000213139	0.278	0.139	
. 30	150	21.45	592	1	592	3148.15	0.000196539	0.253	0.126	
30	180	21.86	562	1	562	2988.62	0.000186579	0.245	0.122	
30	210	22,26	506	1	506	2690.82	0.000167988	0.224	0.112	
30	240	22.97	471	1	471	2504.69	0.000156368	0.216	0.108	
60	300	23.14	458	1	458	2435.56	0.000152052	0.211	0.211	
60	360	23.24	452	1	452	2403.66	0.000150060	0.209	0.209	
60	420	23.36	438	1	438	2329.21	0.000145412	0.204	0.204	
60	480	23.60	421	1	421	2238.80	0.000139769	0.198	0.198	
60	540	23.70	412	1	412	2190.94	0.000136781	0.195	0.195	
60	600	23.85	404	1	404	2148.40	0.000134125	0.192	0.192	
60	660	24.02	396	1	396	2105.86	0.000131469	0.190	0.190	
60	720	24.09	395	1	395	2100.54	0.000131137	0.190	0.190	
Averages		22.56	528.19	1.00	528.19	2808.81	0.000175354	0.234	0.167	

Total Emission in pounds:

2.666

### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K
Cg:m = PPMg \* (Mg/K3)
Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3
PMRg = Cg \* Qstd \* 60 min/hr
PMR = PMRg \* ((T2-T1)/60)

#### Qstd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer) Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

K3 = 24.07 dsm<sup>3</sup>/1E6 mg-mole, mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

. PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

## **NON-HAZARDOUS WASTE MANIFEST**

		print of type (Form designed for use on elite (	es hires Massades							
		NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No.			Manifest Document No.	•	2. Page 1 of		
	7		TISDALES QUI	ck Stof				-		
				od Marihau B	LVD.	***************************************				
		4. Generator's Phone ( )	KINGTRISE S	SC.						
ł	4	5. Transporter 1 Company Name	6.	US EPA ID Number		A. State Trans		· · · · · · · · · · · · · · · · · · ·		
		HERR, Inc. 7. Transporter 2 Company Name		US EPA ID Number		B. Transporter		7-6399		
I	4	7. Transporter 2 Company Name	8. <b>!</b>	US EPA ID Number		C. State Trans				
		Designated Facility Name and Site Address	10.	10. US EPA ID Number			D. Transporter 2 Phone  E. State Facility's ID			
l	4	CWS	<b>~</b>							
		383 5. MAULTSBY 5T.					F. Facility's Phone 910 - 625 - 5012			
		WHITEVILLE, A	<u>C</u>		12. Co	1lainers	13.	14,		
					No.	Туре	Total Quantity	Unit WL/Vol.		
		B 0 1					G16			
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WASTE	$\downarrow$									
3		G. Additional Descriptions for Materials Listed Above  H. Handling Codes for Wastes Listed Above								
S				i						
2										
ON-HAZARDOUS										
R	J	15. Special Handling Instructions and Additional Information								
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1	4	16. GENERATOR'S CERTIFICATION: I hereby cer	filly that the contents of this shipmer	nt are fully and accurately describe	d and are in	all respects		<u> </u>		
		in proper condition for transport. The materials of	lescribed on this manifest are not so	ubject to federal hazardous waste n	egulations.	•				
		Printed/Typed Name		Signature			1	Date		
		Finance i ypaco (value		20 anne			Mon.	n Day Year		
	T R	17. Transporter 1 Acknowledgement of Receipt of N	Anterials	4				Date		
	A	Steve D. vel	P:	Month Day Year 5 7 1/3						
	Ď	18. Transporter 2 Acknowledgement of Receipt of It				<del></del>		Date		
	SPORTER	Printed/Typed Name		Signature			Mon	in Day Year		
		19. Discrepancy Indication Space								
	FA									
	ç.	20. Facility Owner or Operator, Certification of recei	of all the weate materials covered to	y this manifest, except as noted in t	tem 19.	· · · · · · · · · · · · · · · · · · ·				
l	L			a committee de la committee de la constante de la committee de				Date		
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**ESOVINK** 



## HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Monday, June 10, 2013

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC UST Permit #: 18686

Scott.

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 12 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on June 4, 2013. Included is the documentation for the event. The 12 hour event was conducted on monitoring wells MW-1A, MW-3A, and MW-4A.

If you have any questions, please do not hesitate to contact our office.

Sincerely,

Marc Cox

HERR Project Manager



Tisdale's Quick Stop Kingstree, SC June 4, 2013

### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 6/4/13. The ambient temperature was 77 deg F and weather conditions were sunny/fair. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event.

The 12 Hour AFVR event was conducted using a Keith Huber Dominator vacuum truck with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### Pollutant Mass Removal

Total weight of 5.405 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 12 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### Liquid Disposal

Approximately 1,520 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

## **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

# APPENDIX A AFVR FIELD NOTES

## HERR, Inc.

### AFVR - Field Notes

Site Name: TISDALE'S QUICK STOP	Location:/	KINGSTREE, JC	
AFVR Contractor: HERF, Inc Steve	Personnel:	GRI Teny	
Date: 6/4//3 Ambient Air Temperature and	d General Weather (	Condition: 770 Day - 7 si	
Start Time 1: \$.75 Stop Time 1: \$.75	Start Time 2:	Stop Time 2:	
Total volume of water removed during the 8-hour AFVR Event:	15209.	ul	
Total volume of product removed during the 8-hour AFVR Even	t:	ere and a superior of the supe	
Product Recovery Rate:			

Monitoring Well	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft. below TOC)	Estimated volume of water removed during this event	Relevant Observations
MWIA	14.88	14.50		17.62		-
					-2090	
11 W 3 14	14.87	14.55	-	17.36	150	·
MW 4/7	15.29	15.3)		/8.72		

vacuum conversion: (inches of water X 0.07355 = inches of mercury) MW- /A MW- 3A NW- 4A Stinger Placement Vacuum at Vacuum at Vacuum at Targeted **Targeted** Targeted Stinger Product Water Well Well Well Depth Depth Level Notes Time (in. Hg) (in. Hg) (in. Hg) MWI 15,5 14.90 14.88 Mug 19.57 14.87 14.95 18.29 15.31 MWY 8.15 20 20 20 20 20 20 9.15 10.15 20 20 20 11.15 00 20 20 12.15 20 20 20 20 20 20 1.15 2.15 28 20 20 20 20 20 315 20 4.15 20 20 5.15 20 20 20 6.15 20 20 00 20 20 20 815 20 20 20

Vacuum at Pump: 22" Ruys

45

vacuum conversion: (inches of water X 0.07355 = inches of mercury) MW-27 MW-MW-MW-Vacuum Vacuum Vacuum Water Influence Water Influence 8.15 Influence Water Influence Water Level at Well Level at Well Level at Well at Well Level Time (in. Hg) (in. Hg) (in. Hg) (in. Hg) 18.00 1499 02 .04 1015 ٠٥۶ .02 1115 ۔ ي ك Ú 12-15 .02 04 1.15 -52 30. 2.15 -22 .84 315 -22 .08 415-.04 ئے د. 5.15 -02 05 6-15 .06 ړ د. ,05 7.15 .0 -8.15 .61 14.97 سيميد 15-00

	Time	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Farenheit)	Relative Humldity (%)	Other
ı	8.45	1252	785	145	92	42	
	9.15	1055	788	978	109	Y2	
	9:45	1073	808	991	,17	43	
	1015	1098	827	1034	125	43	
	164)	1132	868	1056	136	43	
	11:17	1148	892	1079	145	42	
	1217	1153-	904	1094	147	42	
	FH .	1178	732	1108	164	42	
	2.75	1289	1011	1117	167	42	
	3.15	1292	1055	1139	148	42	
	475 1	1284	1042	1142	167	42	
4	412 /	1256	1017	1164	168	42	
١	4.0	1232	994	1135	168	42	
	725	1221	983	1194	167	42	
	8.95	1205	969	1218	168	42	
	•						
	•						
							•



# APPENDIX B POLLUTANT MASS REMOVAL DATA SHEETS

Site: Tisdale's Quick Stop UST Permit #: 18686

	Calculations - Flow at DSCFM							
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rei. Humidity	Water Vapor (%)	Qstd (flow)	
6/4/13	8:15							
6/4/13	8:45	965	0.022	92	42	0.013555399	20.032	
6/4/13	9:15	978	0.022	109	42	0.022926955	19.508	
6/4/13	9:45	991	0.022	117	43	0.029815743	19.356	
· 6/4/13	10:15	1036	0.022	125	43	0.037653607	19.797	
6/4/13	10:45	1056	0.022	136	43	0.051557130	19.520	
6/4/13	11:15	1079	0.022	145	42	0.064679790	19.377	
6/4/13	12:15	1096	0.022	167	42	0.118893162	17.891	
6/4/13	1:15	1108	0.022	166	42	0.115647588	18.182	
6/4/13	2:15	1117	0.022	167	42	0.118893162	18.234	
6/4/13	3:15	1129	0.022	168	42	0.122232476	18.330	
6/4/13	4:15	1142	0.022	168	42	0.122232476	18.541	
6/4/13	5:15	1166	0.022	168	42	0.122232476	18.931	
6/4/13	6:15	1135	0.022	168	42	0.122232476	18.428	
6/4/13	7:15	1194	0.022	167	42	0.118893162	19.490	
.6/4/13	8:15	1218	0.022	168	42	0.122232476	19.775	
'Averages		1094.00	0.022	148.73	42.20	0.086911872	19.026	

Site:

Tisdale's Quick Stop

UST Permit #: 18686

	Calculations - Pollutant Mass Removal in pounds								
Marg.	Elapsed	Flow	PPM						•
Elap.	Time	(DSCFM)	measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)
. 0	0								
30	30	20.03	1052	1	1052	5594.35	0.000349255	0.420	0.210
. 30	60	19.51	1055	1	1055	5610.30	0.000350251	0,410	0.205
30	90	19.36	1073	1	1073	5706.02	0.000356227	0.414	0.207
30	120	19.80	1098	1	1098	5838.97	0.000364527	0.433	0.216
30	150	19.52	1132	1	1132	6019.78	0.000375815	0.440	0.220
30	180	19.38	1146	1	1146	6094.23	0.000380462	0.442	0.221
60	240	17.89	1153	. 1	1153	6131.45	0.000382786	0.411	0.411
60	300	18.18	1178	1	1178	6264.40	0.000391086	0.427	0.427
60	360	18.23	1287	1	1287	6844.04	0.000427273	0.467	0.467
60	420	18.33	1292	1	1292	6870.63	0.000428933	0.472	0.472
60	480	18.54	1284	1	1284	6828.08	0.000426277	0.474	0.474
· 60	540	18.93	1256	1	1256	6679.19	0.000416982	0.474	0.474
60	600	18.43	1232	1	1232	6551.56	0.000409014	0.452	0.452
. 60	660	19.49	1221	1	1221	6493.06	0.000405362	0.474	0.474
60 <sup>.</sup>	720	19.78	1205	1	1205	6407.98	0.000400050	0.475	0.475
Averages		19.03	1177.60	1.00	1177.60	6262.27	0.000390953	0.446	0.360

Total Emission in pounds:

#### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460)

PPMg = PPM measured \* K

Cg:m = PPMg \* (Mg/K3)

Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3

PMRg = Cg \* Qstd \* 60 min/hr

PMR = PMRg \* ((T2-T1)/60)

Ostd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer)

Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

K3 = 24.07 dsm<sup>3</sup>/1E6 mg-mole, mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

## APPENDIX C LIQUID DISPOSAL MANIFEST

#### **NON-HAZARDOUS WASTE MANIFEST**

T. Transporter's Company Nature 1	WASTE MANIFEST  3. Generator's Name and Mailing Address  TISDACE'S QUICK STOP  / 189 THUR GOOD MARSHALL BLUD.  4. Generator's Phone (	Transporter's ID sporter 1 Phone \$10 - 653 - 63 9 9 Transporter's ID sporter 2 Phone Facility's ID by's Phone 910 - 675 - 5012
A Generalization from an of State Address  1. Separation from a US SPAID Number  A Service From a US SPAID Number  A Service Company from a US SPAID Number  A Service Company from a US SPAID Number  A Service Spain from a US SPAID Number  A Service Spain from a US SPAID Number  A Service Spain from a US SPAID Number  A Service Spain from a US SPAID Number  A Service Spain from a US SPAID Number  A Service Spain from a US SPAID Number  A Service Spain from a US SPAID Number  B Service Spain from a US SPAID Number  C Service Spain from a US SPAID Number  C Service Spain from a US SPAID Number  C Service Spain from a US SPAID Number  C Service Spain from a US SPAID Number  C Service Spain from a US SPAID Number  C Service Spain from a US SPAID Number  C Service Spain from a US SPAID Number  C Service Spain from a US SPAID Number  C Service Spain from a US SPAID Number  C Service Spain from a US SPAID Number  C Service Spain from a US SPAID Number  C Service Spain from a US SPAID Number  C Service Spain from a US SPAID Number  C Service Spain from a US SPAID Number  C Service Spain from a US SPAID Number  C Service Spain from a US Spain from a US SPAID Number  C Service Spain from a US Spain from a	3. Generator's Name and Mailing Address  TISDACE'S QUICK STOP  / 889 THUR GOOD MARSHALL BLUD.  4. Generator's Phone (	Transporter's tD sporter 1 Phone \( \frac{7}{U} - \lambda 53 - \lambda 3 \frac{9}{9} \) Transporter's tD sporter 2 Phone Facility's ID  by's Phone \( \frac{9}{10} - \lambda \frac{7}{5} - 5012 \)
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THE THORY IS THE GOOD MARSHALL BLUD.	189 THURGOD MARSHALL BLUD.	ponter 1 Phone 9/0 - 653 - 6399 Transporter's ID sponter 2 Phone Facility's ID sy's Phone 9/0 - 675 - 5012
4. Generator's Prizze ( )  5. Temportur's Company Name	4. Generator's Phane (	ponter 1 Phone 9/0 - 653 - 6399 Transporter's ID sponter 2 Phone Facility's ID sy's Phone 9/0 - 675 - 5012
THE CET TAC US PAID Number Contract Name 100 Actions 100 Listed Above 100	7. Transporter 2 Company Name  8. US EPA ID Number  9. Designated Facility Name and Site Address  10. US EPA ID Number  E State  CWS  303 J. MAULTSBYTT.  F. Facilit  WHITCUILLENC  11. WASTE DESCRIPTION  12. Containers  No. Type	ponter 1 Phone 9/0 - 653 - 6399 Transporter's ID sponter 2 Phone Facility's ID sy's Phone 9/0 - 675 - 5012
THE CET TAC US PAID Number Contract Name 100 Actions 100 Listed Above 100	7. Transporter 2 Company Name  8. US EPA ID Number  9. Designated Facility Name and Site Address  10. US EPA ID Number  E State  CWS  303 J. MAULTSBYTT.  F. Facilit  WHITCUILLENC  11. WASTE DESCRIPTION  12. Containers  No. Type	ponter 1 Phone 9/0 - 653 - 6399 Transporter's ID sponter 2 Phone Facility's ID sy's Phone 9/0 - 675 - 5012
8. Designated Facility Names and State Address  CWS  TO S. MAJUNTSBYST.  WHITCHILLIANC  11. WASTE DESIGNATION  12. Commission  A. Non-Reg. Potrilan Carte Waste Commission  No. Type Codes for Windows Listed Allows  A. Non-Reg. Potrilan Carte Waste Carte Waste Waste Commission  14. Septidal Handling Instructions and Additional Information  15. Septidal Handling Instructions and Additional Information  16. Septidal Handling Instructions and Additional Information  18. Septidal Handling Instructions and Additional Information  18. Septidal Handling Instructions and Additional Information  18. Septidal Handling Instructions and Additional Information  18. Septidal Handling Instructions and Additional Information  18. Septidal Handling Instructions and Additional Information  18. Septidal Handling Instructions and Additional Information  18. Septidal Handling Instructions and Additional Information  18. Septidal Handling Instructions and Additional Information  18. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. S	9. Designated Facility Name and Site Address 10. US EPA ID Number E State CW5 703 J. MAUUTSBYTT. F. Facilit WHITEUILUGIC  11. WASTE DESCRIPTION 12. Containers No. Type a.	Transporter's ID sporter 2 Phone Facility's ID sy's Phone 9/0 - 675-5012
8. Designated Facility Names and State Address  CWS  TO S. MAJUNTSBYST.  WHITCHILLIANC  11. WASTE DESIGNATION  12. Commission  A. Non-Reg. Potrilan Carte Waste Commission  No. Type Codes for Windows Listed Allows  A. Non-Reg. Potrilan Carte Waste Carte Waste Waste Commission  14. Septidal Handling Instructions and Additional Information  15. Septidal Handling Instructions and Additional Information  16. Septidal Handling Instructions and Additional Information  18. Septidal Handling Instructions and Additional Information  18. Septidal Handling Instructions and Additional Information  18. Septidal Handling Instructions and Additional Information  18. Septidal Handling Instructions and Additional Information  18. Septidal Handling Instructions and Additional Information  18. Septidal Handling Instructions and Additional Information  18. Septidal Handling Instructions and Additional Information  18. Septidal Handling Instructions and Additional Information  18. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. Septidal Handling Instructions and Additional Information  19. S	9. Designated Facility Name and Site Address 10. US EPA ID Number E State CW5 703 J. MAUUTSBYTT. F. Facilit WHITEUILUGIC  11. WASTE DESCRIPTION 12. Containers No. Type a.	poner 2 Phone Facility's ID  Ny's Phone  910 - 625-5012
B. Designated Facility Name and Size Address  C. V. S.  7. O. S. MAUNTSBYST.  WHITCUILLIGATC.  11. WASTE DEBORSTION  12. Containings  No. Type  Causing  No. Type  No. Type  Causing  No. Type  No. Typ	9. Dasignated Facility Name and Site Address  CWS  703 J. MAULTSBYTT.  F. Facilit  WHITEUILUSIC  11. WASTE DESCRIPTION  12. Containers  No. Type  a.	Fecility's ID  N's Phone  910 - 625-5012
No. 1790 Casardy White  No. 17	a.	9/0 - 675-5012
No. 1790 Casardy White  No. 17	a.	910-625-5012
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Date	20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.	Date

F-14 © 2002 LABEL MASTER @ (800) 621-5808 www.labolmaster.com

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Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

MR MARTY EASLER 196 RICHBURG ROAD GREELEYVILLE SC 29056 Cierus Cierus

SEP 2 0 2013

Re: QAPP Contractor Addendum Directive

Tisdales Quick Stop, 1989 Thurgood Marshall Blvd, Kingstree, SC UST Permit # 18686
Release reported March 30, 2001
AFVR Report received June 14, 2013
Williamsburg County

Dear Mr. Easler:

The Underground Storage Tank Management Division (UST Division) of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced report. The report indicates the presence of chemicals of concern in the groundwater.

To determine what risk the referenced release may pose to the environment and public health, and in accordance with Section 280.65 of the South Carolina Underground Storage Tank Control Regulations, implementation of a Groundwater-sampling event in which samples should be collected for BTEX, Naphthalene, MtBE, 1,2-DCA, ethanol, and Oxygenates from all wells associated with this site as outlined in the UST Quality Assurance Program Plan (QAPP), revision 2.0, is necessary. The groundwater-sampling event should be conducted in accordance with the UST QAPP 2.0 and in compliance with all applicable regulations. A copy of the Agency QAPP 2.0 for the UST Division is available at: <a href="http://www.scdhec.gov/environment/lwm/usthome/Qapp.htm">http://www.scdhec.gov/environment/lwm/usthome/Qapp.htm</a>

Please have your contractor complete and submit the QAPP 2.0 Contractor Addendum and Cost Agreement to the UST Division 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 pre-approval from the Agency must be issued before work begins.

On all correspondence regarding this site, please reference **UST Permit #18686**. If you have questions or need additional information, feel free to contact me by telephone at (803) 898-0605, by fax at (803) 898-0673, or by e-mail to <a href="mailto:martinjm@dhec.sc.gov">martinjm@dhec.sc.gov</a>.

Sincerely,

Jim Martin, Hydrogeologist

Corrective Action Section

Underground Storage Tank Management Division

Bureau of Land and Waste Management

cc: Geological Resources, Inc., 2301 Crown Point Executive Drive, Suite F, Charlotte, NC 28227

Technical File



#### **Geological Resources, Inc.**

October 2, 2013

Mr. Jim Martin
South Carolina Department of Health
and Environmental Control
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

Re:

GRI Proposal No. 13-498

Cost Agreement and QAPP Contractor Addendum: Revision 0

Tisdales Quick Stop

1989 Thurgood Marshall Blvd Kingstree, Williamsburg County

UST Permit No. 18686



Dear Mr. Martin:

In response to your September 20, 2013 QAPP Contractor Addendum Directive, Geological Resources, Inc. submits the attached Cost Agreement to conduct a comprehensive ground water sampling event at the above referenced site. The associated QAPP Contractor Addendum - Revision 0 is also attached. Please contact me at (704) 845-4010 with any questions.

Sincerely,

Geological Resources, Inc.

S.C. Site Rehabilitation Contractor #74

W. Scott Ball

Senior Project Manager

enclosure

cc:

file

Appendix B: Contractor Addendum

#### Section A: Project Management

#### A1 Title and Approval Page

Quality Assurance Project Plan
Addendum to the SC DHEC UST Programmatic QAPP
For
Tisdales Quick Stop – UST Permit No. 18686
1989 Thurgood Marshall Blvd., Kingstree, Williamsburg County, South Carolina
Prepared by: W. Scott Ball
Frepared by. VY, Ocott Ball
Geological Resources, Inc.
S.C. Site Rehabilitation Contractor #74
Date: 10/2/2013
Geological Resources, Inc.

Approvals	
Jim Martin	Date
SC DHEC Project Manager	Signature
John M. Brown, PG - GRI	John 15,000 Date 10/03/13
Contractor QA Manager	Signature
Scott Ball - GRI	San Dale 10/3/13
Site Rehabilitation Contractor	Signature
Harry Behzadi	Date 10/3/12
Laboratory Director	Signature

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#### **A3 Distribution List**

				T		
Name	Title/Role from UST Master QAPP	License/Num ber/Exp. date	Organization/Address	Telephone Number	Fax Number	Email Address
Jim Martin	SC DHEC Technical Project Manager	NA	SCDHEC, UST Management Division, 2600 Bull St., Columbia, SC, 29201	803-898- 0605	803-8986- 0673	martinjm@dhec. sc.gov
John M. Brown, P.G.	Contractor Project Verifier	P.G./S.C 1116/ 6-30-2015	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704-845- 4010	704-845- 4012	johnbrown@geo logicalresources inc.com
Terry D. Kennedy, P.G.	Contractor Project Verifier	P.G./S.C 2011/6-30- 2015	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704-845- 4010	704-845- 4012	tdk@geologicalr esourcesinc.co m
Johanna Teschner , P.G.	Contractor Project Verifier	P.G./S.C 2576/6-30- 2015	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704-845- 4010	704-845- 4012	jmt@geologicalr esourcesinc.co m
Rohit Shetty, P.G.	Contractor Project Verifier	P.E./S.C 20536/6-30- 2014	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704-845-4010	704-845- 4012	rshetty@geologic alresourcesinc.co m
Rae Troiano Brown, P.G.	Contractor Project Verifier	P.G./S.C 2366/6-30- 2015	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704-815-0653	252-321- 6094	rtb@geologicalres ourcesinc.com
John M. Brown, P.G.	Contractor QA Officer	P.G./S.C 1116/ 6-30-2015	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704-845- 4010	704-845- 4012	johnbrown@geo logicalresources inc.com
Scott Ball	Contractor Site Rehabilitation Contractor	NA	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704-845- 4010	704-845- 4012	wsb@geological resourcesinc.co m
Scott Ball	Contractor Field Manager	NA	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704-845- 4010	704-845- 4012	wsb@geological resourcesinc.co m
Michael Senglaub	Contractor Field Geologist	NA	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704-845-4010	704-845- 4012	mds@geologicalr esourcesinc.com
Hanna Kahrman n-Zadak	Contractor Field Geologist	NA	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704-845-4010	704-845- 4012	hkz@geologicalre sourcesinc.com

Joanna Alley	Contractor Field Engineer	NA	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704-845-4010	704-845- 4012	jra@geologicalres ourcesinc.com
Holden McClenn ey	Contractor Field Geologist	NA	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704-845-4010	704-845- 4012	hwm@geologicalr esourcesinc.com
Nicole Long	Contractor Field Scientist	NA	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704-845-4010	704-845- 4012	nml@geologicalre sourcesinc.com
William Regenth al	Contractor Field Geologist	NA	GRI - 2301 Crown Point Executive Drive, Charlotte, NC 28227	704-815-0653	252-321- 6094	wlr@geologicalre sourcesinc.com
Harry Behzadi	Laboratory Director	Certification/ SC96038001	Accutest, 4405 Vineland Road, Suite C-15, Orlando, FL 32811	407-425- 6700	427-425- 0707	harryb@accutes t.com

Table 1A Addendum Distribution and Project Organization List

It is understood that certification records must be produced if requested by SCDHEC.

#### 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.

Release reported in March 2001. IGWA completed in December 2001. Tier II completed March 2003. Tier II Addendum completed in October 2004. 35 shallow monitoring wells (MW-1 through MW-31 and MW-1A through MW-4A) and 2 telescoping wells (TW-1 and TW-2) have been installed at the site. Numerous ground water sampling events and AFVR events were conducted at the site from February 2004 through June 2011. The last comprehensive ground water sampling event was conducted in November 2011. **MW-1A through MW-4A have historically contained free product and will only be gauged for free product during the proposed sampling event. In the event that any of the wells do not contain free product, samples will be collected from them.** Two water supply wells remain in the area of the site and will be sampled if it is determined they are in service. The subject site is currently an active convenience store. Surrounding properties consist of a mix of residential and commercial properties as well as county government properties (school bus garage).

The release is currently being assessed to monitor contaminant concentrations in the ground water.

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

UST

#### **A5**

<b>A5</b>	Pro	oject/Task Description
	<i>1</i> .	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).
		Comprehensive ground water sampling event. Sampling of monitoring wells MW-1 through MW-31, MW-1A through MW-4A, TW-1 and TW-2. Sampling of water supply wells WSW-1 and WSW-3.
	2.	The work will begin within 10 business days after cost approval and sampling should be complete by 30 days after approval of cost agreement.
	3.	Are there are time or resource constraints? Yes Include those factors that may interfere with the tentative schedule. Inclement weather, personnel availability, equipment failures, could possibly bring changes such as delay of final report submittal, to the tentative schedule.
Α6	Da	ta Quality Objectives (DQOs) and Data Quality Indicators (DQIs)
	the	tail the geographical area that is to be part of the project. Maps should be included to show not only topography and the geographical area of the State, but also to show more detail of the site itself luding property lines.
		dales Quick Stop, 1989 Thurgood Marshal Blvd, Kingstree, Williamsburg County, SC (see attached ures 1 & 2)
Α7	Се	rtification
The	Fo	llowing Laboratory(ies) will be used for this Project:
		Commercial Lab(s)
Full	N a	me of the Laboratory Accutest

Name of Lab Director Harry Behzadi	
SC DHEC Certification Number 96038001  Parameters this Lab will analyze for this project: BTEX, MTBE, naphthalene, 1,2-DCA a	and 8
Oxygenates by Method 8260	allu o
Full Name of the Laboratory	
Name of Lab Director	
SC DHEC Certification Number	
Parameters this Lab will analyze for this project:	COD-
Please note: SC DHEC may require that the contractor submit some or all of the Laboratory's as part of this QAPP.	SUPS
A8 Documents and Records	
Personnel will receive the most current version of the QAPP Addendum via: (Check all that apply)	
X_US MailCourier _XHand delivered	
Other (please specify): e-mail	

Record	Produced By	Hardcopy/ Electronic	Storage Location For how long?	Archival
Field Notes	GRI	Hardcopy and electric	20 Years	Yes – Computer and GRI library
Chain of Custody	Accutest	Hardcopy and electric - EDD	10 Years	Yes - Electronic
Chain of Custody	GRI	Hardcopy and electric	20 Years	Yes – Computer and GRI library
Report	GRI	Hardcopy and electric	20 Years	Yes - Computer and GRI library
Lab Data	Accutest- Orlando	Hardcopy and electric - EDD	10 Years	Yes - Electronic

Table 2A Record Identification, Storage, and Disposal

#### **Section B Measurement/Data Acquisition**

#### **B1 Sampling Process/Experimental Design**

Item	Start Date	End Date	Comments
QAPP Preparation	10/1/13	10/2/13	In Progress
QAPP Approval	1 business day after submittal to DHEC	30 calender days from date received by DHEC	Assume 30 day turnaround
Ground Water Sampling	11 days from receipt of approved ACCA	12 days from receipt of approved ACCA	
Report Preparation	15 days from receipt of lab report	3 – 4 weeks from receipt of lab report	

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	<del></del>
Ground Water from monitoring wells	37 (MW-1 through MW-31, MW-1A through MW-4A, TW-1 and TW-2) as shown on attached Figure 2
From Drinking/Irrigation water wells	WSW-1 and WSW-3 as shown on attached Figure
From surface water features	<u>2</u> 
Duplicate samples	
Field Blanks	1
Trip Blanks	1
Total number of Water samples	43

Zadak

The samples will be (check as many as apply):HomogenizedX GrabSplit
All samples will be "Grab"
If homogenized or split are checked please indicate how will it be done and the equipment needed.
If decontamination procedures differ from Appendix H, please provide details.
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), or electricity to run sampling equipment.
Fed-Ex for shipping of samples

Failure	Response	Documentation	Individual Responsible				
YSI 556 Meter	Repair @ Enviro Equipment	Field Book/Notes	Michael Senglaub, Hanna Kahrmann- Zadak				
Hanna turbidity meter	Repair @ Enviro Equipment	Field Book/Notes	Michael Senglaub, Hanna Kahrmann- Zadak				
Water level meter	Repair @ Enviro Equipment	Field Book/Notes	Michael Senglaub, Hanna Kahrmann- Zadak				
Interface probe	Repair @ Enviro Equipment	Field Book/Notes	Michael Senglaub, Hanna Kahrmann- Zadak				

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.

**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? After each sample is collected, it is placed in an ice filled cooler that is secured with the sampling personnel's company vehicle. Upon completion of sampling activities, sampling personnel sends the secured cooler and chain of custody via Fed-Ex to the laboratory. Samples are generally sent out via Fed-Ex at the end of each day's sampling event. Or, if possible, the samples/cooler are taken directly to the laboratory's service center where possession of the samples is taken by the lab. Samples requiring analyses that have short hold times are always sent out the same day the samples were collected. Even if short hold times are not a concern, collected samples are never kept in the sampler's/contractors possession for more than 24 hours.
- 2. If sample preservation procedures differ from the UST Programmatic QAPP, please provide details.
- 3. If chain of custody procedures differ from the UST Programmatic QAPP, please provide details.

#### **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	Method Referenced	Comments
BTEX, MTBE, 1,2-	8260B	
DCA,Naphthalene		
8 Oxygenates	8260B-oxy	
рН	YSI 556 Meter	
Dissolved Oxygen	YSI 556 Meter	
Conductivity	YSI 556 Meter	
temperature	YSI 556 Meter	

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.
- 2. Provide SOPs for the Kerr Method or the Ferrous Iron Method if these are parameters for this study. This can be attached or written here. If attached please note that it is an attachment and where it is located (if applicable).

#### **B5 Quality Control Requirements:**

All QC will follow the requirements laid out in Section B5 of the UST Programmatic QAPP. If procedures for QC differ from the UST.

#### **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	Person responsible
YSI 556	GRI1	Calibration	Prior to each sampling event	Michael Senglaub, Hanna Kahrmann- Zadak
Hanna Turbidity Meter	GRi1	Calibration	Prior to each sampling event	Michael Senglaub, Hanna Kahrmann- Zadak
Water Level Indicator	GR/1	Replace batteries	As needed	Michael Senglaub, Hanna Kahrmann- Zadak
Interface Probe	GRI1	Replace Batteries	As needed	Michael Senglaub, Hanna Kahrmann- Zadak
Agilent 5973 of 5975, OI analytical purge and trap system	Multiple units	Leak check, gas pressure check, detector check, septa replacement	As warranted by passing instrument QC and batch QC	Bench Analyst

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	Serial Number	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA
YSI 556	GRI1	Manufacturer's Directions	Prior to the sampling event	Within limits established by manufacturer	Send to manufacturer or Enviro-Equipment	Michael Senglaub, Hanna Kahrmann- Zadak
Hanna Turbidity Meter	GRI1	Manufacturer's Directions	Prior to the sampling event	Within limits established by manufacturer	Send to manufacturer or Enviro-Equipment	Michael Senglaub, Hanna Kahrmann- Zadak
Agilent 5973 or 5975 equipped with OI analytical purge and trap system	NA	Calibrate with series of standards as described in SW-846 8260B, internal standard calibration procedure	Initial calibration performed as necessary and verified daily (CCV)	As described in SW-846 8260B method	In case of daily calibration (CCV) failure, investigate cause of failure, perform maintenance if necessary and recalibrate	Bench Analyst

Table 7A Instrument Calibration Criteria and Corrective Action

#### **B8 Inspection/Acceptance Requirements for Supplies and Consumables**

1. If procedures for storage, handling or transport of supplies/consumables differ from the UST Programmatic QAPP, please provide details.

<sup>\*</sup> 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.

#### **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.,
- 3. Provide its relevance to the project.
- 4. Indicate the justification criteria for use of these data sources and/or models.

Computer database and GRI library Historical ground water elevation and quality data ground water flow trends  SCDHEC FOI Historical ground water elevation and quality data ground water flow contaminant concentration and ground water flow ground water flow contaminant concentration and ground water flow	Data Source	Used for	Relevance	Justification for use in this project	Comments
Historical ground contaminant concentration and	database and GRI	water elevation		contaminant concentration and ground water flow	
trends	SCDHEC FOI	HEC FOI water elevation		contaminant concentration and ground water flow	

**Table 8A Non-Direct Measurements** 

5. Identify key resources/support facilities needed.

#### **B10 Data Management**

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

GRI orders lab kit from Accutest

Accutest ships kit to GRI office (if done directly from Orlando facility) or courier delivers kit to GRI office from service center

Field personnel collects lab samples and returns lab samples and field notes to office.

Accutest courier picks up samples and signs COC. (Alternately - GRI ships coolers to Accutest Southeast)

Samples are analyzed as per the COC and SOPs.

Lab report is emailed to Project manager. Data is checked if usable is populated into tables for report deliverable.

Data is stored at lab and in GRI office (electronic and hard copies).

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?

Laboratory - CoC are scanned into PDF upon log-in, subsequent changes in tests ordered (if any) are made via formal request. Computer records are incrementally backed up through LAN every 20 minutes and fully backed up once a week.

Field Staff – Field notes are recorded in bound, All-Weather Field Books (Model No. 540F) with black or blue ink. Original field notes are reviewed by a senior geologist and project manager upon return of field staff to the GRI office then scanned into a PDF file and saved to working files stored at GRI.

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.

Every piece of analytical data is reviewed once by bench analyst upon initial data processing and undergoes secondary review by section supervisor or senior analyst prior to release to the clients. Third level review performed by QA staff at 10-15% of data.

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).

Raw analytical data is incrementally backed up; full automatic backup occurs once a week and tapes are produced in duplicates. One copy stored off-site. Bench run logs, CoC and other handwritten records are scanned into PDF files; sample reports are converted into PDF files and stored on local servers. Logbooks, Certificates of Analysis, etc. are secured on-site in lockable storage.

As with field notes, GRI reports are converted into PDF files and stored on the GRI server. Hard copies of reports are stored in the GRI library.

#### **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. The samples will be

collected by the on-site supervisor. The on-site supervisor will periodically be audited/observed by a senior GRI personnel such at Terry D. Kennedy or John M. Brown. Auditors will check to see if the on-site supervisor is properly calibrating instrumentation in the field, determine if correct readings are being collected when purging wells, ensure the sample kits are properly labeled and preserved, ensure CoCs are completed in accordance with the QAPP and ensure that all waste materials (purge and decon water) are properly containerized for disposal. Will this person have the authority to stop work if severe problems are seen? Yes

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? 1. GRI's Contract QA Manager (John M. Brown. P.G.) will review the QC Data Summary associated with each Accutest Report to determine that all QA/QC requirements of the laboratory's SOP are met. 2. Accutest Laboratories Southeast participates in the semiannual analyses of PT samples in order to maintain primary state certification and for the benefit of other states' certification program. Accutest Laboratories Inc. maintains corporate purchasing contract with ERA, Waters Company, and results are on file with DHEC, lab certification group When or how often are these done? 1. Upon receipt of each laboratory report. 2. Semi-annually Who will the results be given to and who has the ability to stop work if problems are severe? 1. GRI's Contract QA Manager, Mr. John M. Brown. 2. Accutest Lab Director.

#### **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).



South Carolina Department of Health and Environmental Control

#### July 1, 2011

#### ASSESSMENT COMPONENT COST AGREEMENT SOUTH CAROLINA

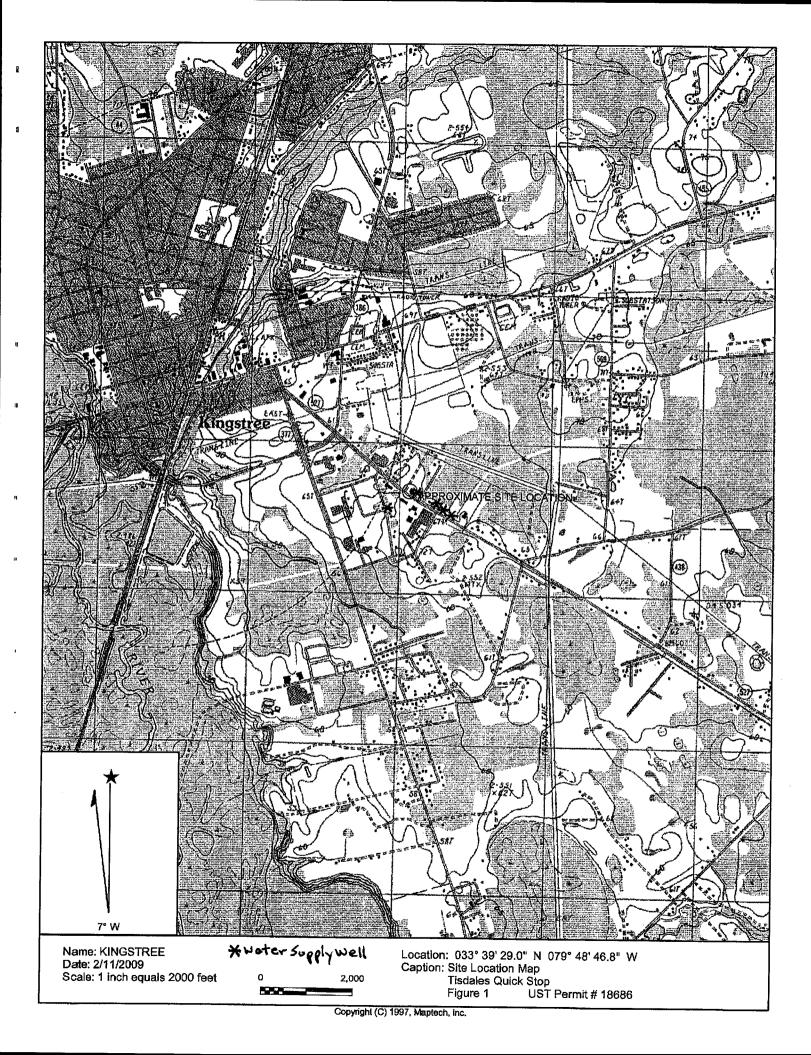
Department of Health and Environmental Control
Underground Storage Tank Management Division
State Underground Petroleum Environmental Response Bank Account

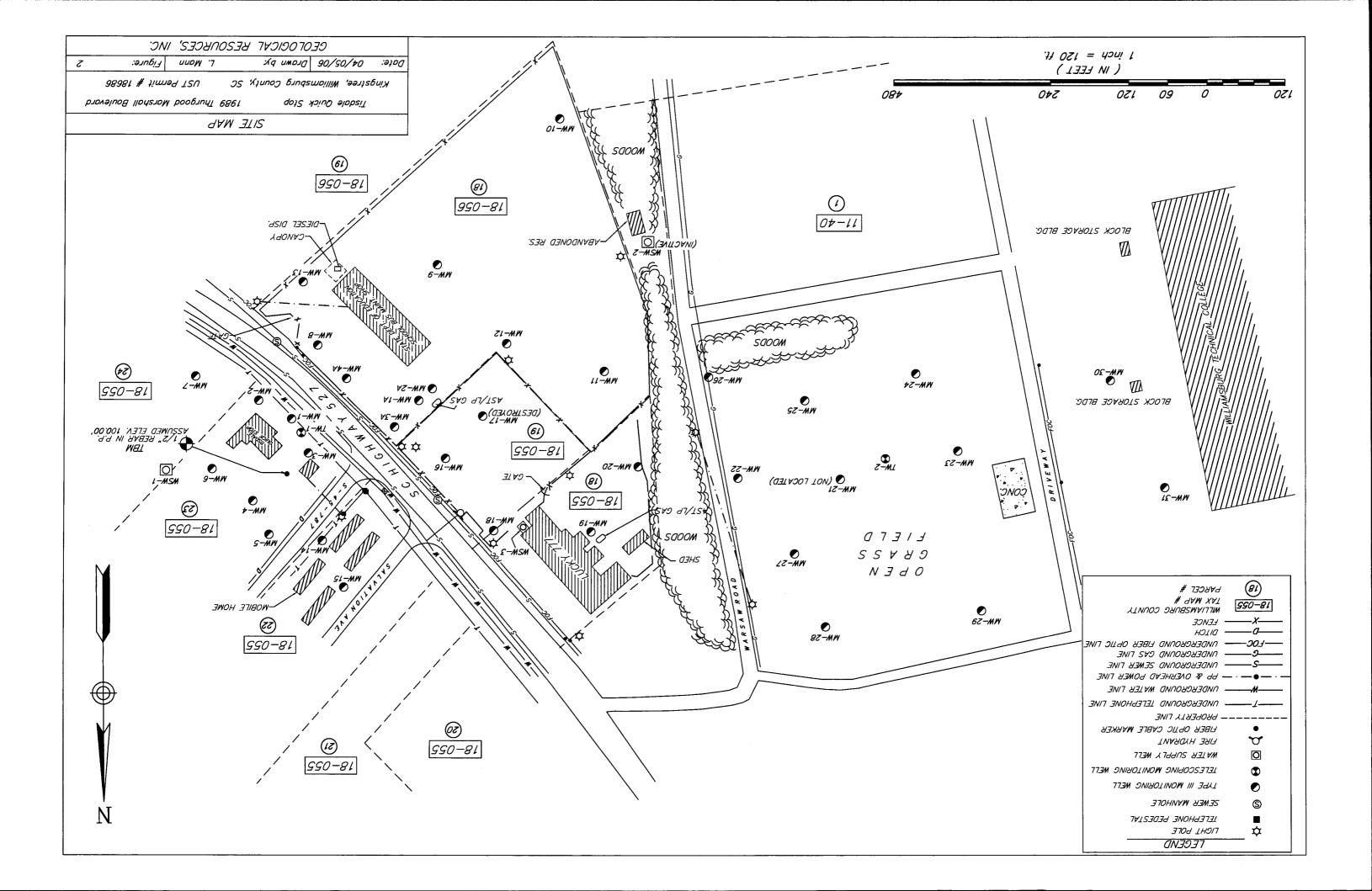
Facility Name:	Tisdales Quick Stop			_		GRI Prop. No. 13-498			
UST Permit #:	18686	Cost Agre	eement #:						
ITEM		QUANTITY	UNIT	UNIT PRICE		TOTAL			
1. Plan*				<b>*</b> F0.00		***			
B. Tax Map	Dien /OADD Annordin B	1	X	\$50.00		\$0.00			
2. Receptor Survey	o. Plan /QAPP Appendix B	1	X	\$525.00 \$500.00		\$525.00 \$0.00			
3. Survey (500 x 50			<del>                                     </del>	\$300.00	+	\$0.00			
A. Comprehensiv			×	\$1,000.00		\$0.00			
	eophysical Survey		^	\$1,000.00		Ψ0.00			
1. < 10 meters i			x	\$2,750.00		\$0.00			
2. > 10 meters i			x	\$3,250.00		\$0.00			
	JST or Drum Survey		x	\$1,125.00		\$0.00			
4. Mob/Demob (Eac									
A. Equipment	•		x	\$575.00		\$0.00			
B. Personnel		2	х	\$290.00		\$580.00			
C. Adverse Terra	in Vehicle to install wells		х	\$575.00		\$0.00			
5. Soil Borings (ha			feet x	\$14.00		\$0.00			
	lled) & Field Screening *					<u> </u>			
	llection of water sample or soil sam	ple, and lab or o	ther analyses						
A. Standard			feet x	\$17.00		\$0.00			
C. Fractured Roo			feet x	\$27.50		\$0.00			
7. Soil Leachability			each x	\$200.00		\$0.00			
8. Abandonment* (	•								
A. 2" diameter o			feet x	\$5.00		\$0.00			
B. Greater than 2			feet x	\$5.50		\$0.00			
	ell (up to 6 foot diameter)		feet x	\$18.00		\$0.00			
9. Well Installation				600.00		<b>60.00</b>			
A. Water Table (I			feet x	\$20.00		\$0.00			
B. Water Table ( C. Telescoping/			feet x	\$38.00 \$58.00		\$0.00 \$0.00			
D. Rock Drilling	-it Cased		feet x	\$58.00		\$0.00			
E. 2" Rock Coring	n		feet x	\$45.00		\$0.00			
	mpling ports/screens		feet x	\$47.20		\$0.00			
	l (4 inch diameter)		each x	\$45.00		\$0.00			
	acked screen (1.25 diameter)		each x	\$18.50		\$0.00			
J. Rotosonic (2 i			each x	\$45.00		\$0.00			
	Sample Collection / Gauge Depth	to Water or Pro		<b>V.0.00</b>	17	Ψ0.00			
A. Groundwater I		37	wells x	\$55.00		\$2,035.00			
B. Air or Vapors	_		samples x	\$90.00		\$0.00			
C. Water Supply		2	samples x	\$30.00		\$60.00			
	No Purge or Duplicate	2	samples x	\$35.00		\$70.00			
	nly (If product is present)	4	per well x	\$20.00		\$80.00			
F. Sample Below			wells x	\$50.00		\$0.00			
G. Pasive Diffusion	n Bag		each x	\$40.00		\$0.00			
H. Field Blank		1	each x	\$5.00		\$5.00			

11. Laboratory Analyses-Groundwater (Each Samp	le)	1 1		Į
A1. BTEX+Naphth.+ Oxyg's+ 1,2 DCA + Ethanol	l 43	samples x	\$100.00	\$4,300.00
AA. Lead, Filtered		samples x	\$46.00	\$0.00
B1. Rush EPA Method 8260B (All of item A.)		samples x	\$143.00	\$0.00
C1. Trimethal, Butyl, and Isopropyl Benzenes		samples x	\$40.00	\$0.00
D. PAH's		samples x	\$120.00	\$0.00
E. Lead, Unfiltered		samples x	\$20.00	\$0.00
F. EDB by EPA 8011		samples x	\$55.00	\$0.00
FF. EDB by EPA Method 8011 Rush	1	samples x	\$75.00	\$0.00
G. 8 RCRA Metals		samples x	\$140.00	\$0.00
H. TPH (9070)	Į.	samples x	\$55.00	\$0.00
I. pH		samples x	\$10.00	\$0.00
J. BOD		samples x	\$40.00	\$0.00
P1. Ethanol		samples x	\$21.50	\$0.00
11. Analyses-Soil (Each Sample)			<u> </u>	<del> </del>
Q. BTEX + Naphth.		samples x	\$100.00	\$0.00
R. PAH's		samples x	\$120.00	\$0.00
S. 8 RCRA Metals		samples x	\$150.00	\$0.00
T. Oil & Grease (9071)		samples x	\$60.00	\$0.00
U. TPH-DRO (3550B/8015B)		samples x	\$65.00	\$0.00
V. TPH- GRO (5030B/8015B)		samples x	\$65.00	\$0.00
W. Grain size/hydrometer	i	samples x	\$99.00	\$0.00
X. Total Organic Carbon		samples x	\$35.00	\$0.00
11. Analyses-Air (Each Sample)		Campios X	Ψ00.00	Ψ0.00
Y. BTEX + Naphthalene		samples x	\$247.50	\$0.00
11. Analyses-Free Phase Product (Each Sample)	<del> </del>	<del> </del>	, =	<del></del>
Z. Hydrocarbon Fuel Identification		samples x	\$620.00	\$0.00
12. Aquifer Characterization*		<u> </u>	`	. '
A. Pumping Test		hours x	\$120.00	\$0.00
B. Slug Test*		tests x	\$150.00	\$0.00
C. Fractured Rock		tests x	\$500.00	\$0.00
13. Free Product Recovery Rate Test* (Each)		tests x	\$120.00	\$0.00
14. Fate/Transport Modeling				
A. Mathematical Model		each x	\$300.00	\$0.00
B. Computer Model		each x	\$500.00	\$0.00
15. Risk Evaluation				, , , , , , , , , , , , , , , , , , , ,
A. Tier I Risk Evaluation		x	\$300.00	\$0.00
B. Tier II Risk Evaluation	ļ	x	\$500.00	\$0.00
16. Subsequent Survey*		Х	\$300.00	\$0.00
17. Disposal* (gallons or tons)				
A. Wastewater	180	gallons x	\$0.80	\$144.00
B1. Free Product		gallons x	\$0.85	\$0.00
C. Soil Treatment/Disposal		tons x	\$72.50	\$0.00
D. Drilling fluids		gallons x	\$0.80	\$0.00
18. Miscellaneous (attach receipts)		-		
		x		\$0.00
		x		\$0.00
		x		\$0.00
20. Tier I Assessment (Use DHEC 3665 form)		х		\$0.00
21. IGWA (Use DHEC 3666 form)		Х		\$0.00
22. Corrective Action (Use DHEC 3667 form)	l	Х		\$0.00

23. Aggressive Fluid & Vapor Recovery (AFVR)			·	
A. 8-hour Event*		each x	\$3,000.00	\$0.00
B. AFVR per-hour Continuance		per hour x	\$204.00	\$0.00
C. Off-gas treatment per-hour Continuance		per hour x	\$35.00	\$0.00
24. Granulated Activated Carbon (GAC) filter system	n installation &	service:		
A. New GAC System Installation*		each x	\$2,500.00	\$0.00
B1. Refurbished GAC Sys. Install*	!	each x	\$1,180.00	\$0.00
C. Filter replacement/removal*		each x	\$450.00	\$0.00
D1. GAC System removal, cleaning, & refurbishmen	nt*	each x	\$720.00	\$0.00
E. GAC System housing		each x	\$450.00	\$0.00
F. In-line particulate filter		each x	\$150.00	\$0.00
G. Additional piping & fittings		feet x	\$4.00	\$0.00
25. Well Repair				
A. Additional Copies of the Report Delivered		each x	\$32.50	\$0.00
B. Repair 2x2 MW pad		each x	\$100.00	\$0.00
C. Repair 4x4 MW pad		each x	\$150.00	\$0.00
D. Repair well vault		each x	\$225.00	\$0.00
F. Replace well cover bolts		each x	\$10.00	\$0.00
G. Replace locking well cap & lock		each x	\$15.00	\$0.00
H. Replace/Repair stick-up		each x	\$137.50	\$0.00
I. Convert Flush-mount to Stick-up		each x	\$175.00	\$0.00
J. Convert Stick-up to Flush-mount		each x	\$125.00	\$0.00
K. Replace missing/illegible well ID plate		each x	\$22.50	\$0.00
Report Prep & Project Management	15%	х	\$7,799.00	\$1,169.85
TOTAL				\$8,968.85

<sup>\*</sup>The appropriate mobilization cost can be added to complete these tasks, as necessary





#### **Accutest Laboratories Southeast**

### ACCUTEST

Chain of Custody
4405 Vineland Road, Suite C-15 Orlando, Fl 32811

Accutest JOB #

PAGE	05
FAGE	OI .

LABORATORIES	TEL. 4	107-425-67				25-6	0707					Acc	utes	t Quo	ote#			- [:	SKIF	F#			
Client / Reporting Information			Informa	est.com ition					100 m							Α	nalytica	al Infor	mation				Matrix Codes
Company Name	Project	Name:																					DW - Drinking Water
Address	Street				*********							1		1	ĺ								GW - Ground Water WW - Water
City State Zip	City						State				······	1	l										SW - Surface Water SO - Soil
Project Contact E-mail	Project	#										1			1								SL - Sludge OI - Oil
Phone#	Fax #				·							┪			1						1		LIQ - Other Liquid AIR - Air
Sampler(s) Name(s) (Printed)	Client F	Purchase Orde	r #	A								1			İ								SOL - Other Solid WP - Wipe
<u> </u>	COLLEC	ION			CONT	AINER I	NFORMA	ION				_		1	1		•						
Accutest   Field ID / Point of Collection	DATE TIMI	SAMPLED E BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NON E	NaOH	HNO3	H2SO4	NAOH+ZNAO	DI WATER												LAB USE ONLY
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Emergency or Rush T/A Data Available VIA Email or Lablink Sample Custody must be do		holow cook	imo sa-	nlos sh-	nac ~	0000	onion	inal	ıdina	00115	ior da	diver		<u> </u>				<del>,</del>					
Relinquished by Sampler: Sample Custody must be do	Received		une san	ipies cna	nge p	usse	Reli	nqui:	shed	by:	; iei ae	шчегу.				Date	e Time	e:	Red	ceived	By:		
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Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

MR MARTY EASLER 196 RICHBURG ROAD GREELEYVILLE SC 29056

OCT 1 8 2013.



Re: Groundwater Sampling Directive

Tisdales Quick Stop, 1989 Thurgood Marshall Blvd, Kingstree, SC UST Permit # 18686; CA#46171 Release reported March 30, 2001 QAPP received October 7, 2013 Williamsburg County

Dear Mr. Easler:

Underground Storage Tank Management Division (UST Division) of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced addendum submitted on your behalf by Geological Resources, Inc. The previous assessment work for this release indicates that petroleum Chemicals of Concern (CoC) are present in the groundwater at concentrations that exceed risk-based screening levels (RBSLs). In order to obtain current groundwater quality data, a comprehensive groundwater sampling event is necessary. All work should be conducted in accordance with the UST Quality Assurance Program Plan (QAPP), revision 2.0, and must be conducted in compliance with all applicable regulations. A copy of Agency QAPP 2.0 for the UST Management Division is available at: http://www.scdhec.gov/environment/lwm/usthome/Qapp.htm.

Groundwater sampling activities at the site should begin immediately upon receipt of this letter. Cost Agreement #46171 has been approved for the amount shown on the enclosed cost agreement form for the sampling of all monitoring wells associated with the release. Groundwater samples should be collected and analyzed for BTEX, Naphthalene, MtBE, 1,2-DCA, Oxygenates, and Ethanol. Analyses should be in accordance with Appendix E of the QAPP 2.0 and shall include a duplicate sample, field blank, and trip blank.

The monitoring report, contractor checklist from Appendix K of the QAPP 2.0, and invoice are due within 60 days from the date of this letter. The report submitted at the completion of these activities should include the required information outlined in the QAPP 2.0. 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.

Geological Resources, Inc., can submit an invoice for direct payment from the State Underground Petroleum Environmental Response Bank (SUPERB) Account for pre-approved costs. By law, the SUPERB Account cannot compensate any costs that are not pre-approved. Please note that applicable South Carolina certification requirements regarding laboratory services and report preparation must be satisfied. If the invoice

is 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 from the UST Division is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the UST Division for the cost to be paid. The Agency 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, the Agency 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.

Please note, if unnecessary dilutions are completed resulting in reporting limits of individual CoC in excess of RBSL, the data cannot be used. In those cases, the UST Division may deny payment for any non-detect analysis where the reporting limit exceeds the RBSL. The UST Division encourages the use of 'J' values as necessary so the appropriate action can be determined for a release.

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 2.0. If the CoC concentrations based on laboratory analysis are below 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 #18686 and Cost Agreement #46171. If you have any questions regarding this correspondence, please contact me by telephone at (803) 898-0605, by fax at (803) 868-0673, or by e-mail to martinim@dhec.sc.gov.

Sincerely,

Jim Martin, Hydrogeologist

Corrective Action Section

7:2/A)

Underground Storage Tank Management Division

Bureau of Land and Waste Management

enc: Approved Cost Agreement

Signed Site Specific QAPP Contractor Addendum

cc: Geological Resources, Inc., 2301 Crown Point Executive Drive, Suite F, Charlotte, NC 28227

(w/enc.)

Technical File (w/ enc.)

#### Section A: Project Management

A1 Title and Approval Page

Quality Assurance Project Plan
Addendum to the SC DHEC UST Programmatic QAPP
For
Tisdales Quick Stop – UST Permit No. 18686

1989 Thurgood Marshall Blvd., Kingstree, Williamsburg County, South Carolina

Prepared by: W. Scott Ball
Geological Resources, Inc.
S.C. Site Rehabilitation Contractor #74

Date: 10/2/2013

Approvals

Jim Martin

SC DHEC Project Manager

John M. Brown, PG - GRI Contractor QA Manager

Scott Ball - GRI Site Rehabilitation Contractor

Harry Behzadi Laboratory Director Signature

Geological Resources, Inc.

\_ Date\_\_

10-14-1-

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Date 16/3/13

Signature

Signature

Date 10/3 // 2

#### Approved Cost Agreement 46171

Facility: 18686 TISDALES QUICK STOP

MARTINJM PO Number:

Task / Description Categories	Item Description	Qty / Pct	Unit Price	<u>Amount</u>
01 PLAN		<del></del>		
	C TIER II/COMP. PLAN/QAPP APP B	1.0000	525.00	525.00
04 MOB/DEMOB				
	B PERSONNEL	2.0000	290.00	580.00
10 SAMPLE COLLECTION		· · · · · · · · · · · · · · · · · · ·		
	A GROUND WATER	37.0000	55.00	2,035.00
	C WATER SUPPLY	2.0000	30.00	60.00
	D GROUNDWATER NO-PURGE	2.0000	35.00	70.00
	E GAUGE WELL ONLY	4.0000	20.00	80.00
	H FIELD BLANK	1.0000	5.00	5.00
11 ANALYSES				
GW GROUNDWATER	A1 BTEXNM+OXYGS+1,2-DCA+ETH-8260B	43.0000	100.00	4,300.00
17 DISPOSAL				
	A WASTEWATER	180.0000	0.80	144.00
19 RPT/PROJECT MNGT & COORDINATIO				
	PCT PERCENT	0.1500	7,799.00	1,169.85

Total Amount 8,968.85

October 17, 2013 Page 1 of 1 suprcait.rdf Rev: 1.15



#### Geological Resources, Inc.

December 12, 2013

Mr. Jim Martin SCDHEC-Underground Storage Tank Management Division Bureau of Land & Waste Management 2600 Bull Street Columbia, SC 29201

Re:

Ground Water Monitoring Report

November 2013 Tisdale's Quick Stop

1989 Thurgood Marshall Blvd

Kingstree, Williamsburg County, SC

UST Permit No. 18686

Dear Mr. Martin,

Please find enclosed the referenced report for the above mentioned site. If you have any questions, please do not hesitate to contact Scott Ball at (704) 845-4010.

Sincerely,

Geological Resources, Inc.

Enclosure

cc:

Mr. Marty Easler

file

Project Coordinator

# GROUND WATER MONITORING REPORT NOVEMBER 2013 TISDALE'S QUICK STOP 1989 THURGOOD MARSHALL BOULEVARD KINGSTREE, WILLIAMSBURG COUNTY SOUTH CAROLINA UST PERMIT NO. 18686

Prepared for:

Mr. Marty Easler 196 Richburg Road Greeleyville, SC 29056

Prepared by:

Geological Resources, Inc.
2301-F Crown Point Executive Drive
Charlotte, North Carolina 28227
Class I UST Site Rehabilitation Contractor # 74

December 12, 2013

W. Scott Ball

Senior Project Manager

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#### Release Information:

• Date Discovered: March 30, 2001

• Estimated Amount of Release: Unknown

Source of Release: Leaking UST System

UST Size/Contents: Two 550 gallon gasoline tanks and one 1,000 gallon diesel

tank (Removed March 1, 2001)

• Latitude: 33.658056° North Longitude: 79.813° West

#### 3.0 GROUND WATER QUALITY

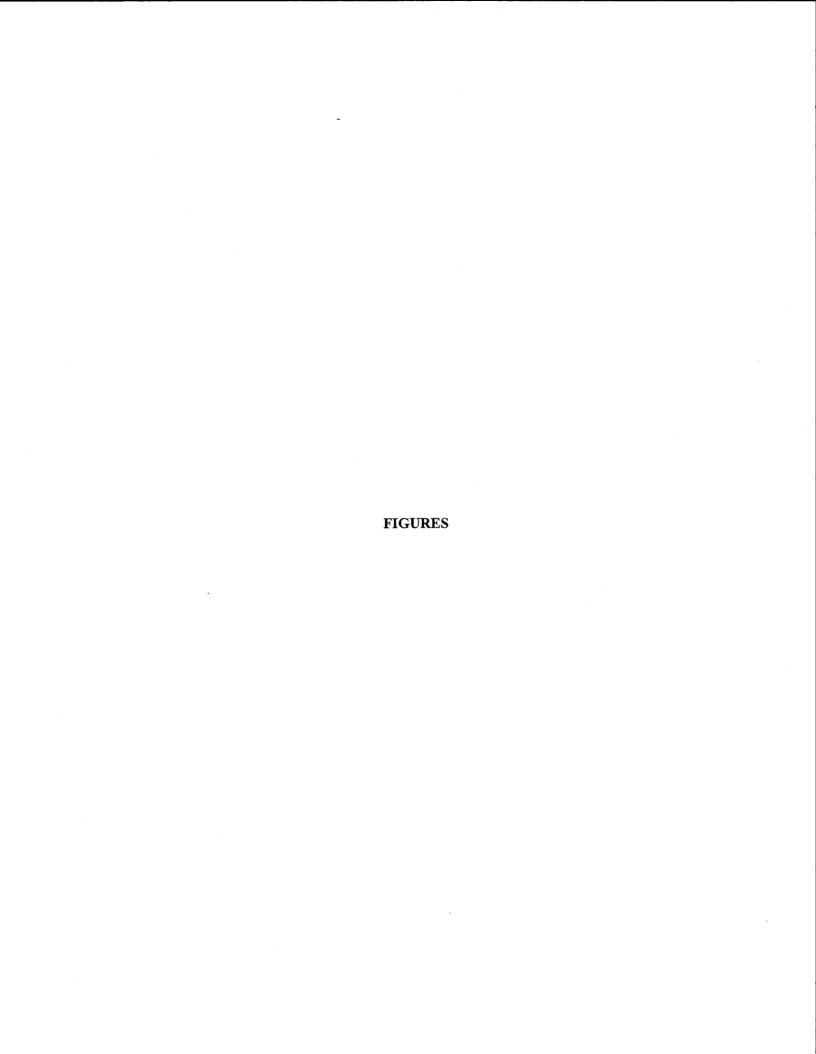
Twenty-nine Type III monitoring wells (MW-1 through MW-10, MW-13 through MW-15, MW-19, MW-20, MW-22 though MW-31 and MW-1A through MW-4A) and two telescoping monitoring wells (TW-1 and TW-2) were gauged, purged and/or sampled on November 6, 2013. Two water supply wells (WSW-1 and WSW-3) were also sampled on November 6, 2013. Monitoring wells MW-2, MW-3, MW-1A, MW-2A and MW-3A contained free product and therefore were not sampled. Free product thicknesses ranged from 0.01 feet to 0.21 feet. Monitoring well MW-17 was previously destroyed and therefore, could not be sampled. Monitoring wells MW-11, MW-12, MW-16, MW-18 and MW-21 could not be found and were not sampled. Monitoring wells MW-4 and MW-5 were obstructed and could be gauged but not sampled. All sampled monitoring wells were purged prior to sampling. The depths to ground water in the Type III monitoring wells which did not contain free product during the November 2013 sampling event ranged from 12.31 to 18.50 feet below the top of casings. Ground water elevations in the Type III monitoring wells relative to a temporary benchmark with an assumed datum of 100.00 feet ranged from 80.24 to 85.31 feet. Based on this data, ground water flow was generally toward the west. The horizontal hydraulic gradient across the site was less than 0.01 feet per foot. The vertical hydraulic gradient calculated for MW-1 and TW-1 was 0.03 feet per foot downward. A Site Map showing the locations of the monitoring wells and the structures on-site has been included as Figure 2. A Water Table Surface Map for the November 2013 sampling event has been included as Figure 3. A summary of well construction and gauging information is presented in Table 1.

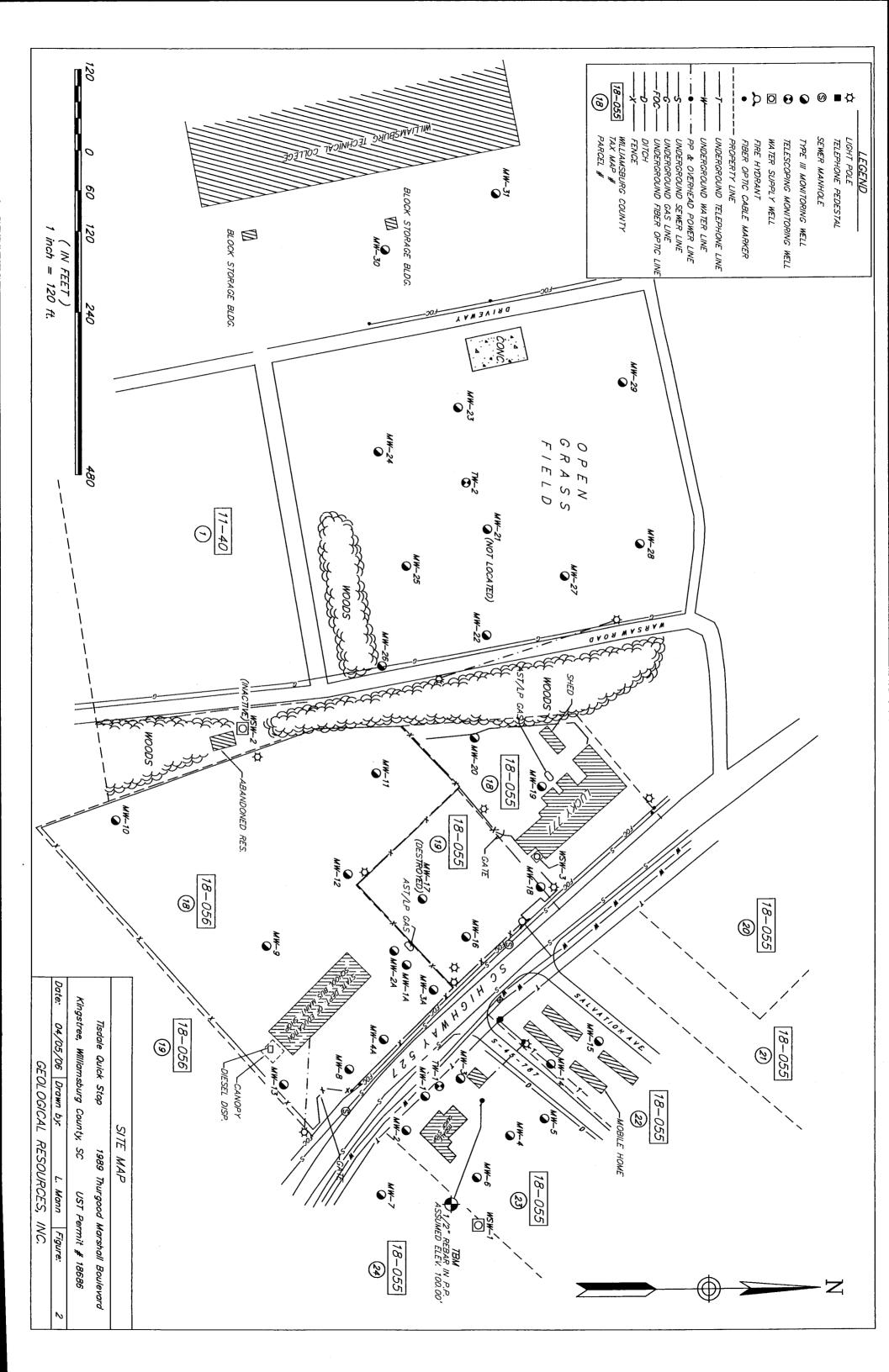
Laboratory analyses were performed on the ground water samples collected from the monitoring wells during the November 2013 sampling event for BTEX, MTBE, naphthalene, 1,2-DCA and eight oxygenates using EPA Method 8260. Concentrations of one or more BTEX constituents, MTBE, and/or naphthalene that exceeded the RBSLs were reported in the ground water samples collected from MW-1, MW-1 DUP, MW-20, MW-22, MW-23 and MW-4A. Detectable concentrations of oxygenates were reported in the samples collected from MW-1, MW-1 DUP, MW-20, MW-22, MW-23 and MW-4A. No detectable concentrations of requested method constituents were reported in the water supply well samples. A Ground Water Quality Map based on data from the November 2013 sampling event has been included as **Figure 4**. Summaries of ground

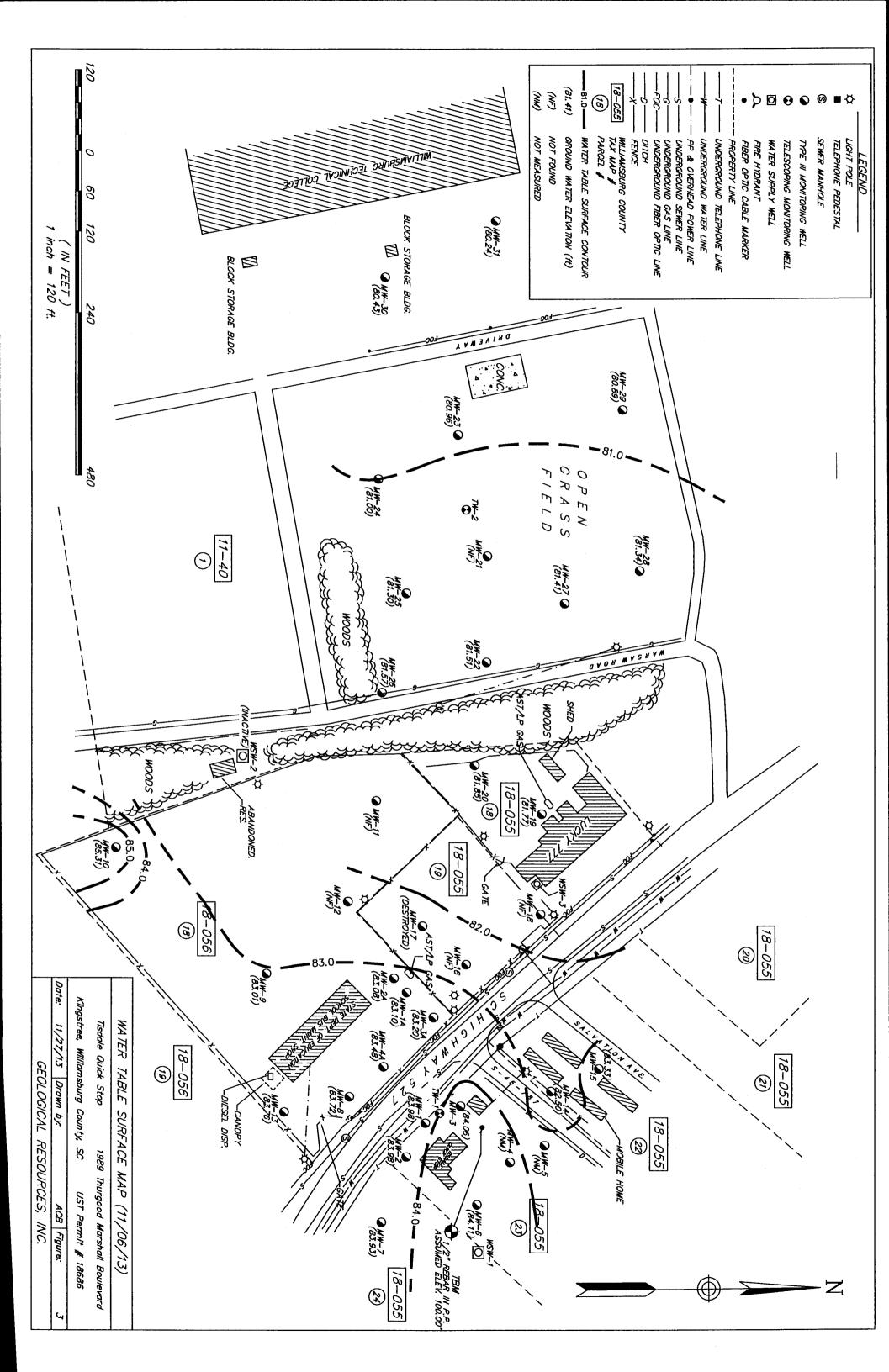
#### 6.0 LIMITATIONS

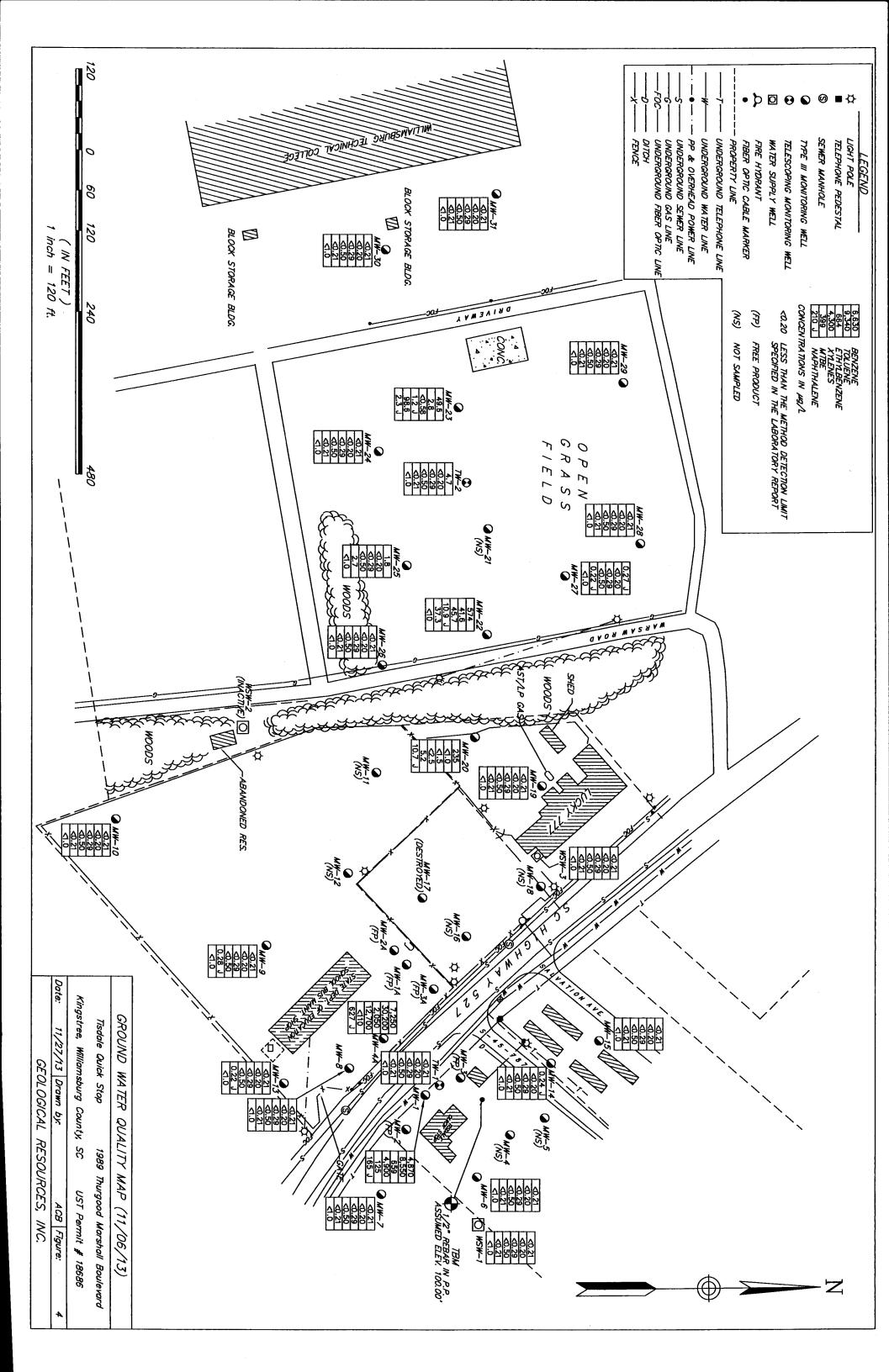
This report has been prepared for the exclusive use of Mr. Marty Easler and the SCDHEC for specific application to the referenced site in Williamsburg County, South Carolina. The assessment was conducted based on the scope of work and level of effort specified by the SCDHEC and with resources adequate only for that scope of work. Our findings have been developed in accordance with generally accepted standards of geology and hydrogeology practices in the State of South Carolina, available information, and our professional judgment. No other warranty is expressed or implied.

The data that are presented in this report are indicative of conditions that existed at the precise locations sampled and at the time the samples were collected. In addition, the data obtained from samples would be interpreted as being meaningful with respect to parameters indicated in the laboratory report. No additional information can logically be inferred from these data.









**TABLES** 

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		15.72		83.09		
	02/09/04		14.25		84.56	]	
	09/23/04		11.94		86.87		
	01/21/05		13.09		85.72		
MW-1	03/23/06	98.81	12.43		86.38	20	10-20
	01/07/09	]	15.12		83.69	7	
	11/04/09		15.58		83.23	7	
	11/22/11	]	17.46		81.35	7	
	11/06/13		14.83		83.98	7	
	01/16/03		17.35	1.90	83.10		
	02/09/04	]	15.17	1.07	84.57	_	
	09/23/04		12.95	1.18	86.88	7	
	01/21/05		13.61	0.61	85.73	7	
MW-2	03/23/06	98.82	12.43		86.39	25	10-25
	01/07/09	1	15.03	0.02	83.81		
	11/03/09		15.97	0.11	82.94		
	11/22/11		17.87		80.95		
	11/06/13		15.02	0.21	83.98		
	01/16/03		15.36	0.33	83.66		
	02/09/04	1	14.34	0.19	84.56		
	09/23/04		12.12	0.06	86.67	-	
	01/21/05		13.38	0.02	85.38	1	
MW-3	03/23/06	98.74	12.37		86.37	25	10-25
	01/07/09	1	15.27	0.12	83.57	1	
	11/03/09		15.82	0.12	83.02	7	
	11/22/11		17.47	0.04	81.30	7	
	11/06/13	1	14.69	0.01	84.06		
	01/16/03		15.06		83.52		
	02/09/04	1	14.01		84.57	7	
	09/23/04	1	11.96		86.62	7	
	01/21/05	1	13.13		85.45	1	
MW-4	03/23/06	98.58	12.24		86.34	25	10-25
	01/07/09	1	14.84		83.74	1	
	11/04/09		15.68		82.90	1	
	11/22/11	]	OBS		OBS	1	
	11/06/13	1	OBS		OBS	7	

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		14.77		83.36		
	02/09/04		13.77		84.36	7	
	09/23/04		11.71		86.42		
	01/21/05	1	13.14		84.99		
MW-5	03/23/06	98.13	12.80		85.33	22	12-22
	01/07/09		14.96		83.17		
	11/04/09		15.26		82.87	1	
	11/22/11	1	OBS		OBS	1	
	11/06/13		OBS		OBS	·	
	01/16/03		14.64		83.86		
	02/09/04	]	13.86		84.64	7	
	09/23/04	1	11.86		86.64	7	
	01/21/05		13.38		85.12	1	
MW-6	03/23/06	98.50	12.81		85.69	21.5	11.5-21.5
	01/07/09	1	15.00		83.50	7	
	11/03/09		15.23		83.27		
	11/22/11		17.47		81.03		
	11/06/13	1	14.39		84.11	7	
	01/16/03		14.69		83.50		
	02/09/04	1	13.56		84.63		
	09/23/04	]	11.56		86.63		
	01/21/05	1	12.78		85.41		
MW-7	03/23/06	98.19	11.73		86.46	22	12-22
	01/07/09		14.60		83.59		
	11/03/09	1	15.27		82.92	7	
	11/22/11	1	17.32		80.87		
	11/06/13	1	14.26		83.93	7	
	01/16/03		14.85		83.32		
	02/09/04	1	13.98		84.19	7	
	09/23/04		12.07		86.10		
	01/21/05		13.33		84.84		
MW-8	03/23/06	98.17	12.14		86.03	22	12-22
	01/08/09	] -	15.00		83.17		
	11/03/09		15.45		82.72		
1	11/22/11	]	17.55		80.62		
	11/06/13	]	14.45		83.72		

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		15.79		82.73		
Ī	02/09/04		15.00		83.52	_	
	09/23/04		13.12		85.40		
•	01/21/05		14.64		83.88		
MW-9	03/23/06	98.52	13.29		85.23	22	12-22
ļ	01/08/09		16.01		82.51		
Ì	11/03/09	]	16.56		81.96		
	11/22/11		18.73		79.79	1	
	11/06/13		15.51		83.01	7	
	01/16/03		16.52		82.16		
	02/09/04		15.79		82.89		
ľ	09/23/04		13.97	-	84.71		
	01/21/05		15.35		83.33		
MW-10	03/23/06	98.68	14.18		84.50	25	10-25
F	01/08/09		15.75		82.93		
	11/03/09		17.41		81.27		
ļ	11/22/11		19.43		79.25		
	11/06/13		13.37		85.31	1	
	01/16/03		12.89		81.76		
	02/09/04		12.10		82.55		
ľ	09/23/04		10.51		84.14		
	01/21/05	1	11.68		82.97	7	
MW-11	03/23/06	94.65	10.55		84.10	22	7-22
	01/08/09		NM		NM		
	11/03/09		NM		NM		
	11/22/11		NM		NM		
	11/06/13		NM		NM	7	
	01/16/03		13.13		82.57		
	02/09/04	]	12.35		83.35	7	
	09/23/04		12.67		83.03	7	
ļ	01/21/05		12.06		83.64		
MW-12	03/23/06	95.70	10.80		84.90	22	7-22
İ	01/08/09	]	NM		NM		
ľ	11/03/09	]	NM		NM		
	11/22/11	]	NM		NM	7	
İ	11/06/13		NM		NM	1	

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		15.65		83.36		
	02/09/04		14.70		84.31		
	09/23/04		12.90		86.11		
	01/21/05		14.05		84.96		:
MW-13	03/23/06	99.01	12.82		86.19	25	10-25
	01/08/09		15.68		83.33		
·	11/03/09		16.30		82.71		
	11/22/11		18.57		80.44		
	11/06/13		15.25		83.76		
	01/16/03		15.12		83.24		
	02/09/04		14.24		84.12	7	
	09/23/04		12.03		86.33	7	
	01/21/05		13.78		84.58	1	
MW-14	03/23/06	98.36	12.75		85.61	25	10-25
•	01/08/09		15.32		83.04		
•	11/04/09		15.77		82.59		
	11/22/11		17.72		80.64		
	11/06/13		15.86		82.50		
	01/16/03		16.40		83.19		
	02/09/04		15.55		84.04	1	
	09/23/04		13.50		86.09		
	01/21/05	]	14.89		84.70	7	
MW-15	03/23/06	99.59	13.92		85.67	25	10-25
•	01/08/09		16.63		82.96	7	
	11/04/09		17.16		82.43	7	
	11/22/11		19.15		80.44	7	
	11/06/13		16.26		83.33	7	
-	01/16/03		16.21	0.04	82.75		
	02/09/04		15.24	0.04	83.72		
	09/23/04		13.55		85.38		
	01/21/05		14.81	0.02	84.14		
MW-16	03/23/06	98.93	13.60		85.33	23	8-23
	01/08/09		16.21		82.72		
	11/04/09		16.57		82.36		
	11/22/11		NM		NM	7	
	11/06/13		NM		NM	7	

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		16.00	0.07	82.31		
	02/09/04		14.55		83.70		
MW-17	09/23/04	98.25	12.82		85.43	23	8-23
	01/21/05		13.78		84.47	,	
	03/23/06		NM		NM		
	01/16/03		17.70		82.13		
	02/09/04		16.91		82.92		
	09/23/04		15.06		84.77		
Ī	01/21/05		16.45		83.38	]	
MW-18	03/23/06	99.83	15.31		84.52	25	10-25
Ī	01/08/09		17.89		81.94		
Ī	11/04/09		18.40		81.43		
Ī	11/22/11		20.20		79.63		
Ī	11/06/13		NM		NM	7	
	01/16/03		18.54		81.73		10-25
	02/09/04		17.63		82.64	25	
	09/23/04		16.00		84.27		
	01/21/05		17.21		83.06		
MW-19	03/23/06	100.27	16.15		84.12		
	01/08/09		NM		NM		
	11/04/09		19.22		81.05		
	11/22/11		20.93		79.34	1	
	11/06/13		18.50		81.77	1	
	01/16/03		15.59		81.62		
	02/09/04	]	14.74		82.47		
	09/23/04		13.15		84.06		
	01/21/05	]	14.33		82.88		
MW-20	03/23/06	97.21	13.21		84.00	25	10-25
	01/08/09	]	NM		NM		
Ī	11/04/09	]	16.30		80.91		
	11/22/11	]	18.02		79.19		
Ī	11/06/13	]	15.36		81.85	7	

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		14.70		81.02		
	02/09/04		13.85		81.87		
	09/23/04		12.27		83.45		
	01/21/05		13.42		82.30		
MW-21	03/23/06	95.72	NM		NM	23	8-23
	01/08/09		NM		NM		
	11/04/09		15.35		80.37		
	11/22/11	]	17.01		78.71		
	11/06/13		NM		NM		
	01/16/03		15.40		80.32		
	02/09/04	]	14.61		82.07		
	09/23/04		12.92		83.76		
	01/21/05		14.15		82.53	]	
MW-22	03/23/06	96.68	13.21		83.47	25	10-25
-	01/08/09		15.54		81.14		
	11/04/09		16.08		80.60		
	11/22/11		17.75		78.93		
	11/06/13		15.17		81.51		
	01/16/03		15.08		80.70		
	02/09/04		14.30		81.48		
i	09/23/04	]	12.72		83.06		
	01/20/05	1	13.82		81.96	1	
MW-23	03/23/06	95.78	13.09		82.69	24	9-24
	01/08/09	]	15.21		80.57	1	
	11/04/09	]	15.64		80.14	1	
	11/22/11	]	17.28		78.50	1	
	11/06/13		14.82		80.96	1	
	01/16/03		13.00		80.86		
	02/09/04	]	12.19		81.67	7	
	09/23/04		10.58		83.28	1	
	01/20/05	] [	11.71		82.15		
MW-24	03/23/06	93.86	10.87		82.99	23	8-23
	01/08/09	]	13.17		80.69		
	11/04/09	] [	13.79		80.07		
İ	11/22/11	] [	15.28		78.58		
	11/06/13	]	12.86		81.00	]	

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		13.20		81.10		
	02/09/04		12.37		81.93		
	09/23/04		10.74		83.56		
	01/20/05	ļ	11.99		82.31		
MW-25	03/23/06	94.30	11.00		83.30	23	8-23
	01/08/09		13.34		80.96		
	11/04/09		13.83		80.47	1	
	11/22/11		15.56		78.74		
	11/06/13		13.00		81.30		
	01/16/03		12.38	_	81.50		
	02/09/04		11.62		82.26		
	09/23/04		10.03		83.85		
	01/20/05		11.18		82.70		
MW-26	03/23/06	93.88	10.58		83.30	21	6-21
	01/08/09		12.44		81.44	7	
	11/04/09		13.26		80.62	7	
	11/22/11		14.92		78.96		
	11/06/13		12.31		81.57	1	
	01/16/03		16.99		81.16		
	02/09/04		16.20		81.95	=	
	09/23/04		14.61		83.54	-	
	01/21/05		15.81		82.34	1	
MW-27	03/23/06	98.15	14.84		83.31	25	10-25
	01/08/09		17.20		80.95	1	
	11/04/09		17.64		80.51	1	
	11/22/11		19.30		78.85	7	
	11/06/13		16.74		81.41	1	
	01/16/03		17.46		80.99		
	02/09/04		16.55		81.90	1	
	09/23/04		15.00		83.45	7	
	01/21/05		16.17		82.28	7	
MW-28	03/23/06	98.45	15.21		83.24	25	10-25
	01/08/09		NM		NM		
	11/04/09	[	18.00		80.45	1	
	11/22/11		19.60		78.85	7	
	11/06/13		17.11		81.34		

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		16.17	" ]	80.61		
	02/09/04		15.30		81.48		
	09/23/04		13.74		83.04	]	
i	01/20/05		14.69		82.09	1	
MW-29	03/23/06	96.78	14.12		82.66	25	10-25
	01/08/09		16.31		80.47		
	11/04/09		16.71		80.07		
	11/22/11		18.26		78.52		
	11/06/13		15.89		80.89		
	01/16/03		15.18		80.20		
	02/09/04		14.36		81.02		
	09/23/04	95.38	12.85		82.53	22	
	01/20/05		13.72		81.66		
MW-30	03/23/06		13.04		82.34		7-22
	01/08/09		15.41		79.97		
	11/04/09		15.74		79.64		
	11/22/11		17.36		78.02		
	11/06/13		14.95		80.43		
	09/23/04		13.88		82.17		
	01/20/05	]	14.73		81.32	1	
	03/23/06	]	14.22		81.83	1	
MW-31	01/08/09	96.05	16.49		79.56	20	10-20
	11/04/09		16.37		79.68	1	
	11/22/11		18.20		77.85		
	11/06/13		15.81		80.24		
	01/21/05		13.46	0.09	83.82		
	03/23/06	.	12.11		85.09	]	
MW-1A	01/08/09	97.20	14.99		82.21	Unknown	Unknown
IVI W - 1 A	11/03/09		15.25	0.06	82.00	Uliknown	Olikhown
	11/22/11		17.76	0.85	80.17		
	11/06/13		14.11	0.01	83.10		

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/21/05		13.63	0.28	83.91		
	03/23/06		12.54	0.31	85.03		
MW-2A	01/08/09	97.30	15.86	0.54	81.90	Unknown	Unknown
M W - 2A	11/03/09	97.30	15.61	0.02	81.71	Chikhowh	Ulkilowii
MW-3A	11/22/11		17.26		80.04		
	11/06/13		14.25	0.03	83.08		
	01/21/05		13.46	0.22	84.00		
	03/23/06		12.22	0.03	85.08		Unknown
	01/08/09	97.27	15.68	1.00	82.45	Unknown	
	11/03/09	97.27	15.63	0.47	82.04	Unknown	
	11/22/11		18.02	0.82	79.95	Unknown	
	11/06/13		14.12	0.06	83.20		
	01/21/05		13.06	0.02	85.05		Unknown
	03/23/06		12.43		85.66		
N 6377 4 A	01/08/09	00.00	16.02	0.85	82.80		
MW-4A	11/03/09	98.09	15.62	0.02	82.49		
	11/22/11		17.84	0.02	80.27		
	11/06/13		14.61		83.48	1	
	01/16/03		15.14		83.87		
	02/09/04		14.81		84.20	7	
	09/23/04	1	13.16		85.85	7	
	01/21/05		14.39		84.62		
TW-1	03/23/06	99.01	13.35		85.66	46	41-46
	01/08/09		15.97		83.04	7	
	11/04/09		16.84		82.17		
	11/22/11	1	18.76		80.25	1	
	11/06/13		15.76		83.25		

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		14.33		80.93		
	02/09/04		13.58		81.68		•
	09/23/04		11.98		83.28		
	01/21/05		13.07		82.19		
TW-2	03/23/06	95.26	12.10		83.16	51	46-51
	01/08/09		14.52		80.74	]	
	11/04/09		15.01		80.25	]	
	11/22/11	] '	16.63		78.63		
	11/06/13	]	14.19		81.07	7	

#### Notes:

- Elevations relative to a temporary benchmark with an assumed datum of 100.00 feet; data reported in feet.
- \*\*: If free product is present in a well, groundwater elevation calculated by: [Top of Casing Elevation Depth to Water] + [free product thickness x 0.8581].
- NM: Not measured; monitoring well is destroyed, covered or could not be located.
- OBS: Monitoring well obstructed.
- Monitoring wells MW-1A through MW-4A were installed by S&ME Consultants in January 2000.
- Monitoring wells MW-16 and MW-17 were completed above grade with stand up covers; depths to ground water were measured from the tops of casing; well depths and screened intervals were measured from the ground surface.

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	мтве	Naphthalene	1,2-DCA	EDB
RBSL	]	5	1,000	700	10,000	40	25	5	0.05
	01/17/03	17,300	31,000	2,220	12,800	495	515	-	0.13
	02/09/04	11,400	19,600	1,010	12,000	395	525	-	NR
	10/07/04	4,160	7,500	504	4,400	348	290	-	0.03
	01/21/05	8,150	13,500	790	7,170	560	< 500	_	NR
MW-1	03/24/06	7,800	11,800	552	6,640	833	<100	-	NR
	01/07/09	15,700	15,100	1,600	12,310	1,120	878	<500	0.092
	11/04/09	7,120	12,600	988	6,940	<500	< 500	<500	0.056
	11/23/11	6,630	9,340	664	4,300	399	210 J	<20	NR
	11/06/13	4,870	8,550	659	4,900	125	165 J	<22	NR
MW-1 DUP (DUP A)	11/06/13	5,090	10,600	687	4,830	105 J	<200	<44	NR
	01/17/03	FP	FP	FP	FP	FP	FP	FP	FP
	02/09/04	FP	FP	FP	FP	FP	FP	FP	FP
	10/07/04	FP	FP	FP	FP	FP	FP	FP	FP
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
MW-2	03/24/06	14,600	17,900	2,240	12,000	164	495	FP	NR
	01/07/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/23/11	20,100	23,800	1,810	9,030	89.8 J	413 J	<50	NR
	11/06/13	FP	FP	FP	FP	FP	FP	FP	FP
MW-2 DUP (DUP 2)	11/23/11	20,600	24,500	2,030	10,000	92.5 J	620 J	<50	NR
	01/17/03	FP	FP	FP	FP	FP	FP	FP	FP
	02/09/04	FP	FP	FP	FP	FP	FP	FP	FP
	10/07/04	FP	FP	FP	FP	FP	FP	FP	FP
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
MW-3	03/24/06	54.6	44.4	17.1	660	2.04	8	FP	NR
	01/07/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
	11/06/13	FP	FP	FP	FP	FP	FP	FP	FP

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	мтве	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000 `	700	10,000	40	25	5	0.05
	01/17/03	3.7	<1.0	1.8	7.2	<1.0	7.4	FP	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	FP	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	FP	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	FP	NR
MW-4	03/24/06	0.200J	<1.00	<1.00	1.44	0.340J	<1.00	FP	NR
	01/07/09	5.9	<5.0	< 5.0	6.0	<5.0	8.0	<5.0	< 0.020
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	01/17/03	<1.0	<1.0	1.7	3.4	<1.0	7.1	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
MW-5	03/24/06	<1.00	<1.00	<1.00	0.350J	<1.00	<1.00	-	NR
	01/07/09	< 5.0	< 5.0	< 5.0	<15.0	<5.0	<5.0	<5.0	< 0.020
	11/04/09	<5.0	< 5.0	< 5.0	<10.0	<5.0	<5.0	<5.0	0.066
	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	01/17/03	<1.0	<1.0	1.9	3.8	<1.0	7	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
MW-6	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/07/09	< 5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.020
	11/03/09	<5.0	<5.0	< 5.0	<10.0	<5.0	<5.0	<5.0	< 0.020
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	< 0.21	<1.0	< 0.22	NR _
	01/17/03	70.3	145	24.3	308	1.8	25.7	-	< 0.02
	02/09/04	<1.0	11.4	60.2	441	<1.0	40.7	-	NR
	10/07/04	<1.0	1.1	2.4	25	<1.0	5.8	-	< 0.02
	01/21/05	<1.0	<1.0	4.5	26.9	<1.0	17.5	_	NR
MW-7	03/24/06	<1.00	<1.00	<1.00	23.3	0.260J	9.62	-	NR
	01/07/09	<5.0	<5.0	<5.0	<15.0	< 5.0	<5.0	< 5.0	< 0.019
	11/03/09	< 5.0	<5.0	<5.0	<10.0	<5.0	12.2	<5.0	< 0.020
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	0.62 J	<1.0	< 0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	< 0.21	<1.0	< 0.22	NR

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	мтве	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	1,480	11,800	1,930	9,930	6.3	<500	-	< 0.02
	02/09/04	59	1,700	424	2,380	<5.0	96	-	NR
İ	10/07/04	<1.0	3.2	7.4	71.1	<1.0	9	-	< 0.02
	01/21/05	12	161	55.6	1,100	<1.0	52.2	-	NR
MW-8	03/24/06	4.19	24.1	118	1,070	<1.00	102	-	NR
	01/08/09	16.8	< 5.0	< 5.0	200.6	<5.0	18.5	<5.0	< 0.019
	11/03/09	<5.0	<5.0	< 5.0	12.8	<5.0	34.7	<5.0	< 0.020
	11/22/11	11.6	1.3	8.1	7.0	< 0.34	19.3	< 0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	< 0.21	<1.0	< 0.22	NR
MW-8 DUP (DUP B)	11/06/13	0.33 J	< 0.20	<0.29	<0.50	<0.21	<1.0	<0.22	NR
	01/17/03	<1.0	<1.0	<1.0	<1.0	34	< 5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	11.1	< 5.00	_	NR
	10/07/04	<1.0	<1.0	<1.0	1.2	<1.0	< 5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	12.5	< 5.00	-	NR
MW-9	03/24/06	<1.00	<1.00	0.270J	2.49	1.5	<1.00	-	NR
	01/08/09	<5.0	< 5.0	<5.0	<15.0	<5.0	< 5.0	< 5.0	< 0.019
	11/03/09	< 5.0	< 5.0	< 5.0	<10.0	<5.0	< 5.0	<5.0	< 0.019
	11/30/11	< 0.20	< 0.20	< 0.20	< 0.52	1.9	<1.0	< 0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	0.28 J	<1.0	< 0.22	NR
	01/17/03	<1.0	<1.0	<1.0	<1.0	1.5	< 5.00		< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	. <5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	_	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
MW-10	03/24/06	<1.00	<1.00	<1.00	0.490J	<1.00	<1.00	-	NR
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/03/09	<5.0	<5.0	< 5.0	<10.0	<5.0	<5.0	<5.0	< 0.020
	11/30/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	<0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	<0.21	<1.0	<0.22	NR

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	МТВЕ	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	1.6	< 5.00	- 1	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	23.7	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	5.1	< 5.00	-	NR
MW-11	03/24/06	<1.00	<1.00	<1.00	<1.00	0.250J	<1.00	-	NR
	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	01/17/03	<1.0	<1.0	<1.0	<1.0	2	< 5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	- 1	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
MW-12	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	01/17/03	<1.0	<1.0	<1.0	<1.0	42.5	< 5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	145	< 5.00	_	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	6.3	< 5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	40.8	< 5.00	-	NR
MW-13	03/24/06	<1.00	<1.00	<1.00	<1.00	11	<1.00		NR
	01/08/09	< 5.0	< 5.0	<5.0	<15.0	< 5.0	< 5.0	<5.0	< 0.019
	11/03/09	< 5.0	< 5.0	<5.0	<10.0	< 5.0	<5.0	< 5.0	< 0.020
	11/30/11	< 0.20	< 0.20	<0.20	< 0.52	2.4	<1.0	< 0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	0.22 J	<1.0	< 0.22	NR

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	мтве	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	3.4	<1.0	<1.0	4.5	<1.0	10.9	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
MW-14	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	79.5	16.7	4.8	26.8	5.8	8.7 J	< 0.40	NR
	11/06/13	0.24 J	< 0.20	< 0.29	< 0.50	< 0.21	<1.0	< 0.22	NR
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
MW-15	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/08/09	<5.0	<5.0	< 5.0	<15.0	< 5.0	<5.0	<5.0	< 0.019
	11/04/09	<5.0	< 5.0	< 5.0	<10.0	<5.0	<5.0	< 5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	< 0.21	<1.0	< 0.22	NR
	01/17/03	FP	FP	FP	FP	FP	FP	-	FP
	02/09/04	FP	FP	FP FP	FP	FP	FP	-	FP
	10/07/04	FP	FP	FP	FP	FP	FP		FP
	01/21/05	FP	FP	FP	FP	FP	FP	-	FP
MW-16	03/24/06	14,600	20,300	2,080	11,800	536	1,080	-	NR
	01/08/09	2,660	6,520	930	5,100	<25.0	633	<25.0	< 0.020
	11/04/09	18,500	33,300	2,880	16,300	454	928	<250	0.30
	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
L	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	МТВЕ	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	FP	FP	FP	FP	FP	FP	-	FP
	02/09/04	<1.0	13.2	12.5	74.2	19	10.1	-	NR
MW-17	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	_	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	03/24/06	NS	NS	NS	NS	NS	NS	NS	NS
1	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	_	< 0.02
	02/09/04	15.4	5.5	<1.0	5.6	<1.0	< 5.00		NR
	10/07/04	1.5	<1.0	<1.0	<1.0	<1.0	< 5.00	_	< 0.02
	01/21/05	19.2	1.1	<1.0	7.1	<1.0	< 5.00	-	NR
MW-18	03/24/06	36.2	1.27	<1.00	6.16	<1.00	<1.00	·	NR
	01/08/09	< 5.0	< 5.0	< 5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/04/09	< 5.0	< 5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/21/05	3.1	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
MW-19	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	< 5.0	<5.0	<5.0	<10.0	< 5.0	<5.0	<5.0	< 0.019
	11/22/11	< 0.20	<0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	< 0.21	<1.0	< 0.22	NR
MW-19 DUP (DUP 1)	11/22/11	1.3	<0.20	<0.20	<0.52	< 0.34	<1.0	<0.20	NR

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	МТВЕ	Naphthalene	1,2-DCA	EDB
RBSL	]	5	1,000	700	10,000	40	25	5	0.05
	01/17/03	1,520	314	108	298	80.4	26.3	_	< 0.02
	02/09/04	3,220	530	15.2	830	78	61.2	-	NR
	10/07/04	90.2	6.6	<1.0	19.8	94.4	< 5.00		< 0.02
	01/21/05	1,120	43.1	5.8	95.1	73	36.9		NR
MW-20	03/24/06	44.9	0.300J	0.310J	3.54	9.14	<1.00	-	NR
	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	9.5	< 5.0	< 5.0	<10.0	<5.0	< 5.0	<5.0	< 0.019
	11/22/11	2.4	< 0.20	< 0.20	< 0.52	6.2	<1.0	< 0.20	NR
	11/06/13	235	<1.0	<1.5	<2.5	5.2	10.7 J	<1.1	NR
	01/17/03	269	27.5	12	118	42.6	12.6	_	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	_	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR
MW-21	03/23/06	NS	NS	NS	NS	NS	NS	_	NS
	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	<5.0	< 5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	108	4.5	< 0.40	<1.0	8.7	<2.0	< 0.40	NR
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	01/17/03	2,080	281	279	576	257	67.9		< 0.02
	02/09/04	782	49.2	41.4	77.5	93.4	15.8	-	NR
	10/07/04	109	11.3	3.2	19.5	71.4	< 5.00	-	< 0.02
	01/21/05	3,980	300	197	454	67	112	-	NR
MW-22	03/23/06	0.340J	<1.00	<1.00	<1.00	8.11	<1.00	-	NR
	01/08/09	< 5.0	<5.0	< 5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/04/09	< 5.0	<5.0	<5.0	<10.0	< 5.0	<5.0	<5.0	< 0.019
	11/22/11	60.0	8.3	3.4	3.1	13.8	<1.0	< 0.20	NR
	11/06/13	574	41.6	45.7	10.9 J	37.3	<10	<2.2	NR

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	мтве	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	27.6	<1.0	<1.0	3.7	27.2	10.5	-	< 0.02
	02/09/04	1,760	72	<1.0	592	372	17.2	-	NR
	10/07/04	1,620	103	<1.0	598	286	46	-	< 0.02
	01/20/05	1,670	111	<1.0	578	172	19.9	-	NR
MW-23	03/23/06	1,290	44.1	<1.00	266	168	38.4	-	NR
	01/08/09	574	< 5.0	< 5.0	30.8	65.2	< 5.0	<5.0	< 0.019
	11/04/09	1,250	<25.0	<25.0	98.9	152	31.0	<25.0	< 0.019
	11/22/11	435	<1.0	<1.0	<2.6	140	15.9 J	<1.0	NR
	11/06/13	49.6	2.8	< 0.58	1.2 J	98.6	2.3 J	<0.44	NR
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	_	< 0.02
	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	_	NR
MW-24	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/08/09	< 5.0	<5.0	< 5.0	<15.0	<5.0	<5.0	<5.0	< 0.020
	11/04/09	< 5.0	< 5.0	< 5.0	<10.0	<5.0	<5.0	<5.0	< 0.020
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	< 0.21	<1.0	< 0.22	NR
	01/17/03	<1.0	<1.0	<1.0	<1.0	4.9	< 5.00		< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00		< 0.02
	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00		NR
MW-25	03/23/06	0.330J	<1.00	<1.00	<1.00	<1.00	<1.00	<b>-</b> .	NR
	01/08/09	< 5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	1.8	< 0.20	< 0.29	< 0.50	2.7	<1.0	< 0.22	NR

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	МТВЕ	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	1.3	<1.0	<1.0	<1.0	4.7	<5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
MW-26	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/08/09	< 5.0	<5.0	< 5.0	<15.0	<5.0	< 5.0	<5.0	< 0.019
	11/04/09	<5.0	< 5.0	<5.0	<10.0	<5.0	< 5.0	<5.0	<0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	0.86 J	<1.0	< 0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	< 0.21	<1.0	< 0.22	NR
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	1.7	< 5.00	-	NR
MW-27	03/23/06	0.320J	<1.00	<1.00	<1.00	3.95	<1.00	-	NR
	01/08/09	<5.0	< 5.0	< 5.0	<15.0	< 5.0	<5.0	<5.0	< 0.019
	11/04/09	<5.0	<5.0	< 5.0	<10.0	<5.0	< 5.0	<5.0	< 0.020
	11/22/11	6.2	< 0.20	< 0.20	0.61 J	2.4	<1.0	< 0.20	NR
	11/06/13	0.27 J	< 0.20	< 0.29	< 0.50	0.22 J	<1.0	< 0.22	NR
	01/17/03	<1.0	<1.0	<1.0	<1.0	1.4	< 5.00		< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
MW-28	03/23/06	<1.00	<1.00	<1.00	<1.00	0.340 J	<1.00		NR
	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	< 5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	0.38 J	<1.0	< 0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	< 0.21	<1.0	<0.22	NR

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	мтве	Naphthalene	1,2-DCA	EDB
RBSL	Date	5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR
MW-29	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.020
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	<0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	<0.21	<1.0	<0.22	NR
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR
MW-30	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/08/09	<5.0	<5.0	< 5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/04/09	<5.0	<5.0	< 5.0	<10.0	<5.0	11.0	<5.0	< 0.020
-	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	<0.21	<1.0	< 0.22	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	_	< 0.02
	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR
	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00		NR
MW-31	01/08/09	< 5.0	< 5.0	< 5.0	<15.0	< 5.0	< 5.0	< 5.0	< 0.019
	11/04/09	<5.0	< 5.0	<5.0 `	<10.0	< 5.0	<5.0	<5.0	< 0.020
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	<0.21	< 0.20	< 0.29	< 0.50	< 0.21	<1.0	< 0.22	NR
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
	03/24/06	20,700	30,600	3,310	17,600	1,880	891	-	NR
MW-1A	01/08/09	14,300	29,300	8,930	48,800	1,250	6,060	<500	0.066
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
	11/06/13	FP	FP	FP	FP	FP	FP	FP	FP

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	МТВЕ	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
	03/23/06	FP	FP	FP	FP	FP	FP	FP	FP
MW-2A	01/08/09	FP	FP	FP	FP	FP	FP	FP	FP
IVI W -2 A.	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/30/11	260	517	37.3	491	<3.4	70.4	<2.0	NR
	11/06/13	FP	FP	FP	FP	FP	FP	FP	FP
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
	03/23/06	FP	FP	FP	FP	FP	FP	FP	FP
MW-3A	01/08/09	FP	FP	FP	FP	FP	FP	FP	FP
1V1 VV - 3 AL	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
	11/06/13	FP	FP	FP	FP	FP	FP	FP	FP
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
	03/24/06	19,600	34,800	3,900	21,500	247	952	NR	NR
MW-4A	01/08/09	FP	FP	FP	FP	FP	FP	FP	FP
1V1 VV -474	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
	11/06/13	7,250	30,200	2,050	12,700	<110	627 J	<110	NR
	01/17/03	25.5	46.6	6.9	19.8	<1.0	9.3	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00		NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	_	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
TW-1	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/08/09	< 5.0	<5.0	< 5.0	<15.0	< 5.0	<5.0	<5.0	< 0.020
	11/04/09	< 5.0	<5.0	<5.0	<10.0	< 5.0	<5.0	<5.0	< 0.019
	11/23/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	< 0.21	<1.0	< 0.22	NR
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	11.7	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR
TW-2	03/24/06	7.22	<1.00	<1.00	<1.00	1.7	<1.00	-	NR
	01/08/09	< 5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/04/09	< 5.0	< 5.0	< 5.0	<10.0	<5.0	<5.0	< 5.0	< 0.020
	11/22/11	7.0	< 0.20	< 0.20	< 0.52	1.0	<1.0	< 0.20	NR
	11/06/13	4.7	< 0.20	< 0.29	< 0.50	< 0.21	<1.0	< 0.22	NR

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
WSW-1	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/08/09	<5.0	<5.0	< 5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/04/09	<5.0	<5.0	<5.0	<10.0	< 5.0	< 5.0	<5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	< 0.21	<1.0	< 0.22	NR
	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
WSW-2	11/03/09	NS	NS	NS	NS	NS	NS	NS	NS
***************************************	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00		NR
WSW-3	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00		NR
*** 5 ** - 5	11/04/09	<5.0	< 5.0	< 5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	<0.21	< 0.20	< 0.29	< 0.50	< 0.21	<1.0	<0.22	NR
FIELD BLANK	11/22/11	<0.20	<0.20	<0.20	<0.52	<0.34	<1.0	<0.20	NR
DLANK	11/06/13	< 0.21	0.21 J	< 0.29	< 0.50	< 0.21	<1.0	< 0.22	NR
TRIP BLANK	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
INIT DUAIN	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	< 0.21	<1.0	<0.22	NR

#### Notes:

- Analyses for selected volatile organic compounds by EPA Method 8260B; lead by EPA Method 6010B or 200.7; and EDB by EPA Method 8011; results reported in μg/l.
- RBSL: May 2001 Risk Based Screening Level.
- · Concentrations in bold face type exceeded the RBSL.
- <: Less than the report limit specified in the laboratory report.
- NS: Not sampled.
- NR: Analysis not requested.
- I or J: Estimated value.
- FP: Free product.

Well No.	Date	Ethanol	ETBA	ETBE	TAME	DIPE	TBF	TBA	TAA
	03/24/06	<5,000	5,030	<50.0	<50.0	<50.0	<1,000	1,280	35,000
MW-1	11/04/09	<20,000	<10,000	<1,000	<1,000	< 500	<5,000	<10,000	10,200
IVI VV - 1	11/23/11	<2,500	<2,500	<31	<39	<35	< 500	<300	24,100
	11/06/13	<2,100	<2,000	<55	<49	<25	< 500	<470	7,700
MW-1 DUP (DUP A)	11/06/13	<4,200	<4,000	<110	<97	<51	<1,000	<950	7,020
	03/24/06	<5,000	4,620	<50.0	54	<50.0	<1,000	1,020	25,700
MW-2	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
IVI VV -2	11/23/11	<6,300	<6,300	<78	<98	<88	<1,300	<750	37,800
	11/06/13	FP	FP	FP	FP	FP	FP	FP	FP
MW-2 DUP	11/23/11	<6,300	<6,300	<78	<98	<88	<1,300	<750	37,000
(DUP 2)		·							
	03/24/06	<100	99.1	<1.00	<1.00	<1.00	<20.0	26.7	223
MW-3	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
1,,,,,	11/22/11	FP	FP	FP	<u>FP</u>	FP	FP	FP	FP
	11/06/13	FP	FP	FP	FP	FP	FP	FP	FP
	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-4	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-5	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	<200	115	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-6	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	< 5.0
	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	< 5.0	<4.7	< 5.0
	11/03/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-7	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	< 5.0
	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	<5.0	<4.7	< 5.0

Well No.	Date	Ethanol	ЕТВА	ЕТВЕ	TAME	DIPE	TBF	TBA	TAA
	11/03/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-8	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	11.2 J
_	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	<5.0	<4.7	<5.0
MW-8 DUP (DUP B)	11/06/13	<21	<20	<0.55	<0.49	<0.25	<5.0	<4.7	<5.0
	11/03/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-9	11/30/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	< 5.0
	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	<5.0	<4.7	<5.0
	11/03/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-10	11/30/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	<5.0
	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	<5.0	<4.7	< 5.0
	11/03/09	NS	NS	NS	NS	NS	NS	NS	NS
MW-11	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	NS	NS	NS	NS	NS	NS	NS	NS
MW-12	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-13	11/30/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	< 5.0
	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	< 5.0	<4.7	< 5.0
	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-14	11/22/11	<50	<50	< 0.62	< 0.78	< 0.70	<10	<6.0	450
	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	<5.0	<4.7	<5.0

Well No.	Date	Ethanol	ETBA	ЕТВЕ	TAME	DIPE	TBF	ТВА	TAA
MW-15	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	<5.0	<3.0	< 5.0
	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	< 5.0	<4.7	< 5.0
	03/24/06	<5,000	5,140	<50.0	72.5	<50.0	<1,000	1,560	34,600
MW-16	11/04/09	<10,000	<5,000	< 500	< 500	<250	<2,500	<5,000	45,400
IVI VV - I O	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-18	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	<5.0	<3.0	19.2 J
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-19	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	5.6 J
	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	< 5.0	<4.7	< 5.0
MW-19 DUP (DUP 1)	11/22/11	<25	<25	<0.31	<0.39	< 0.35	<5.0	<3.0	12.5 J
	11/03/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-20	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	<5.0	9.3 J	151
-	11/06/13	<110	<100	<2.8	<2.4	<1.3	<25	<24	567
MW-21	11/03/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
	11/22/11	<50	<50	< 0.62	1.1 J	< 0.70	<10	25.0 J	343
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS

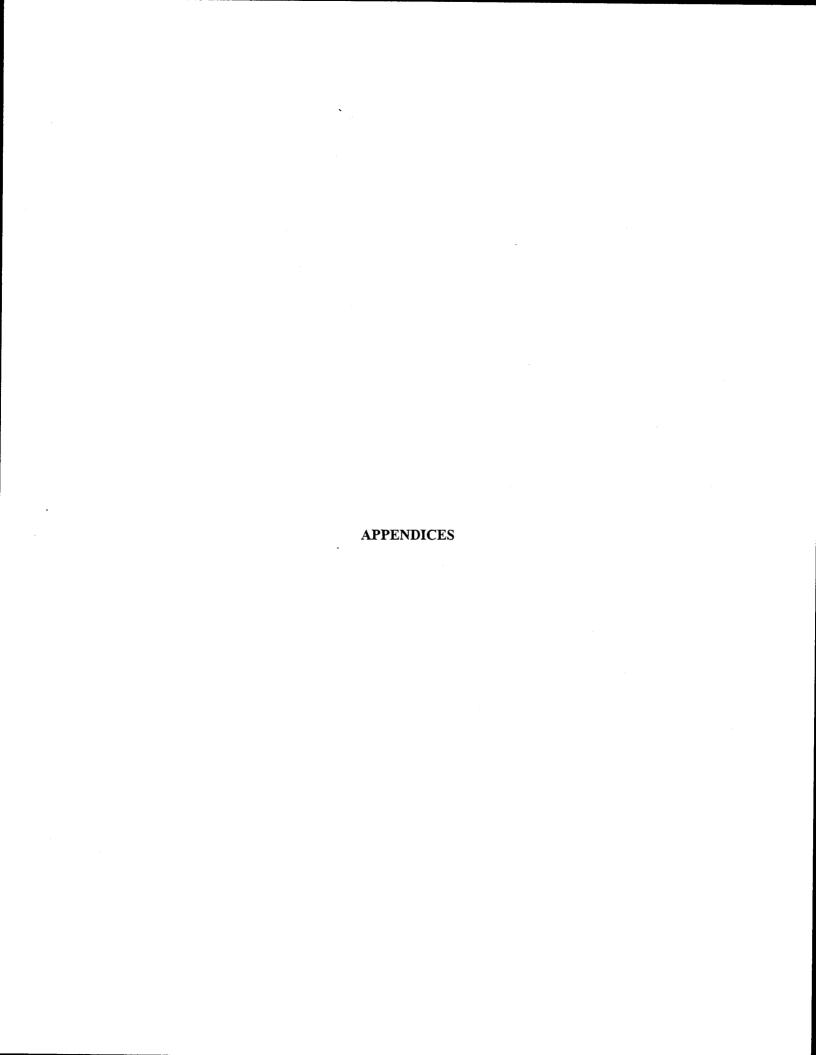
Well No.	Date	Ethanol	ЕТВА	ETBE	TAME	DIPE	TBF	ТВА	TAA
MW-22	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
	11/22/11	<25	<25	0.60 J	3.6	< 0.35	<5.0	45.3	1,370
	11/06/13	<210	<200	<5.5	8.9 J	<2.5	<50	50.3 J	2,000
	11/04/09	<1,000	< 500	<50.0	<50.0	<25.0	<250	< 500	1,490
MW-23	11/22/11	<130	<130	<1.6	9.7 J	<1.8	<25	<15	3,200
	11/06/13	<42	<40	2.0 J	8.8	1.5 J	<10	214	2,700
	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-24	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	<5.0	<3.0	< 5.0
	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	< 5.0	<4.7	< 5.0
	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-25	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	< 5.0
	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	<5.0	<4.7	< 5.0
MW-26	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	< 5.0
	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	< 5.0	<4.7	< 5.0
	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-27	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	43.2
	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	< 5.0	<4.7	< 5.0
	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
MW-28	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	< 5.0
	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	<5.0	<4.7	< 5.0

Well No.	Date	Ethanol	ETBA	ETBE	TAME	DIPE	TBF	TBA	TAA
MW-29	11/04/09	<200	<100	<10.0	<10.0	<5.0	< 50.0	<100	<100
	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	<5.0	<3.0	< 5.0
	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	< 5.0	<4.7	< 5.0
	11/04/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-30	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	< 5.0
	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	<5.0	<4.7	< 5.0
	11/03/09	<200	<100	<10.0	<10.0	<5.0	<50.0	<100	<100
MW-31	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	< 5.0
	11/06/13	<21	<20	< 0.55	<0.49	< 0.25	<5.0	<4.7	< 5.0
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
MW-1A	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
	11/06/13	FP	FP	FP	FP	FP	FP	FP	FP
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
MW-2A	11/30/11	<250	<250	<3.1	<3.9	<3.5	<50	<30	83.3 J
	11/06/13	FP	FP	FP	FP	FP	FP	FP	FP
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
MW-3A	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
	11/06/13	FP	FP	FP	FP	FP	FP	FP	FP
	11/04/09	FP	FP	FP	FP	FP	FP	FP	FP
MW-4A	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
	11/06/13	<11,000	<10,000	<280	<240	<130	<2,500	<2,400	6,280

Well No.	Date	Ethanol	ЕТВА	ЕТВЕ	TAME	DIPE	TBF	TBA	TAA
	03/24/06	<100	<10.0	<1.00	<1.00	<1.00	<20.0	<20.0	<20.0
TW-1	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
1 44-1	11/23/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	< 5.0
	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	<5.0	<4.7	< 5.0
	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
TW-2	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	<5.0	<3.0	15.9 J
:	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	< 5.0	<4.7	<5.0
	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
WSW-1	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	< 5.0
	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	<5.0	<4.7	< 5.0
	11/04/09	<200	<100	<10.0	<10.0	< 5.0	<50.0	<100	<100
WSW-3	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	< 5.0
	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	< 5.0	<4.7	<5.0
FIELD	11/22/11	<25	<25	<0.31	<0.39	< 0.35	<5.0	<3.0	<5.0
BLANK	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	<5.0	<4.7	<5.0
TRIP BLANK	11/22/11	<25	<25	< 0.31	< 0.39	< 0.35	< 5.0	<3.0	<5.0
IKIF DLANK	11/06/13	<21	<20	< 0.55	< 0.49	< 0.25	<5.0	<4.7	<5.0

#### Notes:

- Analyses for oxygenates by Method 8260B; results reported in  $\mu$ g/l.
- <: Less than the report limit specified in the laboratory report.



## APPENDIX A

Laboratory Analytical Report – Ground Water Samples





#### **Technical Report for**

GRI (Geological Resources Inc.)

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

18686

Accutest Job Number: FA9821

Sampling Date: 11/06/13

#### Report to:

GRI

2301 F Crown Point EX Dr Charlotte, NC 28207

wsb@geologicalresourcesinc.com; carriekennedy@geologicalresourcesinc.com; jjr@geologicalresourcesinc.com; nml@geologicalresourcesinc.com;

ATTN: Scott Ball

Total number of pages in report: 56



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Harry Behzadi, Ph.D. Laboratory Director

Client Service contact: Muna Mohammed 407-425-6700

 $\begin{array}{l} \text{Certifications: FL (E83510), LA (03051), KS (E-10327), IA (366), IL (200063), NC (573), NJ (FL002), SC (96038001) } \\ \text{DoD ELAP (L-A-B L2229), CA (04226CA), TX (T104704404), PA (68-03573), VA (460177),} \end{array}$ 

AK, AR, GA, KY, MA, NV, OK, UT, WA

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## Sample Summary

GRI (Geological Resources Inc.)

Job No:

FA9821

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC Project No: 18686

Sample Number	Collected Date	Time By	Received	Matr Code		Client Sample ID
FA9821-1	11/06/13	15:36 HZ	11/08/13	AQ	Ground Water	18686 MW 1
FA9821-2	11/06/13	14:37 HZ	11/08/13	AQ	Ground Water	18686 MW 6
FA9821-3	11/06/13	14:50 HZ	11/08/13	AQ	Ground Water	18686 MW 7
FA9821-4	11/06/13	13:30 HZ	11/08/13	AQ	Ground Water	18686 MW 8
FA9821-5	11/06/13	13:01 HZ	11/08/13	AQ	Ground Water	18686 MW 9
FA9821-6	11/06/13	12:45 HZ	11/08/13	AQ	Ground Water	18686 MW 10
FA9821-7	11/06/13	13:46 HZ	11/08/13	AQ	Ground Water	18686 MW-13
FA9821-8	11/06/13	15:51 HZ	11/08/13	AQ	Ground Water	18686 MW 14
FA9821-9	11/06/13	16:07 HZ	11/08/13	AQ	Ground Water	18686 MW 15
FA9821-10	11/06/13	11:32 HZ	11/08/13	AQ	Ground Water	18686 MW 19
FA9821-11	11/06/13	11:49 HZ	11/08/13	AQ	Ground Water	18686 MW-20
FA9821-12	11/06/13	10:52 HZ	11/08/13	AQ	Ground Water	18686 MW 27
FA9821-13	11/06/13	08:36 HZ	11/08/13	AQ	Ground Water	18686 MW 23



## Sample Summary (continued)

GRI (Geological Resources Inc.)

Job No:

FA9821

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC Project No: 18686

Sample Number	Collected Date	Time By	Received	Matr Code		Client Sample ID
FA9821-27	11/06/13	15:36 HZ	11/08/13	AQ	Ground Water	18686 DUP A
FA9821-28	11/06/13	13:30 HZ	11/08/13	AQ	Ground Water	18686 DUP B
FA9821-29	11/06/13	07:51 HZ	11/08/13	AQ	Field Blank Water	18686 FIELD BLANK
FA9821-30	11/06/13	00:00 HZ	11/08/13	AQ	Trip Blank Water	18686 TRIP BLANK

# Summary of Hits Job Number: FA9821

Account:

Project:

GRI (Geological Resources Inc.) Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Collected:

11/06/13

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA9821-11	18686 MW 20					
Benzene Methyl Tert Buty Naphthalene Tert-Amyl Alcoh		235 5.2 10.7 J 567	5.0 5.0 25 100	1.1 1.1 5.0 25	ug/l ug/l ug/l ug/l	SW846 8260B SW846 8260B SW846 8260B SW846 8260B
FA9821-12	18686 MW 27					
Benzene Methyl Tert Buty	yl Ether	0.27 J 0.22 J	1.0 1.0	0.21 0.21	ug/l ug/l	SW846 8260B SW846 8260B
FA9 <b>8</b> 21-13	18686 MW 23					
Benzene Toluene Xylene (total) Methyl Tert Buty Naphthalene Di-Isopropyl ethe Ethyl Tert Butyl Tert-Amyl Alcoh Tert-Butyl Alcoh	er Ether nol yl Ether	49.6 2.8 1.2 J 98.6 2.3 J 1.5 J 2.0 J 2700 8.8 214	2.0 2.0 6.0 2.0 10 2.0 4.0 100 4.0 40	0.42 0.40 0.99 0.42 2.0 0.51 1.1 25 0.97 9.5	ug/l ug/l ug/l ug/l ug/l ug/l ug/l ug/l	SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B
FA9821-14	18686 MW 24					
No hits reported FA9821-15	in this sample.  18686 MW 25					
Benzene Methyl Tert Buty	yl Ether	1.8 2.7	1.0	0.21 0.21	ug/l ug/l	SW846 8260B SW846 8260B
FA9821-16	18686 MW 26					
No hits reported	in this sample.					
FA9821-17	18686 MW 22					
Benzene Toluene Ethylbenzene Xylene (total)		574 41.6 45.7 10.9 J	10 10 10 30	2.1 2.0 2.9 5.0	ug/l ug/l ug/l ug/l	SW846 8260B SW846 8260B SW846 8260B SW846 8260B



Summary of Hits
Job Number: FA9821
Account: GRI (Geological Resources Inc.)

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Collected:

11/06/13

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA9821-27	18686 DUP A					
Benzene Toluene Ethylbenzene Xylene (total) Methyl Tert Buty Tert-Amyl Alcoh		5090 10600 687 4830 105 J 7020	200 200 200 600 200 4000	42 40 58 99 42 1000	ug/l ug/l ug/l ug/l ug/l ug/l	SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B
FA9821-28	18686 DUP B					
Benzene		0.33 J	1.0	0.21	ug/l	SW846 8260B
FA9821-29	18686 FIELD BL.	ANK				
Toluene		0.21 J	1.0	0.20	ug/l	SW846 8260B
FA9821-30	18686 TRIP BLA	NK				

No hits reported in this sample.

Page 1 of 1

Client Sample ID: 18686 MW 1

Lab Sample ID:

FA9821-1

Date Sampled: 11/06/13

Matrix:

AQ - Ground Water

Date Received: 11/08/13

Method:

SW846 8260B

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	J090168.D	100	11/13/13	DP	n/a	n/a	VJ4522
Run #2	O20154.D	200	11/12/13	MM	n/a	n/a	VO800

Purge Volume Run #1 5.0 ml Run #2 5.0 ml

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	4870	100	21	ug/l	
108-88-3	Toluene	8550 a	200	40	ug/l	
100-41-4	Ethylbenzene	659	100	29	ug/l	
1330-20-7	Xylene (total)	4900	300	50	ug/l	
1634-04-4	Methyl Tert Butyl Ether	125	100	21	ug/l	
91-20-3	Naphthalene	165	500	100	ug/l	J
107-06-2	1,2-Dichloroethane	ND:	100	22	ug/l	
108-20-3	Di-Isopropyl ether	ND.	100	25	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND ·	5000	2000	ug/l	
64-17-5	Ethyl Alcohol	ND.	10000	2100	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	200	55	ug/l	
75-85-4	Tert-Amyl Alcohol	7700	2000	500	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	200	49	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	2000	470	ug/l	
762-75-4	Tert-Butyl Formate	ND	2000	500	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	103%	97%	83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	93%	98%	79-1	25%	
2037-26-5	Toluene-D8	98%	99%	85-1	12%	
460-00-4	4-Bromofluorobenzene	95%	99%	83-1	18%	

(a) Result is from Run# 2

ND = Not detected

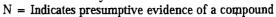
MDL - Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range





Page 1 of 1

Client Sample ID: 18686 MW 7

Lab Sample ID:

FA9821-3

DF

1

Date Sampled:

11/06/13 Date Received: 11/08/13

Matrix: Method: AQ - Ground Water SW846 8260B

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Run #1

Analyzed Ву MM 11/12/13

Prep Date n/a

Prep Batch n/a

VO800

Analytical Batch

Run #2

Purge Volume

Run #1 Run #2 5.0 ml

File ID

O20156.D

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.21	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.29	ug/l	
1330-20-7	Xylene (total)	ND.	3.0	0.50	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.21	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND .	1.0	0.22	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.25	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	20	ug/l	
64-17-5	Ethyl Alcohol	ND	100	21	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.55	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND 🗼 🗀	2.0	0.49	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	4.7	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	97%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	98%		79-1	25%	
2037-26-5	Toluene-D8	100%		85-1	12%	
460-00-4	4-Bromofluorobenzene	101%		83-1	18%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

18686 MW 9 Client Sample ID:

Lab Sample ID:

FA9821-5

AQ - Ground Water

Date Sampled: 11/06/13 Date Received: 11/08/13

Matrix: Method:

SW846 8260B

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

File ID DF Analyzed Ву Prep Date Prep Batch Analytical Batch Run #1 O20158.D 1 11/12/13 MM VO800 n/a n/a

Run #2

Purge Volume

Run #1 5.0 ml

Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.21	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.29	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.50	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.28	1.0	0.21	ug/l	J
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.22	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.25	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	20	ug/l	
64-17-5	Ethyl Alcohol	ND	100	21	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.55	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.49	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	4.7	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	<b>Run#</b> 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	98%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	98%		79-3	125%	
2037-26-5	Toluene-D8	100%		85-1	112%	
460-00-4	4-Bromofluorobenzene	101%		83-3	118%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: 18686 MW 13

Lab Sample ID:

FA9821-7

File ID

5.0 ml

O20160.D

AQ - Ground Water

DF

1

Date Sampled:

11/06/13

VO800

Matrix: Method:

SW846 8260B

Date Received: 11/08/13

Project:

n/a

Percent Solids: n/a

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Ву

MM

Prep Date

n/a

Analyzed

11/12/13

Analytical Batch Prep Batch

Run #1 Run #2

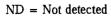
Pur ge Volume

Run #1

Run #2

Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.21	ug/l	
108-88-3	Toluene	ND.	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.29	ug/l	
1330-20-7	Xylene (total)	ND:	3.0	0.50	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.22	1.0	0.21	ug/l	J
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	-
107-06-2	1,2-Dichloroethane	ND	1.0	0.22	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.25	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	20	ug/l	
64-17-5	Ethyl Alcohol	ND	100	21	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.55	ug/l	
75-85-4	Tert-Amyl Alcohol	$ND$ $\otimes$	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.49	ug/l	
75-65-0	Tert-Butyl Alcohol	ND 🛴	<b>2</b> 0	4.7	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	99%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	99%		79-1	25%	
2037-26-5	Toluene-D8	100%	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	85-1	12%	
460-00-4	4-Bromofluorobenzene	100%		83-1	18%	



MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Client Sample ID: 18686 MW 15

Lab Sample ID:

FA9821-9

Date Sampled: 11/06/13

Matrix:

AQ - Ground Water

Date Received: 11/08/13

Method:

SW846 8260B

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

File ID DF Analyzed Вy Prep Date Prep Batch Analytical Batch Run #1 O20162.D 1 11/12/13 MMn/a n/a VO800

Run #2

Pur ge Volume

Run #1 5.0 ml

Run #2

#### Pur geable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.21	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND 🐰	1.0	0.29	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.50	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.21	ug/l	
91-20-3	Naphthalene	ND.	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.22	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.25	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	20	ug/l	
64-17-5	Ethyl Alcohol	ND	100	21	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND.	2.0	0.55	ug/l	
75-85-4	Tert-Amyl Alcohol	ND:	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.49	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	4.7	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	98%	***	83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	100%		79-1	125%	
2037-26-5	Toluene-D8	100%		85-1	112%	
460-00-4	4-Bromofluorobenzene	100%		83-1	18%	

ND = Not detected

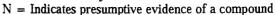
MDL - Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range





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Page 1 of 1

Client Sample ID: 18686 MW 20

Lab Sample ID:

FA9821-11

Date Sampled: 11/06/13

Matrix:

AQ - Ground Water

Date Received: 11/08/13

Method:

SW846 8260B

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

File ID Run #1 O20164.D DF 5

Analyzed By 11/12/13 MM Prep Date n/a

Prep Batch n/a

Analytical Batch VO800

Run #2

Purge Volume

Run #1 Run #2 5.0 ml

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	235	5.0	1.1	ug/I	
108-88-3	Toluene	ND	5.0	1.0	ug/l	
100-41-4	Ethylbenzene	ND 🕛	5.0	1.5	ug/l	
1330-20-7	Xylene (total)	ND	15	2.5	ug/l	
1634-04-4	Methyl Tert Butyl Ether	5.2	5.0	1.1	ug/l	
91-20-3	Naphthalene	10.7	25 .	5.0	ug/I	J
107-06-2	1,2-Dichloroethane	ND:	5.0	1.1	ug/l	
108-20-3	Di-Isopropyl ether	ND	5.0	1.3	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND.	250	100	ug/I	
64-17-5	Ethyl Alcohol	ND .	500	110	ug/I	
637-92-3	Ethyl Tert Butyl Ether	ND	10	2.8	ug/I	
75-85-4	Tert-Amyl Alcohol	567	100	25	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND :	10	2.4	ug/I	
75-65-0	Tert-Butyl Alcohol	ND 🕥	100	24	ug/I	
762-75-4	Tert-Butyl Formate	ND.	100	25	ug/l	
CAS No.	Surrogate Recoveries	Run#1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	97%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	99%		79-1	25%	
2037-26-5	Toluene-D8	101%	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	85-1	12%	
460-00-4	4-Bromofluorobenzene	99%		83-1	18%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: 18686 MW 23

Lab Sample ID:

FA9821-13

Date Sampled:

11/06/13

Matrix:

AQ - Ground Water

Date Received:

11/08/13

Method:

SW846 8260B

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Analytical Batch File ID DF Prep Batch Analyzed By Prep Date 2 MM VO800 Run #1 O20166.D 11/12/13 n/a n/a VJ4522 Run #2 J090169.D 5 11/13/13 DP n/a n/a

Purge Volume Run #1 5.0 ml

Run #2 5.0 ml

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	49.6	2.0	0.42	ug/l	
108-88-3	Toluene	2.8	2.0	0.40	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.58	ug/l	
1330-20-7	Xylene (total)	1.2	6.0	0.99	ug/l	J
1634-04-4	Methyl Tert Butyl Ether	98.6	2.0	0.42	ug/l	
91-20-3	Naphthalene	2.3	10	2.0	ug/l	J
107-06-2	1,2-Dichloroethane	ND	2.0	0.44	ug/l	
108-20-3	Di-Isopropyl ether	1.5	2.0	0.51	ug/l	J
624-95-3	3,3-Dimethyl-1-Butanol	ND	100	40	ug/l	
64-17-5	Ethyl Alcohol	ND	200	42	ug/l	
637-92-3	Ethyl Tert Butyl Ether	2.0	4.0	1.1	ug/l	J
75-85-4	Tert-Amyl Alcohol	2700 a	100	25	ug/l	
994-05-8	Tert-Amyl Methyl Ether	8.8	4.0	0.97	ug/l	
75-65-0	Tert-Butyl Alcohol	214	40	9.5	ug/l	
762-75-4	Tert-Butyl Formate	ND	40	10	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	97%	102%	83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	98%	95%	79-1	25%	
2037-26-5	Toluene-D8	101%	98%	85-1	12%	
460-00-4	4-Bromofluorobenzene	101%	96%	83-1	18%	

(a) Result is from Run# 2

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: 18686 MW 25

Lab Sample ID:

FA9821-15

AQ - Ground Water

DF

1

Date Sampled:

11/06/13 Date Received: 11/08/13

Matrix: Method:

SW846 8260B

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

By

MM

Prep Date

n/a

Analyzed

11/12/13

Prep Batch

n/a

Analytical Batch VO800

Run #1 Run #2

Purge Volume

File ID

O20168.D

Run #1 5.0 ml

Run #2

Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	1.8	1.0	0.21	ug/l	
108-88-3	Toluene	ND.	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.29	ug/I	
1330-20-7	Xylene (total)	ND -	3.0	0.50	ug/I	
1634-04-4	Methyl Tert Butyl Ether	2.7	1.0	0.21	ug/I	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.22	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.25	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	20	ug/l	
64-17-5	Ethyl Alcohol	ND	100	21	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.55	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND.	2.0	0.49	ug/l	
75-65-0	Tert-Butyl Alcohol	ND -	20	4.7	ug/I	
762-75-4	Tert-Butyl Formate	ND 💮 🥟	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	99%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	101%	med 1.  med 1.  med 2.  med 3.  med 3.  med 4.  med 4.  med 5.  med 5.  med 5.  med 6.  med 6.  med 6.  med 6.  med 7.	79-1	.25%	
2037-26-5	Toluene-D8	99%		85-1	.12%	
460-00-4	4-Bromofluorobenzene	100%		83-1	18%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: 18686 MW 22

Lab Sample ID:

FA9821-17

AQ - Ground Water

Date Sampled: 11/06/13

Matrix: Method:

SW846 8260B

Date Received: 11/08/13

DF

10

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Run #1

File ID J090146.D Analyzed 11/12/13

By Prep Date MM n/a

Prep Batch n/a

Analytical Batch VJ4521

Run #2

Purge Volume

Run #1

5.0 ml

Run #2

Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	574	10	2.1	ug/l	
108-88-3	Toluene	41.6	10	2.0	ug/l	
100-41-4	Ethylbenzene	45.7	10	2.9	ug/l	
1330-20-7	Xylene (total)	10.9	30	5.0	ug/l	J
1634-04-4	Methyl Tert Butyl Ether	37.3	10	2.1	ug/l	
91-20-3	Naphthalene	ND	50	10	ug/l	
107-06-2	1,2-Dichloroethane	ND	10	2.2	ug/l	
108-20-3	Di-Isopropyl ether	ND .	10	2.5	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	500	200	ug/l	
64-17-5	Ethyl Alcohol	ND	1000	210	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	20	5.5	ug/l	
75-85-4	Tert-Amyl Alcohol	2000.	200	50	ug/l	
994-05-8	Tert-Amyl Methyl Ether	8.9	20	4.9	ug/l	J
75-65-0	Tert-Butyl Alcohol	50. <b>3</b>	200	47	ug/l	J
762-75-4	Tert-Butyl Formate	ND.	200	50	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	103%		83-1	118%	
17060-07-0	1,2-Dichloroethane-D4	96%	Control Contro	79-1	125%	
2037-26-5	Toluene-D8	97%	CONTROL CONTRO	85-1	12%	
460-00-4	4-Bromofluorobenzene	99%		83-1	l1 <b>8</b> %	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: 18686 MW 29

Lab Sample ID:

FA9821-19

AQ - Ground Water

DF

1

Date Sampled:

11/06/13

Matrix: Method:

SW846 8260B

Date Received: 11/08/13

Project:

Percent Solids: n/a

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Run #1

Analyzed By 11/12/13 MM Prep Date n/a

Prep Batch n/a

Analytical Batch VJ4521

Run #2

Purge Volume

Run #1 Run #2 5.0 ml

File ID

J090148.D

Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.21	ug/l	
108-88-3	Toluene	ND.	1.0	0.20	ug/I	
100-41-4	Ethylbenzene	ND	1.0	0.29	ug/l	
1330-20-7	Xylene (total)	ND .	3.0	0.50	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND .	1.0	0.21	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND .	1.0	0.22	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.25	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND 🗆 🗀	50	20	ug/l	
64-17-5	Ethyl Alcohol	ND,	100	21	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.55	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.49	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	4.7	ug/l	
762-75-4	Tert-Butyl Formate	ND .	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run#1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	105%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	97%		79-1	.25%	
2037-26-5	Toluene-D8	98%	0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	85-1	12%	
460-00-4	4-Bromofluorobenzene	100%		83-1	18%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: 18686 MW 31

Lab Sample ID: Matrix:

FA9821-21 AQ - Ground Water Date Sampled: Date Received: 11/08/13

11/06/13

Method:

SW846 8260B

DF

1

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

By

MM

Analytical Batch

Run #1

File ID 1090150.D Analyzed 11/12/13

Prep Date n/a

Prep Batch n/a

VJ4521

Run #2

Purge Volume

Run #1 5.0 ml

Run #2

Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.21	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.29	ug/l	
1330-20-7	Xylene (total)	ND -	3.0	0.50	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.21	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.22	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.25	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	20	ug/l	
64-17-5	Ethyl Alcohol	ND	100	21	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND 🔻	2.0	0.55	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.49	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	4.7	ug/l	
762-75-4	Tert-Butyl Formate	ND.	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run#1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	105%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	98%	1	79-1	25%	
2037-26-5	Toluene-D8	98%		85-1	12%	
460-00-4	4-Bromofluorobenzene	96%		83-1	18%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: 18686 TW 2

Lab Sample ID:

FA9821-23

AQ - Ground Water

Date Sampled: 11/06/13

Matrix: Method:

Date Received: 11/08/13

SW846 8260B

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Analyzed

11/12/13

Analytical Batch

Run #1

File ID J090152.D DF 1

By MM Prep Date n/a

Prep Batch n/a

VJ4521

Run #2

Purge Volume

Run #1 Run #2 5.0 ml

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	4.7	1.0	0.21	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.29	ug/I	
1330-20-7	Xylene (total)	ND.	3.0	0.50	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND-	1.0	0.21	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/I	
107-06-2	1,2-Dichloroethane	ND .	1.0	0.22	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.25	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	20	ug/l	
64-17-5	Ethyl Alcohol	ND	100	21	ug/I	
637-92-3	Ethyl Tert Butyl Ether	ND.	2.0	0.55	ug/I	
75-85-4	Tert-Amyl Alcohol	ND.	20	5.0	ug/I	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.49	ug/I	
75-65-0	Tert-Butyl Alcohol	ND.	20	4.7	ug/l	
-762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/I	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its	
1868-53-7	Dibromofluoromethane	105%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	97%		79-1	25%	
2037-26-5	Toluene-D8	97%		85-1	12%	
460-00-4	4-Bromofluorobenzene	96%		83-1	18%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: 18686 WSW1

Lab Sample ID:

FA9821-25

AQ - Ground Water

Date Sampled: Date Received:

11/06/13 11/08/13

Matrix: Method:

SW846 8260B

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

File ID J090154.D DF Analyzed 1 11/12/13

Ву MM Prep Date n/a

Prep Batch n/a

Analytical Batch VJ4521

Run #1 Run #2

Purge Volume

5.0 ml

Run #1

Run #2

Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.21	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/I	
100-41-4	Ethylbenzene	ND.	1.0	0.29	ug/I	
1330-20-7	Xylene (total)	ND.	3.0	0.50	ug/I	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.21	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND.	1.0	0.22	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.25	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	20	ug/l	
64-17-5	Ethyl Alcohol	ND	100	21	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.55	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND.	2.0	0.49	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	4.7	ug/l	
762-75-4	Tert-Butyl Formate	ND .	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	105%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	98%		79-1	25%	
2037-26-5	Toluene-D8	97%	Total   Tota	85-1	12%	
460-00-4	4-Bromofluorobenzene	97%		83-1	18%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: 18686 DUP A

Lab Sample ID:

FA9821-27

Date Sampled:

11/06/13

Matrix: Method: AQ - Ground Water

Date Received: 11/08/13

SW846 8260B

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

File ID

DF 200 J090156.D

Analyzed By MM

11/12/13

Prep Date n/a

Prep Batch n/a

Analytical Batch VJ4521

Run #1 Run #2

Purge Volume

Run #1 5.0 ml

Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	5090	200	42	ug/l	
108-88-3	Toluene	10600	200	40	ug/l	
100-41-4	Ethylbenzene	687	200	58	ug/l	
1330-20-7	Xylene (total)	4830	600	99	ug/l	
1634-04-4	Methyl Tert Butyl Ether	105	200	42	ug/l	J
91-20-3	Naphthalene	ND	1000	200	ug/l	
107-06-2	1,2-Dichloroethane	ND-	200	44	ug/l	
108-20-3	Di-Isopropyl ether	ND	200	51	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	10000	4000	ug/l	
64-17-5	Ethyl Alcohol	ND	20000	4200	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND.	400	110	ug/l	
75-85-4	Tert-Amyl Alcohol	7020	4000	1000	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	400°	97	ug/l	
75-65-0	Tert-Butyl Alcohol	ND :	4000	950	ug/l	
762-75-4	Tert-Butyl Formate	ND	4000	1000	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	102%		83-1	.18%	
17060-07-0	1,2-Dichloroethane-D4	95%		79-1	.25%	
2037-26-5	Toluene-D8	97%	The state of the s	85-1	12%	
460-00-4	4-Bromofluorobenzene	96%		83-1	18%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: 18686 FIELD BLANK

Lab Sample ID:

FA9821-29

AQ - Field Blank Water

Date Sampled: 11/06/13

Matrix: Method:

SW846 8260B

Percent Solids: n/a

Date Received: 11/08/13

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Analytical Batch

Run #1

File ID J090158.D

5.0 ml

DF Analyzed 1 11/12/13

By MM

n/a

Prep Date

Prep Batch n/a

VJ4521

Run #2

Purge Volume

Run #1

Run #2

Pur geable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.21	ug/l	
108-88-3	Toluene	0.21	1.0	0.20	ug/l	J
100-41-4	Ethylbenzene	ND	1.0	0.29	ug/l	
1330-20-7	Xylene (total)	ND 🛒	3.0	0.50	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND.	1.0	0.21	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.22	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.25	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND:	50	20	ug/l	
64-17-5	Ethyl Alcohol	ND	100	21	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.55	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.49	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	4.7	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	104%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	99%	in the state of th	79-1	25%	
2037-26-5	Toluene-D8	99%		85-1	12%	
460-00-4	4-Bromofluorobenzene	96%		83-1	18%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank





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**Custody Documents and Other Forms** 

## Includes the following where applicable:

- Certification Exceptions
- Chain of Custody



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Preserved where Applicable: Y N Total # of Coolers:

FA9821: Chain of Custody Page 1 of 4

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	10 Deys Standard 7 Dey RUSH 5 Dey RUSH 3 Dey EMERGENCY 2 Dey EMERGENCY 1 Dey EMERGENCY OTHER					COMMERIC COMMERI REDT <b>28</b> FULT1 (EF	828 v	B" (RES <b>72C3</b> )	Mua JQ	CQ UE	EN	18.1 N (	Çľ			R										
Relinquis	shed by Sampler	A Data Available VIA Email or Lat Samole Custody must b Date Time:	be docum Red	eceived E	Ву	time sar	moles d		-	Re 3	Relinqu	quishe	99 5	Бў : 	delive	<u>~</u>	<u>+</u>		14	-/-/	15-6	4	<u> </u>	ed By:	Ĺ	
Relinquis 5	hed by:	Date Time: /6	AED Re	eceived	Alda	7 <u>N</u>	6/13	ALS		7		quishe	90 U	<i>y</i> r:						ate Tin	ne: 	B		30 Dy.		
Lab Us	e Only: Custody Ser	eal in Place: Y N Temp	Blank	Provide	ıd: Y h	y Pr	reserved	d whe	те А	ppiir	cable	a: Y	N	Tr	otai #	of Coc	lers:		Cooler	Temp	eratur	e (s) (	Celsiu	s:	7	<u>. T</u>

FA9821: Chain of Custody

Page 3 of 4



GC/MS Volatiles

QC Data Summaries

#### Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Page 1 of 1

#### Method Blank Summary

Job Number: FA9821

GRINCC GRI (Geological Resources Inc.) Account:

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

mple File	D ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Bate
[4521-MB J09	0139.D	1	11/12/13	MM	n/a	n/a	VJ4521
•							

The QC reported here applies to the following samples:

Method: SW846 8260B

FA9821-16, FA9821-17, FA9821-18, FA9821-19, FA9821-20, FA9821-21, FA9821-22, FA9821-23, FA9821-24, FA9821-25, FA9821-26, FA9821-27, FA9821-28, FA9821-29, FA9821-30

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.21	ug/l
107-06-2	1,2-Dichloroethane	ND	1.0	0.22	ug/l
108-20-3	Di-Isopropyl ether	ND	1.0	0.25	ug/l
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	20	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.29	ug/l
64-17-5	Ethyl Alcohol	ND	100	21	ug/l
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.55	ug/l
1634-04-4	Methyl Tert Butyl Ether	ND 🗼	1.0	0.21	ug/l
91-20-3	Naphthalene	ND	5.0	1.0	ug/l
75-85-4	Tert-Amyl Alcohol	ND	20	5.0	ug/l
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.49	ug/l
75-65-0	Tert-Butyl Alcohol	ND	20	4.7	ug/l
762-75-4	Tert-Butyl Formate	ND	20	5.0	ug/l
108-88-3	Toluene	ND	1.0	0.20	ug/l
1330-20-7	Xylene (total)	ND .	3.0	0.50	ug/l
CAS No.	Surrogate Recoveries		Limi	ts	
1868-53-7	Dibromofluoromethane	103%	83-11	8%	
17060-07-0	1,2-Dichloroethane-D4	96%	79-12	25%	
2037-26-5	Toluene-D8	98%	85-11	12%	
460-00-4	4-Bromofluorobenzene	98%	83-11	8%	

Account:

GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample VO800-BS	File ID O20148.D	DF 1	<b>Analyzed</b> 11/12/13	By MM	Prep Date	Prep Batch n/a	Analytical Batch VO800	

The QC reported here applies to the following samples:

Method: SW846 8260B

FA9821-1, FA9821-2, FA9821-3, FA9821-4, FA9821-5, FA9821-6, FA9821-7, FA9821-8, FA9821-9, FA9821-10, FA9821-11, FA9821-12, FA9821-13, FA9821-14, FA9821-15

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	27.0	108	81-122
107-06-2	1,2-Dichloroethane	25	24.8	99	75-125
108-20-3	Di-Isopropyl ether	25	24.0	96	68-123
624-95-3	3,3-Dimethyl-1-Butanol	1250	1260	101	55-126
100-41-4	Ethylbenzene	25	26.5	106	81-121
64-17-5	Ethyl Alcohol	500	586	117	46-145
637-92-3	Ethyl Tert Butyl Ether	25	21.3	85	71-120
1634-04-4	Methyl Tert Butyl Ether	25	19.4	78	72-117
91-20-3	Naphthalene	25	20.6	82	63-132
75-85-4	Tert-Amyl Alcohol	250	218	87	65-124
994-05-8	Tert-Amyl Methyl Ether	25	19.2	77	73-122
75-65-0	Tert-Butyl Alcohol	250	231	92	63-129
762-75-4	Tert-Butyl Formate	250	242	97	46-130
108-88-3	Toluene	25	25.4	102	80-120
1330-20-7	Xylene (total)	75	80.4	107	80-126

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	99% 96% 97%	83-118% 79-125% 85-112% 83-118%



<sup>=</sup> Outside of Control Limits.

Page 1 of 1

## Blank Spike Summary Job Number: FA9821

Account:

GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample	<b>File ID</b> J090166.D	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VJ4522-BS		1	11/13/13	DP	n/a	n/a	VJ4522

The QC reported here applies to the following samples:

Method: SW846 8260B

FA9821-1, FA9821-13

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	28.3	113	81-122
107-06-2	1,2-Dichloroethane	2,5	27.3	109	75-125
108-20-3	Di-Isopropyl ether	25	25.6	102	68-123
624-95-3	3,3-Dimethyl-1-Butanol	1250	997	80	55-126
100-41-4	Ethylbenzene	25	27.0	108	81-121
64-17-5	Ethyl Alcohol	500	444	89	46-145
637-92-3	Ethyl Tert Butyl Ether	25	23.7	95	71-120
1634-04-4	Methyl Tert Butyl Ether	25	24.0	96	72-117
91-20-3	Naphthalene	25	23.7	95	63-132
75-85-4	Tert-Amyl Alcohol	250	228	91	65-124
994-05-8	Tert-Amyl Methyl Ether	25	24.1	96	73-122
75-65-0	Tert-Butyl Alcohol	250	223	89	63-129
762-75-4	Tert-Butyl Formate	250	305	122	46-130
1330-20-7	Xylene (total)	75	77.4	103	80-126

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	103%	83-118%
17060-07-0	1,2-Dichloroethane-D4	94%	79-125%
2037-26-5	Toluene-D8	93%	85-112%
460-00-4	4-Bromofluorobenzene	92%	83-118%

<sup>\* =</sup> Outside of Control Limits.

Page 1 of 1

Method: SW846 8260B

## Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA9821

Account:

GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
FA9821-16MS	J090160.D	1	11/12/13	MM	n/a	n/a	VJ4521
FA9821-16MSD	J090161.D	1	11/12/13	MM	n/a	n/a	VJ4521
FA9821-16	J090145.D	1	11/12/13	MM	n/a	n/a	VJ4521

The QC reported here applies to the following samples:

FA9821-16, FA9821-17, FA9821-18, FA9821-19, FA9821-20, FA9821-21, FA9821-22, FA9821-23, FA9821-24, FA9821-25, FA9821-26, FA9821-27, FA9821-28, FA9821-29, FA9821-30

CAS No.	Compound	FA9821-16 ug/l Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	25	28.8	115	27.4	110	5	81-122/14
107-06-2	1,2-Dichloroethane	ND	25	27.7	111	26.4	106	5	75-125/14
108-20-3	Di-Isopropyl ether	ND	25	23.8	95	24.2	97	2	68-123/16
624-95-3	3,3-Dimethyl-1-Butanol	ND	1250	922	74	959	77	4	55-126/17
100-41-4	Ethylbenzene	ND	25	26.2	105	25.9	104	1.	81-121/14
64-17-5	Ethyl Alcohol	ND	500	395	79	452	90	13	46-145/30
637-92-3	Ethyl Tert Butyl Ether	ND	25	23.3	93	23.2	93	0	71-120/14
1634-04-4	Methyl Tert Butyl Ether	ND	25	23.1	92	24.1	96	4	72-117/14
91-20-3	Naphthalene	ND	25	22.2	89	23.5	94	6	63-132/25
75-85-4	Tert-Amyl Alcohol	ND	250	214	86	226	90	5	65-124/23
994-05-8	Tert-Amyl Methyl Ether	ND	25	23.2	93	23.3	93	0	73-122/13
75-65-0	Tert-Butyl Alcohol	ND	250	323	129	315	126	3	63-129/27
762-75-4	Tert-Butyl Formate	ND	250	59.3	24*	52.1	21*	13	46-130/33
108-88-3	Toluene	ND	25	25.8	103	25.5	102	1	80-120/14
1330-20-7	Xylene (total)	ND	75	74.0	99	72.5	97	2	80-126/15
CAS No.	Surrogate Recoveries	MS	MSD	FA	9 <b>8</b> 21-16	Limits			
1868-53-7	Dibromofluoromethane	100%	100%	100	6%	83-118°	%		
17060-07-0	1,2-Dichloroethane-D4	95%	94%	979	%	79-125°	%		
2037-26-5	Toluene-D8	91%	92%	94	%	85-1129	%		
460-00-4	4-Bromofluorobenzene	90%	90%	979	%	83-1189	%		



<sup>\* =</sup> Outside of Control Limits.

#### APPENDIX B

**Ground Water Sampling Data Sheets** 

Date (mm/dd/yy);	11/6/13			Facility Name:	Tisdo	ile's Qu	ick Sto	ρ	
Fleid Personnei:	14KZ			Site ID #	18686		Monitorin	. 1	MW1
General Weather				Well Diameter (	(D):		0.167	foot	
Ambient Air Temp	perature;76	_F		Conversion fac	etor (C): 3.14 X (D/	2)2 for a 2 inch for a 4 inch	well C = 0. vell C = 0.6	163 52	
	Quality Assurance		(				CY		
pH Meter	Conductivity Meter			* Free Product				14.83	_feet _feet
serial no.	serial no.						2012	feet	
pH=4.0		Standard			vater column (LW)	C = TWD-DGW)			foot
pH=7.0	Standard				,	- · · · · · · · · ·		0.0	-
pH=10.0	Standard			1 casing volum	e (CV = LWC X C)	×	0.86		
	Chain of Custody 451 6 6 817	66. AS	<u> </u> 	3 casing volum	16 3 X CV =		gais (stan	dard purge volu	ne)
-	Chain of Guatody 451 6 6817	Mars No Sale		Total volume o	f Water Purged Be	efore Sampling		O.8	gals
	Toma love	~ h 1.000		1	f Water Purged fo	-		Ø	gals
Relinquished by	Date/Time Received by	Date/Time	•		<del>-</del>	•	_	0.8	Total Purged
			l	I'll free product	t is present over 1.	70 men, sampin	ig will flot i	oo required.	
		Initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulative Volur	ne Purged (gallons)	0,25	0.86	1.72	2.58	; ;			,
Time (military)		1535	1536						1536
pH (s.u.)		5.53		*					
Specific Cond. (u	mhos/cm)	114							
Water Temperatu	re (degrees C)	22,73							
	tive; clear, slightly cloudy, cloudy)	102							
Dissolved Oxyge		0.76							

Dry at 1 vol. ~ 0.8 gal. Just much for want for want

PID readings, if required Remarks:

Date (mm/dd/yy):	11/6	(3		]	Facility Name:	Tisdo	nle's Qui	CK Sto	ρ	
Field Personnei:	1+K	4			Site ID #	18686		Monitoring	Well#	MW2
General Weather C	Conditions:	Junny			   Well Diameter (	D):		0.167	foot	
Ambient Air Tempe	erature;	75	F		Conversion fac	tor (C): 3.14 X (D/:	2)2 for a 2 inch v for a 4 inch w			
	Quality Assu	anco						C	-21	dont
pH Meter serial no.	Co serial	nductivity Meter			* Free Product Total Well Depth	d Water (DGW)		15.02 fee		feet feet feet
pH=4.0 pH=7.0	Stand	ard				ater column (LW	C ≖ TWD-DGW)			feet
pH=10.0	Stand	ard	·		_	o (CV = LWC X C)	) =		NS	
	Chain of Custody	431 0 6E13	166 PG		3 casing volume	o 3 X CV =	NS.	gals (stan	dard purge volur	no)
	MIGHT M. SCHOOLS	Hama Lundi	1 man mercel		Total volume of	Water Purged Be	efore Sampling	-	SX'	gals
		4, 02		Total volume of	Water Purged fo	r Post Sampling	l	B	gais	
Relinguished by	Date/Time	Received by	Date/Time			is present over 1			ær	Total Purged
		and the state of t	Initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulatiye Volum	e Purged (gallons)		0,25							NS
Time (military)										
pH ( <b>s</b> ,u.)										
Specific Cond. (un	nhos/cm)		-:							
Water Temperatur	e (degrees C)		_   .	ļ						
Turbidity (subjecti	ive: clear, slightly clo	udy, cloudy)		<u> </u>						
Dissolved Oxygen	) (mg/l)						-			
PID readings, if re Remarks:	berlupe			<u> </u>					<u></u>	

Bailer confirmed tree product. Dark in color

The state of the s										
Date (mm/dd/yy):	11/6	7/13			Facility Name:	Tisda	le's Qui	CK Sto	P	
Field Personnel:	1	V-7			Site ID #	18686		Monitorin	3	MW3
General Weather C	Conditions:	Sunny			Well Diameter (I	D):		0,167	foot	
Ambient Air Temp	erature:	75 '	F		Conversion fact	tor (C): 3.14 X (D/2	2)2 for a 2 inch v for a 4 inch w	well C = 0.7	163 52	
·	Quality Ans	auranca							0.01	fh
pH Meter	C	Conductivity Meter			* Free Product 1 Depth to Groun					feet feet
serial no.		al no.		Total Well Depth (TWD)			<del></del>		feet	
pH=4.0		ndard		1		ater column (LWC	C = TWD-DGW)			feet ·
pH=7.0	Star	ndard		}		, ,	·		.10	
pH≈10.0	Star	ndard			_	o (CV <b>≍ LW</b> C X C)	<b>#</b> ·		NS	
Chain of Cuatody 451 0 6 8 1766 As					3 casing volume 3 X CV ≖ gals (standard purge volume)					
		James Lions	2 minered	1	Total volume of	Water Purged Be	fore Sampling		NS	gals
		(3011 or 10 21	c 4 · 03	1	Total volume of	Water Purged for	r Post Sampling	1	Ø	gais
Relinquished by	Date/Time	Received by	Date/Time			Is present over 1/				Total Purged
			initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulative Volum	e Purged (gallons)		0,25							24
Time (military)										
pH (s.u.)										
Specific Cond. (ur	mhos/cm)			-						
Water Temperatur	re (degrees C)			ļ						
Turbidity (subject	tive; clear, slightly c	cloudy, cloudy)		ļ		·	<u> </u>	<u> </u>		
Dissolved Oxyger	n (mg/l)				<u> </u>					
PID readings, if re	equired				<u></u>					

Bailer confirmed Free Product. Dark in color.

Date (mm/dd/yy):	II/ C	,/13	•	7	Facility Name:	Tisk	ale's Qu	cv St	nO	
Field Personnel: 1+V-7				]	Site ID # 18686 Well Diameter (D):			Monitoring Well #		Mw 4
General Weather Conditions:  Ambient Air Temperature:  Quality Assurance								0.167 foot		
				Conversion factor (C): 3.14 X (D/2)2 for a 2 inch well C = 0.163 for a 4 inch well C = 0.652						
pH Meter Serial no. pH≃4.0 pH¤7.0 pH¤10.0	Star Star Star Star			* Free Product Thickness: Depth to Ground Water (DGW) Total Well Depth (TWD) Length of the water column (LWC × TWD-DGW) 1 casing volume (CV × LWC X C) ×					feet feet feet	
	Chain of Cuatody 451 6 6 8171		the Hoser		3 casing volume	o 3 X CV ≖ Water Purged B				
Relinquished by	Date/Time	Received by	Date/Time		Total volume of Water Purged for Post Sampling gals Total Purge *If free product is present over 1/8 inch, sampling will not be required.					
			Initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulative Volum	e Purged (gallons)	· · · · · · · · · · · · · · · · · · ·	0,25							
Time (military)										
рН ( <b>s</b> .u.)										
Specific Cond. (un	nhos/cm)									
Water Temperature (degrees C)										
Turbidity (subjective: clear, slightly cloudy, cloudy)										
Dissolved Oxygen										
PID readings, if reaRemarks;						<u> </u>				

Likely obstructed. Not sampled. Dry well.

		<b>-</b>					_	
Date (mm/dd/yy):   1   @ / 1 3	·		Facility Name:	Tisde	ale's Qui	CK Sta	00	
Field Personnel:	_	Site ID #	18686	_	Monitoring Well #		mws.	
General Weather Conditions:		Well Diameter (	Well Diameter (D):			0.167_feet		
Ambient Air Temperature: 75 Quality Assurance	Conversion factor (C): 3.14 X (D/2)2 for a 2 inch well C = 0.163 for a 4 inch well C = 0.652							
pH Meter         Conductivity Meter           serial no.         serial no.           pH=4.0         Standard           pH=7.0         Standard           pH=10.0         Standard			* Free Product Thickness: Depth to Ground Water (DGW) Total Well Depth (TWD) Length of the water column (LWC = TWD-DGW) 1 casing volume (CV = LWC X C) =				Ø 8 12.82	feet feet feet feet
Chain of Custody 451 66817	66 AS		3 casing volume					
Relinquished by Date/Time Received by	Date/Time							Total Purged
	Initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulative Volume Purged (gallons)	0,25							
Time (military)								
pH (s.u.)								
Specific Cond. (umhos/cm)								
Water Temperature (degrees C)						 		
Turbidity (subjective: clear, slightly cloudy, cloudy)				·				
Dissolved Oxygen (mg/l)								
PID readings, if required								

Likely obstructed. Dry well.

Date (mm/dd/yy): 11/6/13		]	Facility Name:	Tisda	ale's Qu	ick Sto	P	
Field Personnel:	]	Site ID #	18686		Monitorin	3	MWG	
General Weather Conditions: 20 75  Ambient Air Temperature: 75		Well Diameter (D):  0.167 feet  Conversion factor (C): 3.14 X (D/2)2 for a 2 inch well C = 0.163  for a 4 inch well C = 0.652						
Quality Assurance           pH Meter         Conductivity Meters           serial no.         serial no.           pH=4.0         Standard           pH=7.0         Standard           pH=10.0         Standard		* Free Product Thickness: Depth to Ground Water (DGW) Total Well Depth (TWD) Length of the water column (LWC = TWD-DGW) 1 casing volume (CV = LWC X C) =			14.39 feet 21.03 feet			
Chain of Custody    Chain of Custody   Chain of Cus	7.0	3 casing volume 3 casing volume Total volume of Total volume of	dard purge volu  2,16  8  2,16	2,16 gals 6 gals 2,16 Total Purged				
		·.						Comple
Cumulative Volume Purged (gallons)	Initial 0.25	1st Vol.	2nd Vol. ,	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Time (military)	1435	81437					1437	
pH ( <b>s</b> .u.)	459	4.38	•					
Specific Cond. (umhos/cm)	245	242		-				
Water Temperature (degrees C) 27.77		22/20						

232

1.94

Turbidity (subjective: clear, slightly cloudy, cloudy)

Dissolved Oxygen (mg/l)

PID readings, if required

Remarks;

71000

2.03

000K

Dry at 2001. Not manyle for vadins

Date (mm/dd/yy): 11/6/13		1	Facility Name:	-T:31	ale's Qui	av St		
Field Personnel:			Site ID #	18686	MIL 3 CAU	Monitorin	1	mu7
General Weather Conditions:			Well Diameter (			0.167	_	
Ambient Air Temperature: 75 'Quality Assurance	<u>F</u>		Conversion fac	etor (C): 3,14 X (D	/2)2 for a 2 inch to for a 4 inch v			
pH Meter Conductivity Meterserial no. serial no. pH=4.0 Standard pH=7.0 Standard pH=10.0 Standard	r		Total Well Dept Length of the w	nd Water (DGW)	` } ==	1.		foot foot foot foot
Chain of Guatody 431 0 68	1766 AS		3 casing volum Total volume of	e 3 X CV ≖ f Water Purged B	3.63 efore Sampling	· · · · · · · · · · · · · · · · · · ·		gals
Relinquished by ' Date/Time Received by	Date/Time		<b>∤</b> .	f Water Purged fo			oe rectilred	gals Total Purged
	,	•				9		
	initial ,	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulative Volume Purged (gallons)	0,25	1.21	2.42	3.63				,
Time (military)	1416	1448						1450
pH (s.u.)	4.49	4.29						
Specific Cond. (umhos/cm)	54	40						
Water Temperature (degrees C)	21.63	20.99						
Turbidity (subjective: clear, slightly cloudy, cloudy)	148	71000						
Dissolved Oxygen (mg/l)	3.82	3.37						
PID readings, if required								
Remarks;	_		0.	- 00	1 31	f	~	

y after ~ 2.25 gal. 'ly bailer. just enange for souple

Date (mm/dd/yy): 11/6/13		7	Facility Name:	Tisd	ale's Qu	ick St	n (2		
Field Personnel:		_]	Site ID #	18686	3/12 3 0/0	Monitorir	1	MW8	
General Weather Conditions: Suny	77.7.4		Well Diameter (	D):	<b></b>	0.167	_		
Ambient Air Temperature: 75 Quality Assurance	_F		Conversion fac	tor (C): 3.14 X (D	/2)2 for a 2 inch for a 4 inch v	well C = 0. vell C = 0.0	.163 352		
pH Meter Conductivity Meter serial no. serial no. pH=4.0 Standard pH=7.0 Standard pH=10.0 Standard			İ	d Water (DGW)	·) =	(.1	8 14,45 21.34 6-89	feet feet feet	
Chain of Cuatody 451 6 6817	cry maser		3 casing volume 3 X CV = 3.36 gals (standard purge volume)  Total volume of Water Purged Before Sampling  Total volume of Water Purged for Post Sampling  gals  gals  gals  gals						
Relinquished by Date/Time Received by	Date/Time	]	*if free product	is present over 1	l/8 inch, samplin	g will not	したら be required.	Total Purged	
	Initial	1st Vol.	2nd Vol.	1 8.101		1-2:: 17 1	T6 16 11		
Cumulative Volume Purged (gallons)	0,25	1.12	2.24	3rd Vol. 3.36	4th Vol.	5th Vol.	Post Sampling	Sample	
Time (military)	1327	1329		<u> </u>				1330	
pH (s.u.)	4.89	4.84							
Specific Cond. (umhos/cm)	58	55							
Water Temperature (degrees C)	.21.87	11.76							
Turbidity (subjective: clear, slightly cloudy, cloudy)	99.2	555							
Dissolved Oxygen (mg/l)	4.45	3.47							
PID readings, if required Remarks:									

Dry @ 1.75 gal ~7 bailers, banely mough for sample

Date (mm/dd/yy):	11/6	/13		7	[ ·			. 51		
Field Personnel:	1+1	1-7			Facility Name: Site ID #	18686	ale's Qu	ick 5+	•	Mw 9
General Weather C		unny			Well Diameter (		_	Monitoria 0,167		<u> </u>
Amblent Air Tempe	erature; Quality Ass	73 /	_F		Conversion fac	tor (C): 3.14 X (D	/2)2 for a 2 inch for a 4 inch	well C = 0. well C = 0.0	163 352	
pH Meter serial no. pH≃4.0 pH≈7.0 pH≈10.0	Co seria Stand Stand Stand	lard lard				d Water (DGW)	) <b>=</b>		15.51 21.64 6.13	feet feet feet feet
	Chain of Custody	Your LADYS: Asi 0 PEISE	6 As			f Water Purged B	efore Sampling		ndard purge volur	gals
Relinguished by	Date/Time	Received by	Date/Time			Water Purged fo			115	gals Total Purged
					I Has product	is present over 1	<i>то</i> шсп, <del>ва</del> трш	ig will not	De required.	
			initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulative Volume	e Purged (gallons)		0,25	0.99	1.98	2.97			<b>1</b>	·
Time (military)			1258	1300						1301
pH (s.u.)			4.71	4.61						
Specific Cond. (um	ihos/cm)		52	66						
<u>Water Temperature</u>	(degrees C)		.23.24	23.00						
Turbidity (subjective	ve: clear, slightly clo	oudy, cloudy)	188	71000						
Dissolved Oxygen	(mg/l)		5.63	5.65						
PID readings, if rec Remarks:	quired									

Dry aster ~1.5 gal. Not everyth for readings.

Date (mm/dd/yy):		_	Facility Name:	113	dak's G	Lvice	Step	
Field Personnel: HVZ		1	Site ID #	18686	-	Monitorin		MMIC
General Weather Conditions:			  Well Diameter (	D):		0,167	feet	
Ambient Air Temperature: 73  Quality Assurance	_F		Conversion fac	tor (C): 3.14 X (D/2	2)2 for a 2 inch for a 4 inch v			
pH Meter         Conductivity Meter           serial no.         serial no.           pH=4.0         Standard           pH=7.0         Standard           pH=10.0         Standard			1 casing volum	d Water (DGW) h (TWD) rater column (LWC	xt.	1	13.37 24.76 11.39	feet feet feet feet
Chain of Custody YS 1 0 6 E  Haymon Turk  Relinquished by Date/Time Received by	1766 AS Date/Time	Hu.	Total volume of	e 3 X CV ≖ Water Purged Be Water Purged for Is present over 1/	rfore Sampling r Post Sampling			ne) gals gals Total Purged
			i nee product	is blassiff over 11	o men, sampiii	g will flot i	De required,	
	Initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulative Volume Purged (gallons)	0.25	1.86	3.72	5.58				
Time (military)	1239	1242						1245
pH (s.u.)	4.19	4.04						·
Specific Cond. (umhos/cm)	36	40						
Water Temperature (degrees C)	20.60	19.85						
Turbidity (subjective: clear, slightly cloudy, cloudy)	51.7	71000						
Dissoived Oxygen (mg/l)	6.8	1.25						
PID readings, if required								

Dry after 22.75 gal. Not enough to take readings.

Date (mm/dd/yy): 11/6/13		]	Facility Name:	Tisde	ale's Qui	ck Sto	P	
Field Personnel: 1+V-Z	····		Site ID #	18686		Monitorin	1	MW13
General Weather Conditions:			Well Diameter	(D):		0.167	foot	<u>-</u>
Amblent Air Temperature: 75	_F		Conversion fac	etor (C): 3.14 X (D/	2)2 for a 2 inch for a 4 inch v	well C = 0.4 vell C = 0.6	163 52	
Quality Assuming           pH Meter         Conductivity Meter           serial no.         serial no.           pH=4.0         Standard           pH=7.0         Standard           pH=10.0         Standard			Total Well Dep Length of the v	nd Water (DGW)	•		15.25 23.29 8.04	feet feet feet
Chain of Custody  (Some (Some (Some))  Relinquished by Date/Time Received by	LAS MEXES		Total volume o	ne 3 X CV ≖ of Water Purged Bo of Water Purged fo t Is present over 1	efore Sampling r Post Sampling		dard purge volur 2.5 8 2.5	ne) gals gals Total Purged
	Initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.		Post Sampling	Sample
Cumulative Volume Purged (gallons)	0,25	1.31	2.62	3.93	4(1 00),	5th Vol.	Post Sampling	Sample
Time (military)	1343	1345						1346
pH (s.u.)	5,12	5,09	4.96					
Specific Cond. (umhos/cm)	160	162	170					
Water Temperature (degrees C)	.21.90	21.99	21.47					
Turbidity (subjective: clear, slightly cloudy, cloudy)	87.3	71000						
Dissolved Oxygen (mg/l)	2,65	12.81	7.58					
PID readings, if required Remarks:				(1,0)6	10.44	」 以入	1 10-1	

	110			<b>-</b>						
Date (mm/dd/yy): Fleid Personnel:	116		<del></del>	_	Facility Name:	Tisda	le's Qu	ick St	00	
Lieid Setsonnei:	1+1	1-7			Site ID#	18686	-	Monitorir	ng Well #	MW 14
General Weather C	ondition <del>s</del> :	sunny		_	Well Diameter (	(D):		0.167	foot	·
Ambient Air Tempe		76	_F		Conversion fac	etor (C): 3.14 X (D/2	2)2 for a 2 inch for a 4 inch v	well C = 0. /ell C = 0.6	163 352	
pH Meter serial no. pH≖4.0 pH≖7.0 pH≖10.0	Quality Ansi Conservation Stand Stand Stand Chain of Cuatody  Date/Time	onductivity Meter I no. dard dard dard V31 0 6 8176 XXXXXX (XXXXX)			Total Well Dept Length of the w 1 casing volum 3 casing volum Total volume o	nd Water (DGW) th (TWD) vater column (LWC re (CV = LWC X C)	<sup>™</sup> 3.96 fore Sampling	gais (star	23.99 23.99 8.3 37 ndard purge volum 2.5	gals gals
roundustied by	Date/time	Received by	Date/Time		*if free product	is present over 1/4	8 Inch, samplin	g will not	2,5 be required.	Total Purged
		atara da de de la composição de la compo	initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulatiye Volume	Purged (gallons)		0,25	1.32	2.64	3.96		•		
Time (military)			1547	1549	.1					1551
pH (s.u.)			5.46	5.42			sac M			
Specific Cond. (um	hos/cm)		160	182						*
Water Temperature	(degrees C)		23.15	22.86		*				
	/e: clear, slightly clo	oudy, cloudy)	47.8	71000		·			*	<u> </u>
Dissolved Oxygen			4.39	4.50		*			•	Fig.
PID readings, if rec										
11 VOILLES V.B.	<b>26</b>									

emarks:

Dry @ 2.5 gal. Not

enough for

Date (mm/dd/yy);	1/6	/13			Facility Name:	Tisdo	ale's Qui	CK Sto	e		
Field Personnel:	<u></u>	V-Z		_	Site ID #	18686	_	Monitoring	1	MW 15	
General Weather C	onditions:	Sunny	· · · · · · · · · · · · · · · · · · ·	-	Well Diameter (I	D):		0.167	foot		
Ambient Air Tempe	مت المتوسيواتية	76	F		Conversion fact	or (C): 3.14 X (D/	2)2 for a 2 inch to for a 4 inch w	well C = 0.4 rell C = 0.6	ll C = 0.163   C = 0.652		
pH Meter serial no. pH=4.0 pH=7.0 pH=10.0	seria Stan	conductivity Meter al no. dard dard			Ť	d Water (DGW)	· \ ••		6.26	feet feet feet	
	Chain of Custody	VIST 6 641	166 AS		3 casing volume Total volume of		5, 9 0 efore Sampling	-	dard purge volun 2,00 &	ne) gals gals	
Relinquished by	Date/Time	Received by	Date/Time			is present over 1			2,00	Total Purged	
	er en en en en en en en en en en en en en	· · · · · · · · · · · · · · · · · · ·		<b>-1</b>	*	,			:		
			Initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample	
Cumulative Volum	e Purged (gallons)		0,25	1.30	2.60	3.90					
Time (military)	-		1603	1605	·					1607	
рН ( <b>s.u.</b> )			4.39	4.23						,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
Specific Cond. (un	nhos/cm)		98	105							
Water Temperatur	e (degroes C)		21.45	20,57							
Turbidity (subject	ive: clear, slightly c	loudy, cloudy)	163	71000							
Dissolved Oxygen			4.69	4.49							
PID readings, if re								<u></u>			

Remarks:

Dry at N2 gal (B bailers). Not eneigh for wordings.



				_						
Date (mm/dd/yy):	11/6	/13		,	Facility Name:	Tisda	le's Qui	CK Sto	P	
Field Personnel:	1+!	Lit			Site ID #	18686	_	Monitoring	g Well #	MWIG
General Weather Co	nditions:	Jartly Cloc	AY_		Well Diameter (I	)):		0.167	foot	
Amblent Air Temper	ature;	7(	_E		Conversion fact	or (C): 3.14 X (D/2	2)2 for a 2 inch	well C = 0.1	163 52	
	Quality Ass	ntunce							æ	
	_				* Free Product 1			10 60		feet feet
pH Meter serial no.		onductivity Meter		ļ	Depth to Ground			18.50		feet
эвнагно. pH=4.0	serla				Total Well Depti	•	- TWO DOWN			feet ·
pH≖7.0	Stan			ł	raugu or ma w	ater column (LWC	× IVVD-DGVV)			1001
pH≈10.0	Stan				l 11 casing volume	(CV = LWC X C)	n 00	6.	96	
	Chain of Cuatody	121 0 PE131	66 AS		3 casing volume	(CV = LWC X C) 3 X CV =	2.88	gals (stan	dard purge volun	no)
•	Amani ar Amanon.	\ 4000 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Manney		Total volume of	Water Purged Be	fore Sampling	-	2.0	gals
•		Bought 10. DC	~ h 1.02	İ		Water Purged for	• -	3	Ø	gals
Relinquished by	Date/Time	Received by	Date/Time	1	, , , , , , , , , , , , ,			•	2.0	Total Purged
		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			*if free product	s present over 1/	8 inch, samplin	g will not i		'
				-						
	· · · · · · · · · · · · · · · · · · ·		Initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulative Volume	Purged (gallons)		0,25	0.96	1.92	2.88				
Time (military)	, si Bys (Ballytis)		1127	1129			-			1132
pH ( <b>s.</b> u.)			4.45	4.41						
Specific Cond. (umi	ho#lem)		94	95						
			22.36	21.88						1
Water Temperature	Inahinas cl	<del></del>		899		1 .		1		
Turbidity (subjective	e; clear, slightly c	loudy, cloudy)	136					<del> </del>		
Dissolved Oxygen	(mg/l)		5.71	5.86	<u>                                     </u>			-		
PID readings, if req	ulred					<u> </u>		1		
Remarks:					1. 0	(2) On	1 /10	70r	prough	fer

Date (mm/dd/yy):	•	]	Facility Name:	Tisde	ale's Qui	CK Sto	P	
Field Personnel: 1+V-Z	<del></del>	_[	Site ID #	18686		Monitoring	1	MW20
General Weather Conditions: Partly Cloud	<del>/</del>		  Well Diameter (	D):		0.167	foot	
Ambient Air Temperature:	F		Conversion fac	tor (C): 3.14 X (D/	/2)2 for a 2 inch v for a 4 inch w			
PH Meter Conductivity Meter serial no.  pH=4.0 Standard  pH=7.0 Standard  pH=10.0 Standard  Chain of Custody  Relinquished by Date/Time Received by	Dato/Time		1 casing volum 3 casing volum Total volume of Total volume of	d Water (DGW) h (TWD) ater column (LW e (CV ≍ LWC X C)	9 × 4.) 4 efore Sampling or Post Sampling	gals (stan	8.48 .38 dard purge volur 2.5 & 2.5	feet feet ne) gals gals Total Purged
	Initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulative Volume Purged (gallons)	0,25	1.38	2.76	4.14	1,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	04,700		,
Time (military)	1144	1147						1149
pH (s.u.)	41.49	4.42			and the second			
Specific Cond. (umhos/cm)	59	59		The state of the s			v	
Water Temperature (degrees C)	2115	20.81						
Turbidity (subjective: clear, slightly cloudy, cloudy)	185	773		·				* <b>%</b> ?
Dissolved Oxygen (mg/l)	2.68	2.76			<u> </u>		\$ 100 ms	
PID readings, if required Remarks:							1 Pac No	

Dry after n 2.5 gal. Not brough for needings

Date (mm/dd/yy): 1 / 6 / 1 3		]	Facility Name:	Tisdo	10'5 AV	ick Sta	10	
Field Personnel:			Site ID #	18686		Monitorin		u 27
General Weather Conditions:	<del></del>		   Well Diameter (	D):	_	0.167	foot	
Ambient Air Temperature; 69	F		Conversion fac	tor (C): 3.14 X (D/	2)2 for a 2 inch for a 4 inch	well C = 0.	- 163	
Quality Assurance           pH Meter         Conductivity Meter           serial no.         serial no.           pH=4.0         Standard           pH=7.0         Standard           pH=10.0         Standard			Total Well Depti Length of the w 1 casing volume	d Water (DGW) h (TWD) ater column (LW	_		\$\\ \frac{15\17}{23\.59} \\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	feet feet feet feet
Chain of Cuatody 431 6 6 8 176	is to mexed			e 3 X CV ≖ Water Purged Be Water Purged fo	efore Sampling	-	dard purge volur	ne) _gals _gals
Relinquished by Date/Time Received by	Date/Time			is present over 1	-		2.50 pe required.	Total Purged
	Initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulative Volume Purged (gallons)	0,25	1.37	2.74	4.11				
Time (military)	1033	1035						1037
pH (s.u.)	4.80	4.70						
Specific Cond. (umhos/cm)	32	37						
Water Temperature (degrees C)	23.30	22.09						
Turbidity (subjective: clear, slightly cloudy, cloudy)	130	679						
Dissolved Oxygen (mg/l) 5, 25	130	679						
PID readings, if required Remarks:	F	4.78						

Dry Quiz.5 gal, not enough for rendings

Date (mm/dd/yy):	11/6/1	3		1	Facility Name:	Tisde	10'5 QV	ick Sto	ė	
Field Personnel:	1+V-Z			]	Site ID #	18686	_	Monitoring	1	MW23
General Weather ( Amblent Air Temp		y cloudy	<u>_</u> F		Well Diameter (	D): tor (C): 3.14 X (D/	2)2 for a 2 inch	0.167 well C = 0.4	163	
pH Meter serial no. pH≃4.0 pH≈7.0 pH=10.0	Quality Assurance Conduserial no. Standard Standard Standard	ctivity Meter				d Water (DGW)		2	5 1.82 2.28 7.46	feet feet feet feet
Relinquished by	Chain of Cuatody	one (unic	Date/Time		3 casing volum Total volume of Total volume of	•	3 - 66 efore Sampling or Post Sampling	gals (stan	dard purge volur 3.66 & 3.66	ne) gals gals Total Purged
				-1				·	Post Sampling	Sample
Cumulative Volum	ne Purged (gallons)		0,25	1st Vol.	2nd Vol. 2.44	3rd Vol. 3,66	4th Vol.	5th Vol.	Post Samping	
Time (military)			830	835	834	836				836
pH (s.u.)			7.65	4.77	4,78			ļ		
Specific Cond. (u	mhos/cm)		46	50	47					
Water Temperatur	ra (degraes C)		19.49	19.72	19.97					

839

3.01

694

3.00

170

Turbidity (subjective: clear, slightly cloudy, cloudy)

Dissolved Oxygen (mg/l)
PID readings, if required

Remarks:

Dry @3 vol. Not enough for readings. ('14 bailer)

Date (mm/dd/yy):	11/6/13			Facility Name:	Tisde	210's Qu	ick Sto	P	
Field Personnel:	HVZ			Site ID #	18686	<u> </u>	Monitorin	1	Mwzy
General Weather C Ambient Air Tempe	(3	r Cloudy F		Well Diameter ( Conversion fac		2)2 for a 2 inch	0.167  well C = 0.6	163	
pH Meter serial no. pH=4.0 pH=7.0 pH=10.0	Quality Assurance  Conductivity serial no. Standard Standard Standard Chain of Custody	Meter  5 6 \$ 1766 PG  (UDiding Mexe)		1 casing volum 3 casing volum Total volume of	d Water (DGW) h (TWD) rater column (LW e (CV = LWC X C)	C * TWD-DGW)  **	gals (stan	(2.86 21.04 8.18 33 Idard purgo volui	feet feet feet me) gals
Relinquished by	Date/Time Received	l by Date/Time			is present over 1			e. 0	Total Purged
Cumulative Volum	e Purged (gallons)	Initial   0,25	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Time (military)		852	854						855
pH (s.u.)		5,065	5.14						
Specific Cond. (un	nhos/cm)	38	39						
Water Temperatur	e (degrees C)	20.51	26.29						

PID readings, if required Remarks:

Dissolved Oxygen (mg/l)

Water Temperature (degrees C)

Turbidity (subjective: clear, slightly cloudy, cloudy)

71000

6.61

141

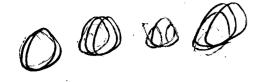
6.77

71000



Date (mm/dd/yy);	11/6	713		7	C1114 N		(1.) A	51		
Field Personnel:		V-Z	·	-	Facility Name: Site ID #	18686	ale's Qu	ick Sh		MW 25
General Weather C	onditions:	my			Well Diameter (			0.167		
Amblent Air Tempe	<del></del>	65	F		Conversion fac	tor (C): 3.14 X (D	2)2 for a 2 inch for a 4 inch	well C = 0. vell C = 0.0	163 352	
pH Meter serial no. pH=4.0 pH=7.0 pH=10.0	Quality Ass  C seria Stan Stan Stan	onductivity Meter Il no. dard dard				d Water (DGW)	, ) ==		13.00 20.51 7.51	feet feet feet feet
	Chain of Custody	Hama Ladyge	6 AS		1	Water Purged B		-		gals
Relinquished by	Date/Time	Received by	Date/Time		l .	Water Purged fo	•		2.0	gals Total Purged
· · · · · · · · · · · · · · · · · · ·		alemaka da da maka da maka da maka da maka da maka da maka da maka da maka da maka da maka da maka da maka da m	Initial	1st Vol.	2nd Vol.	3-41-1		Leavy-	T D - 4 C 1 1	Comple
Cumulative Volume	e Purged (gallons)		0,25	1.22	2.44	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Time (military)			953	955					·	956
pH (s.u.)			5.75	5.52						
Specific Cond. (um	hos/cm)		62	53						
Water Temperature	(degrees C)		20.84	20.87						
Turbidity (subjective	ve: clear, slightly cl	oudy, cloudy)	418	71000		·			ric)	
Dissolved Oxygen	(mg/l)		557	5.91						
PID readings, if red Remarks:	quired									

Dy after 2.0 gal. Not enough for rendings



Date (mm/dd/yy): 11 / 6 / 1 3			Facility Name:	Tish	gle's Qu	ick Sto	10	
Field Personnel: 1414-Z	~ · · · · · · · · · · · · · · · · · · ·	_	Site ID #	18686		Monitorin	1	MW26
General Weather Conditions:			Well Diameter (	D):		0.167	foot	
Ambient Air Temperature: 65	F		Conversion fac	tor (C): 3.14 X (D	/2)2 for a 2 inch for a 4 inch v	well C = 0. vell C = 0.6	163 52	
pH Meter         Conductivity Meter           serial no.         serial no.           pH=4.0         Standard           pH=7.0         Standard           pH=10.0         Standard	A		Total Well Dept Length of the w	d Water (DGW) h (TWD) rater column (LW		,	12.31 19.66 7.35	feet feet feet feet
Chain of Cuatody 451 6 6815	166 PS		3 casing volum Total volume of	Water Purged B	3.57		1.19 dard purge volur 2.38	gals
Relinquished by Date/Time Received by	Date/Time			Water Purged fo			2.38	gals Total Purged
	initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulative Volume Purged (gallons)	0,25	1.19	2.38	3.57				
Time (military)	1015	1017	1019					1014
pH ( <b>s</b> .u.)	4.99	4.98						
Specific Cond. (umhos/cm)	38	39						
Water Temperature (degrees C)	19.87	20.15						
Turbidity (subjective: clear, slightly cloudy, cloudy)	283	71000		·				
Dissolved Oxygen (mg/l)	1.41	2.01						
PID readings, if required Remarks:								

Dry at 2 vol. Not enough for readings.

10-4	1. 1.	7.5	·	7	-				
Date (mm/dd/yy):	4/الــــــ	/13	· · · · · · · · · · · · · · · · · · ·	_	Facility Name:		ale's Qu	ick Stop	
Field Personnel:	1+!	<u> </u>		_	Site ID #	18686	· 	Monitoring Well #	MW27
General Weather (	Conditions:	Sunny		_	Well Diameter (	D):		0.167_foot	
Ambient Air Temp	erature: Quality Ass	G9 '	F		Conversion fac	tor (C): 3.14 X (D	well C = 0.163 vell C = 0.652		
pH Meter serial no. pH=4.0 pH=7.0 pH=10.0	Conservation Conservation Standard	onductivity Meter I no. dard dard dard	66 Ar		1	nd Water (DGW)  Ih (TWD)  vater column (LW)  e (CV = LWC X C		16.74 24.92 28.18 1.33 gais (standard purge vol	feet feet feet feet umo)
	Chain of Custody	Your LADY	in meser		•	f Water Purged B f Water Purged fo	, .	2.5	gals gals
Relinquished by	Date/Time	Received by	Date/Time		*if free product	is present over 1	/8 Inch, samplin	g will not be required.	Total Purged
<u> </u>		ateria de redicionado esta esta esta esta esta esta esta esta	Initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.   Post Sampling	g Sample
Cumulative Volum	e Purged (gallons)		0,25	1.33	2.66	3.99	7,	ou, ron i secoumpun,	
Time (military)			1048	1050					1052
pH (s.u.)	······································		4.59	4,46					
Specific Cond. (un	nhos/cm)		55	63					
Water Temperature	e (degrees C)		22.22	21.72					
Turbidity (subjecti	ive: clear, slightly cle	oudy, cloudy)	179	541		·			
Dissolved Oxygen	) (mg/l)		179	541		,			
PID readings, if re Remarks:	quired		5,67	5.55			<u></u>		



Dry @ 2.5 gal (half a bucket). Not much for readings

Date (mm/dd/yy):	11/6	/13		]	Facility Name:	Tish	ale's Qu	ick St	1P	
Field Personnel:	<u>'</u> <u>'</u>	V-Z			Site ID #	18686	_	Monitorin	1	MW 28
General Weather C	onditions:	partly Clo	udy		Well Diameter (	D):		0.167	foot	·
Ambient Air Tempe	orature; Quality Ass	70	F		Conversion fac	tor (C): 3.14 X (D	/2)2 for a 2 inch for a 4 inch v	well C ≖ 0. vell C ≖ 0.6	163 352	
pH Meter serial no. pH=4.0 pH=7.0 pH=10.0	C seria	onductivity Meter il no. dard dard			Total Well Dept Length of the w	id Water (DGW)	) <b>=</b>	(	Ø 17.11 24.68 1.57 23	feet feet feet
	Chain of Custody	Howa Lupiga	so meser		1	e 3 X CV ≖ f Water Purged B f Water Purged fo			ndard purge volui	ne) gals
Relinquished by	Date/Time	Received by	Date/Time			is present over 1			2.0	Total Purged
		and the state of t			·					· · · · · · · · · · · · · · · · · · ·
Cumulative Volume	a Purged (gallons)		Initial 0,25	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Time (military)			1107	1109						12:1111
рН ( <b>s</b> ,u.)			4.14	4.14						n.
Specific Cond. (um	hos/cm)		302	304						
Water Temperature	(degrees C)		21.43	21.56	·					
Turbidity (subjective	ve: clear, slightly cl	oudy, cloudy)	152	342						
Dissolved Oxygen	(mg/l)		6.81	6.33						
PID readings, if rec	quired									

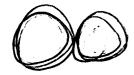
Och

after 2.0 gal.

Ø1

Mar energe

) revins



			_						
Date (mm/dd/yy):	11/6/13			Facility Name:	Tisda	le's Qu	ick Sto	P	
Field Personnel:	HVZ			Site ID #	18686		Monitorin	g Well #	Monsa
General Weather C	onditions: Sun	Partly Cloudy		Well Diameter (	D):		0,167	feet	
Ambient Air Tempe		F		Conversion fac	tor (C): 3.14 X (D/2	)2 for a 2 inch for a 4 inch v	well C = 0. vell C = 0.6	163 52	
	Quality Assurance			* Free Product	Thickness:			Ø	feet
pH Meter	Conductivity	Meter		Depth to Groun					feet
serial no. pH≖4.0	serial no. Standard	<del></del>	-	Total Well Dept	•			<del></del> _	feet
pH=7.0	Standard	<del></del>	-	Longth of the w	rater column (LWC	× TWD-DGW)		8,19	feet
pH≖10.0	Standard			1 casing volum	e (CV ≍ LWC X C) :	ng.	1	.33	
	Chain of Custody 751 (	56 E1766 AS	]	3 casing volum		3.99	gals (stan	dard purge volun	no)
	Jama	5 6 E 1766 AS Kurdiding meser		Total volume of	Water Purged Be	fore Sampling	-	3.00	gals
•	V .	<i>f</i>		Total volume of	Water Purged for	Post Sampling	)		gals
Relinquished by	Date/Time Received	by Date/Time		*if from product	Is present over 1/8	loob samalin	a will not !		Total Purged
		i initlal	1 2 2 3 7 1		X 111.				
			1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulative Volume	Purged (gallons)	0,25	1.33	2.66	3.99				
Time (military)	79	801	804	807	7				<u>පිරදි</u>
pH (s.u.)		4.21	4.05	4.03					<u> </u>
Specific Cond. (um	hos/cm)	61	69	73	10				
<u>Water Temperature</u>	(degrees C)	18.50	17.75	18.58	**	\$ 			
Turbidity (subjective	/e: clear, slightly cloudy, cloud	iy) 136	71000	71000					71000
Dissolved Oxygen	(mg/l)	7.39	8.21	7.76		,			
PID readings, if rec									

Ory (a) 3.0 sal. Mot may enough for readings

Date (mm/dd/yy);	11/6	2/13		1	Facility Name:	Tisdo	ile's Qui	CK Sto	P	
Field Personnel:		+V-Z			Site ID #	18686		Monitorin	1	MW30.
General Weather (	Conditions:	Sunky Par	tly Cloud	<del>\</del>	Well Diameter (	D):		0.167	foot	
Amblent Air Temp	***************************************	56'	F		Conversion fac	tor (C): 3.14 X (D/	2)2 for a 2 inch for a 4 inch v	well C = 0.4 vell C = 0.6	163 52	
	Quality An	SULUDICO			* Free Product	Thickness			<b>S</b>	feet
pH Meter	(	Conductivity Meter			Depth to Groun					feet
serial no.	ser	ial no.		]	Total Well Dept	•				feet
pH≖4.0		ndard			Length of the w	rater column (LW	C ≖ TWD-DGW)		3.83	feet
pH≈7.0 pH≈10.0		ndard Indard				. (0)/ . 1,140,37,03		6	.62	
μη <b>- τ</b> ν.ν	Chain of Custod		766 PG	-	3 casing volum	o (CV ≍ LWC X C) o 3 X CV ≖	1.86		dard purge volur	no)
	WIND NO.	x Azi opei	5:30 meses		· ·	f Water Purged B	•	-	1.0	gals
Relinquished by	Date/Time	Received by	Date/Time	-		f Water Purged fo	_		V. O	gals Total Purged
		·		-1	I Was bisses					
			initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulative Volun	ne Purged (gallons)	)	0,25	0.62	1.24	1.86				
Time (military)			730	731		5				732
pH (s.u.)			5.23	4,43						
Specific Cond. (u	mhos/cm)		33	32	:					
Water Temperatu			19,73	20.40						
	tive; clear, slightly	cloudy, cloudy)	12.5	585						
Dissolved Oxyge			6.39	6.62						

Dissolved Oxygen (mg/l)

PID readings, if required

Remarks:

Date (mm/dd/yy):	3			Facility Name:	Tisda	le's Qui	ck Sto	ρ	
Field Personnel:	Personnel:				18686	-	Monitoring	1	WW 31
General Weather Conditions: Sun	my / Partly	(louby		Well Diameter (I	D):	·	0.167	foat	
an manufacture and a supplementary and a suppl	56 F			Conversion fact	tor (C): 3.14 X (D/2	2)2 for a 2 inch for a 4 inch v	well C = 0.1 vell C = 0.6!	163 52	
Quality Assuran				* Free Product 1	Chicknoses			Ø	feet
pH Meter Condu	ctivity Meter			Depth to Groun					feet
serial noserial no.	_			Total Well Depti	•				feet
pH≖4.0Standard				Length of the w	ater column (LWC	C ≍ TWD-DGW)		4.38	feet
pH=7.0 Standard	<u></u>						•	.71	
pH=10.0 Standard		<del></del>			• (CV = LWC X C)	7.14		dard purge volun	
Chain of Custody	121 0 061166	M		3 casing volume	B 3 X C γ ≖		dain (2rail	data parga voicii	,,,,,
,×0	inna Lousysia	mezer			Water Purged Be Water Purged for			0.71	gals gals
Relinquished by Date/Time Re	celved by Da	ato/Tlme			is present over 1/			0.71	Total Purged
							Sth Vol.	Post Sampling	Sample
		Initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	3(1) 401.	Post Sampling	Jampie
Cumulative Volume Purged (gallons)		0,25	0.71	1.42	2.14				<u> </u>
Time (military)	4	89744	745						745
рН ( <b>s.</b> u.)		4.60	4.61						
Specific Cond. (umhos/cm)		54	54						
Water Temperature (degrees C)		21.74	21.52						
Turbidity (subjective: clear, slightly cloudy	, cloudy)	62.5	71000		·				<u> </u>
Dissolved Oxygen (mg/l)	l l	7.64			-			<u>.</u>	
PID readings, if required Remarks:								11.50	

Dry @ 1 vol; not enough to till entire cup for readings.

Date (mm/dd/yy):	11/6/	3			Facility Name:	Tisdo	ile's Qui	CK Stop	
Field Personnel:	1+KZ				Site ID #	18686	_	Monitoring Well#	TW1
General Weather C	conditions: Sur	N		<u> </u>	Well Diameter (D	)):		0.167_foot	
Ambient Air Tempe	And the state of t	76	F		Conversion fact	or (C): 3.14 X (D/2	2)2 for a 2 inch v for a 4 inch w		
·	Quality Assum	CO		į	* Free Product T	blatenass		Ø	feet
pH Meter serial no. pH=4.0	serial no	Ī			Depth to Ground Total Well Depth	Water (DGW)	C ≭ TWD-DGW)	15.7 45,50 29.7	6 feet 1 feet
pH≈7.0 pH≈10.0	Standard Standard				d analysis states	(CV = LWC X C)	_	4.84	
	<del></del>		6 PG		3 casing volume	•	14.52	gals (standard purg	
	120	nua Ladorgo 121 0 PE136	so meser		,	Water Purged Be Water Purged fo	•	- 14. <del>5</del>	gals
Relinquished by	Date/Time Re	celved by	Date/Time		tif from product I	a present over 1	/8 Inch samplin	g will not be required	.52 Total Purged
·			Initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.   Post San	·
		<del></del>	0,25	4.84		14,52	401700	3477011 7 302341	
Cumulative Volum	e Purged (gallons)		0,22	107	9.68				1500
Time (military)			1509	1514	1520	1526			1526
pH (s.u.)			5.28	4.97	4,89	4.87			
Specific Cond. (un	nhos/cm)	-42	10	74	79	79	7-		
Water Temperatur	e (degrees C)		23/14	20.71	20.50	20.38			
Turbidity (sub)ecti	ive: clear, slightly cloud	y, cloudy)	20.7	15.3	5t. 51.7	32.8			
Dissolved Oxygen	(mg/l)	4.93	1.90	1.72	1.67				
PID readings, if re Remarks:	quired								

Date (mm/dd/yy);	11/0	/ ( )			Facility Name:	11790	ALL 5 CXV	1 CK- 210	(J			
Field Personnel:	<u>.</u> 141	LZ.		]	Site ID #	18686		Monitorin	1	TW2		
General Weather Condit	tlons: 5	unny			   Well Diameter (E	)):		0.167	foot			
Amblent Air Temperatur	re: Quality Assi	GŸ	F		Conversion fact	or (C): 3.14 X (D/	2)2 for a 2 inch for a 4 inch v	well C = 0.4 voll C = 0.6	163 52			
·	MUAIILY BASI	Italisa			* Free Product T	hlckness			Ø	feet		
pH Meter	Ce	onductivity Meter			Depth to Ground	· · · · · · · · · · ·			14.19	feet		
serial no.	serla	l no.			Total Well Depti	• •			<u> </u>	feet		
pH=4.0	Stand	lard		}		ater column (LW	C × TWD-DGW)		35.30	feet		
pH¤7.0	Stand	lard		}				<	726			
pH=10.0	Stand			}	1 casing volume (CV = LWC X C) = 5.75							
Che	ain of Custody	you to be is	166 AS		3 casing volume 3 X CV = 17.25 gais (standard purge volume)							
· Sent	WITH THE STREET, SALE	Venna (40)	1 minesel		Total volume of Water Purgad Before Sampling [7.25] gal							
		12011 10 21	φ. ω		Total volume of	Water Purged fo	r Post Samplin	<del>J</del>	<u> </u>	gals		
Relinquished by Dat	te/Time	Received by	Date/Time			-			17.25	Total Purged		
				i	*if free product	s present over 1	/8 Inch, samplir	ig will not l	oe required.			
					•							
			initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample		
Cumulatiye Volume Pur	ged (gallons)		0.25	5.75	11.50	17.25						
Time (military)			911	917	927	935				935		
pH (s.u.)	6.32	5,91	6.14	6.10								
Specific Cond. (umhos/	133	141	141									
Water Temperature (dec			137	20.12	19.92	19.86						

12.5

3.08

12.6

Turbidity (subjective: clear, slightly cloudy, cloudy)

Dissolved Oxygen (mg/l)

PID readings, if required Remarks:

12.3

2.40

Date (mm/dd/yy):	i. / -	/(3		7				<del></del>		
t	<u>11 / G</u>	/13			Facility Name:		ale's Qu	ick Str	P	
Field Personnel:	1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	- V-Z			Site ID #	18686	_	Monitorin	g Well #	MWIR
General Weather (	Conditions:	Sunny			Well Diameter (	D <b>):</b>		0,167	foot	
Amblent Air Temp	<del></del>	73	F		Conversion fact	tor (C): 3.14 X (D	/2)2 for a 2 inch for a 4 inch v	well C = 0.	163 52	
	Quality An	aurance					101 4 1 1101,	1011 0 010		
pH Meter	(	Conductivity Meter			* Free Product 7				0.01	feet
serial no.		al no.			Depth to Groun				14.11	feet
pH=4.0		ndard			Total Well Depti	n (1770) 'ater column (LW	C - TWD DOWN		21. 62	feet
pH≈7.0		ndard	***		rendin or ma w	arai column (CAA	C * IVVD-DGVV)			feet
pH=10.0	Star	ndard		l	1 casing volume	o (CV = LWC X C	) #			
-	Chain of Custody	Hama Tuda	766 No		3 casing volume			gals (stan	dard purge volu	ne)
		Jama Litte	1 minused		Total volume of	Water Purged B	efore Sampling		NS	gals
		120	c 4 · co			Water Purged fo		1	8	gals
Relinguished by	Date/Time	Received by	Date/Time			Tracer rangeare	, rost camping	,	NO	Total Purged
					*if free product	is present over 1	/8 Inch. samolin	a wiil not i	oe required.	Total Large
			initiai	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulative Volum	e Purged (gallons)	· · · · · · · · · · · · · · · · · · ·	0,25							NS
Time (military)										
(.u <b>.e)</b>										
Specific Cond. (un	nhos/cm)									
Water Temperatur	e (degrees C)				,					
Turbidity (subjecti	ive: clear, slightly c	loudy, cloudy)								
Dissolved Oxygen										
PID readings, if re										
Remarks:										

Builter confirmed Free product. Dank in color.

Date (mm/dd/yy):	11/6	13		]	Facility Name:	Tisdo	nle's Qui	ck Sto	6	
Field Personnel:	1+	V-Z		]	Site ID#	18686		Monitorin	1	MW 2.B
General Weather C	onditions:	Sunny			Well Diameter (	D):		0.167	feet	
Ambient Air Tempe	******	73	F		Conversion fact	or (C): 3.14 X (D/	2)2 for a 2 inch for a 4 inch v	well C ≖ 0.′ vell C ≖ 0.6	163 52	
pH Meter serial no. pH=4.0 pH=7.0 pH=10.0	serl: Star Star	Conductivity Meter al no. ndard ndard ndard	166 No Ling Mexed Dato/Time		* Free Product Toppth to Ground Total Well Depth Length of the waste of the waste of the waste of the total volume of total volume of the total volume of the total volume of tota	20.89  dard purge volum  NS  NS	feet feet feet ne) gals gals Total Purged			
,					I was produce	is present ever in	to mon pampin	<u> </u>		
			initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulative Volume	e Purged (gallons)	Processing the control of the State of	0,25							NS
Time (military)										
рН ( <b>s</b> ,u.)								ļ.		
Specific Cond. (um	nhos/cm)									
Water Temperature	e (degrees C)							ļ		
Turbidity (subjecti	ve: clear, slightly c	loudy, cloudy)						-		
Dissolved Oxygen	(mg/i)									
PID readings, if re- Remarks:	quired					<u></u>				

Bailer confirmed free product. Dark in color.

Date (mm/dd/yy): 11/6/13			Facility Name:	Tisde	ale's Qui	ck Stop	>	
Field Personnel: 14V-7			Site ID #	18686		Monitoring	Well#	MW3A
General Weather Conditions: Sunvy		-	Well Dlameter (I	D):		0,167	foot	
Ambient Air Temperature: 73	F		Conversion fact	tor (C): 3.14 X (D/	2)2 for a 2 inch for a 4 inch v			
Quality Assurance		ļ	ļ		101 4 7 7 1011 1			
			* Free Product 7				1.06	feet
pH Meter Conductivity Meter serial no. serial no.		1	Depth to Groun	· · · · · · · · · · · · · · · · · · ·			4.12	_feet _feet
	4-14-14-14-14-14-14-14-14-14-14-14-14-14	-]	Total Well Depti		C - TIAID DOWN	7.2	0.02	feet
pH≖4.0 Standard pH=7.0 Standard	,	-	Length of the W	ater column (LW	C = TVVD-DGVV)	-		1000
pH=10.0 Standard		-	1 casing volume	e (CV = LWC X C)	\ <del>==</del>			
***************************************	24	1	3 casing volume	lard purge volu	ourge volume)			
Chain of Cuatody 451 0 681	166 175						Ma	
Juma Turb	2:30 mexed		Total volume of	Water Purged B	efore Sampling		<u> </u>	gals
	φ. 3		Total volume of	Water Purged fo	r Post Sampling		B	gals
Relinquished by Date/Time Received by	Date/Time	1		•	•	_	NS	Total Purged
			*if free product	ls present over 1	/8 inch, samplin	ig will not b	e required.	•
		<b></b>	,					
·								
	Initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	
Cumulative Volume Purged (gallons)	0,25							NB
Time (military)								<del> </del>
pH (s.u.)		<u> </u>						
Specific Cond. (umhos/cm)						-		
Water Temperature (degrees C)		<u> </u>						
Turbidity (subjective: clear, slightly cloudy, cloudy)		ļ						
Dissolved Oxygen (mg/l)								
PID readings, if required								
	7 1	•	1 from	0000 1 01	$\cap$		ı	
Ţ.	Sailler (c	whim	d free	product.	york	in C	2/Or.	

·											
Date (mm/dd/yy):	11/6	/ (3			Facility Name:	Tisdo	gle's Qui	CK Sto	2		
Field Personnel:	1+1	<del>/ 7</del>			Site ID #	18686	<del></del>	Monitoring	) Well #	Ar un	
General Weather C	onditions:	Suny		_	Well Diameter (	D <b>):</b>		0.167	foot		
Amblent Air Temperature: 75 F				Conversion factor (C): 3.14 X (D/2)2 for a 2 inch well C = 0.163 for a 4 inch well C = 0.052							
pH Meter	Quality Assi	urance onductivity Meter			* Free Product Depth to Groun				Ø 1.61	feet feet	
serial no. pH=4.0 pH=7.0	seria Stand Staño	dard		-	Total Well Dept Length of the w	h (TWD) rater column (LW	C × TWD-DGW)	2	6,10	feet feet	
pH=10.0	Stand		-	1 casing volume (CV = LWC X C) = 2.97 3 casing volume 3 X CV = 2.97  Total volume of Water Purged Before Sampling Total volume of Water Purged for Post Sampling			0.99 gals (standard purge volume)				
	Chain of Cuatody 451 0 6 817		in weser				4	· .	1.5 &	_gals _gals	
Relinquished by Date/Time Received by Date/Time					*if free product is present over 1/8 inch, sampling will not be required.						
		An and the state of the state of the state of the state of the state of the state of the state of the state of	Initial	1st Vol.	2nd Vol.	3rd Vol.	1 4th Vol.	5th Vol.	Post Sampling	Sample	
Cumulative Volume	e Purged (gallons)		0,25	8.99	1.98	2.97					
Time (military)			1313	1315						1316	
pH (s.u.)			4.96	4,90							
Specific Cond. (un	nhos/cm)		111	122							
Water Temperature (degrees C)		21.48		·							
Turbidity (subjecti	ve: clear, slightly cl	oudy, cloudy)	101	217		<u> </u>					
Dissolved Oxygen	(mg/l)		1.34	1,19			<u> </u>				
PID readings, if re	quired				<u> </u>			<u></u>	L	)	

vory hour sheen.

Dry after 6 bailers ~ 1.5 gal. Wat ong brough

APPENDIX C
Disposal Manifest

Pleas	e print or type (Form designed for use on elite (12						
	NON-HAZARDOUS WASTE MANIFEST	Generator's US EPA ID No.			Manilest Document No.		2. Page 1 of
N	3. Generator's Name and Mailing Address	15 DALE'S QUICK	< 570P				***************************************
		989 THURGOUN	MARSHALL BYUD				
Ы	4. Generator's Phone ( )	KINGSTREE JE	MARSHALL BLUD US EPA ID Number	*			
		6.	US EPA ID Number		A. State Trans	porter's ID	
	GRE		1-		B. Transporter	1 Phone 704-845	-4010
	7. Transporter 2 Company Name	В.	US EPA ID Number		C. State Trans	porter's ID	
	HERR Inc.  9. Designated Facility Name and Site Address		1CP-00013981L			2 Phone 910 - 45:	3-6319
	9. Designated Pacifity Name and Site Address  CUIS	10.	ua era iu rumber		E. State Feolid	y's ID	
	303 5. MAULTSBY	57.			F. Facility's Ph	one _	
	WHITEUICES NO.				,	910 - CZ5-	5012
N	11. WASTE DESCRIPTION		•	1		Total	14. Unit Wt.Nol.
				No.	Туре	Quantity	Wt.Nol.
N						7-7-0	6-
	Non-Reg. Petroleo	n Central	てなら			77.73	GAL
G	<b>b.</b>						
E N	W						
ER				ļ			
H	<b>c</b> .						
A							
O R	<b>d</b>						
M	C Aridinani Danssintian for the and the Co.	<b>&gt;</b>		<u></u>	н ш	odes for Wastes Listed Abov	
	G. Additional Descriptions for Materials Listed Above	-			in mandaing C		
H	6.						
N							
	15. Special Handling Instructions and Additional Info	-mation			<u> </u>		
H	# A STATE OF THE PARTY OF THE P						
				7			
	16. GENERATOR'S CERTIFICATION: I horeby cert	iffy that the contents of this shipm	ent are fully and accurately described	and are in	all respects	(*************************************	
	in proper condition for transport. The materials d	escribed on this manifest are not	subject to tederal hazardous waste re	gutalions.			
							Date
	Printed/Typed Name		Signature 2	-> 1	0	Mon	
F	17. Transporter 1 Acknowledgement of Receipt of M	laterials	1 WAINE	3	<u> </u>	10	177   15 Date
Ř	Printed/Typed Name		Signature	<u> </u>	1	Mor	
Š	W. Scott BAIL		I WYW	12//	<u>//</u>		214/13
ó	18. Transporter 2 Acknowledgement of Receipt of M	daminis					Date
TRANSPORTER	Printed Typed Name  Steve River bank		Signature Stands	9	Renn.	N R.C.C /	nth Day Yea 2   4   / 3
	19. Discrepancy Indication Space	-	- Ximo (		V VIV	<i>ب</i> ر. ر. (.	- 1 1 1 3
F	-						
C							
L	20. Facility Owner or Operator, Certification of receip	of the waste materials covered	by this manifest, except as noted in h	em 19.		r	Part-
1	Printed/Typed Name		Signature			Mor	Date th Day Yea
10	1/1/2 /			_	0		1 1 / 1

**NON-HAZARDOUS WASTE MANIFEST** 

Appendix D

Contractor Checklist

South Carolina Underground Storage Tank Program Tisdales Quick Stop Title: Programmatic QAPP Revision Number: 0 Revision Date: NA

#### **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?	X		
2	Is UST Owner/Operator name, address, & phone number provided?	X		
3	Is name, address, & phone number of current property owner provided?	X		
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?	х		
7	Has the facility history been summarized?	X		
8	Has the regional geology and hydrogeology been described?			X
9	Are the receptor survey results provided as required?			X
10	Has current use of the site and adjacent land been described?	X		
11	Has the site-specific geology and hydrogeology been described?			X
12	Has the primary soil type been described?			Х
13	Have field screening results been described?			X
14	Has a description of the soil sample collection and preservation been detailed?			X
15	Has the field screening methodology and procedure been detailed?			X
16	Has the monitoring well installation and development dates been provided?			X
17	Has the method of well development been detailed?			X
18	Has justification been provided for the locations of the monitoring wells?			X
19	Have the monitoring wells been labeled in accordance with the UST QAPP guidelines?			Х
20	Has the groundwater sampling methodology been detailed?	X		
21	Have the groundwater sampling dates and groundwater measurements been provided?	X		
22	Has the purging methodology been detailed?	X		
23	Has the volume of water purged from each well been provided along with measurements to verify that purging is complete?	Х		
24	If free-product is present, has the thickness been provided?	X		
25	Does the report include a brief discussion of the assessment done and the results?	Х		
26	Does the report include a brief discussion of the aquifer evaluation and results?			Х
27	Does the report include a brief discussion of the fate & transport models used?			×

South Carolina Underground Storage Tank Program Tisdales Quick Stop Title: Programmatic QAPP Revision Number: 0 Revision Date: NA

Item #	Item	Yes	No	N/A
28	Are the site-conceptual model tables included? (Tier 1 Risk Evaluation)			X
29	Have the exposure pathways been analyzed? (Tier 2 Risk Evaluation)			X
30	Have the SSTLs for each compound and pathway been calculated? (Tier 2 Risk Evaluation)			X
31	Have recommendations for further action been provided and explained?	Х		
32	Has the soil analytical data for the site been provided in tabular format? (Table 1)			х
33	Has the potentiometric data for the site been provided in tabular format? (Table 2)	Х		
34	Has the current and historical laboratory data been provided in tabular format?	X		
35	Have the aquifer characteristics been provided and summarized on the appropriate form?			X
36	Have the Site conceptual model tables been included? (Tier 1 Risk Evaluation)			X
37	Has the topographic map been provided with all required elements? (Figure 1)	Х		
38	Has the site base map been provided with all required elements? (Figure 2)	X		
39	Have the CoC site maps been provided? (Figure 3 & Figure 4)	X		
40	Has the site potentiometric map been provided? (Figure 5)	X		
41	Have the geologic cross-sections been provided? (Figure 6)			X
42	Have maps showing the predicted migration of the CoCs through time been provided? (Tier 2 Risk Evaluation)			Х
43	Has the site survey been provided and include all necessary elements? (Appendix A)			X
44	Have the sampling logs, chain of custody forms, and the analytical data package been included with all required elements? (Appendix B)	X		
45	Is the laboratory performing the analyses properly certified?	X		
46	Has the tax map been included with all necessary elements? (Appendix C)			X
47	Have the soil boring/field screening logs been provided? (Appendix D)			X
48	Have the well completion logs and SCDHEC Form 1903 been provided? (Appendix E)			X
49	Have the aquifer evaluation forms, data, graphs, equations, etc. been provided? (Appendix F)			X
50	Have the disposal manifests been provided? (Appendix G)	X		
51	Has a copy of the local zoning regulations been provided? (Appendix H)			X
52	Has all fate and transport modeling been provided? (Appendix I)			X
53	Have copies of all access agreements obtained by the contractor been provided? (Appendix J)			X
54	Has a copy of this form been attached to the final report and are explanations for any missing or incomplete data been provided?	Х		

South Carolina Underground Storage Tank Program Tisdales Quick Stop Title: Programmatic QAPP Revision Number: 0 Revision Date: NA

Explanation for missing or incomplete information.



Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

US) CAETIN

FEB 2 8 2014

MR MARTY EASLER 196 RICHBURG ROAD GREELEYVILLE SC 29056

Re: **AFVR Directive** 

Tisdales Quick Stop, 1989 Thurgood Marshall Blvd, Kingstree, SC

UST Permit # 18686; CA#47381 Release reported March 30, 2001

Monitoring Report received December 16, 2013

Williamsburg County

Dear Mr. Easler:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) recognizes your commitment to continue work at this site utilizing Geological Resources, 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) events may commence as outlined in the UST Quality Assurance Program Plan (QAPP) Revision 2.0. Please be aware that the AFVR Procedures have been updated. Please connect to MW-1a, MW-2a, MW-3a & MW-4a for the duration of the event. The stingers shall be lowered at six inch intervals starting at the water table interface to a maximum depth of 26 feet in the wells. A copy of Agency QAPP Version 2.0 for the Underground Storage Tank Division is available at http://www.dhec.sc.gov/environment/lwm/usthome/QAPP.htm.

As soon as the beginning date of the event has been scheduled, please contact Jim Martin at martinjm@dhec.sc.gov.

The AFVR Report should be submitted within 60 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 #47381 has been approved in the amount shown on the enclosed cost agreement. Geological Resources, 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 the Agency for the cost to be paid. The Agency 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, the Agency 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.

The Agency 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 #18686 and CA #47381. If you have any questions, please contact me at (803) 898-0605 or by e-mail at martinjm@dhec.sc.gov.

Sincerely,

Jim Martin, Hydrogeologist Corrective Action Section

7. Te

Underground Storage Tank Management Division

Bureau of Land and Waste Management

enc: Approved Cost Agreement

cc: Technical File (with enclosure)

Geological Resources, Inc., 2301 Crown Point Executive Drive, Suite F, Charlotte, NC

28227 (with enclosure)

# Approved Cost Agreement 47381

Facility: 18686 TISDALES QUICK STOP

MARTINJM PO Number:

Task / Description Categories	Item Description	Qty / Pct	<b>Unit Price</b>	<u>Amount</u>	
19 RPT/PROJECT MNGT & COORDINATIO		*			
,,	PERC REPORT PREPARATION	0.1000	19,968.00	1,996.80	
23 EFR				**********	
	A4 96 HOUR EVENT	1.0000	12,567.50	12,567.50	
	C4 OFF GAS TREATMENT 96 HOUR	1.0000	780.00	780.00	
	D SITE RECONNAISSANCE	1.0000	203.25	203.25	
	E1 ADDITIONAL WELL HOOK-UPS	1.0000	25.75	25.75	
	F EFFLUENT DISPOSAL	20,000.0000	0.30	6,000.00	
	G AFVR EQUIPMENT MOB	1.0000	391.50	391.50	

Total Amount 21,964.80



June 9, 2014

Mr. Jim Martin, Hydrogeologist South Carolina Department of Health and Environmental Control 2600 Bull Street Columbia, South Carolina 29201-1708

Re: AFVR Report

Tisdales Quick Stop

1989 Thurgood Marshall Blvd. Kingstree, Williamsburg County

UST Permit #: 18686

CA #: 47381

#### Dear Mr. Martin:

This report presents the results of the aggressive fluid-vapor recovery (AFVR) event conducted in May 2014 at the above referenced site. The activities were conducted in accordance with the requirements outlined in correspondence from the SCDHEC dated February 28, 2014 and addressed to Mr. Marty Easler. The purpose of the activities was to remove residual free-phase product and reduce dissolved phase contaminant concentrations in monitoring wells MW-1A, MW-2A, MW-3A and MW-4A. The following Figures, Tables and Appendix have been included:

Figure 1:

Site Location Map

Figure 2:

Site Map

Table 1:

AFVR Event Chronology – May 19-23, 2014 Summary of Monitoring Well Gauging Data

Table 2:

Appendix A:

AFVR Report, Calculations, Disposal Manifests

Tisdales Quick Stop AFVR Report UST Permit # 18686

Geological Resources, Inc. visited the site on May 15, 2014 to gauge monitoring wells MW-1A, MW-2A, MW-3A and MW-4A. Approximately 0.01 feet of free product was measured in MW-1A. There was no measurable amount of free product in MW-2A, MW3A or MW-4A. The AFVR contractor, Hazmat Emergency Response and Remediation, Inc. (HERR), arrived on-site on May 19, 2014 for the AFVR event. The event was conducted on monitoring wells MW-1A, MW-2A, MW-3A and MW-4A. General weather conditions were sunny/fair with an ambient air temperature of approximately 75°F at the time of system start-up. No free product was measured in any of the wells prior to system startup. AFVR activities were conducted for ninety-six (96) hours on MW-1A, MW-2A, MW-3A and MW-4A using a vacuum truck with a maximum vacuum rating of 25 in. Hg and a capacity of 325 cubic feet per minute. During the course of the event, the vacuum at the wells remained steady at 25 in. Hg. Please note that the vacuum truck was equipped with an activated charcoal filter for off-gas treatment of vapor phase hydrocarbons. A total of 28,712 gallons of liquid were removed during the event. However, there was no measureable amount of liquid phase free product noted in the tanker. No measurable free product was present in any of the vacuum wells (MW-1A, MW-2A, MW-3A and MW-4A) at the conclusion of the event. Based on data collected during the AFVR event, an estimated total of 47.91 pounds (approximately 7.67 gallons) of vapor phase hydrocarbons were calculated to have been removed during the event.

If you have any comments or questions concerning this project, please do not hesitate to contact the undersigned at (704) 845-4010.

Sincerely,

W. Scott Ball

Project Man

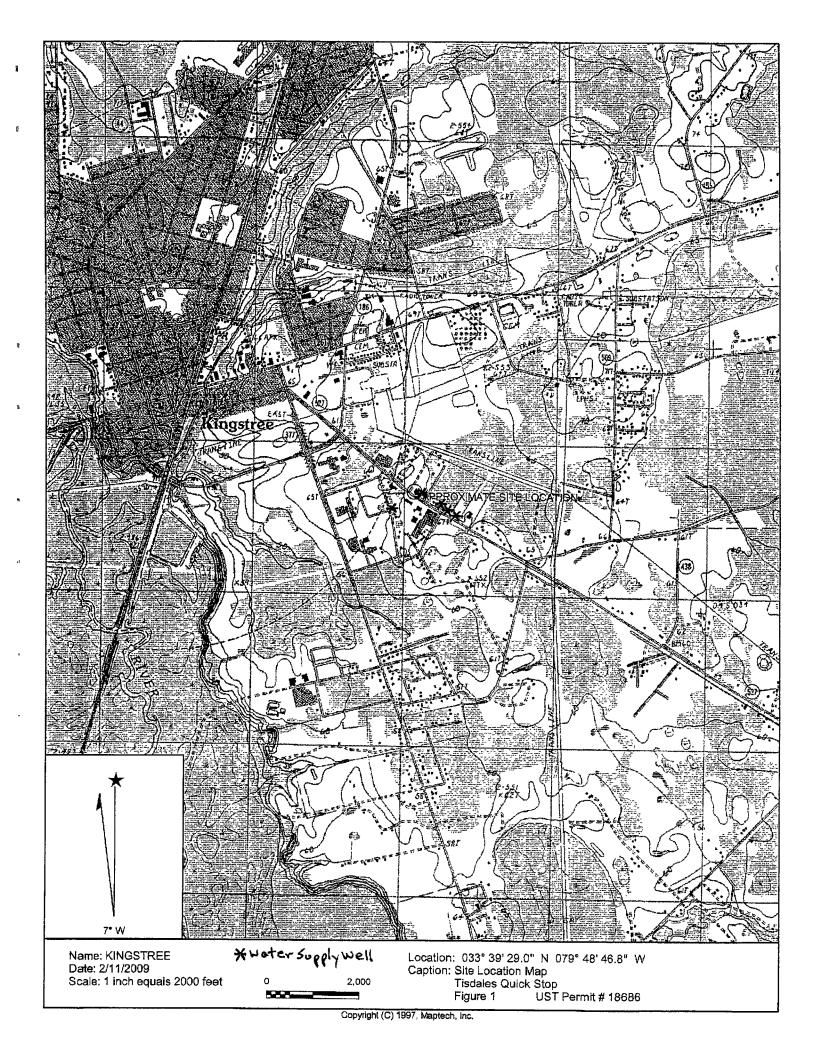
License N

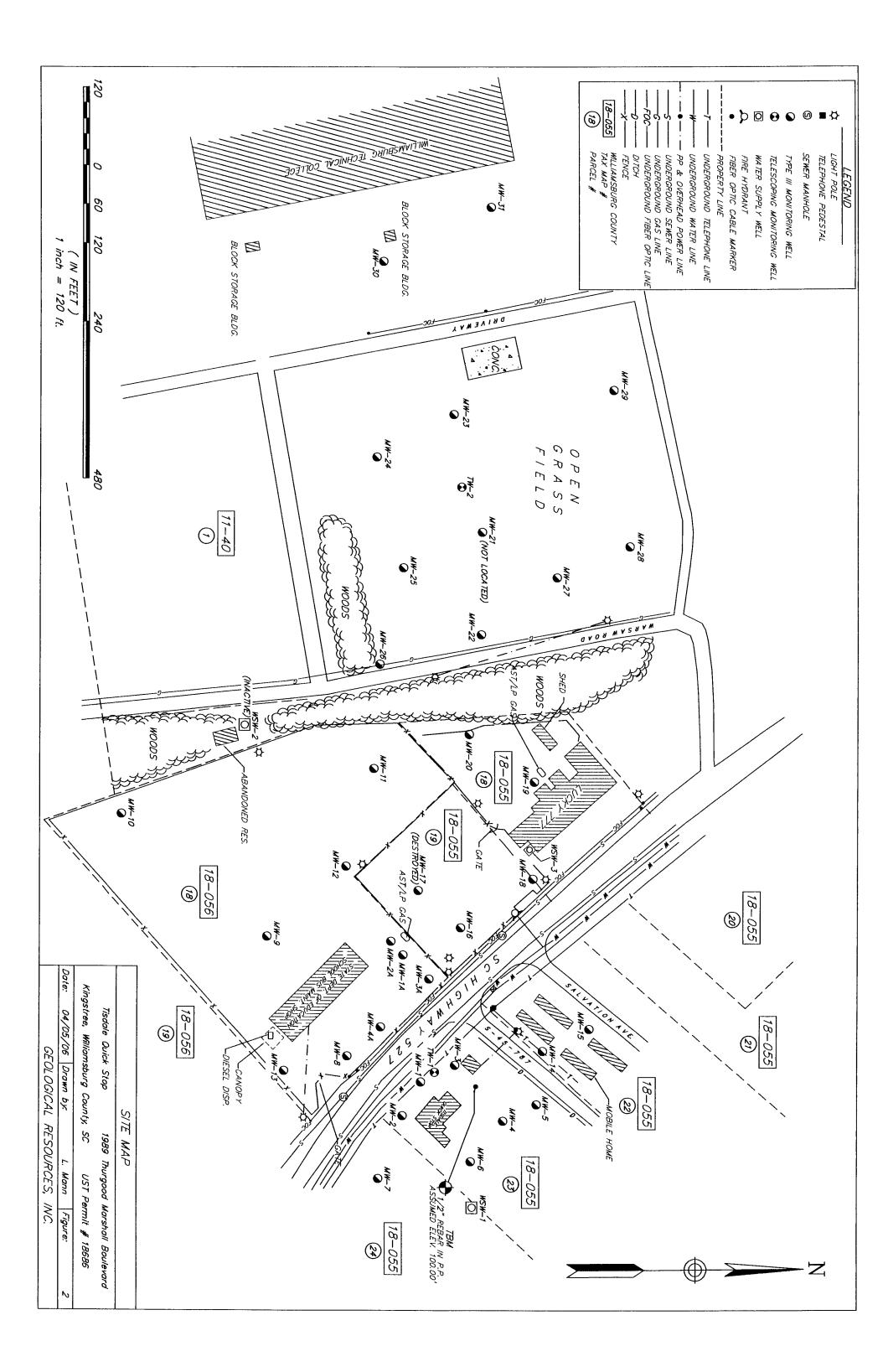
**Enclosures** 

cc: Mr. Marty Easler

File









# TABLE 1 AFVR EVENT CHRONOLOGY MAY 19-23, 2014 TISDALE'S QUICK STOP UST PERMIT #18686

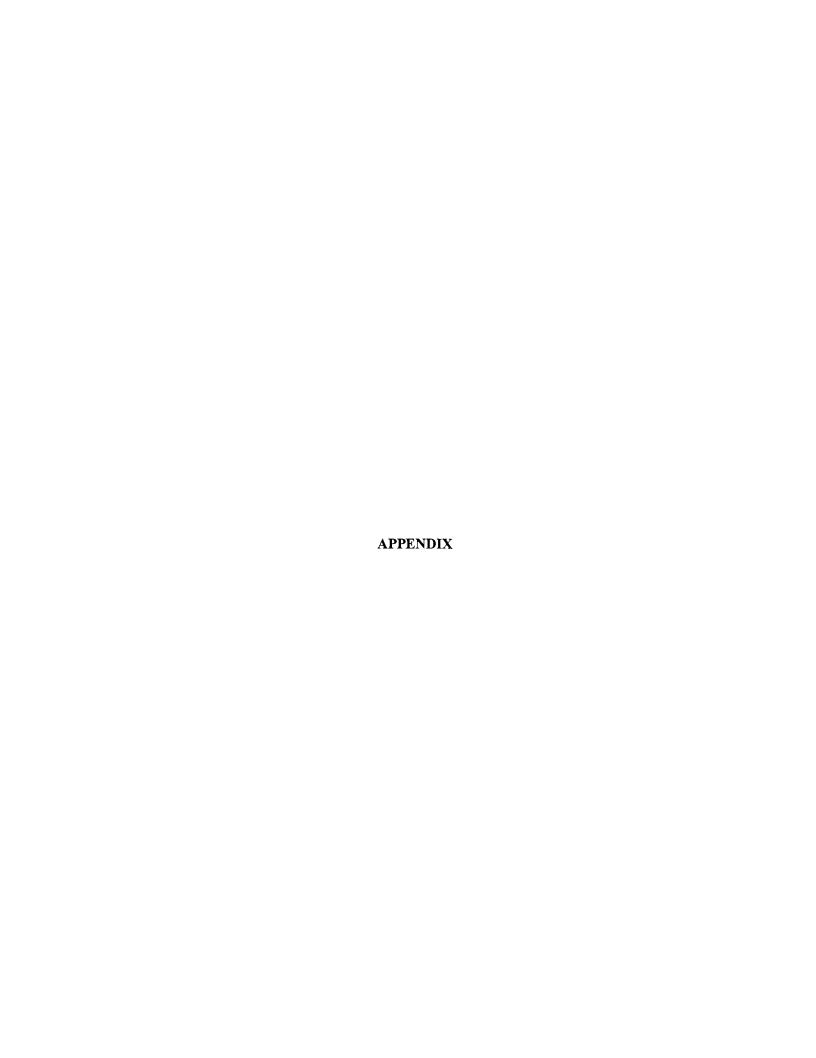
Task	Hours	Personnel	Equipment	Company
Gauge Liquid Levels in MW-1A, MW-2A, MW-3A and MW-4A	8:30 05/19/14	Vacuum Truck Operator	Interface Probe	HERR
Vacuum Truck Setup for Fluid Removal in MW-1A, MW-2A, MW-3A and MW-4A	8:30 - 9:00 05/19/14	Vacuum Truck Operator	Vacuum Truck	HERR
Fluid Recovery in MW-1A, MW-2A, MW-3A and MW-4A	9:00 05/19/14 - 9:00 05/23/14	Vacuum Truck Operator	Vacuum Truck	HERR
Gauge Liquid Levels in MW-1A, MW-2A, MW-3A and MW-4A	9:30 05/23/14	Vacuum Truck Operator	Interface Probe	HERR

#### TABLE 2 SUMMARY OF MONITORING WELL GAUGING DATA TISDALE'S QUICK STOP UST PERMIT #18686

Well No.	Date	Time	Depth to Free	Depth to Ground	Free
			Product	Water	Product
MW-1A		11:15	11.46	11.47	0.01
MW-2A	05/15/14	11:15		11.71	
MW-3A	03/13/14 [	11:15		11.48	
MW-4A		11:15		11.87	-
MW-1A		8:30		11.90	***
MW-2A	05/19/14	8:30		12.24	
MW-3A	03/19/14	8:30		11.85	
MW-4A		8:30		12.50	***
MW-1A		9:30		10.36	
MW-2A	05/22/14	9:30		11.03	
MW-3A	05/23/14	9:30		10.31	
MW-4A		9:30		11.17	

#### Note:

• Data reported in feet.



#### APPENDIX A

AFVR Report, Calculations, Disposal Manifests



#### HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Monday, June 2. 2014

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott.

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 96 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on May 19 – May 23, 2014. Included is the documentation for the event. The 96 hour event was conducted on monitoring wells MW-1A, MW-2A, MW-3A, and MW-4A.

If you have any questions, please do not hesitate to contact our office.

Sincerely.

Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC May 19 – May 23, 2014

#### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 05/19/14. The ambient temperature was 75 deg F and weather conditions were sunny/fair. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event.

The 96 Hour AFVR event was conducted using a Global Vacuum Liquid Ring Pump with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### Pollutant Mass Removal

Total weight of 47.9135 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 96 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### Liquid Disposal

Approximately 28,712 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

- AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEETC. LIQUID DISPOSAL MANIFEST

# APPENDIX A AFVR FIELD NOTES

# HERR. Inc

# AFVR - Field Notes

Site Name: (157ACL) QUICH STOP Location: KINGSTREE, SC	
AFVR Contractor: HERR Inc. Personnel: St Ruch	
// 9 Ambient Air Temperature and	•
Start Time 1: 7.00 Stop Time 1: 7:00 Start Time 2: Stop Time 2:	
moved during the 8-hour AFVR Event: $\mathcal{Z}_{\theta}\mathcal{I}/\mathcal{L}$	
Total volume of product removed during the 8-hour AFVR Event: NO - Prolumt	
Product Recovery Rate:	

	Depth to					
	product	Depth to water	Depth to product   Depth to water	Depth to water		
	prior to stinger	prior to stinger	at cessation of	at cessation of	Estimated volume	Relevant
Monitoring Well	placement	placement	vacuuming	vacúuming	of water removed	Observations
•	(ft. below TOC)	(ft. below TOC)	(ft. below TOC)	(ft. below TOC).	during this event	
1/4	1 / 1	11.90	101	10.36		•
A.G.		12.24	101	. 69.11		
3/	1. 1.	11.95	10-	16:01		
414	,,,,	12.50	-0-	. 11'11		
		٠		,	•	

		vacu	um conversion	: (inches of wa	ter X 0.07355	= inches of me	rcury) ·	
MWYA			MW- 24	mw. 34		Stinger	Placement	
	Time	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Vacuum at Targeted Well (in. Hg)	Stinger Depth	Product Depth	Water Level	Notes .
.	8914		•				11.90	10.36
	M 2A				•		12241	11.07
	pa3A						11.85	0.31
75.19 5.19				• .	•		12.50/	11.17
Jan AM	10.00	· <del>2</del> 5	J5	25				
320m	10.00	-,		25		•		
.0 717	14.63	.25 25	25	. 25				
25	2.00		25		<del></del>		<u> </u>	
25	4.00	25	25	25 25	<del></del>			<u> </u>
	400	25	25					·
25	8.01	25	25	25				<u> </u>
25	10:00	25	25	25			·	
J AM	17.20	93	73	25	······································			
Jun 5-20		2 <	0 tr	0				·
25	8.00	25	25	25		,		•
,	1200	25	25	25				
25	4.00	32	25	25		•		
25	8: -= 2	25	25	75			-	
23/	12.00	25	25	25				
الحريكا								
. 32	8:00	25	25	25			•	
22	1200	25	25	25				
·	4:00	25	25	25				
	8,60	25	25	25				
·	12.00	25	25	25				
			20					

Vacuum at Pump: 27. Pup

vacuum conversion: (inches of water X 0.07355 = inches of mercury) 4 A MW-/H MW- 2H MW. 3A Stinger Placement Vacuum at Vacuum at' Vacuum at Targeted **Targeted** Targeted Stinger Product Water Well Well Weli Depth Depth Level **Notes** Time (in. Hg) (in. Hg) (in. Hg) 25 25 25. 8. w 25 25 1200 25 25 J.s-25 4.00 25 25 25 25 8.00 25 25 75 25 7:00 9.00 05. 25 25

Vacuum at Pump: 27 & Purp

Mark 5-18

PM

Time 9.00 Am	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Farenheit)	Relative Humidity (%)	Other
9.30	7.30	271.	. 1472	76.	52	•
D, 60	9 20	385	1485	84	52	
10.90	1042	424	1-191	52	<i>5</i> ,2	
11:00	1054	4.30	1517	101	52	•
. 1630	1064	435	1524	118	52	,
12.00	1071	441	1532	124	52	
1230	1074	445	1566	129.	. 52	
د ن ا	1098	445	1571	135	5,7	
1.30	11 34	. 440	1579	148	\$2	
9.00	11 42	441	1588	151	52.	
2.30	1157	44,2	1565	162	52	•
3.00	1178	442	1592	163	· . 52	
. 330	1191	445	1596	168	52.	· ·.
4.00	1205	448	1108.	175	5-1	
4.30	1226	451	1617	125	52	•
500	1741	458	1215	172	52	
570	1265	472	11-18	1.71	32	
6.00	1277	475	1221	. 169	5-2	
. 6 3.0	1292	481	1624	169	らな	
700	1234	455	1625.	167	52.	
130	1233	. 458	1629	153	· 5:3	
در ۶	1235	454	1626	,62	52	
8.70	1241	. 454	1628	150	5-2	
200	1238	449	1631	155	82.	
9.30	1232	4.43	1431	155	. 52	•

5-17	Time	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Farenheit)	Relative Humidity (%)	Other
	10.00	1735	4143	1237	153	52	
	10.3C	1232	442	1325	150	52	
	11.00	1229	442	1327	150	52	
	11.30	1230	442.	. 1829	150	52	
AM	1700	127	441	1831	148	52	•
7.M	8.00	1044	3 24	1864	145	30	•
	10 000	1054	322	1865	150	50	
PIH	1200	1543	318	1843	150	5 ()	
	200	1035	314	1869	152	. 50	
	400	1032	315	1875	152	50	
	600	1033	315	1883	152	51	
	800	1029	314	1851	150	50	•
	10 00	1025	31/	1875	145	56 .	
MAL	1200	1008	302	1892	148	Śŧ	:
<u>_</u>						,	•
91	800	765	243	1890	145	48	
	1000	763	243.	1892	155	48	•
	1700	744	2343	1891	157	45	
•	200	762	273	1893	155	48	
	400	754	a 39	1890	156	48	
	600	755	235	1892	154	45	
	800	751	239	1894	150	45	
	1000	752	239	1595	151	48.	
pin	1300	748	237	1894	1215	48	

1 Too in

Ther = 27

Time	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Farenheit)	Relative Humidity (%)	Other
8.00	562	124	PB 12	144	48	,
100	557	124	1810	.151	48	
1 <b>3</b> .00	555	1.22	1817	155	. 48	
200	538	120	1815	159	48	
9,00	535	.117	1814	158	48	
60	531	119	1815	158.	48	
8.60	532	119	18 18	156	48.	
20.00	526	115	1823	154	. ५५	
1700	521	115	1825	153	44.	• •
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800	364	12.	1871	148	78	· •
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124 5-7:

# $\frac{\text{APPENDIX B}}{\text{POLLUTANT MASS REMOVAL DATA SHEETS}}$

Site:

Tisdale's Quick Stop 18686

UST Permit #:

			Calculat	ions - Flow a	t DSCFM	<del></del>	•
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)
5/19/14	9:00						
5/19/14	9:30	1472	0.022	76	52	0.009974511	31.58
5/19/14	10:00	1486	0.022	84	52	0.013019908	: 31.32
5/19/14	10:30	1491	, 0.022	92	52	0.016870413	30.85
5/19/14	11:00	1517	0.022	106	52	0.026133831	30.32
5/19/14	11:30	1524	0.022	118	52	0.037520782	29.48
5/19/14	12:00	1532	0:022	124	52	0.044787453	29.11
5/19/14	12:30	1566	0.022	129	52	0.051824935	29.28
5/19/14	1:00	1571	0.022	136	52	0.063448928	28.68
5/19/14	1:30	1579	. 0.022	148	52	0.089453999	27.47
5/19/14	2:00	1588	0.022	151	52	0.097447063	27.25
5/19/14	2:30	1585	0.022	162	52	0.133487711	25.65
5/19/14	3:00	1592	0.022	163	52	0.137384967	25.61
5/19/14	3:30	1596	0.022	168	52	0.158763906	24.83
5/19/14	4:00	1608	0.022	175	. 52	0.194963540	23.68
5/19/14	4:30	1617	0.022	185	52	0.263910125	: 21.44
5/19/14	5:00	1615	0.022	172	52	0.178445224	24.39
5/19/14	6:00	1621	0.022	169	52	0.163452672	25.04
5/19/14	7:00	1625	0.022	167	52	0.154219767	25.46
5/19/14	8:00	1626	0:022	162	52	0.133487711	. 26.31
5/19/14	9:00	1631	0.022	155	52	0.109232833	·• 27.44
5/19/14	10:00	1826	0.022	153	52	0.103169901	31.03
5/19/14	11:00	1827	0.022	150	52	0.094706404	31.50
5/20/14	12:00	1831	0.022	148	52	0.089453999	31.85
5/20/14	8:00	1864	0.022	145	50	0.078555704	32.98
5/20/14	10:00	1865	0.022	150	50	0.090533667	32.30

	, .		•					
	5/20/14	12:00	1863	0.022	150	· 50	0.090533667	32.26
	5/20/14	2:00	1869	0.022	152	50	0.095816846	32.08
	5/20/14	4:00	1875	0.022	152	· 50	0.095816846	32.18
	5/20/14	6:00	1883	0.022	152	50	0.095816846	32.32
•	5/20/14	8:00	1881	0.022	150	50	0.090533667	32.58
	5/20/14	10:00	1885	0.022	148	50	0.085540302	32.93
	5/21/14	12:00	1892	0.022	148	50	0.085540302	33.06
	5/21/14	8:00	1890	0.022	. 145	48	0.075034416	33.57
	5/21/14	10:00	1892	0.022	155	48	0.099486357	32.18
	5/21/14	12:00	1891	0.022	157	48	0.105256777	31.85
	5/21/1.4	2:00	1893	0.022	158	48	0.108267821	31.73
	5/21/14	4:00	1890	0.022	156	48	0.102330526	31.99
	5/21/14	6:00	1892	0.022	154	48	0.096721671	32.33
•	5/21/14	8:00	1894	0.022	150	· 48	0.086409237	32.95
	5/21/14	10:00	1895	0.022	151	48	0.088880013	32.82
	5/22/14	12:00	1894	0.022	148	. 48	0.081669427	33.23
	5/22/14	8:00	1812	0.022	146	. 48	0.077185306	32.05
	5/22/14	10:00	1810	0.022	151	. 48	0.088880013	31.35
	5/22/14	12:00	1817	0.022	155	48	0.099486357	30.90
	5/22/14	2:00	· 1815	0.022	157	48	0.105256777	30.57
•	5/22/14	4:00	1816	0.022	158	48	0.108267821	30.44
	5/22/14	6:00	1815	0.022	158	48	0.108267821	.30.42
	5/22/14	8:00	1818	0.022	156	48	0.102330526	30.77
	5/22/14	10:00	1823	0.022	154	48	0.096721671	31.15
	5/23/14	12:00	1825	0.022	153	48	0.094033968	31.33
	5/23/14	8:00	1871	0.022	148	48	0.081669427	32.83
•	5/23/14	9:00		<del></del>	SHU	T DOWN		
	Averages		1746.20	0.022	148.04	50.16	0.097647144	30.132
				•		•		
			•					
• •				•		•		,

Site: Tisdale's Quick Stop UST Permit #: 18686

		Calcu	lations - Po	ollutant	Mass R	lemoval in p	ounds	•	
Marg. Elap.	Elapsed Time	Flow (DSCFM)	PPM measured	K (#C-	PPMg	Cg:m	Cg	PMRg	PMR
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)
0	0		• .					•	
30	30	31.58	730	1	730	3882.01	0.000242354	0.459	0.230
30	60	31.32	• 920	1	920	4892.40	0.000305432	0.574	0.287
30	90	30.85	1042	1_	1042	5541.17	0.000345935	0.640	0.320
. 30	120	30.32	1056	1	1056	5615.62	0.000350583	0.638	0.319
30	150	29.48	1064	1	1064	5658.16	0.000353239	0.625	0.312
30	180	29.11	1071	1	1071	5695.39	0.000355563	0.621	0.310
. 30	210	29.28	1074	1	1074	5711.34	0.000356559	0.626	0.313
30	. 240	· 28.68	.1098	. 1	1098	5838.97	0.000364527	0.627	0.314
30	270	27.47	1136	1	1136	6041.05	0.000377143	: 0.622	0.311
30	300	27.25	1142	1	1142	6072.95	0.000379135	0.620	0.310
30	330	25.65	1157	1	1157	6152.72	0.000384114	0.591	0.296
30	360	25.61	1178	1	1178	6264.40	0.000391086	0.601	0.300
30	390	24.83	• 1191	1_	1191	6333.53	0.000395402	0.589	0.295
30	420	23.68	1205	1	1205	6407.98	0.000400050	0.568	0.284
30	450	21.44	· 1226	1	1226	6519.65	0.000407022	0.523	0.262
30	480	24.39	1241	1	1241	6599.42	0.000412002	0.603	0.301
. 60	540	25.04	1277	1	1277	6790.86	0.000423953	0.637	0.637
60	600	25.46	1236	1	1236	6572.83	0.000410342	0.627	0.627
60	660	26.31	1235	1	1235 ·	6567.51	0.000410010	0.647	0.647
60	720	27.44	1238	1	1238	6583.46	0.000411006	0.677	0.677
60	. 780	· 31.03	1235	1	1235	6567.51	0.000410010	0.763	0.763
60	840	31.50	1229	1	1229	6535.60	0.000408018	: 0.771	0.771
60	900	31.85	1229	1	1229	6535.60	0.000408018	0.780	0.780
480	1380	32.98	1066	1	1066	5668.80	0.000353903	0.700	5.602

1054 1043 1035 1032 1033 1029 1025 1008 765 763 764 762 756	5604.99 5546.49 5503.95 5487.99 5493.31 5472.04 5450.77 5360.37 4068.13 4057.50 4062.82 4052.18 4020.27	0.000349919 0.000346267 0.000343611 0.000342615 0.000342947 0.000341619 0.000340291 0.000334648 0.000253974 0.000253310 0.000253642 0.000252978 0.000250986	0.678 0.670 0.661 0.665 0.668 0.672 0.664 0.511 0.489 0.485 0.482	1.356 1.341 1.323 1.323 1.330 1.335 1.345 1.327 4.092 0.978 0.970 0.963
1035 1032 1033 1029 1025 1008 765 763 764 762 756	5503.95 5487.99 5493.31 5472.04 5450.77 5360.37 4068.13 4057.50 4062.82 4052.18	0.000343611 0.000342615 0.000342947 0.000341619 0.000340291 0.000334648 0.000253974 0.000253310 0.000253642 0.000252978	0.661 0.665 0.668 0.672 0.664 0.511 0.489 0.485	1.323 1.323 1.330 1.335 1.345 1.327 4.092 0.978
1032 1033 1029 1025 1008 765 763 764 762	5487.99 5493.31 5472.04 5450.77 5360.37 4068.13 4057.50 4062.82 4052.18	0.000342615 0.000342947 0.000341619 0.000340291 0.000334648 0.000253974 0.000253310 0.000253642 0.000252978	0.661 0.665 0.668 0.672 0.664 0.511 0.489 0.485 0.482	1.323 1.330 1.335 1.345 1.327 4.092 0.978
1033 1029 1025 1008 765 763 764 762 756	5493.31 5472.04 5450.77 5360.37 4068.13 4057.50 4062.82 4052.18	0.000342947 0.000341619 0.000340291 0.000334648 0.000253974 0.000253310 0.000253642 0.000252978	0.665 0.668 0.672 0.664 0.511 0.489 0.485 0.482	1.330 1.335 1.345 1.327 4.092 0.978
1029 1025 1008 765 763 764 762 756	5472.04 5450.77 5360.37 4068.13 4057.50 4062.82 4052.18	0.000341619 0.000340291 0.000334648 0.000253974 0.000253310 0.000253642 0.000252978	0.668 0.672 0.664 0.511 0.489 0.485 0.482	1.335 1.345 1.327 4.092 0.978 0.970
1025 1008 765 763 764 762 756	5450.77 5360.37 4068.13 4057.50 4062.82 4052.18	0.000340291 0.000334648 0.000253974 0.000253310 0.000253642 0.000252978	0.672 0.664 0.511 0.489 0.485 0.482	1.345 1.327 4.092 0.978 0.970
1008 765 763 764 762 756	5360.37 4068.13 4057.50 4062.82 4052.18	0.000334648 0.000253974 0.000253310 0.000253642 0.000252978	0.664 0.511 0.489 0.485 0.482	1.327 4.092 0.978 0.970
765 763 764 762 756	4068.13 4057.50 4062.82 4052.18	0.000253974 0.000253310 0.000253642 0.000252978	0.511 0.489 0.485 0.482	4.092 0.978 0.970
763 764 762 756	4057.50 4062.82 4052.18	0.000253310 0.000253642 0.000252978	0.489 0.485 0.482	0.978
764 762 756	4062.82 · 4052.18	0.000253642 0.000252978	0.485	0.970
762 756	4052.18	0.000252978	0.482	
756				0.963
	4020.27	0.000250986	1	
755			. 0.482	0.964
	4014.96	0.000250654	0.486	0.972
751	3993.69	0.000249326	0.493	0.986
752	3999.00	0.000249658	0.492	0.983
748	3977.73	0.000248330	0.495	0.990
562	2988.62	0.000186579	0.359	2.871
557	2962.03	0.000184919	0.348	0.696
555	2951.39	0.000184255	0.342	0.683
538	2860.99	0.000178612	0.328	0.655
535	2845.04	0:000177616	0.324	0.649
531-	2823.76	0.000176288	0.322	0.644
532	2829.08	0.000176620	0.326	0.652
526	· 2797.17	0.000174628	0.326	0.653
521	- 2770.59	0.000172968	. 0.325	0.650
366	1946.32	0.000121509		1.915
		•		1
		0.000309690	0.551	0.939
	748 562 557 555 538 531 532 526 521 366	748 3977.73 562 2988.62 557 2962.03 555 2951.39 538 2860.99 535 2845.04 531 2823.76 532 2829.08 526 2797.17 521 2770.59 366 1946.32 SHUT DOWN	748 3977.73 0.000248330 562 2988.62 0.000186579 557 2962.03 0.000184919 555 2951.39 0.000184255 538 2860.99 0.000178612 535 2845.04 0.000177616 531 2823.76 0.000176288 532 2829.08 0.000176620 526 2797.17 0.000174628 521 2770.59 0.000172968 366 1946.32 0.000121509 SHUT DOWN	748 3977.73 0.000248330 0.495 562 2988.62 0.000186579 0.359 557 2962.03 0.000184919 0.348 555 2951.39 0.000184255 0.342 538 2860.99 0.000178612 0.328 535 2845.04 0.000177616 0.324 531 2823.76 0.000176288 0.322 532 2829.08 0.000176620 0.326 526 2797.17 0.000174628 0.326 521 2770.59 0.000172968 .0.325 366 1946.32 0.000121509 0.239 SHUT DOWN

Total Emission in pounds:

#### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K Cg:m = PPMg \* (Mg/K3) Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3 PMRg = Cg \* Qstd \* 60 min/hr PMR = PMRg \* ((T2-T1)/60)

Qstd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer) Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

 $K3 = 24.07 \text{ dsm}^3/1E6 \text{ mg-mole}$ , mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

V V	NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA	ID No		Manifest Document No		2 Face 1 of
3. Gene	rator's Name and Mailing Address  Address  Address	R Step	Kingatra So				
	erator's Phone ( )				E		
5. Trans	sperter 1 Company Name		6 US EPA ID Numbe	75	A State Trans	parter s ID	
<i></i>	JERR INC				B Transporter	1 Phone	
7. Trans	sporter 2 Company Name		B US EPA ID Numbe	Đị.	C. State Trans		
D. Door	gnated Facility Name and Site Address		. 10 JS EPA ID Numb	B'	D. Transporter E. State Facial		
#, Dessign	WS 303 17	routed St		-			
u;	Spelielle				F. Facility's Ph	-640	
	STE DESCRIPTION			No	Type	13 Total Quantity	14 Unit Wt A
a. /	ION-HOZ Petr	oleum Con	terf water Min	/	TT	7000	9.6
G <sup>b</sup> E							
E R   °							
A   T							
O R d			**************************************			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
C Add	Itional Descriptions for Materials Listed /	6 h maa			H Handime C	odes for Wastes Listed Above	
16 GE	ecial Handling Instructions and Additional Additional Section (1997) (19	v centily that the contents of the	his shipmonl are fully and accurate	ly described and are not see that the second are the second and are the second ar	n all respects		
16. GE		v centily that the contents of the	his shipmont are fully and accurate it are not subject to leperal hazard:	ily described and are in ous waste regulations	n all respects		Date
16. GE in p	ENERATOR'S CERTIFICATION: I herob proper condition for transport. The mater	v centily that the contents of the	his shipment are fully and accurate it are not subject to federal hazard:	ily described and are rous waste regulations	n all respects	Idoni 5	
Pripred	ENERATOR'S CERTIFICATION: I heroboroper condition for transport. The material transport of the material transport of the material transporter 1. Acknowledgement of Receipt	y certify that the contents of the last described on this manness	st are not subject to federal hazard:	ily described and are in ous waste regulations	n all respects		h Day
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Proposed  Proposed  T R Printed  Printed  Printed  F A C C	ENERATOR'S CERTIFICATION: I heroboroper condition for transport. The mater of the material of the mater of the material	y certify that the contents of thats described on this mannes	Signature Signature Signature Signature	Dus waste regulations	all respects	Litorii 5	Day Dale Day Dale



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	NON-HAZARDOUS WASTE MANIFEST  1 Generator's US EPA I	cN G		Manifest Document No		2 Page 1 ol
	Commence Manager and Holling Address of					
	Jisedak Queh St 4 Generator's Phone ( )	5/				
	4 Generator's Phone ( ) Kuruwe	<i>)</i>				
		6 US EPA IC Number		A State Transp	oners ID	
	TERRIDE	8 US EPA ID Number		B Transporter 1		
1	7 Transporter 2 Company Name	8 US EPA ID Number	ŀ	C State Transp  D Transporter 2		
	Designated Facility Name and Site Address	10, US EPA ID Number		E State Facility		
1	9. Dosignated Facility Name and Site Address  CWS 303 Moulthy & Whitevelle MC	+				
	LILY OR NIC			F. Facility's Pho	ne	
2	11. WASTE DESCRIPTION		12 Coi	tainers Type	13 Total Quantity	14 Unit Wt Vol
	" NON-HOS Petrolein Con	tent 12 letter ste	1			
	NOTV-1702 PERDELINE CON			77	7000	1900
GE	b					
N						
ER	С					
Α						
T						
цR	d					
S F						
M M	G Additional Descriptions for Materials Listed Above		<u> </u>	H Handling Co	des for Wastes Listed Abov	e e
چ آ						
N-HAZARDOUS						
F						
Ž I	15 Special Handling Instructions and Additional Information					
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						2007 ET
	16. GENERATOR'S CERTIFICATION: I hereby contry that the contents of the	is shipment are fully and accurately describ	bed and are in	al respects		
	in proper condition for transport. The materials described on this manifest	are not subject to federal hazardous wast	e regulations			
		11	60			Dat∈
	Printed Translation B. Zenbrit	Signature	Ker	be	Mon	
			V		5	10/11
TR	17 Transporter 1 Advisorable operant of Receipt of Materials  Printed Typed Name  ### Common	Signature	<del>``</del>			Date
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PO	18. Transporter 2 Acknowledcement of Receipt of Materials					Date
PT E	Printed Types Name	Signature			Man	th Day Ye
Ä						
F	19 Discrepancy Indication Space					
A						
ij	20 Facility Owner or Operator, Certification of receipt of the waste materials of	covered by this manifest, except as noted in	in item 19			
11						
ī						Date
I T Y	Printed Typed Marye	Signature	7	Cy	Mon	

Pleaso	NON-HAZARDOOS	E US EPA ID No.		Manifest Document No		2. Page 1
	WASTE MANIFEST  3 Generalpr's Name and Mailing Address , 3-1					
	3 Generator's Name and Mailing Address  Justicele Quick  4 Generator's Phone ( )  5. Transponer 1 Company Name  TERR INC					
	Mug. Lpre	« 5 C				
2	4 Generator's Phone ( )					
	5. Transporter 1 Company Name	6 US EPA ID Number		A State Transp	· · · · · · · · · · · · · · · · · · ·	
	······································		<u></u>	B. Transporter		
	7. Transporter 2 Company Name	6 US EPA iD Number		C State Transp		
	D. C. and Fragis, No. 2, and Este 2 delegan	10 US EPA ID Number		D Transporter  E. Starc Faculty		
	9 Designated Facility Name and Site Address	54		C. Start Facility	· \$ (2)	
	[ C 3 3 3 3 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3,		F Facility's Pho	one	
	CWS 303 Mautisby White ville NC	1				
	11, WASTE DESCRIPTION		12 C	ontainers	13. Tctal	14 Unit
			No.	Type	Quantity	Wt.Va
	2 NON-HEZ Petroleiun	n Water Mig	#	亓	7500	900
GEZ	b.					
E R	c.					
A T						
O R	d					
:						
1 1	15 Special Handling Instructions and Additional Information					
	16. GENERATOR'S CERTIFICATION: I hereby certify that the con in proper condition for transport. The materials described on this	ntents of this shipment are fully and accurately is manifest are not subject to federal hazardou	described and are is waste regulations	n all respects		3
						Date
	Printed Typed Name	Signature & L	0	1	h:	lontn Day Ye
έ.	Steve NiveybAr	1 1	1/	with	٤	572419
Ţ	17 Transporter 1 Acknowledgement of Flederpt of Materials		1			Date
<b>ピタヹのひのだト</b>	Printed Types Name	Signatury	11 /1	7	i.	lonth Day Ye
S	TURK Gore	Mat		<u> </u>		5 22 1
00	18 Transporter 2 Acknowledgement of Receipt of Materials	*				Date
HE	Printed Typed Name	Signature			ħ	Ionth Day Ye
FA	19 Discrepancy Indication Space				<u></u> 1,	
C	00 5 77 0	materials as exactly, the secondary secondary	noted in it 40			
L	20. Facility Owner or Operator; Certification of receipt of the waste	materials covered by this manifest, except as	HORD IN HEIR 19		Г	Date
1	Printed/Typed Name	Signature				tonin Day Ye
Y	1/44Ai CGL	Signature 1	29-	- P.		5   22  /
	10 1710 017		- /-		7	<u> </u>



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	NON-HAZARDOUS 1 Generator's WASTE MANIFEST	US EPA ID No	Manifest Document No		2 Page 1 of
	3 Gonerators Name and Mailing Address Tusclove G	to the			
	,				
	4 Generator's Phone ( )				
4	5. Transporter 1 Corpoany Name	6 US EPA ID Number	A. State Trans	porters ID	
	TENI I		B. Transporte		
ŀ	7 Transporter 2 Company Name	8 US EPA ID Number	C State Trans	·	
		122 55 6 12 4	D Transporte		
	Designated Facility Name and Site Address	10 US EPA ID Number	E State Facili	ly s ID	
	Mus 303 Maultel		F. Facility's P	boog	
1	CWS 303 Maultery Withten N.C.	1	r. racinty s r	ione	
	11 WASTE DESCRIPTION		12 Contamers	13.	14.
			Na Type	Total Ouantity	Unit WL/Vol,
	· NON- HUZ PHOLOGIUM	" Confact Water Min			
	10 510 27 =			7000	90C
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	16. GENERATOR'S CERTIFICATION: I hereby certify that the cont in proper condition for transport. The materials described on this	tents of this shipment are fully and accurately describ manifest are not subject to federal hazardous waste	ed and are in all respects regulations		
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	20. Facility Owner or Operator, Certification of receipt of the waste n	materials covered by this manifest, except as noted in	n ítem 19.		
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	WASTE MANIFEST		Document	40	2,
		DALE'S QUICK STOP			
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	4 Generator's Phone ( )	IN CSTREET SC 6 US EPA ID Number	13 (19)		
				ansponer's ID	
	HERR, Inc.	NCR-000135	₹i6 B Transpo		(40-2607
4	7 Transporter 2 Company Name	5. US EPA ID Number		ansperier's ID	
	9 Designated Facility Name and Site Address	10 US EPA ID Number	E State Fr	etter 2 Phone	
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	11. WASTE DESCRIPTION		12 Containers No Type	13. Total Quantity	Unit Wt.V'ot
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## Catherine B. Templeton, Director Promoting and protecting the health of the public and the environment

MR MARTY EASLER 196 RICHBURG ROAD GREELEYVILLE SC 29056

JUN 1 8 2014

Re: Site Specific Work Plan Request

Tisdales Quick Stop, 1989 Thurgood Marshall Blvd, Kingstree, SC UST Permit # 18686
Release reported March 30, 2001
AFVR Report received June 12, 2014
Williamsburg County



Dear Mr. Easler:

The Underground Storage Tank (UST) Management Division (Division) of the South Carolina Department of Health and Environmental Control (Agency) recognizes your commitment to continue work at this site using Geological Resources, Inc., as your contractor. The next scope of work is a groundwater sampling event as outlined in Revision 2.0 of the UST Quality Assurance Program Plan (QAPP). Please have your contractor plan to conduct a comprehensive groundwater sampling of all monitoring wells located at the site. Samples should be analyzed for BTEX, Naphthalene, Oxygenates, 1,2-DCA, MTBE, and EDB, in accordance with QAPP Rev. 2.0, and in compliance with all applicable regulations. A copy of the QAPP is available at http://www.scdhec.gov/environment/qapp\_rev-2\_april2013.pdf.

Please have your contractor complete and submit the Site Specific Work Plan and Cost Agreement within thirty (30) days of the date of this letter. The Site Specific Work Plan form can be found at <a href="http://www.dhec.sc.gov/library/D-0653.pdf">http://www.dhec.sc.gov/library/D-0653.pdf</a>. 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 the Agency must be issued before work begins.

On all correspondence concerning this site, please reference UST Permit # 18686. If there are any questions, feel free to contact me by telephone at (803) 898-0605, by fax at (803) 898-0673, or by e-mail at martinjm@dhec.sc.gov.

Sincerely,

Jim Martin, Hydrogeologist Corrective Action Section

Underground Storage Tank Management Division

Bureau of Land and Waste Management

cc: Geological Resources, Inc., 2301 Crown Point Executive Drive, Suite F, Charlotte, NC 28227 Technical File





June 25, 2014

Mr. Jim Martin
South Carolina Department of Health
And Environmental Control
Underground Storage Tank Management Division
Bureau of Land and Waste Management
2600 Bull Street
Columbia, South Carolina 29201

Re: GRI Proposal No. 14-382

Site Specific Work Plan Tisdale's Quick Stop

1989 Thurgood Marshall Blvd Kingstree, Williamsburg County

UST Permit No. 18686

Dear Mr. Martin:

Attached is a Site Specific Work Plan for approved ACQAP and the associated Assessment Component Cost Agreement for the above referenced site in Kingstree, Williamsburg County, South Carolina.

Please contact me at (704) 845-4010 or by e-mail at <a href="wsb@geologicalresourcesinc.com">wsb@geologicalresourcesinc.com</a> if you have questions or comments concerning this matter.

Sincerely,

W. Scott Ball Senior Project Manager

**Enclosures** 

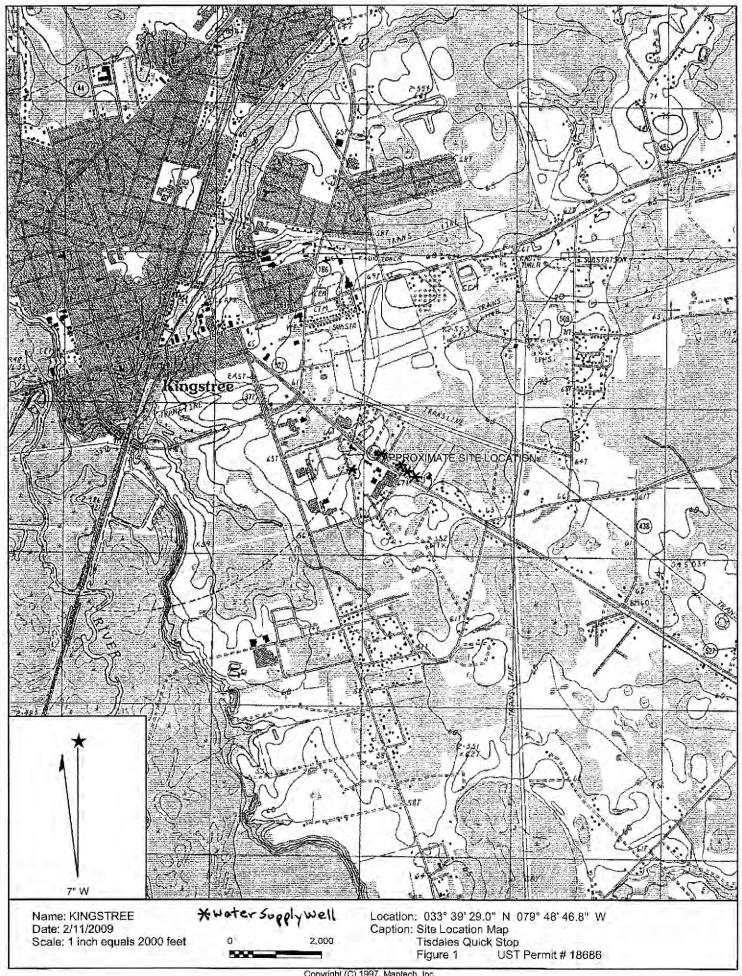
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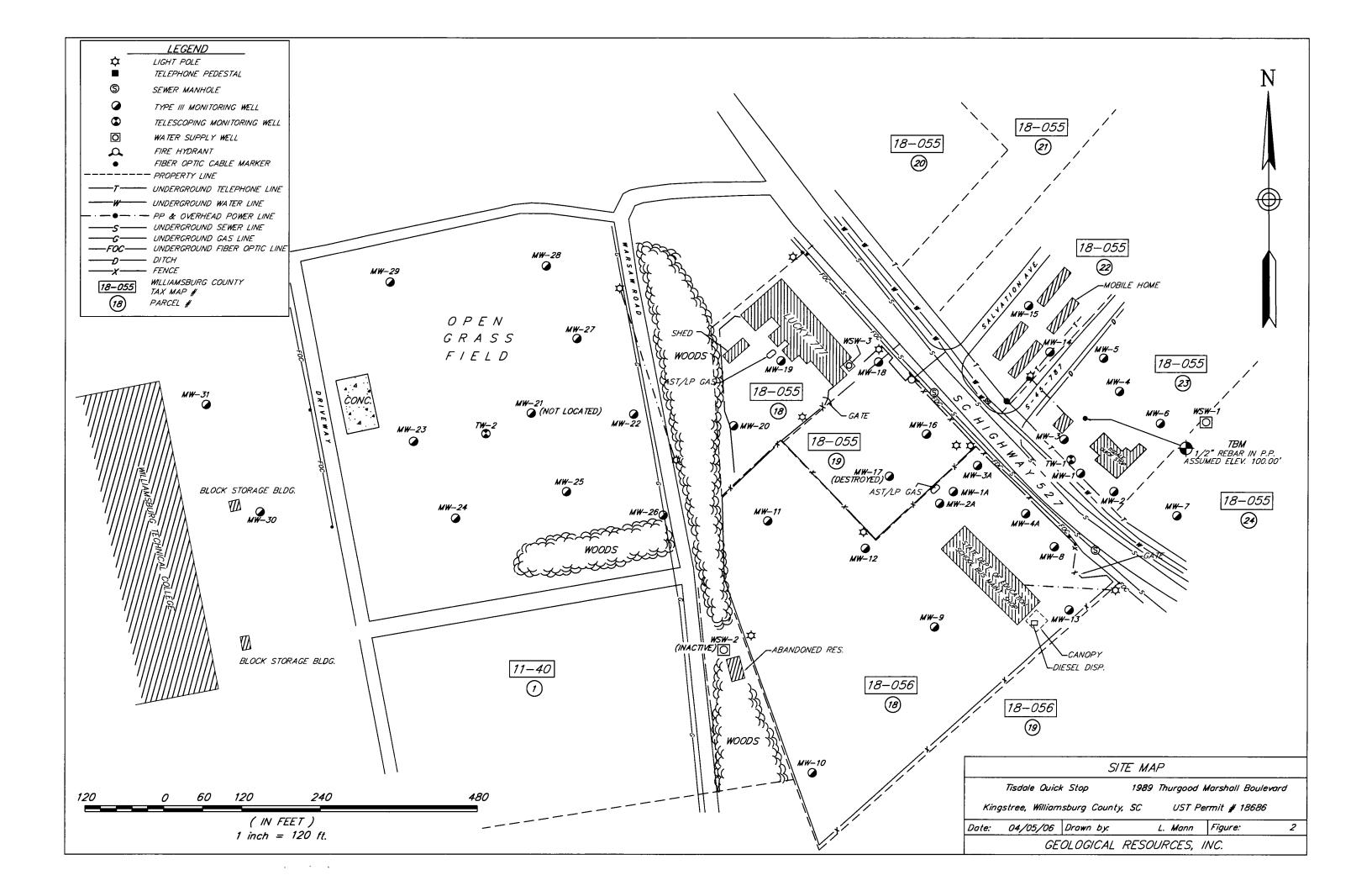


# Site-Specific Work Plan for Approved ACQAP Underground Storage Tank Management Division

To: Jim Martin (SCDHEC Project Manag						
From: Scott Ball (Contractor Project Manager)  Contractor: Geological Resources, Inc.  UST Contractor Certification Number: 74						
		- Contractor Certificati				
Facility Name: Tisdale's Quick Facility Address: 1989 Thurgo	od Marshall Blvd. Kingstre	ee. Williamsburg County, SC	UST Permit #: <u>*</u>	10000		
Responsible Party: Mr. Marty I			(0.40) 4	26-2557		
RP Address: 196 Richburg Roa	d, Greeleyville, SC 29056	3				
Property Owner (if different):	Andy McKnight					
Property Owner Address: 316	McCullough Loop,Kingstr	ree, SC				
Current Use of Property: Con	nmercial - Restaurant					
Scope of Work (Please ched	ck all that apply)					
□ IGWA □ Ti	er II	☑ Groundw	ater Sampling	☐ GAC		
□ Tier I □ M	onitoring Well Installation	on 🗆 Other		MA BANKS		
Analyses (Please check all t	hat apply)					
Groundwater/Surface Water:						
☑ BTEXNMDCA (8260B)	☐ Lead	☐ BOD		☐ Methane		
Oxygenates (8260B)	□ 8 RCRA Metals	☐ Nitrate		☐ Ethanol		
☑ EDB (8011)		☐ Sulfate		□ Dissolved Iron		
☐ PAH (8270D)	□ рН	☐ Other				
Soil:		<b>5 T</b> 011 <b>D</b> 0	o (0550D/0045D)	П. Очейа Оіна		
□ BTEXN	☐ 8 RCRA Metals		O (3550B/8015B)	☐ Grain Size		
□ PAH	☐ Oil & Grease (90	71) LI IPH-GR	O (5030B/8015B)	□ TOC		
Air:						
□ BTEXN						
Sample Collection (Estimate				llected.) 1 Field Blank		
Soil  36 Monitoring Wells	<del></del>		Air Duplicate	1 Trip Blank		
36 Monitoring Wells	Sulla	ice vvalei	Duplicate	TIP DIATIK		
Field Screening Methodology						
Estimate number and total co		point, and include their p	proposed locations	on the attached map.		
# of shallow points proposed:						
# of deep points proposed:		Estimated Footag	e:	feet per point		
Field Screening Methodology						
Permanent Monitoring Wells						
Estimate number and total co		well, and include their p	roposed locations	on the attached map.		
# of shallow wells: NA		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 wit	h SOP):				
Comments, if warranted:						
•						
			*****			

UST Permit #: 18686 Facility Na	me: Tisdale's Quick Stop				
Implementation Schedule (Number of calendar Field Work Start-Up: 5 days from approval Report Submittal: 45 days from approval	days from approval)  Field Work Completion: 8 days from approval  # of Copies Provided to Property Owners: 1				
Aquifer Characterization  Pump Test: □ Slug Test: □ (Check one and provide explanation below for choice)  NA					
Investigation Derived Waste Disposal Soil:Tons	Purge Water: 100 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.  Sample monitoring wells MW-1 through MW16, MW-18 through MW-31, MW-1A through MW-4A, TW-1 and TW-2.  Sample water supply wells WSW-1 and WSW-3. If any of the monitoring wells contain free product they will only be gauged and no samples will be collected. All ground water samples collected will be submitted for analyses of BTEX, MTBE, naphthalene, 1, 2-DCA and 8 oxygenates by Method 8260 and EDB by Method 8011.					
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:  NAM Well Driller as indicated in ACQAO? (Yes/No) If no, indicate driller information below.  Name of Well Driller:  SCLLR Certification Number:  NA Other variations from ACQAP. Please describe below.					
Prepare a site base map. This map must must include the following:     North Arrow     Location of property lines     Location of buildings     Previous soil sampling locations	e USGS topographic map showing the site location.  be accurately scaled, but does not need to be surveyed. The map osed monitoring well locations nd with facility name and address, UST permit number, and bar scale ts or highways (indicate names and numbers) tion of all present and former ASTs and USTs tion of all potential receptors				







### ASSESSMENT COMPONENT INVOICE **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: Tisdale's Quick Stop

GRI Proposal #14-382

UST Permit #: 18686	Cost Ar	reement #:		GRI Proposal #14-382
10000	Oost At	ji odilidili m.		
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 Apper	ndix 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		each	\$1,020.00	\$0.00
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, pu	ish technol	ogy, etc)* or		
Field Screening (including water sam	ple, soil sar	nple, 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 diamet	er)	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	Ì	per foot	\$33.40	\$0.00
HH. Recovery Well (4" diameter)		per foot	\$45.00	\$0.00
II. Pushed Pre-packed screen (1.25" o	lia)	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 / Ga	auge Depth	to Water or Pi		
A1. Groundwater Purge	2	per well/receptor	'	\$120.00
B1. Air or Vapors		per receptor	\$12.00	\$0.00
C1. Water Supply	2	per well/receptor	\$22.00	\$44.00
D1. Groundwater (No Purge or Duplicat	36	per well/receptor	· ·	\$1,008.00
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	1	each	\$24.60	\$24.60

111. Laboratory Analyses-Groundwater		1	I	1
A2. BTEXNM+Oxyg's+1,2 DCA+Eth(82	42	per sample	\$122.00	\$5,124.00
AA1. Lead, Filtered		per sample	\$13.80	\$0.00
B2. Rush EPA Method 8260B (All of iten	n A.)	per sample	\$153.60	\$0.00
C2. Trimethal, Butyl, and Isopropyl Benz	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	41	per sample	\$45.20	\$1,853.20
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		por campio	<b>411100</b>	<b>¥</b> 0.00
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		por campio	Ψ00.00	ΨΟ.ΟΟ
Y1. BTEX + Naphthalene		per sample	\$216.00	\$0.00
11. Analyses-Free Phase Product		por campio	Ψ210.00	ΨΟ.ΟΟ
Z1. Hydrocarbon Fuel Identification		per sample	\$357.00	\$0.00
12. Aquifer Characterization		por sample	ΨΟΟ1.00	ΨΟ.ΟΟ
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 Tes	f*	each	\$38.00	\$0.00
14. Fate/Transport Modeling	•	Cuon	Ψ00.00	Ψ0.00
A1. Mathematical Model		each	\$100.00	\$0.00
B1. Computer Model		each	\$100.00	\$0.00
15. Risk Evaluation		Guon	Ψ100.00	ΨΟ.ΟΟ
A. Tier I Risk Evaluation		each	\$300.00	\$0.00
B1. Tier II Risk Evaluation		each	\$100.00	\$0.00
16. A1. Subsequent Survey*		each	\$260.00	\$0.00
17. Disposal (gallons or tons)*		Caon	Ψ200.00	ψ0.00
AA. Wastewater	100	gallon	\$0.56	\$56.00
BB. Free Product	100	gallon	\$0.50	\$0.00
C1. Soil Treatment/Disposal		ton	\$60.00	\$0.00
D1. Drilling fluids		gallon	\$0.42	\$0.00
18. Miscellaneous (attach receipts)		gallon	Ψ0.42	Ψυ.ου
(attaon roosipto)		each	\$0.00	\$0.00
		each	\$0.00	\$0.00
		each	\$0.00	\$0.00
20. Tier I Assessment (Use DHEC 3665 fo	orm)	standard	Ψ0.00	\$0.00
21. IGWA (Use DHEC 3666 for		standard		\$0.00
22. Corrective Action (Use DHEC 3667 to		PFP Bid		\$0.00
	,	5,0		Ψ0.00

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 syste	m installation	& service:	1	
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
II. 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 Coordination   12%	percent	\$9,225.80		\$1,107.10
TOTAL				\$10,332.90

<sup>\*</sup>The appropriate mobilization cost can be added to complete these tasks, as necessary. DHEC



Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment



MR MARTY EASLER 196 RICHBURG ROAD GREELEYVILLE SC 29056

JUL 3 0 2014

Re: Groundwater Sampling Directive

Tisdales Quick Stop, 1989 Thurgood Marshall Blvd, Kingstree, SC

UST Permit # 18686; CA# 48442 Release reported March 30, 2001 SSWP received June 27, 2014

Williamsburg County

Dear Mr. Easler:

The Underground Storage Tank Management Division (UST Division) of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced Site Specific Work Plan submitted on your behalf by Geological Resources, Inc. The previous assessment work for this release indicates that petroleum Chemicals of Concern (CoC) are present in the groundwater at concentrations that exceed risk-based screening levels (RBSLs). In order to obtain current groundwater quality data, a comprehensive groundwater sampling event is necessary. All work should be conducted in accordance with the UST Quality Assurance Program Plan, revision 2.0, (QAPP) and must be conducted in compliance with all applicable regulations. A copy of the Agency QAPP for the UST Management Division is available at http://www.scdhec.gov/environment/QAPP\_Rev-2\_April2013.pdf

Groundwater sampling activities at the site should begin immediately upon receipt of this letter. Cost Agreement #48442 has been approved for the amount shown on the enclosed cost agreement form for the sampling of all monitoring wells associated with the release. Groundwater samples should be collected and analyzed for BTEX, Naphthalene, MtBE, 1,2-DCA, Oxygenates, Ethanol and EDB. Analyses should be in accordance with Appendix E of the QAPP and shall include a duplicate sample, field blank, and trip blank.

The monitoring report, contractor checklist from Appendix K of the QAPP, and invoice are due within 60 days from the date of this letter. The report submitted at the completion of these activities should include the required information outlined in the QAPP. 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.

Geological Resources, Inc., can submit an invoice for direct payment from the State Underground Petroleum Environmental Response Bank (SUPERB) Account for pre-approved costs. By law, the SUPERB Account cannot compensate any costs that are not pre-approved. Please note that applicable South Carolina certification requirements regarding laboratory services and report preparation must be satisfied. If the invoice is 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 from the UST Division is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the UST Division for the cost to be paid. The Agency 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, the Agency 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.

Please note, if unnecessary dilutions are completed resulting in reporting limits of individual CoC in excess of RBSL, the data cannot be used. In those cases, the UST Division may deny payment for any non-detect analysis where the reporting limit exceeds the RBSL. The UST Division encourages the use of 'J' values as necessary so the appropriate action can be determined for a release.

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 CoC concentrations based on laboratory analysis are below 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 #18686 and Cost Agreement #48442**. If you have any questions regarding this correspondence, please contact me by telephone at (803) 898-0605, by fax at (803) 898-0673, or by e-mail to <a href="mailto:martinjm@dhec.sc.gov">martinjm@dhec.sc.gov</a>.

Sincerely,

Jim Martin, Hydrogeologist Corrective Action Section

Underground Storage Tank Management Division

Bureau of Land and Waste Management

enc: Approved Cost Agreement

cc: Geological Resources, Inc., 3502 Hayes Rd., Monroe, NC 28110 (w/enc.)

Technical File (w/ enc.)

## Approved Cost Agreement 48442

Facility 18686 TISDALES QUICK STOP

MARTINJM

PO Number:

Task / Description Categories	Item Description	Qty / Pct	<b>Unit Price</b>	<u>Amount</u>
01 PLAN				
	A1 SITE SPECIFIC WORK PLAN	1.0000	150.00	150.00
04 MOB/DEMOB				
	B1 PERSONNEL	2.0000	423.00	846.00
10 SAMPLE COLLECTION				
	A1 GROUNDWATER (PURGE)	2.0000	60.00	120.00
	C1 WATER SUPPLY	2.0000	22.00	44.00
	D1 GROUNDWATER NO PURGE/DUPLICATE	36.0000	28.00	1,008.00
	H1 FIELD BLANK	1.0000	24.60	24.60
11 ANALYSES				
GW GROUNDWATER	A2 BTEXNM+OXYGS+1,2-DCA+ETH-8260B	42.0000	122.00	5,124 00
	F1 EDB BY 8011	41.0000	45 20	1,853.20
17 DISPOSAL				
	AA WASTEWATER	100.0000	0.56	56.00
19 RPT/PROJECT MNGT & COORDINATIO			<del></del>	
	PRT REPORT PREPARATION	0 1200	9,225.80	1,107 10
		Total Amo	unt	10,332.90

July 28, 2014 Page 1 of 1 suprcait.rdf Rev: 1.15



## Catherine B Templeton, Director Promoting and protecting the health of the public and the environment

MR MARTY EASLER 196 RICHBURG ROAD GREELEYVILLE SC 29056

DET 0 1 2014



Re: **AFVR Directive** 

Tisdales Quick Stop, 1989 Thurgood Marshall Blvd, Kingstree, SC

UST Permit # 18686; CA#48925 Release reported March 30, 2001

Monitoring Report received September 26, 2014

Williamsburg County

Dear Mr. Easler:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) recognizes your commitment to continue work at this site utilizing Geological Resources, 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 may commence as outlined in the UST Quality Assurance Program Plan (QAPP) Revision 2.0. Please be aware that the AFVR Procedures have been updated. Please connect to MW-1a, MW-2a, MW-3a & MW-4a for the duration of the event. The stingers shall be lowered at six inch intervals starting at the water table interface to a maximum depth of 26 feet in the wells. A copy of Agency QAPP Version 2.0 for the Underground Storage Tank Division is available at http://www.dhec.sc.gov/environment/docs/qapp rev-2 april2013.pdf.

As soon as the beginning date of the event has been scheduled, please contact Jim Martin at martinjm@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 #48925 has been approved in the amount shown on the enclosed cost agreement. Geological Resources, 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 the Agency for the cost to be paid. The Agency 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, the Agency 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.

The Agency 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 #18686 and CA #48925. If you have any questions, please contact me at (803) 898-0605 or by e-mail at martinjm@dhec.sc.gov.

Sincerely,

Jim Martin, Hydrogeologist Corrective Action Section

Underground Storage Tank Management Division

Bureau of Land and Waste Management

enc: Approved Cost Agreement

cc: Technical File (with enclosure)

Geological Resources, Inc., 3502 Hayes Rd., Monroe, NC 28110 (with enclosure)

## Approved Cost Agreement 48925

Facility 18686 TISDALES QUICK STOP MARTINJM PO Number

Task / Description Categories	Item Description	Qty / Pct	Unit Price	<u>Amount</u>
19 RPT/PROJECT MNGT & COORDINATIO				
	PRT REPORT PREPARATION	0 1200	22,742 25	2,729 07
23 EFR		= = =		
	A4 96 HOUR EVENT	1 0000	12,567 50	12,567 50
	C4 OFF GAS TREATMENT 96 HOUR	1 0000	780 00	780 00
	D SITE RECONNAISSANCE	1 0000	203 25	203 25
	F1 EFFLUENT DISPOSAL	20,000 0000	0 44	8,800 00
	G AFVR EQUIPMENT MOB	1 0000	391 50	391 50
		Total Amou	unt	25,471 32

September 30, 2014 Page 1 of 1 suprcait.rdf Rev: 1.15





November 21, 2014

Mr. Jim Martin, Hydrogeologist South Carolina Department of Health and Environmental Control 2600 Bull Street Columbia, South Carolina 29201-1708

Re:

AFVR Report

Tisdales Quick Stop 1989 Thurgood Marshall Blvd. Kingstree, Williamsburg County

UST Permit #: 18686

CA #: 48925

GRI Project No. 1543

#### Dear Mr. Martin:

This report presents the results of the aggressive fluid-vapor recovery (AFVR) event conducted in October 2014 at the above referenced site. The activities were conducted in accordance with the requirements outlined in correspondence from the SCDHEC dated October 1, 2014 and addressed to Mr. Marty Easler. The purpose of the activities was to remove residual free-phase product and reduce dissolved phase contaminant concentrations in monitoring wells MW-1A, MW-2A, MW-3A and MW-4A. The following Figures, Tables and Appendix have been included:

Figure 1:

Site Location Map

Figure 2:

Site Map

Table 1:

AFVR Event Chronology - October 13-17, 2014

Table 2:

Summary of Monitoring Well Gauging Data

Appendix A:

AFVR Report, Calculations, Disposal Manifests

Tisdales Quick Stop AFVR Report UST Permit # 18686

The AFVR contractor, Hazmat Emergency Response and Remediation, Inc. (HERR), arrived on-site on October 13, 2014 for the AFVR event. The event was conducted on monitoring wells MW-1A, MW-2A, MW-3A and MW-4A. General weather conditions were overcast with an ambient air temperature of approximately 74°F at the time of system start-up. No free product was measured in any of the wells prior to system startup. AFVR activities were conducted for ninety-six (96) hours on MW-1A, MW-2A, MW-3A and MW-4A using a vacuum truck with a maximum vacuum rating of 25 in. Hg and a capacity of 325 cubic feet per minute. During the course of the event, the vacuum at the wells remained steady at 20 in. Hg. Please note that the vacuum truck was equipped with an activated charcoal filter for off-gas treatment of vapor phase hydrocarbons. A total of 20,630 gallons of liquid were removed during the event. However, there was no measureable amount of liquid phase free product noted in the tanker. No measurable free product was present in any of the vacuum wells (MW-1A, MW-2A, MW-3A and MW-4A) at the conclusion of the event. Based on data collected during the AFVR event, an estimated total of 19.388 pounds (approximately 3.10 gallons) of vapor phase hydrocarbons were calculated to have been removed during the event.

If you have any comments or questions concerning this project, please do not hesitate to contact the undersigned at (704) 845-4010.

Sincerely

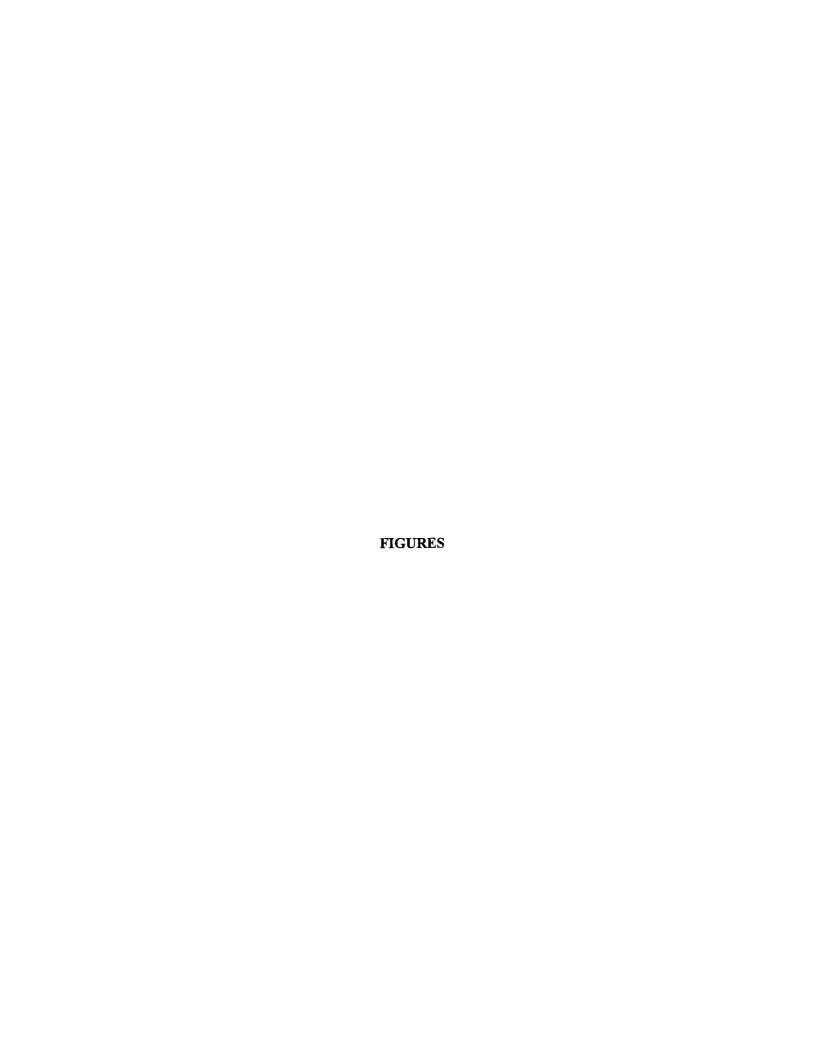
W. Scott Ball

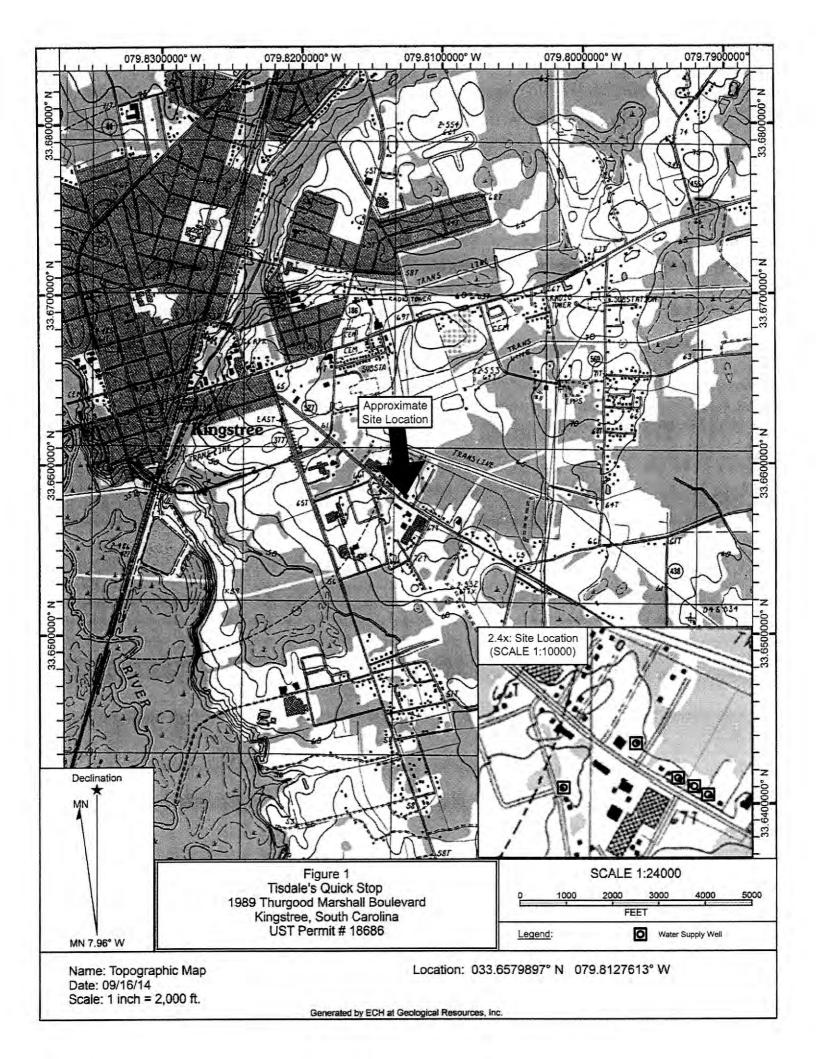
Project Man

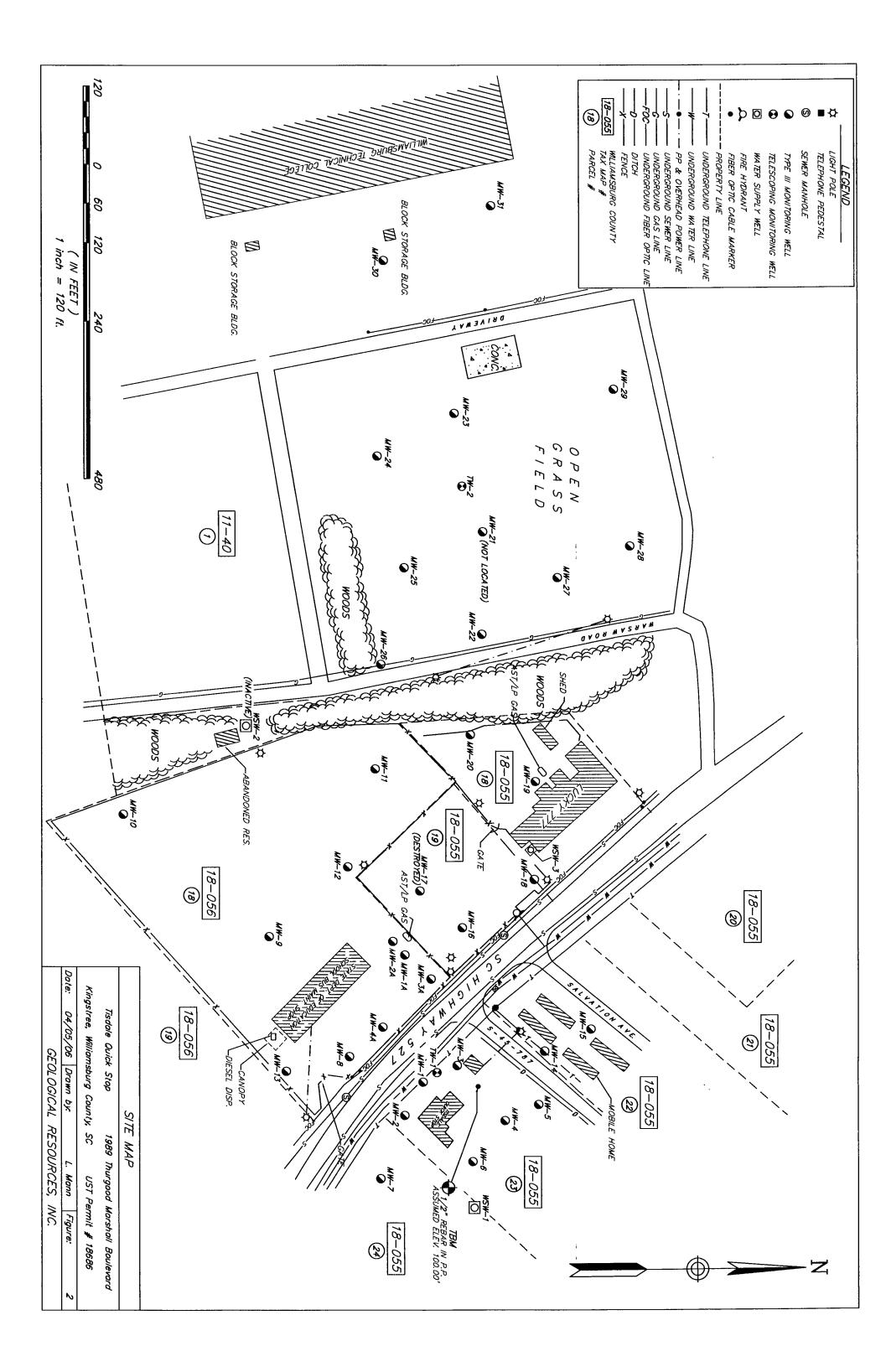
cc: Mr. Marty Easler

File

Enclosures """









# TABLE 1 AFVR EVENT CHRONOLOGY OCTOBER 13-17, 2014 TISDALE'S QUICK STOP UST PERMIT #18686

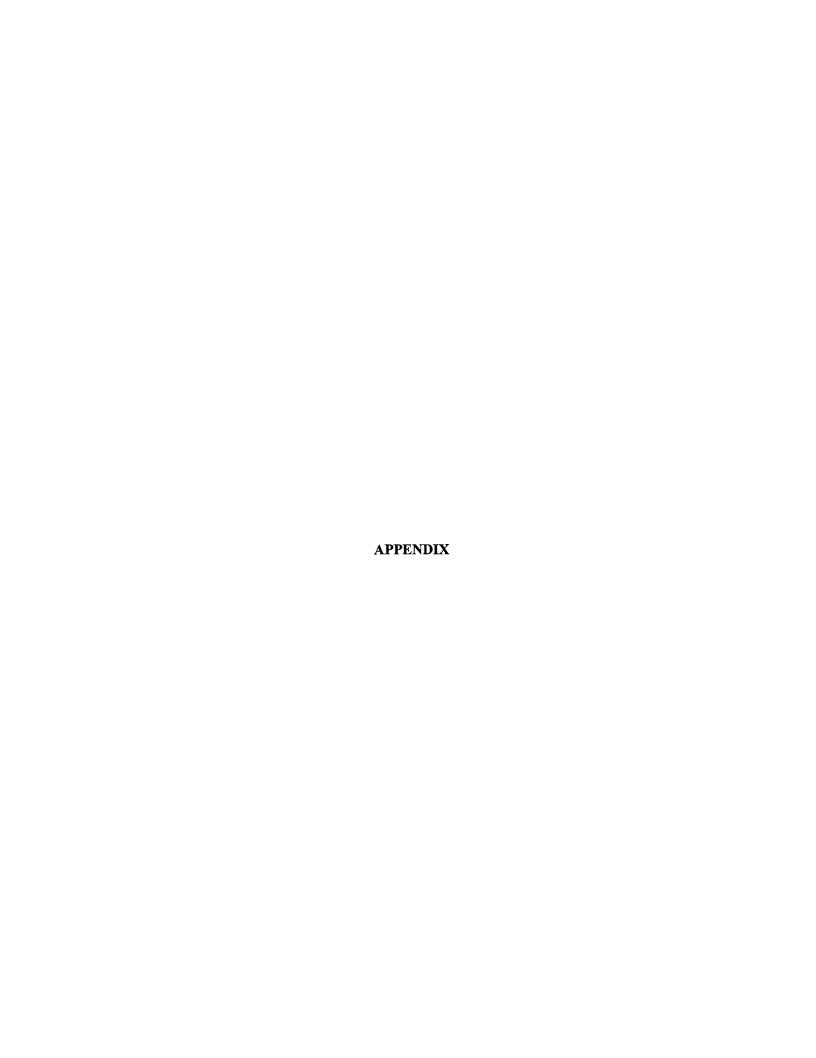
Task	Hours	Personnel	Equipment	Company
Gauge Liquid Levels in MW-1A, MW-2A, MW-3A and MW-4A	9:15 10/13/14	Vacuum Truck Operator	Interface Probe	HERR
Vacuum Truck Setup for Fluid Removal in MW-1A, MW-2A, MW-3A and MW-4A	9:15 - 9:30 10/13/14	Vacuum Truck Operator	Vacuum Truck	HERR
Fluid Recovery in MW-1A, MW-2A, MW-3A and MW-4A	9:30 10/13/14 - 9:30 10/17/14	Vacuum Truck Operator	Vacuum Truck	HERR
Gauge Liquid Levels in MW-1A, MW-2A, MW-3A and MW-4A	9:45 10/17/14	Vacuum Truck Operator	Interface Probe	HERR

### TABLE 2 SUMMARY OF MONITORING WELL GAUGING DATA TISDALE'S QUICK STOP UST PERMIT #18686

W-11 N-	Data	Time o	Depth to Free	Depth to Ground	Free
Well No.	Date	Time	Product	Water	Product
MW-1A		09:15		14.16	
MW-2A	10/13/14	09:15		14.27	
MW-3A	10/13/14	09:15		14.15	
MW-4A		09:15		14.56	
MW-1A		09:45		14.63	
MW-2A	10/17/14	09:45		14.65	
MW-3A	10/1//14	09:45		14.75	
MW-4A		09:45		14.82	

#### Note:

• Data reported in feet.



### APPENDIX A

AFVR Report, Calculations, Disposal Manifests



### HAZMAT EMERGENCY RESPONSE AND REMEDIATION, INC.

Post Office Box 381 • 217 North 701 By Pass • Tabor City, NC 28463 • 910-653-6399 Fax: 910-653-6398 • E-mail:herrteam@hotmail.com • www.herrteam.com

Thursday, October 30, 2014

Scott Ball Geological Resources, Inc. 2301-F Crown Point Executive Dr. Charlotte, NC 28227

Re: Site Name: Tisdale's Quick Stop

Kingstree, SC

UST Permit #: 18686

Scott,

Hazmat Emergency Response and Remediation, Inc. (HERR) completed one 96 hour Aggressive Fluid Vapor Recovery (AFVR) event at the above site on October 13-17, 2014. Included is the documentation for the event. The 96 hour event was conducted on monitoring wells MW-1A, MW-2A, MW-3A, and MW-4A.

. If you have any questions, please do not hesitate to contact our office.

Sincerely,

Marc Cox

HERR Project Manager

Serving North & South Carolina

Tisdale's Quick Stop Kingstree, SC October 13-17, 2014

#### **AFVR**

HERR mobilized personnel and equipment to Tisdale's Quick Stop on 10/13/14. The ambient temperature was 74 deg F and weather conditions were overcast. The depths to product and water were measured prior to and subsequent to the AFVR event (See attached data). Personnel from Geological Resources, Inc. (GRI) were on site to supervise the event. The 96 Hour AFVR event was conducted using a Global Vacuum Liquid Ring Pump with off gas treatment through a vapor phase granular activated carbon scrubber. The vacuum unit is capable of providing 325 CFM at 25 inches of mercury.

#### Pollutant Mass Removal

Total weight of 19.388 pounds of petroleum in the vapor phase (total non-methane organic emissions) was removed during the 96 hour AFVR event. This amount is based on data collected during the AFVR event (see attached data sheets)

#### Liquid Disposal

Approximately 20,630 gallons of petroleum contact water was collected during the AFVR event (See attached disposal manifest)

## **APPENDICES**

- A. AFVR FIELD NOTES
- B. POLLUTANT MASS REMOVAL DATA SHEET
- C. LIQUID DISPOSAL MANIFEST

# APPENDIX A AFVR FIELD NOTES

## HERR, Inc.

## AFVR – Field Notes

Site Name: TISPACES QUICK STOP	Location: KINGSTREE	50
AFVR Contractor: HERR, Inc.	Personnel: Steve	
	nd General Weather Condition: 7	4- Driverst
Start Time 1: 9:30 Stop Time 1: 9:30-	Start Time 2:	Stop Time 2:
Total volume of water removed during the 8-hour AFVR Event:	20 670 1	_
Total volume of product removed during the 8-hour AFVR Even	nt: Film	_
Product Recovery Rate:		•

Monitoring Well	Depth to product prior to stinger placement (ft. below TOC)	Depth to water prior to stinger placement (ft. below TOC)	Depth to product at cessation of vacuuming (ft. below TOC)	Depth to water at cessation of vacuuming (ft below TOC)	Estimated volume of water removed during this event	Relevant Observations
mu 4 a		14.56	~ · ·	14.82	الم.	•
MV3	· · · ·	14.15	- ,	14.75	30 9	
new /a	~ ~ ~	14.16	C	14.63	70,6	
m w 2a	- 0 -	14.27		14.65	201	

vacuum conversion: (inches of water X 0.07355 = inches of mercury) MWYG MW- 2a MW- / 9 MW- 3~ **Stinger Placement** Vacuum at Vacuum at Vacuum at **Targeted Targeted Targeted** Water Stinger .Product Well Well Well Depth Depth Level Notes (in. Hg) (in. Hg) (in. Hg) 14.72 16' 14.54 16 14.75 14.15 nwza 1463 14-14 nwsa 16 14.65 16 Am Ha 20 20 20 80 00 .00 20 14.5 20 20 20 00 20 20 80 a o 00 20 20 20 10-17 20 20 20 20 00 20 20 90 00 171. 20 20 20 مر ည္ပ . 20 yi 20 se BO 17.5' 20 20 20 00 20 20 80 20 80 0 20 70. 20 سه زا 3:0

Vacuum at Pump: 25 Ppmp

vacuum conversion: (inches of water X 0.07355 = inches of mercury) MW- /A MW4A MW- 2A MW. 3A Stinger Placement Vacuum at Vacuum at Vacuum at **Targeted** Targeted . **Targeted** Stinger **Product** Water مع عرب Well Well Well Depth Depth ' Level **Notes** 10-15 Time (in. Hg) (in. Hg) (in. Hg) خنحح . 20 20 20 مر: صها. 20 18.0' 20 ခြေပ 00 4,00 00 **7** 0 20 20 00 8.00 . 20 مو 20 70 S 5 1200 20 20 20 20 20 0 0 1200 20 20 10 20 در روه 20 00 20 00 تعري 20 ں ھ 20 20 1200 JU 20 20 20 10-17 2mi .900 20

Vacuum at Pump: 26 Cfup

you	
10-13	

pm

Time 930	PID at stack (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity ·	Temperature (Farenheit)	Relative Humidity (%)	Other
1000	715	472	1018	84	. 78	
10.32	728	484	1021	9.2	68	•
11:00	731	492	1026	94	69	
1130	728	488	1029	105	68	
17:00	7.21	484	1033	115	68	
17.30	717	475	1037	119	68	
). 00	704	445	1041	129	68	•
. 1.30	694	421	1044	134	68	•
5:00	187	451	1049	134	68	•
2.30	674	.443.	1053	137	68	
3.00	455	425	1057	137	68 5	
330	434	404	1062.	137	18	•
4.00	617	3 7 7	1068	135	68	
4.30	594	3 74	1074	135	68	
5.4.3	572	372.	1079	135	18	
5-30	390	371.	1085	135	68	•
6:00	586	364	7801	132	68	
630	582	360	1094	132	68	
700	577	354	1099	130	68	
732	573	352 .	1103	128	68	
8.00	568	3 49	1110	124	68	
. 8.30	561:	343	1121	125	68	
900	554	337	1125	125	68	
930	5 4 5	325	11 30	125	68	
W.ov	542	32)	11 38	127	68	

10-13	Time	PID <u>at stack</u> (ppm)	PID after off-gas treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Farenheit)	Relative Humidity (%)	Other
10-13	WWW/HAD	MEDAIN	MOSTER	Mart 10	Monnall	Walls	
	10.50	532	307	1152	120	68	
•	ان ف ۱/۰	528	300	11 -4	1.20	68	
•	11.30	521	298 .	11 70	120	68	
AM	1200.	512	292	1174	120	68	
10-1-1.	8,00	428	187	1342	116	70	-
Time	900	424	187.	1358	118	10	
	10.00	425	187	1364	122	20	
	11.00	423	181	13 71	123	.70	
DM	1200	421	1,86.	1377	124	20	
	1.00	419	185	1385	125	20	•
	نه یم	420.	185	1392 .	125	クレ	·
	300	4 j Y	185	1398	125	20	
	400	4174	184	1404	125	70	<u>-</u>
	·5-av	411	184	1412	124	10	
•	6.00	407	182	1419	124	70	
•	700	405	18/	1426	122	70	· · · · · · · · · · · · · · · · · · ·
	Hav .	402	186	1435	121	70	
	900	Yu 2	181	1442	120	70	
	100	ם טיף	780	1453	120	70	
	1100	397	180	1466	123	20	
AM	.1200	395	179	1478	120	70	•
							,

18-15	Time	PID <u>at stack</u> (ppm)	PID  after off-gas  treatment (carbon) (ppm)	Velocity (ft. / min.)	Temperature (Farenheit)	Relative Humidity (%)	Other
wed	8:00	358	137	1535	115	81	
	س.ها	354	134	1542	118	85	
ma	1200	35/	135	1554	12)	86	
•	2.00	348	134	1563	122	87	
٠.	4,00	345	134	1574	122	18	
	100.	334	128	1585	121	87	
	8 cm	324	125	1589	118	8L	
·	10,00	318	121	1593	117	81	
. AM	1200	307	115.	1599	115	85	· ·
		,	, 		•		
加加	8.00	278	82	1663	112	79	
	10,00	275	82.	12 48	115	79	· .
DW	1700	277.	82	1475	118	79	•
, 1	2.00	273	81	1186 .	118	79	** ,
•	400.	270	81	1174	117	79.	
•	600	271	8/	1708	115	75	
. !	8.ee.	268	80	1715	115	79	· ·
4	1000	266	80	1719	114	71	
AM	1200	212	79	1723	114	79	
. / <b>B</b> -17.	8,00	246	.58	1781	1/1	71	·
mi	9, 00	245	58	1785	1/2	74	<del></del>
- •	9.30	Solut D					•
			,	•			•

## $\frac{\text{APPENDIX B}}{\text{POLLUTANT MASS REMOVAL DATA SHEETS}}$

Site:

Site: Tisdale's Quick Stop UST Permit #: 18686

	<del></del> -		Calculati	ons - Flow a	t DSCFM		
Date	Time	Velocity (ft/min)	Cross Sec. Stack Area (ft^2)	Temperature (F)	Rel. Humidity	Water Vapor (%)	Qstd (flow)
10/13/14	9:30					(,,,,	(11047)
10/13/14	10:00	1018	0.022	84	68	0.017136404	21.36
10/13/14	10:30	1021	0.022	92	68	0.022246971	21.01
10/13/14	11:00	1026	0.022	96	68	0.025288000	20.89
10/13/14	11:30	1029	0.022	105	68	0.033563919	20.45
10/13/14	12:00	1033	0.022	115	68	0.045644192	19.92
10/13/14	12:30	1037	0.022	119	68	0.051528122	19.73
10/13/14	1:00	1041	0.022	124	68	0.059895220	19.47
10/13/14	1:30	1046	0.022	136	68	0.085660299	18.64
10/13/14	2:00	1049	0.022	136	68	0.085660299	18.69
10/13/14	2:30	1053	0.022	137	68	0.088242814	18.68
10/13/14	3:00	1057	0.022	137	68	0.088242814	18.75
10/13/14	3:30	. 1062	0.022	137	68	0.088242814	18.84
10/13/14	4:00	1068	0.022	135	68	0.083152757	19.12
10/13/14	4:30	1074	0.022	135	68	0.083152757	19.22
10/13/14	5:00	1079	0.022	135	68	0.083152757	19.31
10/13/14	5:30	1085	0.022	135	68	0.083152757	19.42
10/13/14	6:00	1087	0.022	132	68	0.076056493	19.71
10/13/14	7:00	1099	0.022	130	68	0.071659055	20.09
10/13/14	8:00	1110	0.022	126	68	0.063592753	20.60
10/13/14	9:00	1125	0.022	125	68	0.061717417	20.96
10/13/14	10:00	1138	0.022	124	68	0.059895220	21.28
10/13/14	11:00	1164	0.022	120	68	0.053107162	· 22.07
10/14/14	12:00	1176	0.022	120	68	0.053107162	22.30
10/14/14	8:00	1342	0.022	116	70	0.048544724	25.75
10/14/14	10:00	1364	0.022	122	70	0.058218219	25.64
10/14/14	12:00	1377	0.022	124	70	0.061831964	25.70

	10/14/14	2:00	1392	0.022	125 <sup>.</sup>	70	0.063718589	25.88
	10/14/14	4:00	1404	0.022	125	70	0.063718589	26.10
	10/14/14	6:00	1419	0.022	124	70	0.061831964	26.48
	10/14/14	8:00	1435	0.022	121	70	0.056487958	27.07
<b>.</b>	10/14/14	10:00	1453	0.022	120	70	0.054806769	27.51
	10/15/14	12:00	1478	0.022	120	. 70	0.054806769	27.98
	10/15/14	8:00	1535	0.022	115	86	0.058870022	29.18
•	10/15/14	10:00	1542	0.022	118	86	0.064601606	28.99
	10/15/14	12:00	1556	0.022	121	. 86	0.070870630	28.90
	10/15/14	2:00	1563	0.022	122	86	0.073088899	28.92
	10/15/14	4:00	1574	0.022	122	86	0.073088899	29.12
	10/15/14	6:00	1585	0.022	121	86	0.070870630	29.44.
•	10/15/14	8:00	1589	0.022	118	86	0.064601606	29.87
	10/15/14	10:00	1593	0.022	117	86	0.062633857	30.06
	10/16/14	12:00	1599	0.022	116	. 86	0.060723923	. 30.29
	10/16/14	8:00	1663	0.022	112	79	0.048919299	32.12
	10/16/14	10:00	1668	0.022	115	79	0.053664854	31.89
_	10/16/14	12:00	1675	0.022	118	79	0.058845864	31.68
	10/16/14	2:00	1686	0.022	118	79	0.058845864	31.89
	10/16/14	4:00	1694	0.022	117	· 79	0.057068005	32.16
•	10/16/14	6:00	1708	0.022	115	79	0.053664854	32.65
	10/16/14	8:00	1715	0.022	115	79	0.053664854	32.79
	10/16/14	10:00	1719	0.022	114	79	0.052036544	32.98
	10/17/14	12:00	1723	0.022	114	79	0.052036544	33.05
	10/17/14	8:00	1784	0.022	111	76	0.045494865	34.64
•	10/17/14	9:00_	1786	0.022	112	76	0.046921467	34.57
	10/17/14	9:30	shut down					
	Averages		1351.88	0.022	120.44	73.67	0.060914938	25.458

Site: Tisdale's Quick Stop UST Permit #: 18686

Calculations - Pollutant Mass Removal in pounds												
Marg. Elap.	Elapsed Time	Flow (DSCFM)	PPM measured	K (#C-	PPMg	Cg:m	Cg	PMRg ·	PMR			
Time	(min)	(Qstd)	(ppm)	gas)		(mg/dsm^3)	(lb/dscf)	(lb/hr)	(lb)			
0	0											
30	30	21.36	715	1	715	3802.24	0.000237374	0.304	0.152			
30	60	21.01	726	1	726	3860.74	0.000241026	0.304	0.152			
30	90	20.89	731	1	731	3887.33	0.000242686	0.304	10.152			
30	120	20.45	728	1	728	3871.38	0.000241690	0.296	0.148			
30	150	19.92	721	1	721	3834.15	0.000239366	0.286	0.143			
30	180	19.73	717	1	717	3812.88	0.000238038	0.282	0.141			
30	210	19.47	706	1	. 706	3754.38	0.000234386	0.274	0.137			
30	240	18.64	694	1_	694	3690.57	0,000230402	0.258	0.129			
30	270	18.69	687	1	687	3653.34	0.000228078	0.256	0.128			
30	300	18.68	674	1	674	3584.21	0.000223762	0.251	0.125			
30	330	18.75	655	1	655	3483.17	0.000217455	0.245	0.122			
30	360	18.84	634	1	634	3371.50	0.000210483	0.238	0.119			
30	390	19.12	617	1	617	· 3281.10	0.000204839	0.235	0.117			
30	420	19.22	596	1	596	3169.42	0.000197867	0.228	0.114			
30	450	19.31	592	1	592	3148.15	0.000196539	0.228	0.114			
30	480	19.42	590	1	590	3137.52	0.000195875	0.228	0.114			
30_	510	19.71	586	1	586	3116.24	0.000194547	0.230	0.115			
60	570	20.09	577	1	577	3068.38	0.000191559	0.231	0.231			
60	630	20.60	568	1	568	3020.52	0.000188571	0.233	0.233			
60	690	20.96	556	1	556	2956.71	0.000184587	0.232	0.232			
60	750	21.28	542	1	542	2882.26	0.000179939	0.230	0.230			
60	810	22.07	528	1	528	2807.81	0:000175292	0.232	0.232			
60	870	22.30	512	1	512	2722.73	0.000169980	0.227	0.227			
480	1350	25.75	428	1	428	2276.03	0.000142092	0.220	1.756			
120	1470	25.64	425	1	425	2260.07	0.000141096	0.217	0.434			
120	1590	25.70	421	1	421	2238.80	0.000139769	0.215	0.431			

Total Emission in pounds:									
Averages		25.46	468.08	1.00	468.08	2489.15	0.000155398	0.221	0.373
. 30	5760	shut down							
60	5730	34.57	245	1	245	1302.87	0.000081338	0.169	0.169
480	5670	34.64	246	1	246	1308.18	0,000081670	0.170	1.358
120	5190	33.05	262	1	. 262	1393.27	0.000086982	0.173	0.345
120	5070	32.98	266	1	266	1414.54	0.000088310	0.175	0.349
120	4950	32.79	268	1	268	1425.18	0.000088974	0.175	0.350
120	4830	32.65	271	1	271	1441.13	0.000089970	0.176	0.353
120	4710	32.16	270	1	270	1435.81	0.000089638	0.173	·0.346
120	4590	31.89	273	1	273	1451.77	0.000090634	0.173	0.347
120	4470	31.68	277	1	277	1473.04	0.000091962	0.175	0.350
120	4350	31.89	275	1	275	1462.40	0.000091298	0.175	0.349
480	4230	32.12	278	1	278	1478.35	0.000092294	0.178	1.423
120	3750	30.29	307	1	307	1632.57	0.000101921	0.185	0.370
120	3630	30.06	318	1	318	1691.07	0.000105573	0.190	0.381
120	3510	29.87	326	1	326	1733.61	0.000108229	0.194	0.388
120	3390	29.44	334	1	334	1776.15	0.000110885	0.196	0.392
120	3270	29.12	345	1	345	1834.65	0.000114537	0.200	0.400
120	3150	28.92	348	1	348	1850.60	0.000115533	0.200	0.401
120	3030	28.90	351	1	351	1866.56	0.000116529	0.202 0.202	0.404
120	2910	28.99	356	1	356	1893.14	0.000118189	0.206	0.411
480	2790	29.18	358	1	358	1903.78	0.000131137	0.208	1.665
120	2310	27.98	395	<u>.</u> 1	395	2100.54	0.000132797	0.219	0.438
120	2190	27.51	400	<u>'</u> 1	400	2137.76 2127.13	0.000133461 0.000132797	0.217 0.219	0.434
120	2070	27.07	402	1	407			0.215	0.429
120	1950	26.48	407	1	407	2164.35	0.000138109 0.000135121	0.216	0.433
120 120	1710 1830	25.88 26.10	420 416	<u>'</u>	420 416	2233.49 2212.21	0.000139437	0.217	0.433

#### **Pollutant Mass Removal Calculations**

Qstd = (1-water vapor) \* velocity \* (PI \* (diameter/24)^2) \* (528degrees R/(Temp + 460) PPMg = PPM measured \* K Cg:m = PPMg \* (Mg/K3) Cg = Cg:m \* 62.43E-09 lb-m^3/mg-ft^3 PMRg = Cg \* Qstd \* 60 min/hr PMR = PMRg \* ((T2 -T1)/60)

Qstd = Flow at DSCFM

Vacuum = The level of vacuum being applied should be recorded from the vacuum truck tank (inches of Hg)

Velocity = rate at which air flow is measured at the blower discharging pipe (anemometer) Cross Sectional Area = area in ft^2 of discharge stack

Relative Humidity = The % relative humidity of the air stream exiting from the blower discharge piping

Water Vapor in % = Pounds of water/ pound of dry air, derived from the psychrometric chart (temp vs relative humidity)

PPM = PPM measurements taken with an OVA/ PID at the blower discharge piping

K = Number of carbons in calibration gas: K=1

PPMg = PPMv, Volumetric concentration as gasoline emission, dry basis at STP

Cg:m =mg/dsm3, mass concentration of gasoline emission

Mg = 128 mg/mg-mole, molecular weight of gasoline

 $K3 = 24.07 \text{ dsm}^3/1E6 \text{ mg-mole}$ , mass to volume conversion factor at STP

Cg = lb/dcsf, mass concentration of gasoline emission, dry basis at STP

PMRg = lb/hr, pollutant mass removal rate of gasoline emission

PMR = pollutant mass removal of gasoline emission over time

# APPENDIX C LIQUID DISPOSAL MANIFEST

	1003	e print or type (Form designed for use on elite (12 pitch) typewriter)					
		NON-HAZARDOUS  VASTE MANIFEST  1. Generator's US EPAI			Manifest Document No	0	2 Page I
		3 Generator's Name and Mailing Address TI SDALE'S (	DUICK STOP				·L
		1989 THURC	icon mathall bl	VD.			
		4 Ganerator's Phone ( ) KING5-77	er Si	•			
	₹	4 Generator's Phone ( ) KING5-77 5 Transporter 1 Company Name	6 US EPA ID Number		A State Tran	isporter's ID	
- 1		RA COL Exterprises			B. Transporte	····	
		7 Transporter 2 Company Name	8 US EPA ID Number	<u></u> _	C State Tran	sporter's ID	
	J	9 Designated Facility Name and Site Address	10 US EPA ID Number		D. Transporte	···	
		5 Designated Facility Name and Site Addless	TO US EFA ID NUMBER		E State Facil	lity's ID	
- 1					F Facility's P	hone	
		11 WASTE DESCRIPTION		1	ntainers	13 Total	14 Unit
	ł	a.	<del>"</del>	No.	Туре	Quantity	Wt /Vol
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		Prints Type of Name	Signature		9	A10	Date nth Day Year
		T. Venbray	1200	-//-	Se,	//	1414
	T R	17 Transporter 1 Acknowledgement of Receipt of Materials					Date
	AN	Printed Type of Name	Signature			Mo le	
	P .	18. Transporter 2 Acknowledgement of Receipt of Materials	1 (ans		$\sim$	Je	Date
	AZSPORF	Printed Typed Name (2)	Signature			Mo	
	ER	Stere 1) deplos					
	F	19. Discrepancy Indication Space					
	AC						
	۱ <u>۲</u>	20. Facility Owner or Operator; Certification of receipt of the waste materials of	overed by this manifest, except as noted i	n item 19	<del> </del>		
	1						Date
	Ť	Printed/Typed Hapie	Signature	4 -	Cury	Ma	onth Day Year
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Standard's Prince   HINGSTREEL SC   A Sout Transport some   S US EPA O Number   A Sout Transport is STANCE   S US EPA O Number   A Sout Transport is STANCE   S US EPA O Number   S US EPA O NUMBER   S US EPA	3. Generator's Name and Mailing Address	T1504 64	5 - 1			
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Pleas	NON-HAZAHDOOS	US EPA ID No		nifest cument No	2 Page 1	
	WASTE MANIFEST	· · · · · · · · · · · · · · · · · · ·		P	ol	
	3 Generator's Name and Mailing Address 7159ACE'S	DVICK STOP	1			Ì
	1989 7	CHUR GOUD MARSHALL				-
	4 Generator's Phone ( ) KING	THUR GOUD MARSHUL B STREE JC B US EPAID Number	3000.			
	5 Transporter 1 Company Name	6 US EPA ID Number		State Transporter's ID	<del></del>	
	HERR Inc.	NCP 000138810	- R		710-640-260-	<del>,</del>
	7 Transporter 2 Company Name	8 US EPA ID Number	C .	State Transporter's ID	110, 01, 200	-
	That is possible and the second of the secon	1		Fransponer 2 Phone		$\dashv$
	9. Designated Facility Name and Site Address	10 US EPA ID Number	<del></del>	State Facility's ID		
	CWS 363 5. MAVLTSDY 57. WHITKYICKS, NC 11. WASTE DESCRIPTION			,		
	363 5. NAVLTEDY ST.		F	acility's Phone		
	WHITK NILLY. NO		l l	910-	680-2608	
	11. WASTE DESCRIPTION		12 Containe	ers I	13 1.4 otal Unit	
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WAS	G. Additional Descriptions for Materials Listed Above		<del></del>	Handling Codes for Was	tes Listed Above	
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Т	17 Transporter 1 Acknowledgement of Receipt of Materials				Date	
	· · · · · · · · · · · · · · · · · · ·	Signature	7			
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RANSPORTE	; <b>;</b>	Signature	N/m		10 14	14
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FA	19 Discrepancy Indication Space	Signature	d in item 19		10 14 Date	Year   / <del>'</del>   Year

Pto	case print or type (Form designed for use on eater	(12 pitch) typewnier)					
	NON-HAZARDOUS	1 Generator's US EPA ID No			Manifest Document No		2 Page 1
	WASTE MANIFEST	<u>,                                    </u>					71
	3 Generator's Name and Mailing Address	1989 THURGOOD	STU				ł
		10101000	7 7 1 gr	<u> </u>			
	•	1989 THURGOOD	O MARTHALL B	cvo.			
	4 Generator's Phone ( )	KINGSTRE	55C				
			* US EPA ID Number		A State Transp		4. 4
	RA COX ENTER	G21745			B Transporter		44-2617
	7 Transporter 2 Company Name	8.	US EPA ID Number	-	C State Transp		
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	9 Designated Facility Name and Site Address	10	US EPA ID Number	1	E State Facility	/'s ID	
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	WHITEVILLE	NC		12 Con		110-640-	2600
	11 WASTE DESCRIPTION			No.	Туре	Total Quantity	Unit Wi Vot
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### Catherine B Templeton, Director Promoting and protecting the health of the public and the environment

MR MARTY EASLER 196 RICHBURG ROAD GREELEYVILLE SC 29056

DEC 0 3 2016



Re: Site Specific Work Plan Request

Tisdales Quick Stop, 1989 Thurgood Marshall Blvd, Kingstree, SC UST Permit # 18686 Release reported March 30, 2001

AFVR Report received November 26, 2014

Williamsburg County

Dear Mr. Easler:

The Underground Storage Tank (UST) Management Division (Division) of the South Carolina Department of Health and Environmental Control (Agency) recognizes your commitment to continue work at this site using Geological Resources, Inc., as your contractor. The next scope of work is a groundwater sampling event as outlined in Revision 2.0 of the UST Quality Assurance Program Plan (QAPP). Please have your contractor plan to conduct a comprehensive groundwater sampling of all monitoring wells located at the site. Samples should be analyzed for BTEX, Naphthalene, Oxygenates, 1,2-DCA, MTBE, and EDB, in accordance with QAPP Rev. 2.0, and in compliance with all applicable regulations. A copy of the QAPP is available at http://www.scdhec.gov/environment/docs/qapp\_rev-2 april2013.pdf.

Please have your contractor complete and submit the Site Specific Work Plan and Cost Agreement within thirty (30) days of the date of this letter. The Site Specific Work Plan form can be found at <a href="http://www.dhec.sc.gov/library/D-0653.pdf">http://www.dhec.sc.gov/library/D-0653.pdf</a>. 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 the Agency must be issued before work begins.

On all correspondence concerning this site, please reference UST Permit # 18686. If there are any questions, feel free to contact me by telephone at (803) 898-0605, by fax at (803) 898-0673, or by e-mail at martinjm@dhec.sc.gov.

Sincerely.

Jim Martin, Hydrogeologist Corrective Action Section

Underground Storage Tank Management Division

Bureau of Land and Waste Management

cc: Geological Resources, Inc., 3502 Hayes Rd., Monroe, NC 28110

Technical File







US 7 0 41 tech CAET

December 11, 2014

Mr. Jim Martin
South Carolina Department of Health
And Environmental Control
Underground Storage Tank Management Division
Bureau of Land and Waste Management
2600 Bull Street
Columbia, South Carolina 29201

Re: GRI Proposal No. 14-739

Site Specific Work Plan Tisdale's Quick Stop

1989 Thurgood Marshall Blvd Kingstree, Williamsburg County

UST Permit No. 18686

Dear Mr. Martin:

Attached is a Site Specific Work Plan for approved ACQAP and the associated Assessment Component Cost Agreement for the above referenced site in Kingstree, Williamsburg County, South Carolina.

Please contact me at (704) 845-4010 or by e-mail at <u>wsb@geologicalresourcesinc.com</u> if you have questions or comments concerning this matter.

Sincerely,

W. Scott Ball

Senior Project Manager

Enclosures

cc:

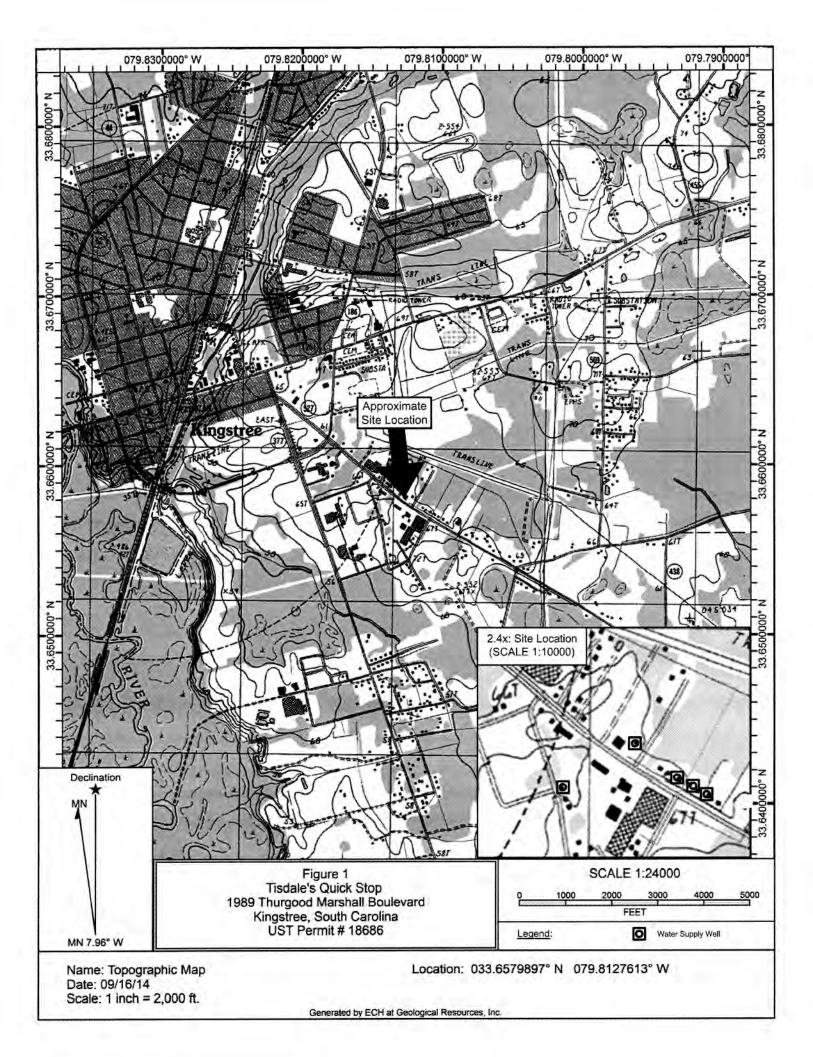
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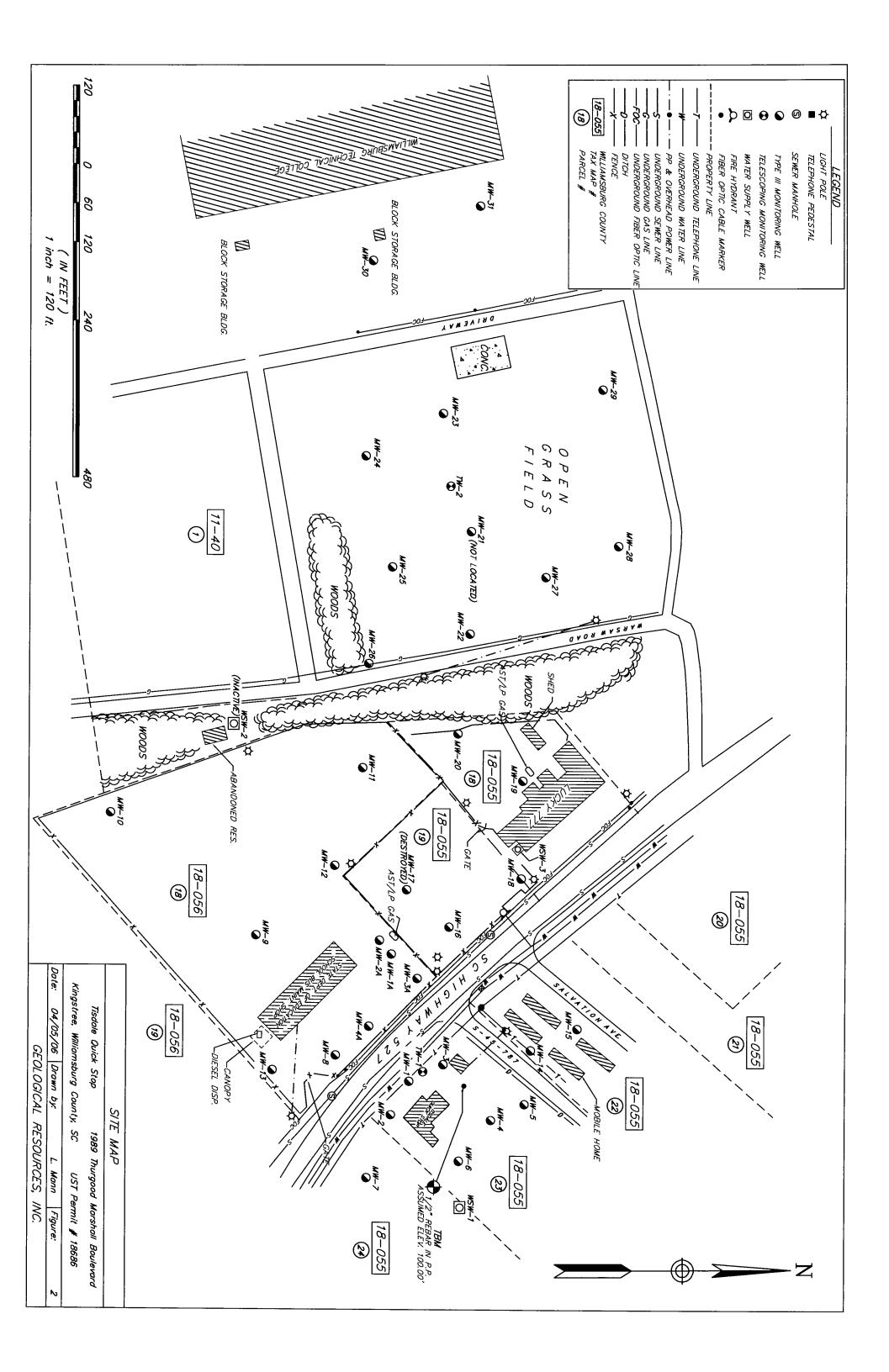


### Site-Specific Work Plan for Approved ACQAP Underground Storage Tank Management Division

To: Jim Martin		(SC	DHEC Project Manager)
From: Scott Ball			tractor Project Manager)
Contractor: Geological Resou	ces, Inc. UST Contr	actor Certification Number: 74	
Facility Name: Tisdale's Quick	Stop	UST Permit #:	18686
Facility Address: 1989 Thurg	ood Marshall Blvd, Kingstree, William	sburg County, SC	
Responsible Party: Mr. Marty	Easler	Phone: (843) 4	26-2557
RP Address: 196 Richburg Ro	ad, Greeleyville, SC 29056		
Property Owner (if different):	Andy McKnight		
Property Owner Address: 31	6 McCullough Loop,Kingstree, SC		
Current Use of Property: Co	mmercial - Restaurant		
Scope of Work (Please che	eck all that apply)		
· · · · · · · · · · · · · · · · · · ·	ier II	☑ Groundwater Sampling	☐ GAC
□ Tier I □ N	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:	_ F	-	
□ BTEXN	☐ 8 RCRA Metals	☐ TPH-DRO (3550B/8015B)	☐ Grain Size
□ PAH	☐ Oil & Grease (9071)	☐ TPH-GRO (5030B/8015B)	□ TOC
Air:	<b>2</b> 3 4 5 5 6 6 5 7 7	<b>2</b> *** *** (****************************	00
□ BTEXN			
Sample Collection (Estima	te the number of samples of each	matrix that are expected to be co	llected.)
Soil	2 Water Supply W	/ellsAir	1 Field Blank
Monitoring Wells	Surface Water	2 Duplicate	1 Trip Blank
Field Screening Methodolo		d include their proposed locations	on the attached man
# of shallow points proposed		timated Footage:	•
			feet per point
		timated Footage:	
Field Screening Methodolog	/:		
Permanent Monitoring We			
		include their proposed locations of	
		d Footage:	
		d Footage:	
		d Footage:	
Monitoring Well developmen	t method (consistent with SOP): _		
Comments, if warranted:			

UST Permit #: 18686 Fac	cility Name: 🛚	isdale's Quick Stop	
Implementation Schedule (Number of ca Field Work Start-Up: 5 days from approval Report Submittal: 45 days from approval		from approval)  Field Work Completion: 8 days from approval  # of Copies Provided to Property Owners: 1	
Aquifer Characterization Pump Test: □ Slug Test: □ (Check or NA		de explanation below for choice)	
Investigation Derived Waste Disposal	Tons	Purge Water: 100	Gallons
Drilling Fluids:		Free-Phase Product:	_ Gallons
event, etc. Sample monitoring wells MW-1 through MW16, Sample water supply wells WSW-1 and WSW-	s to be abanc , MW-18 throu 3. If any of the samples collec	doned/repaired, well pads/bolts/caps to replace, details of gh MW-31, MW-1A through MW-4A, TW-1 and TW-2. The monitoring wells contain free product they will only be gauged the will be submitted for analyses of BTEX, MTBE, naphthale thod 8011.	d and
			· · · · · · · · ·
Name of Laboratory:	(Yes/No)	If no, indicate laboratory information below.  If no, indicate driller information below.	
	Proposed I Legend wit Streets or h Location of	SS topographic map showing the site location.  Scurately scaled, but does not need to be surveyed. The monitoring well locations h facility name and address, UST permit number, and basighways (indicate names and numbers) all present and former ASTs and USTs fall potential receptors	·
Assessment Component Cost Agree	eement, SCD	HEC Form D-3664	







#### ASSESSMENT COMPONENT INVOICE 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: Tisdale's Quick Stop

UST Permit #: 18686	Cost A	greement #:		GRI Proposal #14-739
ITEM	QUANTITY	UNIT I	UNIT PRICE	TOTAL
1. Plan Preparation			9/12/03/03/03	
A1. Site-specific Work Plan	1	each	\$150.00	\$150.00
B1. Tax Map	1.00	each	\$70.00	\$0.00
C1. Tier II or Comp. Plan /QAPP Appe	endix 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	1	9,754	X.112-16165	10,42121
1B. < 10 meters below grade	1	each	\$1,300.00	\$0.00
2B. > 10 meters below grade		each	\$2,310.00	\$0.00
C1. Geophysical UST or Drum Survey	8	each	\$910.00	\$0.00
4. Mob/Demob	+	00011	Ψο (ο)ου	
A1. Equipment		each	\$1,020.00	\$0.00
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, p	ush techno		ΨΟ,ΟΟ	Ψυ.υς
Field Screening (including water san AA. Standard C1. Fractured Rock 7. A1. Soil Leachability Model	npie, soii sa	per foot per foot each	\$15.00 \$20.20 \$60.00	\$0.00 \$0.00 \$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 diame	eter)	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	3	per foot	\$33.40	\$0.00
HH. Recovery Well (4" diameter)		per foot	\$45.00	\$0.00
II. Pushed Pre-packed screen (1.25"	dia)	per foot	\$15.00	\$0.00
J1. Rotosonic (2" diameter)	i ,	per foot	\$44.00	\$0.00
K. Re-develop Existing Well		per foot	\$11.00	\$0.00
10. Groundwater Sample Collection / C	Gauge Depth			+5.00
A1. Groundwater Purge	2	per well/receptor	\$60.00	\$120.00
B1. Air or Vapors		per receptor	\$12.00	\$0.00
C1. Water Supply	2	per well/receptor	\$22.00	\$44.00
	and the same of th			\$1,008.00
	ata 36	ner well/recentor	20/0/11/1	-0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
D1. Groundwater (No Purge or Duplica	ate 36	per well/receptor	\$28.00 \$7.00	
D1. Groundwater (No Purge or Duplica E1. Gauge Well only	ate 36	per well	\$7.00	\$0.00
D1. Groundwater (No Purge or Duplica	ate 36	The second secon		\$0.00 \$0.00 \$0.00

11. Laboratory Analyses-Groundwater		ī — i		6.40
A2. BTEXNM+Oxyg's+1,2 DCA+Eth(82	42	per sample	\$122.00	\$5,124.00
AA1. Lead, Filtered		per sample	\$13.80	\$0.00
B2. Rush EPA Method 8260B (All of itel	mA)	per sample	\$153.60	\$0.00
C2. Trimethal, Butyl, and Isopropyl Ben		per sample	\$36.40	\$0.00
D1. PAH's	1	per sample	\$60.60	\$0.00
E1. Lead		per sample	\$16.00	\$0.00
F1. EDB by EPA 8011	41	per sample	\$45.20	\$1,853.20
FF1. EDB by EPA Method 8011 Rush	71	per sample	\$68.20	\$0.00
G1. 8 RCRA Metals		per sample	\$63.40	\$0.00
		per sample	\$41.00	\$0.00
H1. TPH (9070)		The second secon	\$5.20	\$0.00
II. pH		per sample		\$0.00
J1. BOD		per sample	\$20.00	
PP. Ethanol		per sample	\$14.80	\$0.00
11. Analyses-Soil		edvestorie.	CO 4 00	00.00
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				00.00
Y1. BTEX + Naphthalene		per sample	\$216.00	\$0.00
11. Analyses-Free Phase Product			1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Na Xee
Z1. Hydrocarbon Fuel Identification		per sample	\$357.00	\$0.00
12. Aquifer Characterization			- 20 808/20 0	- 100
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
<ol><li>A1. Free Product Recovery Rate Test</li></ol>	st*	each	\$38.00	\$0.00
14. Fate/Transport Modeling				10/00/0
A1. Mathematical Model		each	\$100.00	\$0.00
B1. Computer Model		each	\$100.00	\$0.00
15. Risk Evaluation				1,000
A. Tier I Risk Evaluation		each	\$300.00	\$0.00
B1. Tier II Risk Evaluation		each	\$100.00	\$0.00
16. A1. Subsequent Survey*		each	\$260.00	\$0.00
17. Disposal (gallons or tons)*				
AA. Wastewater	100	gallon	\$0.56	\$56.00
BB. Free Product		gallon	\$0.50	\$0.00
C1. Soil Treatment/Disposal		ton	\$60.00	\$0.00
D1. Drilling fluids		gallon	\$0.42	\$0.00
18. Miscellaneous (attach receipts)				1.10.1
		each	\$0.00	\$0.00
		each	\$0.00	\$0.00
		each	\$0.00	\$0.00
20. Tier I Assessment (Use DHEC 3665 f	orm)	standard		\$0.00
21. IGWA (Úse DHEC 3666 fo	orm)	standard		\$0.00
22. Corrective Action (Use DHEC 366/1		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 systematics	m installation 8		
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	1	000	
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
II. 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 Coordination   12%	percent	\$9,225.80	\$1,107.10
TOTAL			\$10,332.90

\*The appropriate mobilization cost can be added to complete these tasks, as necessary. DHEC



Catherine B Templeton, Director

Promoting and protecting the health of the public and the environment

US A HARED CAETING

MR MARTY EASLER 196 RICHBURG ROAD GREELEYVILLE SC 29056

DEC 3 0 2014

Re: Groundwater Sampling Directive

Tisdales Quick Stop, 1989 Thurgood Marshall Blvd, Kingstree, SC

UST Permit # 18686; CA# 49370 Release reported March 30, 2001 SSWP received December 12, 2014

Williamsburg County

Dear Mr. Easler:

The Underground Storage Tank Management Division (UST Division) of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced Site Specific Work Plan submitted on your behalf by Geological Resources, Inc. The previous assessment work for this release indicates that petroleum Chemicals of Concern (CoC) are present in the groundwater at concentrations that exceed risk-based screening levels (RBSLs). In order to obtain current groundwater quality data, a comprehensive groundwater sampling event is necessary. All work should be conducted in accordance with the UST Quality Assurance Program Plan, revision 2.0, (QAPP) and must be conducted in compliance with all applicable regulations. A copy of the Agency QAPP for the UST Management Division is available at http://www.scdhec.gov/environment/docs/QAPP Rev-2 April2013.pdf

Groundwater sampling activities at the site should begin immediately upon receipt of this letter. Cost Agreement #49370 has been approved for the amount shown on the enclosed cost agreement form for the sampling of all monitoring wells associated with the release. Groundwater samples should be collected and analyzed for BTEX, Naphthalene, MtBE, 1,2-DCA, Oxygenates, Ethanol and EDB. Analyses should be in accordance with Appendix E of the QAPP and shall include a duplicate sample, field blank, and trip blank.

The monitoring report, contractor checklist from Appendix K of the QAPP, and invoice are due within 60 days from the date of this letter. The report submitted at the completion of these activities should include the required information outlined in the QAPP. 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.

Geological Resources, Inc., can submit an invoice for direct payment from the State Underground Petroleum Environmental Response Bank (SUPERB) Account for pre-approved costs. By law, the SUPERB Account cannot compensate any costs that are not pre-approved. Please note that applicable South Carolina certification requirements regarding laboratory services and report preparation must be satisfied. If the invoice is 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 from the UST Division is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the UST Division for the cost to be paid. The Agency 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, the Agency 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.

Please note, if unnecessary dilutions are completed resulting in reporting limits of individual CoC in excess of RBSL, the data cannot be used. In those cases, the UST Division may deny payment for any non-detect analysis where the reporting limit exceeds the RBSL. The UST Division encourages the use of 'J' values as necessary so the appropriate action can be determined for a release.

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 CoC concentrations based on laboratory analysis are below 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 #18686 and Cost Agreement #49370**. If you have any questions regarding this correspondence, please contact me by telephone at (803) 898-0605, by fax at (803) 898-0673, or by e-mail to <a href="mailto:martinjm@dhec.sc.gov">martinjm@dhec.sc.gov</a>.

Sincerely,

Jim Martin, Hydrogeologist Corrective Action Section

Underground Storage Tank Management Division

Bureau of Land and Waste Management

enc: Approved Cost Agreement

cc: Geological Resources, Inc., 3502 Hayes Rd., Monroe, NC 28110 (w/ enc.)

Technical File (w/ enc.)

#### Approved Cost Agreement 49370

Facility 18686 TISDALES QUICK STOP

MARTINJM

PO Number:

Task / Description Categories	Item Description	Qty / Pct	Unit Price	<u>Amount</u>
01 PLAN				
	A1 SITE SPECIFIC WORK PLAN	1.0000	150.00	150 00
04 MOB/DEMOB			······································	
	B1 PERSONNEL	2 0000	423.00	846.00
10 SAMPLE COLLECTION				
	A1 GROUNDWATER (PURGE)	2 0000	60.00	120 00
	C1 WATER SUPPLY	2.0000	22.00	44 00
	D1 GROUNDWATER NO PURGE/DUPLICATE	36.0000	28.00	1,008 00
	H1 FIELD BLANK	1 0000	24.60	24.60
11 ANALYSES				
GW GROUNDWATER	A2 BTEXNM+OXYGS+1,2-DCA+ETH-8260B	42 0000	122.00	5,124 00
	F1 EDB BY 8011	41.0000	45.20	1,853.20
17 DISPOSAL		*		
	AA WASTEWATER	100.0000	0.56	56.00
19 RPT/PROJECT MNGT & COORDINATIO				
	PRT REPORT PREPARATION	0.1200	9,225.80	1,107.10
		Total Amo	unt	10,332.90

December 30, 2014 Page 1 of 1 suprcait.rdf Rev: 1.15



#### Geological Resources, Inc.

January 30, 2015

Mr. Jim Martin SCDHEC-Underground Storage Tank Management Division Bureau of Land & Waste Management 2600 Bull Street Columbia, SC 29201

Re:

Ground Water Monitoring Report

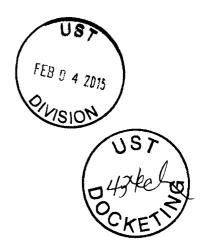
January 2015

Tisdale's Quick Stop

1989 Thurgood Marshall Blvd

Kingstree, Williamsburg County, SC

UST Permit No: 18686 GRI Project No: 1543



Dear Mr. Martin,

Please find enclosed the referenced report for the above mentioned site. If you have any questions, please do not hesitate to contact Scott Ball at (704) 698-1223.

Sincerely,

Geological Resources, Inc.

Jackie Donnelly
Project Coordinator

Enclosure

cc: Mr. Marty Easler

file

# GROUND WATER MONITORING REPORT JANUARY 2015 TISDALE'S QUICK STOP 1989 THURGOOD MARSHALL BOULEVARD KINGSTREE, WILLIAMSBURG COUNTY SOUTH CAROLINA UST PERMIT NO. 18686 GRI PROJECT NO. 1543

#### Prepared for:

Mr. Marty Easler 196 Richburg Road Greeleyville, SC 29056

#### Prepared by:

Geological Resources, Inc.
3502 Hayes Road
Monroe, North Carolina 28110
Class I UST Site Rehabilitation Contractor # 74

January 30, 2015

License # 2576

W. Scott Ball

Senior Project Manager

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#### 1.0 INTRODUCTION

This report presents the results of comprehensive ground water sampling activities conducted in January 2015 at the Tisdales Quick Stop site located at 1989 Thurgood Marshall Highway, in Kingstree, Williamsburg County, South Carolina (Figures 1 and 2). The activities were conducted in accordance with the "Groundwater Sampling Directive" dated December 30, 2014 from the SCDHEC. The purpose of the activities was to obtain current ground water quality data for the site.

The site is a former petroleum retail location. There are two buildings on site, the first is used as a convenience store and grill and the second building is used for a liquor store. Surrounding properties are a mix of commercial and residential. According to the South Carolina Underground Storage Tank (UST) registry database, a release at the site occurred on March 30, 2001, and the confirmation date of the release is listed as April 6, 2001. Two 550 gallon gasoline tanks and one 1,000 gallon diesel tank were removed March 1, 2001. A total of 37 monitoring wells (MW-1 through MW-31, MW-1A through MW-4A, TW-1 and TW-2) have been installed previously at the site. Please refer to earlier submittals for additional information regarding previous assessment activities.

#### 2.0 FACILITY INFORMATION

• Facility Name: Tisdales Quick Stop

• Location: 1989 Thurgood Marshall Blvd (Highway 527)

Kingstree, Williamsburg County

• **UST Permit No.** 18686

• Property Owner: Andy McKnight

316 McCullough Loop

Kingstree, South Carolina 29566

(843) 382-2474

• UST Owner/Operator: Marty Easler

196 Richburg Road

Greeleyville, South Carolina 29056

(843) 372-2502

• Site Rehabilitation Contractor: Geological Resources, Inc.

3502 Hayes Road

Monroe, North Carolina 28110

(704) 845-4010

Class 1, Certification Number 74

• Laboratory: Accutest Laboratories - Southeast

4405 Vineland Road, Suite C-15

Orlando, FL 32811

(407) 425-6700

State Certification Number: 96038001

**Release Information:** 

Date Discovered: March 30, 2001
 Estimated Amount of Release: Unknown

• Source of Release: Leaking UST System

• UST Size/Contents: Two 550 gallon gasoline tanks and one 1,000 gallon diesel

tank (Removed March 1, 2001)

• Latitude: 33.6579897° North Longitude: 79.8127613° West

#### 3.0 GROUND WATER QUALITY

Thirty Type III monitoring wells (MW-1 through MW-10, MW-13 through MW-15, MW-19 through MW-31 and MW-1A through MW-4A) and two telescoping monitoring wells (TW-1 and TW-2) were gauged, purged and/or sampled between January 15 and 16, 2015. Two water supply wells (WSW-1 and WSW-3) were also sampled between January 15 and 16, 2015. Monitoring wells MW-11, MW-12 and MW-17 were previously destroyed; and therefore, could not be sampled. Monitoring wells MW-16 and MW-18 could not be found and were not sampled. Monitoring wells MW-4 and MW-5 were obstructed and could be gauged but not sampled. Telescoping wells TW-1 and TW-2 were the only wells purged prior to sampling. The depths to ground water in the Type III monitoring wells during the January 2015 sampling event ranged from 10.10 to 17.26 feet below the top of casings. Ground water elevations in the Type III monitoring wells relative to a temporary benchmark with an assumed datum of 100.00 feet ranged from 80.99 to 85.43 feet. Based on this data, ground water flow was generally toward the west. The horizontal hydraulic gradient across the site was less than 0.01 feet per foot. The vertical hydraulic gradient calculated for MW-1 and TW-1 was 0.02 feet per foot downward. A Site Map showing the locations of the monitoring wells and the structures on-site has been included as Figure 2. A Water Table Surface Map for the January 2015 sampling event has been included as Figure 3. A summary of well construction and gauging information is presented in Table 1.

Laboratory analyses were performed on the ground water samples collected from the monitoring wells during the January 2015 sampling event for BTEX, MTBE, naphthalene, 1,2-DCA and eight oxygenates using EPA Method 8260 as well as EDB by EPA Method 8011. Concentrations of benzene, toluene, ethylbenzene, xylenes, MTBE, naphthalene and/or EDB that exceeded the RBSLs were reported in the ground water samples collected from MW-1, MW-2, MW-3, MW-20, MW-22, MW-23, MW-1A, MW-2A, MW-3A and MW-4A. Detectable concentrations of oxygenates were reported in the samples collected from MW-1, MW-2, MW-3, MW-13, MW-20, MW-22, MW-23, MW-1A, MW-2A, MW-3A and MW-4A. No detectable concentrations of requested method constituents were reported in the water supply well samples. A Ground

Water Quality Map based on data from the January 2015 sampling event has been included as **Figure 4**. Summaries of ground water sample analytical results are presented in **Tables 2** and **3**. A complete laboratory analytical report has been included as **Appendix A**. Ground water sampling data sheets have been included as **Appendix B**.

#### 4.0 QA/QC

Monitoring well gauging, purging and sampling was conducted in general accordance with the SCDHEC Programmatic QAPP and the approved site specific Contractor Addendum. All wells were purged and/or sampled with dedicated disposable bailers. All field measurement equipment was properly decontaminated between sampling locations. Duplicate samples from monitoring wells MW-1 and MW-8 as well as a field blank were collected during the sampling activities. A trip blank was included in the sample cooler. Laboratory results for MW-1 and MW-1 DUP as well as MW-8 and MW-8 DUP showed similar concentrations. No detectable concentrations of requested method constituents were reported for the trip blank or field blank. All applicable items on the Contractor Checklist were reviewed and verified. A copy of the Contractor Checklist is included as **Appendix C**.

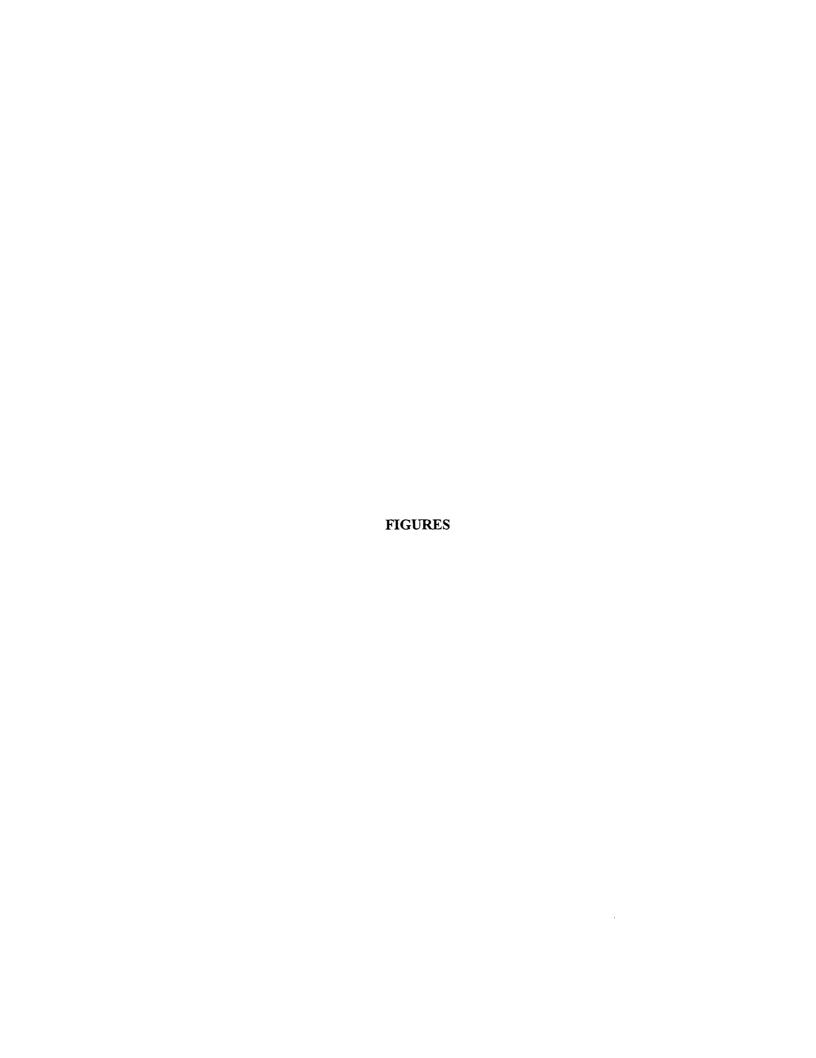
#### 5.0 CONCLUSIONS AND RECOMMENDATIONS

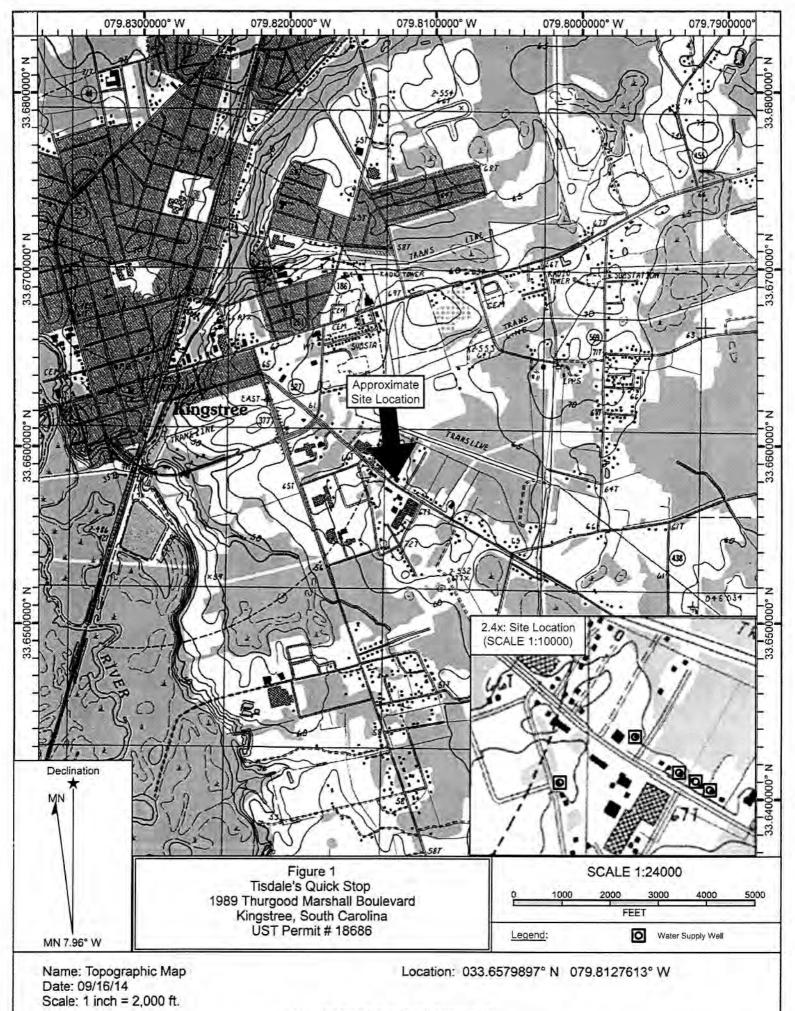
- A total of thirty Type III monitoring wells, two telescoping monitoring wells and two water supply wells were gauged, purged and/or sampled in January 2015. Ground water flow at the site based on the January 2015 event was generally toward the west. The horizontal hydraulic gradient across the site was less than 0.01 feet per foot. The vertical hydraulic gradient was 0.02 feet per foot downward.
- Concentrations of benzene, toluene, ethylbenzene, xylenes, MTBE, naphthalene and/or EDB that exceeded the RBSLs were reported in the ground water samples collected from MW-1, MW-2, MW-3, MW-20, MW-22, MW-23, MW-1A, MW-2A, MW-3A and MW-4A. Detectable concentrations of oxygenates were reported in samples collected from MW-1, MW-2, MW-3, MW-13, MW-20, MW-22, MW-23, MW-27, MW-1A, MW-2A, MW-3A and MW-4A. No detectable concentrations of requested method constituents were reported in the water supply well samples.
- Based on the historical presence of free product, an AFVR or MMPE event is recommended for the
  affected wells. In addition, monitoring well MW-16 historically contained free product or elevated
  levels of dissolved-phase contaminants and should be replaced.
- Ground water sampling should continue as directed by the SCDHEC.

#### 6.0 LIMITATIONS

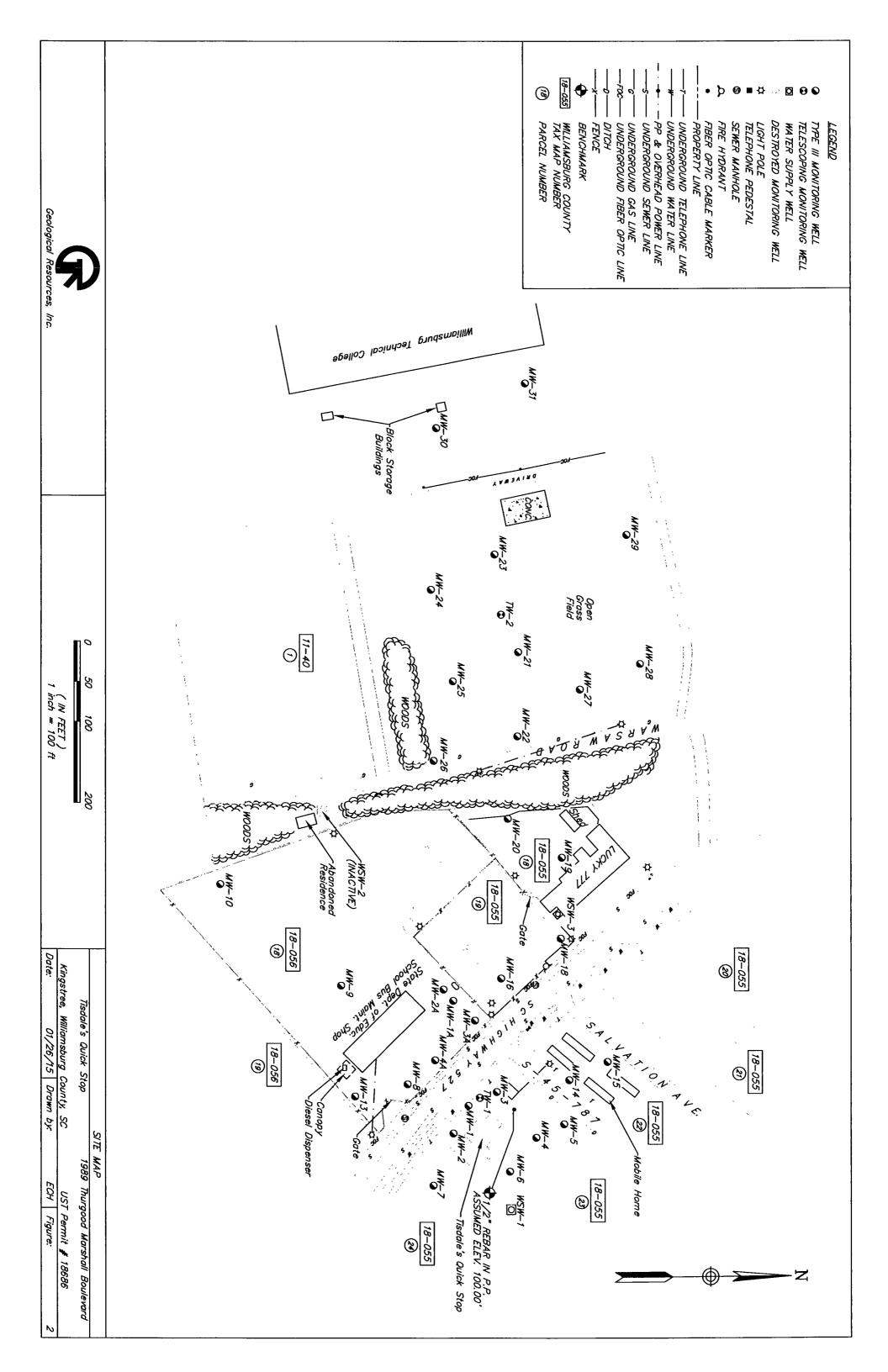
This report has been prepared for the exclusive use of Mr. Marty Easler and the SCDHEC for specific application to the referenced site in Williamsburg County, South Carolina. The assessment was conducted based on the scope of work and level of effort specified by the SCDHEC and with resources adequate only for that scope of work. Our findings have been developed in accordance with generally accepted standards of geology and hydrogeology practices in the State of South Carolina, available information, and our professional judgment. No other warranty is expressed or implied.

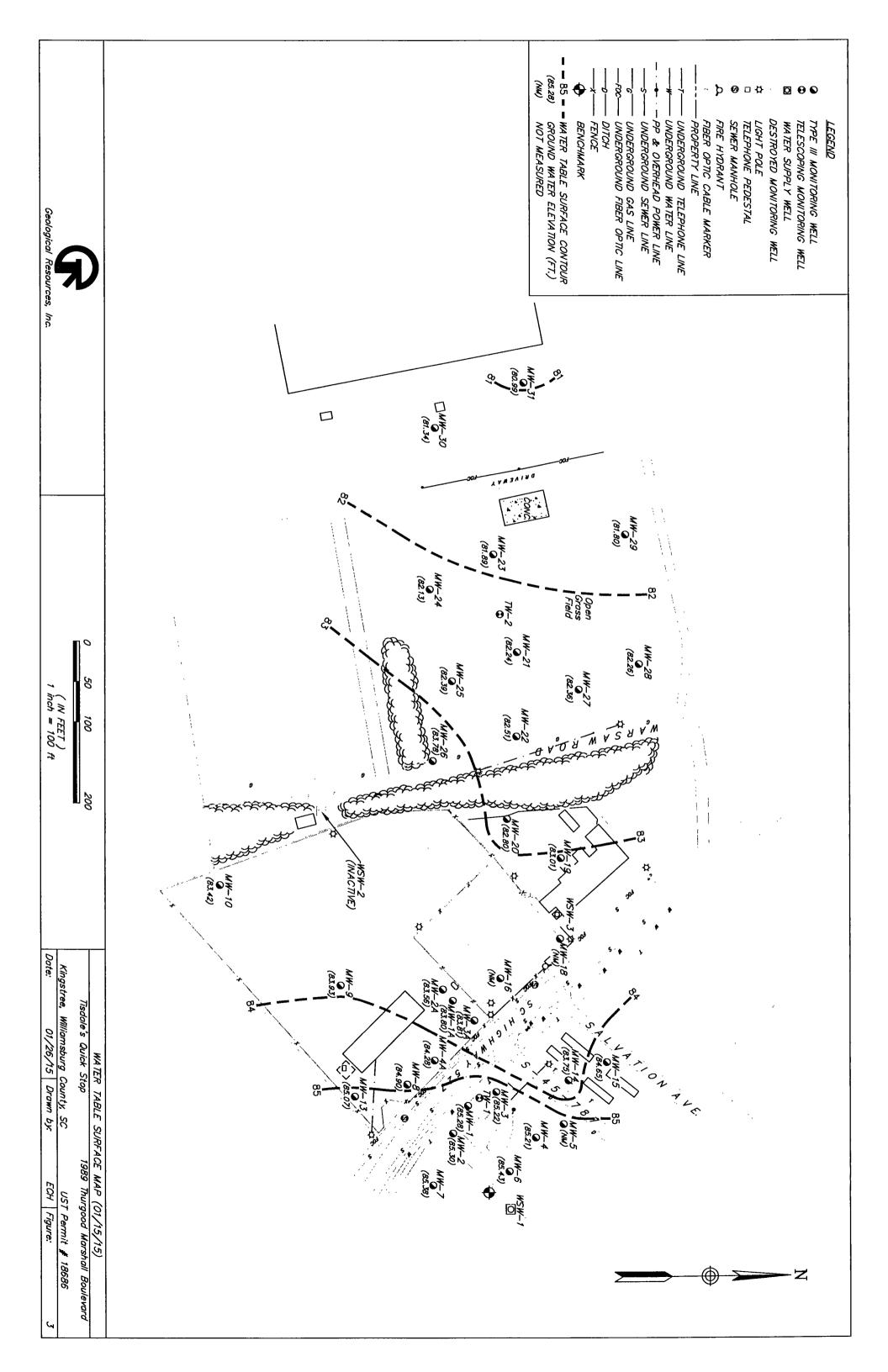
The data that are presented in this report are indicative of conditions that existed at the precise locations sampled and at the time the samples were collected. In addition, the data obtained from samples would be interpreted as being meaningful with respect to parameters indicated in the laboratory report. No additional information can logically be inferred from these data.

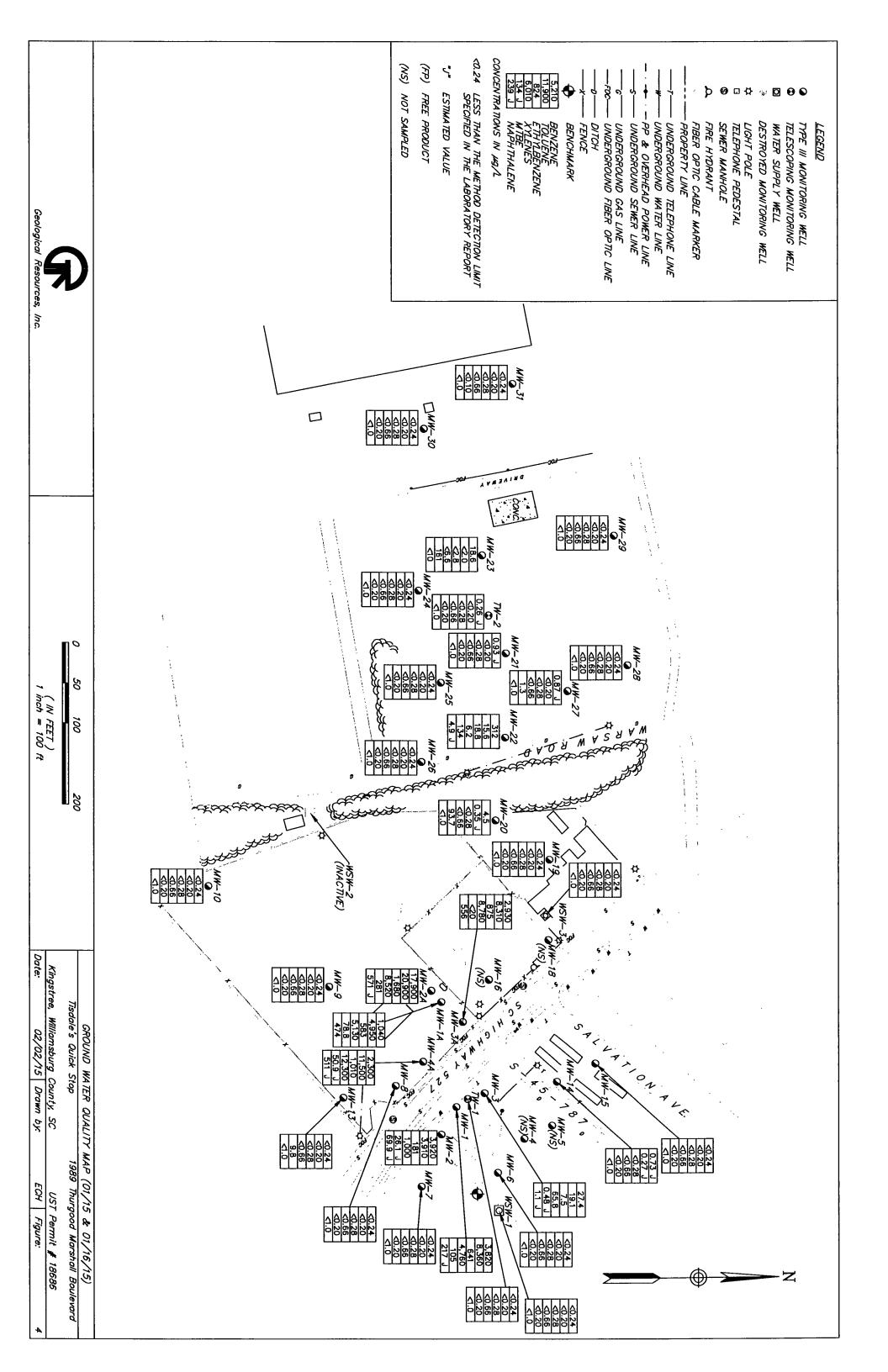


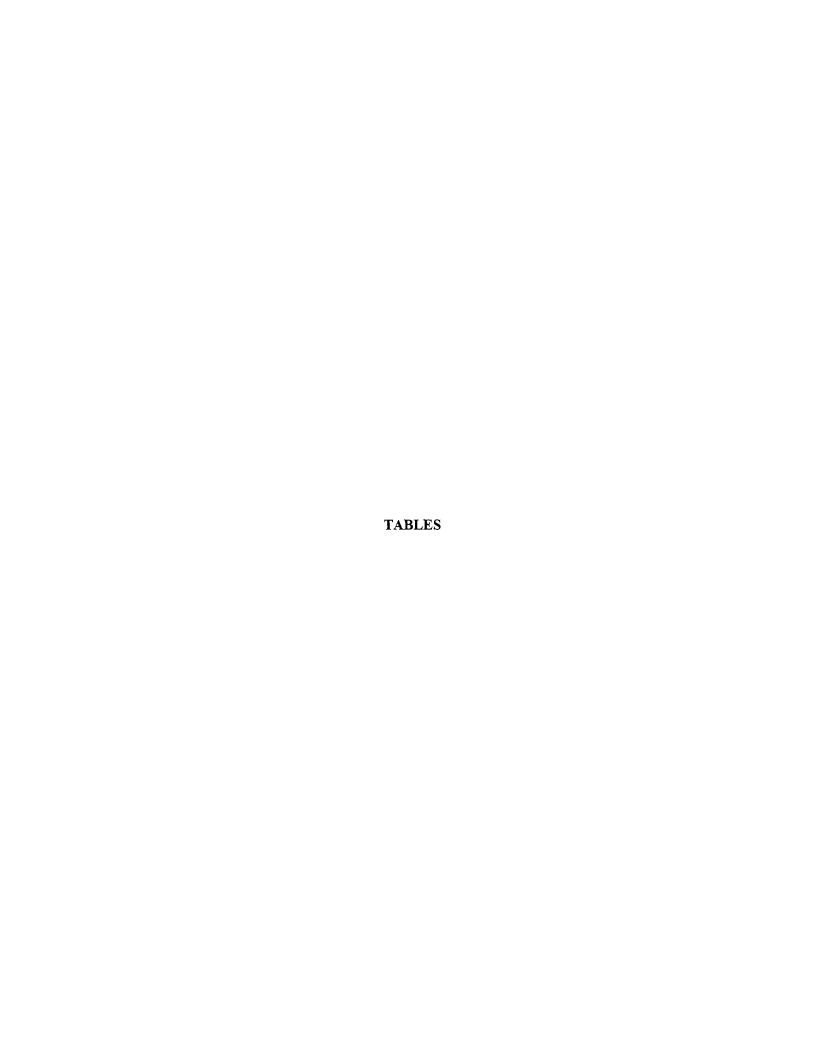


Generated by ECH at Geological Resources, Inc.









Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		15.72		83.09		
	02/09/04	]	14.25		84.56	1	
	09/23/04	1	11.94		86.87	1	
	01/21/05	]	13.09		85.72	1	
	03/23/06	1	12.43		86.38	1	
MW-1	01/07/09	98.81	15.12		83.69	20	10-20
	11/04/09	]	15.58		83.23	1	
	11/22/11	1	17.46		81.35		
	11/06/13		14.83		83.98		
	08/27/14	]	14.52		84.29		
	01/15/15		13.53		85.28		
	01/16/03		17.35	1.90	83.10		· · · · · · · · · · · · · · · · · · ·
	02/09/04	1	15.17	1.07	84.57		
	09/23/04		12.95	1.18	86.88		
	01/21/05	]	13.61	0.61	85.73		
	03/23/06		12.43		86.39	1	
MW-2	01/07/09	98.82	15.03	0.02	83.81	25	10-25
	11/03/09	]	15.97	0.11	82.94	1	
	11/22/11	]	17.87		80.95	7	
	11/06/13	]	15.02	0.21	83.98		
	08/27/14	]	14.62	0.02	84.22	7	
	01/15/15		13.52		85.30	7	

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		15.36	0.33	83.66		
	02/09/04	]	14.34	0.19	84.56	7	
	09/23/04	]	12.12	0.06	86.67	1	
	01/21/05	]	13.38	0.02	85.38	1	
	03/23/06	1	12.37		86.37	7	
MW-3	01/07/09	98.74	15.27	0.12	83.57	25	10-25
	11/03/09		15.82	0.12	83.02	1	
	11/22/11	1	17.47	0.04	81.30	1	
	11/06/13	]	14.69	0.01	84.06		
	08/27/14	]	14.48		84.26		
	01/15/15	]	13.52		85.22		
	01/16/03		15.06		83.52		
	02/09/04		14.01		84.57	1	
	09/23/04		11.96		86.62	1	
	01/21/05		13.13		85.45	_	10-25
	03/23/06		12.24		86.34		
MW-4	01/07/09	98.58	14.84		83.74	25	
	11/04/09		15.68		82.90	1	
	11/22/11		OBS		OBS		
	11/06/13		OBS		OBS		
	08/27/14	]	OBS		OBS		
	01/15/15	]	13.37		85.21		

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		14.77		83.36		
	02/09/04	]	13.77		84.36		
	09/23/04	1	11.71		86.42	]	
	01/21/05	]	13.14		84.99	]	
	03/23/06	]	12.80		85.33		
MW-5	01/07/09	98.13	14.96		83.17	22	12-22
	11/04/09	1	15.26		82.87		
	11/22/11	]	OBS		OBS	Well Depth	
	11/06/13		OBS		OBS		
	08/27/14		OBS		OBS		
	01/15/15	]	OBS		OBS		
	01/16/03		14.64		83.86		
	02/09/04	1	13.86		84.64	7	
	09/23/04	1	11.86		86.64		
	01/21/05	]	13.38		85.12		
	03/23/06	1	12.81		85.69	1	
MW-6	01/07/09	98.50	15.00		83.50	21.5	11.5-21.5
	11/03/09		15.23		83.27	1	
	11/22/11		17.47		81.03		
	11/06/13		14.39		84.11		
	08/27/14		14.27		84.23	1	
	01/15/15	]	13.07		85.43		

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		14.69		83.50		
	02/09/04		13.56		84.63	]	
	09/23/04		11.56		86.63		
	01/21/05		12.78		85.41	7	
	03/23/06		11.73		86.46		
MW-7	01/07/09	98.19	14.60		83.59	22	12-22
	11/03/09		15.27		82.92	1	
	11/22/11		17.32		80.87	1	
	11/06/13	]	14.26		83.93	7	
	08/27/14		14.05		84.14		
	01/15/15		12.81		85.38		
	01/16/03		14.85		83.32		
	02/09/04	}	13.98		84.19	7	
	09/23/04	1	12.07		86.10	7	
	01/21/05		13.33		84.84	22	12-22
	03/23/06		12.14		86.03		
MW-8	01/08/09	98.17	15.00		83.17		
	11/03/09		15.45		82.72		
	11/22/11		17.55		80.62		
	11/06/13		14.45		83.72	7	
	08/27/14		14.31		83.86		
	01/15/15	]	13.27		84.90	7	

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		15.79		82.73		
	02/09/04		15.00		83.52		
	09/23/04		13.12		85.40		
	01/21/05		14.64		83.88		
	03/23/06	] i	13.29		85.23	]	
MW-9	01/08/09	98.52	16.01		82.51	22	12-22
	11/03/09		16.56		81.96	1	1
	11/22/11		18.73		79.79		
	11/06/13		15.51		83.01	1	
	08/27/14	]	15.35		83.17	22	
	01/15/15		14.59		83.93		
	01/16/03		16.52		82.16		
	02/09/04		15.79		82.89		
	09/23/04		13.97		84.71	1	
	01/21/05	-	15.35		83.33	25	10-25
	03/23/06		14.18		84.50		
MW-10	01/08/09	98.68	15.75		82.93		
	11/03/09	-	17.41		81.27		
	11/22/11		19.43		79.25		
	11/06/13		13.37		85.31		
	08/27/14		16.16		82.52		
	01/15/15		15.26		83.42		

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		12.89		81.76		
	02/09/04	]	12.10		82.55		
	09/23/04	]	10.51		84.14		
	01/21/05		11.68		82.97		
	03/23/06		10.55		84.10	]	
MW-11	01/08/09	94.65	NM		NM	22	7-22
	11/03/09	]	NM		NM	1	
	11/22/11		NM		NM		
	11/06/13	]	NM		NM	1	
	08/27/14	]	NM		NM	7	
	01/15/15	}	NM		NM	7	
	01/16/03		13.13		82.57	22	7-22
	02/09/04		12.35		83.35		
	09/23/04		12.67		83.03		
	01/21/05		12.06		83.64		
	03/23/06		10.80		84.90		
MW-12	01/08/09	95.70	NM		NM		
	11/03/09		NM		NM		
	11/22/11		NM		NM		
	11/06/13		NM		NM		
	08/27/14	}	NM		NM		
	01/15/15	]	NM		NM		

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		15.65		83.36		
	02/09/04		14.70		84.31		ii
ļ	09/23/04		12.90		86.11		
1	01/21/05		14.05		84.96		
	03/23/06	]	12.82		86.19		
MW-13	01/08/09	99.01	15.68		83.33	25	10-25
	11/03/09	]	16.30		82.71	1	
	11/22/11	1	18.57		80.44	]	
	11/06/13	]	15.25		83.76		
	08/27/14	]	15.08		83.93		
	01/15/15	]	13.94		85.07		
	01/16/03		15.12		83.24		
	02/09/04	]	14.24		84.12	]	
	09/23/04	1	12.03		86.33	1	
	01/21/05	]	13.78		84.58	25	10-25
	03/23/06	]	12.75		85.61		
MW-14	01/08/09	98.36	15.32		83.04		
	11/04/09	-	15.77		82.59		
	11/22/11		17.72		80.64		
	11/06/13		15.86		82.50		
	08/27/14	]	14.58		83.78	-	
	01/15/15	]	14.61		83.75		

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		16.40		83.19		
	02/09/04	1	15.55		84.04		
	09/23/04	1	13.50		86.09		
	01/21/05	]	14.89		84.70		
	03/23/06		13.92		85.67	]	
MW-15	01/08/09	99.59	16.63		82.96	25	10-25
	11/04/09	]	17.16		82.43	]	
	11/22/11	1	19.15		80.44		
	11/06/13	1	16.26		83.33	]	
	08/27/14	1	15.96		83.63	1	
01/15/1	01/15/15		14.94		84.65	1	
	01/16/03	16.21 15.24	0.04	82.75			
	02/09/04		15.24	0.04	83.72		
	09/23/04		13.55		85.38		
	01/21/05		14.81	0.02	84.14		
	03/23/06		13.60		85.33	1	
MW-16	01/08/09	98.93	16.21		82.72	23	8-23
	11/04/09	1	16.57		82.36		
	11/22/11		NM		NM		
	11/06/13		NM		NM	]	
	08/27/14	]	NM		NM	1	
	01/15/15		NM		NM	]	
	01/16/03		16.00	0.07	82.31		
	02/09/04	]	14.55		83.70		
MW-17	09/23/04	98.25	12.82		85.43	23	8-23
	01/21/05		13.78		84.47		
	03/23/06		NM		NM		

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		17.70		82.13		
	02/09/04		16.91		82.92		
	09/23/04	] [	15.06		84.77		
	01/21/05	] [	16.45		83.38		
03/23	03/23/06	]	15.31		84.52	7	
MW-18	01/08/09	99.83	17.89		81.94	25	10-25
11/04/09 11/22/11 11/06/13	11/04/09	]	18.40		81.43	7	
	11/22/11	]	20.20		79.63		
	11/06/13		NM		NM		
	08/27/14		NM		NM		
	01/15/15	1	NM		NM		
	01/16/03		18.54		81.73		
	02/09/04	]	17.63		82.64	7	
	09/23/04	]	16.00		84.27	7	
	01/21/05	]	17.21		83.06	1	
	03/23/06		16.15	T	84.12	7	
MW-19	01/08/09	100.27	NM		NM	25	10-25
	11/04/09	]	19.22		81.05	7	
	11/22/11	]	20.93		79.34	7	
	11/06/13		18.50		81.77		
	08/27/14		18.08		82.19		
	01/15/15	]	17.26	T	83.01	7	

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		15.59		81.62		
	02/09/04	]	14.74		82.47	]	
	09/23/04		13.15		84.06	]	
	01/21/05	]	14.33		82.88	]	
	03/23/06	]	13.21		84.00	]	
MW-20	01/08/09	97.21	NM		NM	25	10-25
	11/04/09	]	16.30		80.91	]	
	11/22/11		18.02		79.19		
	11/06/13		15.36		81.85		
	08/27/14		15.18		82.03		
	01/15/15		14.41		82.80		
	01/16/03		14.70		81.02		
	02/09/04		13.85		81.87	1	
	09/23/04		12.27		83.45	1	
	01/21/05		13.42		82.30	7	
	03/23/06		NM		NM	1	
MW-21	01/08/09	95.72	NM		NM	23	8-23
	11/04/09	]	15.35		80.37	7	
	11/22/11	]	17.01		78.71	]	
	11/06/13	-	NM		NM	]	
	08/27/14		14.22		81.50	]	
	01/15/15	]	13.48		82.24	]	

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		15.40		80.32		
	02/09/04		14.61		82.07		
	09/23/04		12.92		83.76		
	01/21/05		14.15		82.53	]	
	03/23/06		13.21		83.47	]	
MW-22	01/08/09	96.68	15.54		81.14	25	10-25
	11/04/09	]	16.08		80.60		
	11/22/11		17.75		78.93		
	11/06/13		15.17		81.51		
	08/27/14		15.00		81.68		
	01/15/15		14.17		82.51		
	01/16/03		15.08		80.70		
	02/09/04		14.30		81.48		
	09/23/04	]	12.72		83.06		
	01/20/05	]	13.82		81.96	1	
	03/23/06		13.09		82.69		
MW-23	01/08/09	95.78	15.21		80.57	24	9-24
	11/04/09	]	15.64		80.14		
	11/22/11		17.28		78.50	]	•
	11/06/13		14.82		80.96	7	
	08/27/14		14.71		81.07	1	
	01/15/15	]	13.89		81.89	7	

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		13.00		80.86		
	02/09/04		12.19		81.67		
	09/23/04		10.58		83.28	]	
	01/20/05		11.71		82.15	]	
	03/23/06	]	10.87		82.99	1	
MW-24	01/08/09	93.86	13.17		80.69	23	8-23
	11/04/09	]	13.79		80.07	]	
	11/22/11	]	15.28		78.58	]	
	11/06/13	]	12.86		81.00		
	08/27/14		12.62		81.24		
	01/15/15	]	11.73		82.13		
	01/16/03		13.20		81.10		
	02/09/04		12.37		81.93	]	
	09/23/04	:	10.74		83.56	1	
	01/20/05		11.99		82.31	7	
<u>.</u>	03/23/06	]	11.00		83.30	]	
MW-25	01/08/09	94.30	13.34		80.96	23	8-23
	11/04/09	]	13.83		80.47	1	
	11/22/11		15.56		78.74	]	
	11/06/13	]	13.00		81.30	1	:
	08/27/14	]	· 12.79		81.51	]	
	01/15/15		11.91		82.39	]	

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		12.38		81.50		
	02/09/04	]	11.62		82.26		
	09/23/04		10.03		83.85		
	01/20/05	] [	11.18		82.70		
	03/23/06		10.58		83.30		
MW-26	01/08/09	93.88	12.44		81.44	21	6-21
	11/04/09		13.26		80.62	1	
	11/22/11	]	14.92		78.96		
	11/06/13		12.31		81.57		
	08/27/14		12.09		81.79		
	01/15/15		10.10		83.78		
	01/16/03		16.99		81.16		
	02/09/04	]	16.20		81.95	7	
	09/23/04		14.61		83.54	7	
	01/21/05	]	15.81		82.34	1	
	03/23/06	]	14.84		83.31	7	
MW-27	01/08/09	98.15	17.20		80.95	25	10-25
	11/04/09	]	17.64		80.51		
<b></b>	11/22/11	]	19.30		78.85	]	
	11/06/13		16.74		81.41		
	08/27/14		16.61		81.54		
	01/15/15	]	15.79		82.36		

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		17.46		80.99		
	02/09/04		16.55		81.90		
	09/23/04	] [	15.00		83.45		
	01/21/05		16.17		82.28		
	03/23/06	]	15.21		83.24		
MW-28	01/08/09	98.45	NM		NM	25	10-25
	11/04/09		18.00		80.45	]	
	11/22/11	]	19.60		78.85	]	
	11/06/13		17.11		81.34		
	08/27/14		16.96		81.49		
	01/15/15		16.19		82.26		
	01/16/03		16.17		80.61		
	02/09/04	1	15.30		81.48		
	09/23/04	]	13.74		83.04		
	01/20/05	]	14.69		82.09		
	03/23/06	1 1	14.12		82.66	1 .	
MW-29	01/08/09	96.78	16.31		80.47	25	10-25
	11/04/09	]	16.71		80.07	1	
	11/22/11	]	18.26		78.52		
	11/06/13		15.89		80.89		
	08/27/14		15.74		81.04	1	
	01/15/15	]	14.98		81.80		

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		15.18		80.20		
	02/09/04	]	14.36		81.02	1	
	09/23/04		12.85		82.53	1	
	01/20/05	]	13.72		81.66	]	
	03/23/06	1	13.04		82.34	1	
MW-30	01/08/09	95.38	15.41		79.97	22	7-22
	11/04/09		15.74		79.64	7	
11/22/11 11/06/13 08/27/14 01/15/15	11/22/11	1	17.36		78.02		
	11/06/13	1	14.95		80.43	1	
	08/27/14	1	14.75		80.63	1	
	01/15/15	1	14.04		81.34	1	1
	09/23/04		13.88		82.17	20	10-20
:	01/20/05	•	14.73		81.32		
	03/23/06		14.22		81.83		
	01/08/09	1	16.49		79.56		
MW-31	11/04/09	96.05	16.37		79.68		
	11/22/11		18.20		77.85		
	11/06/13	]	15.81		80.24	1	
	08/27/14	1	15.71		80.34	1	
	01/15/15	1	15.06		80.99		
	01/21/05		13.46	0.09	83.82		
	03/23/06	1	12.11		85.09	7	
	01/08/09	]	14.99		82.21	7	
	11/03/09	07.20	15.25	0.06	82.00	Unknown	Unknown
MW-1A	11/22/11	97.20	17.76	0.85	80.17	Onknown	Oliknown
	11/06/13		14.11	0.01	83.10	]	
	08/27/14	]	14.08		83.12		
	01/15/15	]	13.40		83.80	7	

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/21/05		13.63	0.28	83.91		
	03/23/06	1	12.54	0.31	85.03	1	
	01/08/09		15.86	0.54	81.90	1	
MW-2A	11/03/09	97.30	15.61	0.02	81.71	I Independent	Unknown
MW-ZA	11/22/11	97.30	17.26		80.04	Unknown	Ulikilowii
	11/06/13	]	14.25	0.03	83.08	]	
	08/27/14 01/15/15 01/21/05	]	14.21		83.09		
			13.74		83.56		
			13.46	0.22	84.00		Unknown
	03/23/06		12.22	0.03	85.08	Unknown	
	01/08/09		15.68	1.00	82.45		
MW-3A	11/03/09	97.27	15.63	0.47	82.04		
MW-3A	11/22/11	97.27	18.02	0.82	79.95		
	11/06/13	1	14.12	0.06	83.20		
	08/27/14	1	14.08		83.19	1	
	01/15/15	1	13.46		83.81	7	
-	01/21/05		13.06	0.02	85.05		
	03/23/06	1	12.43		85.66	1	
	01/08/09	1	16.02	0.85	82.80	7	
 	11/03/09	00.00	15.62	0.02	82.49	T 11	T.T
MW-4A	11/22/11	98.09	17.84	0.02	80.27	Unknown	Unknown
	11/06/13		14.61		83.48	7	
	08/27/14	]	14.52		83.57	1	
	01/15/15		13.81		84.28	7	

Well No.	Date	Top of Casing Elevation	Depth to Ground Water	Free Product Thickness	Ground Water Elevation	Constructed Well Depth	Screened Interval
	01/16/03		15.14		83.87		
	02/09/04		14.81		84.20	]	
	09/23/04		13.16		85.85		
	01/21/05		14.39		84.62		
	03/23/06		13.35		85.66	]	
TW-1	01/08/09	99.01	15.97		83.04	46	41-46
	11/04/09	1	16.84		82.17	]	
	11/22/11	1	18.76		80.25	]	'
	11/06/13		15.76		83.25		
	08/27/14		15.54		83.47		
	01/15/15	]	14.31		84.70		
	01/16/03		14.33		80.93		
	02/09/04		13.58		81.68	]	
	09/23/04	]	11.98		83.28	]	
	01/21/05		13.07		82.19	]	
	03/23/06	1	12.10		83.16		
TW-2	01/08/09	95.26	14.52		80.74	51	46-51
	11/04/09		15.01		80.25	1	
	11/22/11	]	16.63		78.63		
	11/06/13	]	14.19		81.07	]	
	08/27/14		13.97		81.29	]	
	01/15/15		13.14		82.12		

#### Notes:

- Elevations relative to a temporary benchmark with an assumed datum of 100.00 feet; data reported in feet.
- \*\*: If free product is present in a well, groundwater elevation calculated by: [Top of Casing Elevation Depth to Water] + [free product thickness x 0.8581].
- NM: Not measured; monitoring well is destroyed, covered or could not be located.
- OBS: Monitoring well obstructed.
- Monitoring wells MW-1A through MW-4A were installed by S&ME Consultants in January 2000.
- Monitoring wells MW-16 and MW-17 were completed above grade with stand up covers; depths to ground water were measured from the tops of casing; well depths and screened intervals were measured from the ground surface.

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	мтве	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	17,300	31,000	2,220	12,800	495	515	-	0.13
	02/09/04	11,400	19,600	1,010	12,000	395	525	-	NR
	10/07/04	4,160	7,500	504	4,400	348	290		0.03
	01/21/05	8,150	13,500	790	7,170	560	< 500	-	NR
	03/24/06	7,800	11,800	552	6,640	833	<100		NR
MW-1	01/07/09	15,700	15,100	1,600	12,310	1,120	878	< 500	0.092
	11/04/09	7,120	12,600	988	6,940	< 500	<500	< 500	0.056
	11/23/11	6,630	9,340	664	4,300	399	210 J	<20	NR
: 	11/06/13	4,870	8,550	659	4,900	125	165 J	<22	NR
· ·	08/27/14	5,210	11,900	824	6,010	134 J	239 J	<48	< 0.0095
	01/16/15	3,820	8,360	641	4,760	105	217 J	<24	< 0.0097
	11/06/13	5,090	10,600	687	4,830	105 J	<200	<44	NR
MW-1 DUP	08/27/14	5,210	12,300	845	6,140	130 J	210 J	<48	< 0.0095
	01/16/15	3,690	8,250	623	4,860	105	196 J	<20	< 0.0097

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	мтве	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	FP	FP	FP	FP	FP	FP	FP	FP
4	02/09/04	FP	FP	FP	FP	FP	FP	FP	FP
	10/07/04	FP	FP	FP	FP	FP	FP	FP	FP
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
MW-2	03/24/06	14,600	17,900	2,240	12,000	164	495	FP	NR
141 44 -2	01/07/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/23/11	20,100	23,800	1,810	9,030	89.8 J	413 J	<50	NR
	11/06/13	FP	FP	FP	FP	FP	FP	FP	FP
<del></del>	01/16/15	3,920	3,910	181	1,000	26.1 J	69.9 J	<12	0.17
MW-2 DUP (DUP 2)	11/23/11	20,600	24,500	2,030	10,000	92.5 J	620 J	<50	NR
<u> </u>	01/17/03	FP	FP	FP	FP	FP	FP	FP	FP
	02/09/04	FP	FP	FP	FP	FP	FP	FP	FP
	10/07/04	FP	FP	FP	FP	FP	FP	FP	FP
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
	03/24/06	54.6	44.4	17.1	660	2.04	8	FP	NR
MW-3	01/07/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
	11/06/13	FP	FP	FP	FP	FP	FP	FP	FP
	08/27/14	3.7	6.9	6.0	44.2	< 0.20	5.0	<0.24	< 0.0096
	01/16/15	27.4	19.1	7.5	65.8	0.48 J	1.1 J	< 0.24	< 0.0094

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	МТВЕ	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	3.7	<1.0	1.8	7.2	<1.0	7.4	FP	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	FP	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	FP	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	FP	NR
MW-4	03/24/06	0.200J	<1.00	<1.00	1.44	0.340J	<1.00	FP	NR
	01/07/09	5.9	<5.0	<5.0	6.0	<5.0	8.0	<5.0	< 0.020
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	01/17/03	<1.0	<1.0	1.7	3.4	<1.0	7.1	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	<0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
MW-5	03/24/06	<1.00	<1.00	<1.00	0.350J	<1.00	<1.00	-	NR
IVI VV -3	01/07/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	< 5.0	< 0.020
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	0.066
	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	01/15/15	NS	NS	NS	NS	NS	NS	NS	NS

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	мтве	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	1.9	3.8	<1.0	7	-	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	_	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
MW-6	01/07/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.020
	11/03/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.020
	11/22/11	<0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	< 0.21	<1.0	<0.22	NR
	08/27/14	< 0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0094
	01/16/15	< 0.24	< 0.20	< 0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0096
	01/17/03	70.3	145	24.3	308	1.8	25.7	-	<0.02
	02/09/04	<1.0	11.4	60.2	441	<1.0	40.7	-	NR
	10/07/04	<1.0	1.1	2.4	25	<1.0	5.8	-	< 0.02
	01/21/05	<1.0	<1.0	4.5	26.9	<1.0	17.5	-	NR
	03/24/06	<1.00	<1.00	<1.00	23.3	0.260J	9.62	-	NR
MW-7	01/07/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/03/09	< 5.0	< 5.0	<5.0	<10.0	< 5.0	12.2	<5.0	< 0.020
	11/22/11	< 0.20	< 0.20	< 0.20	<0.52	0.62 J	<1.0	< 0.20	NR
	11/06/13	<0.21	< 0.20	< 0.29	< 0.50	< 0.21	<1.0	< 0.22	NR
	08/27/14	< 0.24	< 0.20	<0.28	< 0.66	0.41 J	<1.0	<0.24	< 0.0096
	01/16/15	<0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	<0.0098

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	мтве	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	1,480	11,800	1,930	9,930	6.3	< 500		< 0.02
	02/09/04	59	1,700	424	2,380	<5.0	96	-	NR
	10/07/04	<1.0	3.2	7.4	71.1	<1.0	9	-	< 0.02
	01/21/05	12	161	55.6	1,100	<1.0	52.2	-	NR
	03/24/06	4.19	24.1	118	1,070	<1.00	102		NR
MW-8	01/08/09	16.8	<5.0	<5.0	200.6	<5.0	18.5	<5.0	< 0.019
	11/03/09	<5.0	<5.0	<5.0	12.8	<5.0	34.7	<5.0	< 0.020
	11/22/11	11.6	1.3	8.1	7.0	< 0.34	19.3	< 0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	<0.21	<1.0	<0.22	NR
	08/27/14	< 0.24	< 0.20	0.69 J	< 0.66	< 0.20	<1.0	< 0.24	< 0.0096
	01/15/15	<0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0097
MW-8 DUP	11/06/13	0.33 J	< 0.20	< 0.29	< 0.50	< 0.21	<1.0	<0.22	NR
IVI VV -O DUP	01/15/15	< 0.20	< 0.40	< 0.20	< 0.51	< 0.30	<1.0	<0.20	< 0.0097

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	МТВЕ	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	34	<5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	11.1	<5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	1.2	<1.0	<5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	12.5	<5.00	-	NR
	03/24/06	<1.00	<1.00	0.270J	2.49	1.5	<1.00		NR
MW-9	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/03/09	<5.0	<5.0	< 5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/30/11	< 0.20	< 0.20	< 0.20	< 0.52	1.9	<1.0	<0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	0.28 J	<1.0	<0.22	NR
	08/27/14	< 0.24	< 0.20	< 0.28	< 0.66	<0.20	<1.0	< 0.24	<0.0094
	01/15/15	< 0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0095
	01/17/03	<1.0	<1.0	<1.0	<1.0	1.5	<5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	_ NR
	03/24/06	<1.00	<1.00	<1.00	0.490J	<1.00	<1.00		NR
MW-10	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/03/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.020
	11/30/11	<0.20	<0.20	<0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	<0.21	< 0.20	< 0.29	< 0.50	< 0.21	<1.0	<0.22	NR
	08/27/14	< 0.24	<0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0096
	01/15/15	<0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0094

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	мтве	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	1.6	< 5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	23.7	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	5.1	< 5.00	-	NR
MW-11	03/24/06	<1.00	<1.00	<1.00	<1.00	0.250J	<1.00	-	NR
	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	01/17/03	<1.0	<1.0	<1.0	<1.0	2	< 5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	_	NR
MW-12	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
1V1 VV -1 Z	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	01/15/15	NS	NS	NS	NS	NS	NS	NS	NS

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	МТВЕ	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	42.5	<5.00		< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	145	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	6.3	< 5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	40.8	< 5.00	-	NR
	03/24/06	<1.00	<1.00	<1.00	<1.00	11	<1.00	-	NR
MW-13	01/08/09	<5.0	< 5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	11/03/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.020
	11/30/11	< 0.20	< 0.20	< 0.20	< 0.52	2.4	<1.0	<0.20	NR
	11/06/13	<0.21	< 0.20	< 0.29	< 0.50	0.22 J	<1.0	< 0.22	NR
	08/27/14	< 0.24	< 0.20	<0.28	< 0.66	3.5	<1.0	<0.24	< 0.0095
	01/15/15	< 0.24	< 0.20	<0.28	< 0.66	9.8	<1.0	<0.24	< 0.0094
	01/17/03	3.4	<1.0	<1.0	4.5	<1.0	10.9	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	· -	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	- ]	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
MW-14	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/04/09	< 5.0	< 5.0	<5.0	<10.0	<5.0	<5.0	< 5.0	< 0.019
	11/22/11	79.5	16.7	4.8	26.8	5.8	8.7 J	< 0.40	NR
	11/06/13	0.24 J	<0.20	< 0.29	< 0.50	<0.21	<1.0	< 0.22	NR
	08/27/14	< 0.24	<0.20	<0.28	< 0.66	< 0.20	<1.0	< 0.24	< 0.0095
	01/16/15	0.73 J	0.27 J	<0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0094

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	мтве	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	_	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	_	NR
MW-15	01/08/09	<5.0	< 5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/04/09	<5.0	< 5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	< 0.21	<1.0	< 0.22	NR
	08/27/14	< 0.24	< 0.20	< 0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0096
	01/16/15	< 0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0094
	01/17/03	FP	FP	FP	FP	FP	FP		FP
	02/09/04	FP	FP	FP	FP	FP	FP	-	FP
	10/07/04	FP	FP	FP	FP	FP	FP		FP
	01/21/05	FP	FP	FP	FP	FP	FP	-	FP
MW-16	03/24/06	14,600	20,300	2,080	11,800	536	1,080	-	NR
	01/08/09	2,660	6,520	930	5,100	<25.0	633	<25.0	< 0.020
	11/04/09	18,500	33,300	2,880	16,300	454	928	<250	0.30
	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	мтве	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	FP	FP	FP	FP	FP	FP	_	FP
	02/09/04	<1.0	13.2	12.5	74.2	19	. 10.1	-	NR
MW-17	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00		< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	03/24/06	NS	NS	NS	NS	NS	NS	NS	NS
<del>-</del>	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	<b>-</b>	< 0.02
	02/09/04	15.4	5.5	<1.0	5.6	<1.0	< 5.00	_	NR
	10/07/04	1.5	<1.0	<1.0	<1.0	<1.0	< 5.00	_	< 0.02
	01/21/05	19.2	1.1	<1.0	7.1	<1.0	< 5.00	-	NR
MW-18	03/24/06	36.2	1.27	<1.00	6.16	<1.00	<1.00	_	NR
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	МТВЕ	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/21/05	3.1	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
MW-19	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	<0.21	< 0.20	< 0.29	< 0.50	<0.21	<1.0	< 0.22	NR
	08/27/14	< 0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	< 0.24	< 0.0095
	01/15/15	< 0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0096
MW-19 DUP (DUP 1)	11/22/11	1.3	<0.20	<0.20	<0.52	<0.34	<1.0	<0.20	NR
-	01/17/03	1,520	314	108	298	80.4	26.3	-	< 0.02
,	02/09/04	3,220	530	15.2	830	78	61.2	-	NR
	10/07/04	90.2	6.6	<1.0	19.8	94.4	< 5.00	-	<0.02
1	01/21/05	1,120	43.1	5.8	95.1	73	36.9	-	NR
	03/24/06	44.9	0.300J	0.310J	3.54	9.14	<1.00	-	NR
MW-20	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	9.5	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	2.4	< 0.20	< 0.20	< 0.52	6.2	<1.0	< 0.20	NR
	11/06/13	235	<1.0	<1.5	<2.5	5.2	10.7 J	<1.1	NR
	08/27/14	<0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0096
	01/15/15	4.5	0.35 J	<0.28	< 0.66	93.7	<1.0	< 0.24	< 0.0095

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	мтве	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	269	27.5	12	118	42.6	12.6	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	_	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	03/23/06	NS	NS	NS	NS	NS	NS	-	NS
MW-21	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	108	4.5	< 0.40	<1.0	8.7	<2.0	< 0.40	NR
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	08/27/14	<0.24	< 0.20	< 0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0095
	01/15/15	0.93 J	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0098
	01/17/03	2,080	281	279	576	257	67.9		< 0.02
	02/09/04	782	49.2	41.4	77.5	93.4	15.8	-	NR
	10/07/04	109	11.3	3.2	19.5	71.4	<5.00	_	< 0.02
	01/21/05	3,980	300	197	454	67	112	-	NR
	03/23/06	0.340J	<1.00	<1.00	<1.00	8.11	<1.00	-	NR
MW-22	01/08/09	< 5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	60.0	8.3	3.4	3.1	13.8	<1.0	< 0.20	NR
	11/06/13	574	41.6	45.7	10.9 J	37.3	<10	<2.2	NR
	08/27/14	1.0	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0096
	01/15/15	312	15.6	18.8	6.2	134	4.9 J	0.99 J	< 0.0095

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	МТВЕ	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	27.6	<1.0	<1.0	3.7	27.2	10.5	-	< 0.02
	02/09/04	1,760	72	<1.0	592	372	17.2	-	NR
	10/07/04	1,620	103	<1.0	598	286	46	-	< 0.02
	01/20/05	1,670	111	<1.0	578	172	19.9	-	NR_
	03/23/06	1,290	44.1	<1.00	266	168	38.4	-	NR
MW-23	01/08/09	574	<5.0	<5.0	30.8	65.2	<5.0	<5.0	< 0.019
	11/04/09	1,250	<25.0	<25.0	98.9	152	31.0	<25.0	< 0.019
	11/22/11	435	<1.0	<1.0	<2.6	140	15.9 J	<1.0	NR
	11/06/13	49.6	2.8	<0.58	1.2 J	98.6	2.3 J	<0.44	NR
	08/27/14	239	16.4	<1.4	7.3 J	239	<5.0	<1.2	< 0.0096
	01/15/15	18.6	<2.0	<2.8	<6.6	161	<10	<2.4	< 0.0094
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	_	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00		NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	_	NR
	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
MW-24	01/08/09	< 5.0	< 5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.020
	11/04/09	<5.0	< 5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.020
	11/22/11	< 0.20	< 0.20	<0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	<0.21	<1.0	<0.22	NR
	08/27/14	< 0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0095
	01/15/15	<0.24	< 0.20	<0.28	< 0.66	<0.20	<1.0	<0.24	<0.0095

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	мтве	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	4.9	<5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	<0.02
	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR
	03/23/06	0.330J	<1.00	<1.00	<1.00	<1.00	<1.00	- 1	NR
MW-25	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	1.8	< 0.20	< 0.29	< 0.50	2.7	<1.0	< 0.22	NR
	08/27/14	< 0.24	< 0.20	< 0.28	< 0.66	< 0.20	<1.0	< 0.24	<0.0095
	01/15/15	<0.24	< 0.20	< 0.28	< 0.66	< 0.20	<1.0	< 0.24	< 0.0096
	01/17/03	1.3	<1.0	<1.0	<1.0	4.7	< 5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	_	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	< 0.02
	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00		NR
MW-26	01/08/09	< 5.0	<5.0	< 5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	0.86 J	<1.0	< 0.20	NR
	11/06/13	<0.21	< 0.20	< 0.29	< 0.50	<0.21	<1.0	< 0.22	NR
	08/27/14	<0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	<0.0095
	01/15/15	<0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	<0.0096

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	МТВЕ	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	1.7	<5.00	-	NR
	03/23/06	0.320J	<1.00	<1.00	<1.00	3.95	<1.00	_	NR
MW-27	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.020
	11/22/11	6.2	< 0.20	< 0.20	0.61 J	2.4	<1.0	< 0.20	NR
	11/06/13	0.27 J	<0.20	< 0.29	< 0.50	0.22 J	<1.0	<0.22	NR
	08/27/14	< 0.24	< 0.20	< 0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0096
	01/15/15	0.87 J	< 0.20	<0.28	< 0.66	1.3	<1.0	<0.24	< 0.0097
	01/17/03	<1.0	<1.0	<1.0	<1.0	1.4	< 5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	03/23/06	<1.00	<1.00	<1.00	<1.00	0.340 J	<1.00	-	NR
MW-28	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	0.38 J	<1.0	< 0.20	NR
	11/06/13	<0.21	< 0.20	< 0.29	< 0.50	< 0.21	<1.0	<0.22	NR
	08/27/14	< 0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0094
	01/15/15	<0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0095

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	МТВЕ	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	<0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR
	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
MW-29	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.020
	11/04/09	<5.0	< 5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	<0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	<0.21	<1.0	< 0.22	NR
	08/27/14	< 0.24	< 0.20	< 0.28	< 0.66	< 0.20	<1.0	< 0.24	<0.0095
	01/15/15	< 0.24	< 0.20	< 0.28	< 0.66	< 0.20	<1.0	< 0.24	<0.0095
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR
	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
MW-30	01/08/09	< 5.0	<5.0	< 5.0	<15.0	< 5.0	<5.0	<5.0	< 0.019
ļ	11/04/09	< 5.0	< 5.0	< 5.0	<10.0	<5.0	11.0	<5.0	< 0.020
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	<0.21	<1.0	< 0.22	NR
	08/27/14	<0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	<0.0094
	01/15/15	<0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	<0.0096

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	мтве	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	< 0.02
	01/20/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR
	03/23/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
MW-31	11/04/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.020
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	<0.21	<1.0	< 0.22	NR
	08/27/14	< 0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0094
	01/15/15	< 0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0096
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
	03/24/06	20,700	30,600	3,310	17,600	1,880	891	-	NR
	01/08/09	14,300	29,300	8,930	48,800	1,250	6,060	<500	0.066
MW-1A	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
WIW-IA	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
	11/06/13	FP	FP	FP	FP	FP	FP	FP_	FP
	08/27/14	140	417	42.7	590	4.4 J	155	<1.2	< 0.0097
	01/15/15	1,040	4,950	583	5,130	78.8	474	<1.2	< 0.0096

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	мтве	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
	03/23/06	FP	FP	FP	FP	FP	FP	FP	FP
	01/08/09	FP	FP	FP	FP	FP	FP	FP	FP
MW-2A	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
IVI VV -2.A	11/30/11	260	517	37.3	491	<3.4	70.4	<2.0	NR
	11/06/13	FP	FP	FP	FP	FP	FP	FP	FP
	08/27/14	17,000	30,600	2,420	15,700	232 J	1,270 J	<60	< 0.0093
	01/15/15	17,900	20,900	1,680	8,520	281	571 J	<60	0.12
MW-2A DUP (DUP B)	08/27/14	17,500	31,000	2,310	14,500	250 J	695 J	<120	0.19
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
	03/23/06	FP	FP	FP	FP	FP	FP	FP	FP
	01/08/09	FP	FP	FP	FP	FP	FP	FP	FP
MW-3A	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
IVI VV - 3A	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
	11/06/13	FP	FP	FP	FP	FP	FP	FP	FP
	08/27/14	15,700	38,900	2,430	15,300	<100	873 J	<120	0.17
	01/15/15	2,930	8,310	875	8,780	<20	556	<24	0.029

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/21/05	FP	FP	FP	FP	FP	FP	FP	FP
	03/24/06	19,600	34,800	3,900	21,500	247	952	NR	NR
	01/08/09	FP	FP	FP	FP	FP	FP	FP	FP
MW-4A	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
IVI VV -4A	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
	11/06/13	7,250	30,200	2,050	12,700	<110	627 J	<110	NR
	08/27/14	6,890	27,700	1,680	16,300	<50	561 J	<60	0.13
	01/15/15	2,300	11,500	1,010	12,300	50.9 J	511 J	<48	0.052
	01/17/03	25.5	46.6	6.9	19.8	<1.0	9.3	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
<u> </u>	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
TW-1	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.020
	11/04/09	< 5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
	11/23/11	<0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	<0.21	<1.0	< 0.22	NR
	08/28/14	< 0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0095
<u>-</u>	01/16/15	<0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0096

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	02/09/04	<1.0	<1.0	<1.0	<1.0	11.7	<5.00	-	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	03/24/06	7.22	<1.00	<1.00	<1.00	1.7	<1.00	-	NR
TW-2	01/08/09	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/04/09	<5.0	<5.0	< 5.0	<10.0	<5.0	<5.0	<5.0	< 0.020
	11/22/11	7.0	< 0.20	< 0.20	< 0.52	1.0	<1.0	<0.20	NR
	11/06/13	4.7	< 0.20	< 0.29	< 0.50	<0.21	<1.0	<0.22	NR
	08/27/14	< 0.24	< 0.20	< 0.28	< 0.66	< 0.20	<1.0	< 0.24	< 0.0095
	01/15/15	0.26 J	< 0.20	< 0.28	< 0.66	< 0.20	<1.0	< 0.24	< 0.0094
	01/17/03	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	02/09/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	_	NR
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	_	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	NR
	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00		NR
WSW-1	01/08/09	< 5.0	< 5.0	< 5.0	<15.0	<5.0	<5.0	<5.0	< 0.019
	11/04/09	< 5.0	< 5.0	< 5.0	<10.0	<5.0	<5.0	< 5.0	< 0.019
	11/22/11	<0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	<0.21	< 0.20	< 0.29	< 0.50	<0.21	<1.0	< 0.22	NR
	08/28/14	< 0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	< 0.24	< 0.0094
	01/16/15	<0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	< 0.24	< 0.0096

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	01/08/09	NS	NS	NS	NS	NS	NS	NS	NS
WSW-2	11/03/09	NS	NS	NS	NS	NS	NS	NS	NS
W 5 W -2	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	10/07/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.00	-	< 0.02
	01/21/05	<1.0	<1.0	<1.0	<1.0	<1.0	< 5.00	-	NR
	03/24/06	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	NR
WSW-3	11/04/09	<5.0	< 5.0	<5.0	<10.0	<5.0	<5.0	<5.0	< 0.019
W 5 W - 5	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
	11/06/13	< 0.21	< 0.20	< 0.29	< 0.50	<0.21	<1.0	< 0.22	NR
	08/28/14	< 0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	< 0.24	< 0.0094
	01/15/15	<0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	< 0.24	< 0.0097
	11/22/11	< 0.20	< 0.20	< 0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
FIELD	11/06/13	<0.21	0.21 J	< 0.29	< 0.50	< 0.21	<1.0	< 0.22	NR
BLANK	08/27/14	<0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0094
	01/16/15	<0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0096

Well No.	Date	Benzene	Toluene	Ethylbenzene	Xylenes	МТВЕ	Naphthalene	1,2-DCA	EDB
RBSL		5	1,000	700	10,000	40	25	5	0.05
	11/22/11	< 0.20	< 0.20	<0.20	< 0.52	< 0.34	<1.0	< 0.20	NR
TRIP BLANK	11/06/13	<0.21	< 0.20	< 0.29	< 0.50	<0.21	<1.0	<0.22	NR
I KII BLANK	08/27/14	<0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	NR
	01/15/15	<0.24	< 0.20	<0.28	< 0.66	< 0.20	<1.0	<0.24	< 0.0096

#### Notes:

- Analyses for selected volatile organic compounds by EPA Method 8260B; lead by EPA Method 6010B or 200.7; and EDB by EPA Method 8011; results reported in μg/l.
- RBSL: May 2001 Risk Based Screening Level.
- Concentrations in bold face type exceeded the RBSL.
- <: Less than the report limit specified in the laboratory report.
- NS: Not sampled.
- NR: Analysis not requested.
- I or J: Estimated value.
- FP: Free product.

Well No.	Date	DIPE	ЕТВА	Ethanol	ЕТВЕ	TAA	TAME	ТВА	TBF
	03/24/06	<50.0	5,030	<5,000	<50.0	35,000	<50.0	1,280	<1,000
	11/04/09	<500	<10,000	<20,000	<1,000	10,200	<1,000	<10,000	<5,000
MW-1	11/23/11	<35	<2,500	<2,500	<31	24,100	<39	<300	< 500
1V1 VV -1	11/06/13	<25	<2,000	<2,100	<55	7,700	<49	<470	< 500
	08/27/14	<45	<760	<4,600	<40	10,600	<44	<1,800	<810
	01/16/15	<23	<380	<2300	<20	12,200	<22	<880	<400
	11/06/13	<51	<4,000	<4,200	<110	7,020	<97	<950	<1,000
MW-1 DUP	08/27/14	<45	<760	<4,600	<40	8,960	<44	<1,800	<810
	01/16/15	<20	<1,000	<3,500	<20	12,300	<22	<540	<400
	03/24/06	< 50.0	4,620	<5,000	<50.0	25,700	54	1,020	<1,000
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
MW-2	11/23/11	<88	<6,300	<6,300	<78	37,800	<98	<750	<1,300
	11/06/13	FP	FP	FP	FP	FP	FP	FP	FP
	01/16/15	<11	<190	<1,200	<10	5,830	<11	<440	<200
MW-2 DUP (DUP 2)	11/23/11	<88	<6,300	<6,300	<78	37,000	<98	<750	<1,300
	03/24/06	<1.00	99.1	<100	<1.00	223	<1.00	26.7	<20.0
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
MW-3	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
101 00 - 3	11/06/13	FP	FP	FP	FP	FP	FP	FP	FP
	08/27/14	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
	01/16/15	< 0.23	<3.8	<23	<0.20	23.9	<0.22	<8.8	<4.0
	11/04/09	<5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
MW-4	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
1V1 VV -4	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	01/15/15	NS	NS	NS	NS	NS	NS	NS	NS

Well No.	Date	DIPE	ЕТВА	Ethanol	ETBE	TAA	TAME	TBA	TBF
	11/04/09	<5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
MW-5	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
WIW-5	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	01/15/15	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	<5.0	115	<200	<10.0	<100	<10.0	<100	<50.0
	11/22/11	< 0.35	<25	<25	< 0.31	< 5.0	< 0.39	<3.0	<5.0
MW-6	11/06/13	< 0.25	<20	<21	< 0.55	<5.0	< 0.49	<4.7	< 5.0
	08/27/14	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
	01/16/15	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
	11/03/09	< 5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/22/11	< 0.35	<25	<25	< 0.31	<5.0	< 0.39	<3.0	< 5.0
MW-7	11/06/13	< 0.25	<20	<21	< 0.55	<5.0	< 0.49	<4.7	<5.0
į	08/27/14	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
	01/16/15	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
	11/03/09	<5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/22/11	< 0.35	<25	<25	< 0.31	11.2 J	< 0.39	<3.0	< 5.0
MW-8	11/06/13	< 0.25	<20	<21	< 0.55	<5.0	<0.49	<4.7	<5.0
	08/27/14	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
	01/15/15	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
MW-8 DUP	11/06/13	< 0.25	<20	<21	< 0.55	<5.0	<0.49	<4.7	< 5.0
IVI W -0 DUF	01/15/15	< 0.20	<10	<35	< 0.20	<8.1	< 0.22	<5.4	<4.0
	11/03/09	<5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/30/11	< 0.35	<25	<25	< 0.31	<5.0	< 0.39	<3.0	<5.0
MW-9	11/06/13	< 0.25	<20	<21	< 0.55	<5.0	<0.49	<4.7	< 5.0
	08/27/14	< 0.23	<3.8	<23	< 0.20	<7.4	<0.22	<8.8	<4.0
	01/15/15	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0

Well No.	Date	DIPE	ЕТВА	Ethanol	ЕТВЕ	TAA	TAME	ТВА	TBF
	11/03/09	<5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/30/11	< 0.35	<25	<25	< 0.31	<5.0	< 0.39	<3.0	<5.0
MW-10	11/06/13	< 0.25	<20	<21	< 0.55	<5.0	< 0.49	<4.7	<5.0
	08/27/14	< 0.23	<3.8	<23	<0.20	<7.4	<0.22	<8.8	<4.0
	01/15/15	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
	11/03/09	NS	NS	NS	NS	NS	NS	NS	NS
MW-11	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
101 00 -1 1	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	01/15/15	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	NS	NS	NS	NS	NS	NS	NS	NS
MW-12	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
1V1 VV - 1 Z	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	01/15/15	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	< 5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/30/11	< 0.35	<25	<25	< 0.31	< 5.0	< 0.39	<3.0	<5.0
MW-13	11/06/13	< 0.25	<20	<21	< 0.55	<5.0	<0.49	<4.7	< 5.0
	08/27/14	< 0.23	<3.8	<23	<0.20	<7.4	0.96 J	<8.8	<4.0
	01/15/15	< 0.23	<3.8	<23	< 0.20	<7.4	5.1	<8.8	<4.0
	11/04/09	<5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/22/11	< 0.70	< 50	<50	< 0.62	450	<0.78	<6.0	<10
MW-14	11/06/13	< 0.25	<20	<21	< 0.55	<5.0	<0.49	<4.7	<5.0
	08/27/14	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
	01/16/15	< 0.23	<3.8	<23	< 0.20	<7.4	<0.22	<8.8	<4.0

Well No.	Date	DIPE	ЕТВА	Ethanol	ЕТВЕ	TAA	TAME	ТВА	TBF
77.02	11/04/09	<5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/22/11	< 0.35	<25	<25	< 0.31	<5.0	< 0.39	<3.0	<5.0
MW-15	11/06/13	< 0.25	<20	<21	< 0.55	<5.0	<0.49	<4.7	< 5.0
	08/27/14	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
	01/16/15	< 0.23	<3.8	<23	< 0.20	<7.4	<0.22	<8.8	<4.0
	03/24/06	<50.0	5,140	<5,000	<50.0	34,600	72.5	1,560	<1,000
	11/04/09	<250	<5,000	<10,000	< 500	45,400	<500	<5,000	<2,500
MW-16	11/22/11	NS	NS	NS	NS	NS	NS	NS	NS
	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	01/15/15	NS	NS	NS	NS	NS	NS	NS	NS
	11/04/09	<5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
MW-18	11/22/11	< 0.35	<25	<25	<0.31	19.2 J	< 0.39	<3.0	< 5.0
IVI VV -10	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	01/15/15	NS	NS	NS	NS	NS	NS	NS	NS
	11/03/09	< 5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/22/11	< 0.35	<25	<25	< 0.31	5.6 J	< 0.39	<3.0	< 5.0
MW-19	11/06/13	< 0.25	<20	<21	< 0.55	<5.0	< 0.49	<4.7	< 5.0
	08/27/14	< 0.23	<3.8	<23	<0.20	<7.4	< 0.22	<8.8	<4.0
	01/15/15	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
MW-19 DUP (DUP 1)	11/22/11	<0.35	<25	<25	<0.31	12.5 J	<0.39	<3.0	<5.0
	11/03/09	< 5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/22/11	< 0.35	<25	<25	< 0.31	151	< 0.39	9.3 J	<5.0
MW-20	11/06/13	<1.3	<100	<110	<2.8	567	<2.4	<24	<25
	08/27/14	< 0.23	<3.8	<23	< 0.20	<7.4	<0.22	<8.8	<4.0
	01/15/15	1.6	<3.8	<23	1.9 J	1,880	3.6	105	<4.0

Well No.	Date	DIPE	ЕТВА	Ethanol	ETBE	TAA	TAME	ТВА	TBF
	11/03/09	<5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/22/11	< 0.70	<50	<50	< 0.62	343	1.1 J	25.0 J	<10
MW-21	11/06/13	NS	NS	NS	NS	NS	NS	NS	NS
	08/27/14	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
	01/15/15	< 0.23	<3.8	<23	< 0.20	<7.4	<0.22	<8.8	<4.0
	11/04/09	<5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/22/11	< 0.35	<25	<25	0.60 J	1,370	3.6	45.3	<5.0
MW-22	11/06/13	<2.5	<200	<210	<5.5	2,000	8.9 J	50.3 J	<50
}	08/27/14	< 0.23	<3.8	<23	< 0.20	<7.4	<0.22	<8.8	<4.0
	01/15/15	3.7	<3.8	<23	6.6	8,180	22.6	<8.8	<4.0
	11/04/09	<25.0	< 500	<1,000	<50.0	1,490	<50.0	< 500	<250
	11/22/11	<1.8	<130	<130	<1.6	3,200	9.7 J	<15	<25
MW-23	11/06/13	1.5 J	<40	<42	2.0 J	2,700	8.8	214	<10
	08/27/14	3.4 J	<19	<120	6.2 J	8,040	28.7	<44	<20
	01/15/15	2.9 J	<38	<230	4.5 J	4,730	19.3 J	339	<40
	11/04/09	<5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/22/11	< 0.35	<25	<25	< 0.31	<5.0	< 0.39	<3.0	<5.0
MW-24	11/06/13	< 0.25	<20	<21	< 0.55	<5.0	< 0.49	<4.7	<5.0
	08/27/14	< 0.23	<3.8	<23	< 0.20	<7.4	<0.22	<8.8	<4.0
	01/15/15	< 0.23	<3.8	<23	< 0.20	<7.4	<0.22	<8.8	<4.0
	11/04/09	<5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/22/11	< 0.35	<25	<25	< 0.31	<5.0	< 0.39	<3.0	< 5.0
MW-25	11/06/13	< 0.25	<20	<21	< 0.55	<5.0	<0.49	<4.7	< 5.0
1	08/27/14	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
	01/15/15	< 0.23	<3.8	<23	< 0.20	<7.4	<0.22	<8.8	<4.0

Well No.	Date	DIPE	ЕТВА	Ethanol	ЕТВЕ	TAA	TAME	ТВА	TBF
-	11/04/09	< 5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/22/11	< 0.35	<25	<25	< 0.31	<5.0	< 0.39	<3.0	<5.0
MW-26	11/06/13	< 0.25	<20	<21	< 0.55	<5.0	< 0.49	<4.7	< 5.0
	08/27/14	< 0.23	<3.8	<23	< 0.20	<7.4	<0.22	<8.8	<4.0
	01/15/15	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
	11/04/09	<5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/22/11	< 0.35	<25	<25	< 0.31	43.2	<0.39	<3.0	<5.0
MW-27	11/06/13	< 0.25	<20	<21	< 0.55	<5.0	< 0.49	<4.7	<5.0
	08/27/14	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
	01/15/15	< 0.23	<3.8	<23	<0.20	11.5 J	< 0.22	<8.8	<4.0
	11/04/09	<5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/22/11	< 0.35	<25	<25	< 0.31	< 5.0	< 0.39	<3.0	<5.0
MW-28	11/06/13	< 0.25	<20	<21	< 0.55	< 5.0	< 0.49	<4.7	< 5.0
	08/27/14	<0.23	<3.8	<23	<0.20	<7.4	< 0.22	<8.8	<4.0
	01/15/15	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
	11/04/09	<5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/22/11	< 0.35	<25	<25	< 0.31	<5.0	< 0.39	<3.0	< 5.0
MW-29	11/06/13	< 0.25	<20	<21	< 0.55	< 5.0	< 0.49	<4.7	< 5.0
	08/27/14	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
	01/15/15	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
	11/04/09	< 5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/22/11	< 0.35	<25	<25	< 0.31	<5.0	< 0.39	<3.0	<5.0
MW-30	11/06/13	< 0.25	<20	<21	< 0.55	<5.0	< 0.49	<4.7	<5.0
	08/27/14	< 0.23	<3.8	<23	<0.20	<7.4	<0.22	<8.8	<4.0
	01/15/15	< 0.23	<3.8	<23	<0.20	<7.4	<0.22	<8.8	<4.0

Well No.	Date	DIPE	ЕТВА	Ethanol	ЕТВЕ	TAA	TAME	ТВА	TBF
	11/03/09	<5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/22/11	< 0.35	<25	<25	< 0.31	<5.0	< 0.39	<3.0	<5.0
MW-31	11/06/13	<0.25	<20	<21	< 0.55	<5.0	<0.49	<4.7	<5.0
	08/27/14	< 0.23	<3.8	<23	< 0.20	<7.4	<0.22	<8.8	<4.0
	01/15/15	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
MW-1A	11/06/13	FP	FP	FP	FP	FP	FP	FP	FP
	08/27/14	<1.1	<19	<120	<1.0	2,150	5.3 J	<44	<20
	01/15/15	2.1 J	<19	<120	3.3 J	11,900	12.2	386	<20
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/30/11	<3.5	<250	<250	<3.1	83.3 J	<3.9	<30	<50
MW-2A	11/06/13	FP	FP	FP	FP	FP	FP	FP	FP
	08/27/14	<57	<950	<5,800	<50	65,500	110 J	<2,200	<1,000
	01/15/15	<57	<950	<5,800	<50	60,900	103 J	<2,200	<1,000
MW-2A DUP (DUP B)	08/27/14	<110	<1,900	<12,000	<100	63,000	<110	<4,400	<2,000
	11/03/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
MW-3A	11/06/13	FP	FP	FP	FP	FP	FP	FP	FP
	08/27/14	<110	<1,900	<12,000	<100	24,900	<110	<4,400	<2,000
	01/15/15	<23	<380	<2,300	<20	1,690 J	<22	<880	<400

Well No.	Date	DIPE	ЕТВА	Ethanol	ЕТВЕ	TAA	TAME	ТВА	TBF
	11/04/09	FP	FP	FP	FP	FP	FP	FP	FP
	11/22/11	FP	FP	FP	FP	FP	FP	FP	FP
MW-4A	11/06/13	<130	<10,000	<11,000	<280	6,280	<240	<2,400	<2,500
	08/27/14	<57	<950	<5,800	<50	5,990	<55	<2,200	<1,000
_	01/15/15	<45	<760	<4,600	<40	2,110 J	<44	<1,800	<810
	03/24/06	<1.00	<10.0	<100	<1.00	<20.0	<1.00	<20.0	<20.0
	11/04/09	<5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
TW-1	11/23/11	< 0.35	<25	<25	< 0.31	<5.0	<0.39	<3.0	<5.0
1 W-1	11/06/13	< 0.25	<20	<21	< 0.55	<5.0	< 0.49	<4.7	<5.0
	08/28/14	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8>	<4.0
,	01/16/15	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
	11/04/09	<5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/22/11	< 0.35	<25	<25	< 0.31	15.9 J	< 0.39	<3.0	<5.0
TW-2	11/06/13	< 0.25	<20	<21	< 0.55	<5.0	< 0.49	<4.7	<5.0
	08/27/14	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
	01/15/15	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
<del></del>	11/04/09	<5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/22/11	< 0.35	<25	<25	< 0.31	<5.0	< 0.39	<3.0	< 5.0
WSW-1	11/06/13	< 0.25	<20	<21	< 0.55	<5.0	<0.49	<4.7	<5.0
	08/28/14	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
	01/16/15	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0
	11/04/09	<5.0	<100	<200	<10.0	<100	<10.0	<100	<50.0
	11/22/11	< 0.35	<25	<25	< 0.31	<5.0	< 0.39	<3.0	<5.0
WSW-3	11/06/13	< 0.25	<20	<21	< 0.55	<5.0	< 0.49	<4.7	<5.0
	08/28/14	< 0.23	<3.8	<23	< 0.20	<7.4	<0.22	<8.8	<4.0
	01/15/15	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0

Well No.	Date	DIPE	ЕТВА	Ethanol	ЕТВЕ	TAA	TAME	TBA	TBF
FIELD	11/22/11	< 0.35	<25	<25	<0.31	<5.0	< 0.39	<3.0	< 5.0
	11/06/13	< 0.25	<20	<21	< 0.55	<5.0	<0.49	<4.7	<5.0
BLANK	08/27/14	< 0.23	<3.8	<23	< 0.20	<7.4	<0.22	<8.8	<4.0
	01/16/15	< 0.23	<3.8	<23	<0.20	<7.4	<0.22	<8.8	<4.0
	11/22/11	< 0.35	<25	<25	< 0.31	< 5.0	< 0.39	<3.0	<5.0
TDID DI ANIZ	11/06/13	< 0.25	<20	<21	< 0.55	< 5.0	<0.49	<4.7	<5.0
TRIP BLANK	08/27/14	< 0.23	<3.8	<23	< 0.20	<7.4	<0.22	<8.8	<4.0
	01/15/15	< 0.23	<3.8	<23	< 0.20	<7.4	< 0.22	<8.8	<4.0

## Notes:

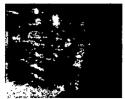
- Analyses for oxygenates by Method 8260B; results reported in  $\mu$ g/l.
- <: Less than the report limit specified in the laboratory report.
- Bold indicates analyte reported about the method detection limit.



# APPENDIX A

Laboratory Analytical Report – Ground Water Samples





# Technical Report for

GRI (Geological Resources Inc.)

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

18686

Accutest Job Number: FA21494

Sampling Dates: 01/15/15 - 01/16/15

## Report to:

GRI

3502 Hayes Rd

Monroe, NC 28110

wsb@geologicalresourcesinc.com; carriekennedy@geologicalresourcesinc.com;

jjr@geologicalresourcesinc.com; nml@geologicalresourcesinc.com ATTN: Scott Ball

Total number of pages in report: 118



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer Technical Director

Client Service contact: Muna Mohammed 407-425-6700

Certifications: FL (E83510), LA (03051), KS (E-10327), IA (366), IL (200063), NC (573), NJ (FL002), SC (96038001) DoD ELAP (L-A-B L2229), CA (2937), TX (T104704404), PA (68-03573), VA (460177),

AK, AR, GA, KY, MA, NV, OK, UT, WA

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Sections:

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# Sample Summary

GRI (Geological Resources Inc.)

Job No:

FA21494

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC Project No: 18686

Sample Number	Collected Date	I Time By	Received	Matr Code		Client Sample ID
FA21494-1	01/16/15	09:39 DB	01/17/15	AQ	Ground Water	18686 MW-1
FA21494-2	01/16/15	09:27 DB	01/17/15	AQ	Ground Water	18686 MW-2
FA21494-3	01/16/15	09:52 DB	01/17/15	AQ	Ground Water	18686 MW-3
FA21494-4	01/16/15	10:24 DB	01/17/15	AQ	Ground Water	18686 MW-6
FA21494-5	01/16/15	10:12 DB	01/17/15	AQ	Ground Water	18686 MW-7
FA21494-6	01/15/15	14:48 DB	01/17/15	AQ	Ground Water	18686 MW-8
FA21494-7	01/15/15	15:51 DB	01/17/15	AQ	Ground Water	18686 MW-9
FA21494-8	01/15/15	16:00 DB	01/17/15	AQ	Ground Water	18686 MW-10
FA21494-9	01/15/15	16:13 DB	01/17/15	AQ	Ground Water	18686 MW-13
FA21494-10	01/16/15	10:39 DB	01/17/15	AQ	Ground Water	18686 MW-14
FA21494-11	01/16/15	10:52 DB			Ground Water	18686 MW-15
FA21494-12					Ground Water	18686 MW-19
FA21494-13	01/15/15	16:36 DB	01/17/15	AQ	Ground Water	18686 MW-20

# Sample Summary (continued)

GRI (Geological Resources Inc.)

Job No:

FA21494

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC Project No: 18686

Sample Number	Collected Date	l Time By	Received	Matr Code		Client Sample ID
FA21494-14	01/15/15	12:53 DB	01/17/15	AQ	Ground Water	18686 MW-21
FA21494-15	01/15/15	12:32 DB	01/17/15	AQ	Ground Water	18686 MW-22
FA21494-16	01/15/15	10:42 DB	01/17/15	AQ	Ground Water	18686 MW-23
FA21494-17	01/15/15	10:29 DB	01/17/15	AQ	Ground Water	18686 MW-24
FA21494-18	01/15/15	13:07 DB	01/17/15	AQ	Ground Water	18686 MW-25
FA21494-19	01/15/15	13:17 DB	01/17/15	AQ	Ground Water	18686 MW-26
FA21494-20	01/15/15	12:16 DB	01/17/15	AQ	Ground Water	18686 MW-27
FA21494-21	01/15/15	11:59 DB	01/17/15	AQ	Ground Water	18686 MW-28
FA21494-22	01/15/15	11:46 DB	01/17/15	AQ	Ground Water	18686 MW-29
FA21494-23	01/15/15	10:10 DB	01/17/15	AQ	Ground Water	18686 MW-30
FA21494-24	01/15/15	09:59 DB	01/17/15	AQ	Ground Water	18686 MW-31
FA21494-25	01/15/15	15:28 DB	01/17/15	AQ	Ground Water	18686 MW-1A
FA21494-26	01/15/15	15:37 DB	01/17/15	AQ	Ground Water	18686 MW-2A



# Sample Summary

(continued)

GRI (Geological Resources Inc.)

Job No:

FA21494

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC Project No: 18686

Sample Number	Collected Date	Time By	Received	Matr Code		Client Sample ID
FA21494-27	01/15/15	15:21 DB	01/17/15	AQ	Ground Water	18686 MW-3A
FA21494-28	01/15/15	15:12 DB	01/17/15	AQ	Ground Water	18686 MW-4A
FA21494-29	01/16/15	09:11 DB	01/17/15	AQ	Ground Water	18686 TW-1
FA21494-30	01/15/15	11:31 DB	01/17/15	AQ	Ground Water	18686 TW-2
FA21494-31	01/16/15	09:59 DB	01/17/15	AQ	Ground Water	18686 WSW-1
FA21494-32	01/15/15	13:33 DB	01/17/15	AQ	Ground Water	18686 WSW-3
FA21494-33	01/15/15	00:00 DB	01/17/15	AQ	Ground Water	18686 DUP A
FA21494-34	01/16/15	00:00 DB	01/17/15	AQ	Ground Water	18686 DUP B
FA21494-35	01/16/15	10:58 DB	01/17/15	AQ	Field Blank Water	18686 FIELD BLANK
FA21494-36	01/15/15	00:00 DB	01/17/15	AQ	Trip Blank Water	18686 TRIP BLANK

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# **Summary of Hits Job Number:** FA21494

Account: GRI (Geological Resources Inc.)

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Collected: 01/15/15 thru 01/16/15

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA21494-1	18686 MW-1					
Benzene		3820	100	24	ug/l	SW846 8260B
Toluene		8360	100	20	ug/l	SW846 8260B
Ethylbenzene		641	100	28	ug/l	SW846 8260B
Xylene (total)		4760	300	66	ug/l	SW846 8260B
Methyl Tert Buty	l Ether	105	100	20	ug/l	SW846 8260B
Naphthalene		217 J	500	100	ug/l	SW846 8260B
Tert-Amyl Alcoh	ol	12200	2000	740	ug/l	SW846 8260B
FA21494-2	18686 MW-2					
Benzene		3920	50	12	ug/l	SW846 8260B
Toluene		3910	50	10	ug/l	SW846 8260B
Ethylbenzene		181	50	14	ug/l	SW846 8260B
Xylene (total)		1000	150	33	ug/l	SW846 8260B
Methyl Tert Buty	1 Ether	26.1 J	50	10	ug/l	SW846 8260B
Naphthalene		69.9 J	250	50	ug/l	SW846 8260B
Tert-Amyl Alcoh	ol	5830	1000	370	ug/l	SW846 8260B
1,2-Dibromoetha	ne <sup>a</sup>	0.17	0.019	0.0096	ug/l	SW846 8011
FA21494-3	18686 MW-3					
Benzene		27.4	1.0	0.24	ug/l	SW846 8260B
Toluene		19.1	1.0	0.20	ug/l	SW846 8260B
Ethylbenzene		7.5	1.0	0.28	ug/l	SW846 8260B
Xylene (total)		65.8	3.0	0.66	ug/l	SW846 8260B
Methyl Tert Buty	l Ether	0.48 J	1.0	0.20	ug/l	SW846 8260B
Naphthalene		1.1 J	5.0	1.0	ug/l	SW846 8260B
Tert-Amyl Alcoh	ol	23.9	20	7.4	ug/l	SW846 8260B

FA21494-4 18686 MW-6

No hits reported in this sample.

FA21494-5 18686 MW-7

No hits reported in this sample.

FA21494-6 18686 MW-8

No hits reported in this sample.

Summary of Hits Job Number: FA21494

Account:

Project:

GRI (Geological Resources Inc.) Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Collected:

01/15/15 thru 01/16/15

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA21494-7	18686 MW-9					
No hits reported	in this sample.					
FA21494-8	18686 MW-10					
No hits reported	in this sample.					
FA21494-9	18686 MW-13					
Methyl Tert Buty Tert-Amyl Methy		9.8 5.1	1.0 2.0	0.20 0.22	ug/l ug/l	SW846 8260B SW846 8260B
FA21494-10	18686 MW-14					
Benzene Toluene		0.73 J 0.27 J	1.0 1.0	0.24 0.20	ug/l ug/l	SW846 8260B SW846 8260B
FA21494-11	18686 MW-15					
No hits reported	in this sample.					
FA21494-12	18686 MW-19					
No hits reported	in this sample.					
FA21494-13	18686 MW-20					
Benzene Toluene Methyl Tert Buty Di-Isopropyl ethe Ethyl Tert Butyl Tert-Amyl Alcoh Tert-Amyl Methy Tert-Butyl Alcoho	er Ether ol VI Ether	4.5 0.35 J 93.7 1.6 1.9 J 1880 3.6 105	1.0 1.0 1.0 1.0 2.0 100 2.0 20	0.24 0.20 0.20 0.23 0.20 37 0.22 8.8	ug/l ug/l ug/l ug/l ug/l ug/l ug/l ug/l	SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B
FA21494-14	18686 MW-21					
Benzene		0.93 J	1.0	0.24	ug/l	SW846 8260B
FA21494-15	18686 MW-22					
Benzene Toluene		312 15.6	10 1.0	2.4 0.20	ug/l ug/l	SW846 8260B SW846 8260B

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**Summary of Hits** Job Number: FA21494

Account:

GRI (Geological Resources Inc.)

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Collected: 01/15/15 thru 01/16/15

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
Ethylbenzene	18.8	1.0	0.28	ug/l	SW846 8260B
Xylene (total)	6.2	3.0	0.66	ug/l	SW846 8260B
Methyl Tert Butyl Ether	134	10	2.0	ug/l	SW846 8260B
Naphthalene	4.9 J	5.0	1.0	ug/l	SW846 8260B
1,2-Dichloroethane	0.99 J	1.0	0.24	ug/l	SW846 8260B
Di-Isopropyl ether	3.7	1.0	0.23	ug/l	SW846 8260B
Ethyl Tert Butyl Ether	6.6	2.0	0.20	ug/l	SW846 8260B
Tert-Amyl Alcohol	8180	200	74	ug/1	SW846 8260B
Tert-Amyl Methyl Ether	22.6	2.0	0.22	ug/l	SW846 8260B
FA21494-16 18686 MW-23					
Benzene	18.6	10	2.4	ug/l	SW846 8260B
Methyl Tert Butyl Ether	161	10	2.0	ug/1	SW846 8260B
Di-Isopropyl ether	2.9 J	10	2.3	ug/l	SW846 8260B
Ethyl Tert Butyl Ether	4.5 J	20	2.0	ug/l	SW846 8260B
Tert-Amyl Alcohol	4730	200	74	ug/l	SW846 8260B
Tert-Amyl Methyl Ether	19.3 J	20	2.2	ug/l	SW846 8260B
Tert-Butyl Alcohol	339	200	88	ug/l	SW846 8260B

### FA21494-17 18686 MW-24

No hits reported in this sample.

#### FA21494-18 18686 MW-25

No hits reported in this sample.

#### FA21494-19 18686 MW-26

No hits reported in this sample.

### FA21494-20 18686 MW-27

Benzene	0.87 J	1.0	0.24	ug/l	SW846 8260B
Methyl Tert Butyl Ether	1.3	1.0	0.20	ug/l	SW846 8260B
Tert-Amyl Alcohol	11.5 J	20	7.4	ug/l	SW846 8260B

### FA21494-21 18686 MW-28

No hits reported in this sample.

#### 18686 MW-29 FA21494-22

No hits reported in this sample.

Summary of Hits Job Number: FA21494

Account: Project:

GRI (Geological Resources Inc.)
Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC 01/15/15 thru 01/16/15

Collected:

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA21494-23	18686 MW-30					
No hits reported	in this sample.					
FA21494-24	18686 MW-31					
No hits reported	in this sample.					
FA21494-25	18686 MW-1A					
Benzene Toluene Ethylbenzene Xylene (total) Methyl Tert Buty Naphthalene Di-Isopropyl ethe Ethyl Tert Butyl Tert-Amyl Alcoh Tert-Amyl Methy Tert-Butyl Alcoh	er Ether ool yl Ether	1040 4950 583 5130 78.8 474 2.1 J 3.3 J 11900 12.2 386	20 50 20 60 5.0 25 5.0 10 400 10	4.9 20 5.6 13 1.0 5.0 1.1 1.0 150 1.1	ug/l ug/l ug/l ug/l ug/l ug/l ug/l ug/l	SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B
Benzene Toluene Ethylbenzene Xylene (total) Methyl Tert Buty Naphthalene Tert-Amyl Alcoh	rl Ether ol	17900 20900 1680 8520 281 571 J 60900	250 250 250 750 250 1300 5000	61 50 70 170 50 250 1900	ug/l ug/l ug/l ug/l ug/l ug/l	SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B
Tert-Amyl Methy 1,2-Dibromoetha  FA21494-27		103 J 0.12	500 0.020	55 0.0098	ug/l ug/l	SW846 8260B SW846 8011
Benzene Toluene Ethylbenzene Xylene (total) Naphthalene Tert-Amyl Alcoh 1,2-Dibromoetha	ol	2930 8310 875 8780 556 1690 J 0.029	100 100 100 300 500 2000 0.020	24 20 28 66 100 740 0.0099	ug/l ug/l ug/l ug/l ug/l ug/l	SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8011

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# Summary of Hits Job Number: FA21494

Account: GRI (Geological Resources Inc.)

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

01/15/15 thru 01/16/15 Collected:

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA21494-28	18686 MW-4A					
Benzene		2300	200	49	ug/l	SW846 8260B
Toluene		11500	200	40	ug/l	SW846 8260B
Ethylbenzene		1010	200	56	ug/l	SW846 8260B
Xylene (total)		12300	600	130	ug/l	SW846 8260B
Methyl Tert Buty	l Ether	50.9 J	200	40	ug/l	SW846 8260B
Naphthalene		511 J	1000	200	ug/l	SW846 8260B
Tert-Amyl Alcoh		2110 J	4000	1500	ug/l	SW846 8260B
1,2-Dibromoetha	ne <sup>a</sup>	0.052	0.019	0.0095	ug/l	SW846 8011
FA21494-29	18686 TW-1					
No hits reported	in this sample.					
FA21494-30	18686 TW-2					
Benzene		0.26 J	1.0	0.24	ug/l	SW846 8260B
FA21494-31	18686 WSW-1					
No hits reported	in this sample.					
FA21494-32	18686 WSW-3					
No hits reported :	in this sample.					
FA21494-33	18686 DUP A					
No hits reported	in this sample.					
FA21494-34	18686 DUP B					
Benzene		3690	100	20	ug/l	SW846 8260B
Toluene		8250	100	40	ug/l	SW846 8260B
Ethylbenzene		623	100	20	ug/l	SW846 8260B
Xylene (total)		4860	300	51	ug/l	SW846 8260B
Methyl Tert Buty	l Ether	105	100	30	ug/l	SW846 8260B
Naphthalene		196 J	500	100	ug/l	SW846 8260B
Tert-Amyl Alcoh	ol	12300	2000	810	ug/l	SW846 8260B

### FA21494-35 18686 FIELD BLANK

No hits reported in this sample.

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Summary of Hits Job Number: FA21494

Account: GRI (Geological Resources Inc.)

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

**Collected:** 01/15/15 thru 01/16/15

Lab Sample ID Client Sample ID Result/
Analyte Qual RL MDL Units Method

FA21494-36 18686 TRIP BLANK

No hits reported in this sample.

(a) All hits confirmed by dual column analysis.







Sample Results	
Report of Analysis	
report of rinarysis	

Client Sample ID: 18686 MW-1 Lab Sample ID:

FA21494-1

Date Received: 01/17/15

Prep Date

n/a

Date Sampled: 01/16/15

Matrix: Method: AQ - Ground Water SW846 8260B

DF

100

Percent Solids: n/a

n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

By MM

Analyzed

01/24/15

Prep Batch Analytical Batch

VJ4880

Run #1

Run #2

Purge Volume

File ID

J0963322.D

Run #1 5.0 ml

Run #2

Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	3820	100	24	ug/1	
108-88-3	Toluene	8360	100	20	ug/l	
100-41-4	Ethylbenzene	641	100	28	ug/l	
1330-20-7	Xylene (total)	4760	300	66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	105	100	20	ug/l	
91-20-3	Naphthalene	217	500	100	ug/l	J
107-06-2	1,2-Dichloroethane	ND	100	24	ug/l	
108-20-3	Di-Isopropyl ether	ND	100	23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	5000	380	ug/l	
64-17-5	Ethyl Alcohol	ND	10000	2300	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	200	20	ug/l	
75-85-4	Tert-Amyl Alcohol	12200	2000	740	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	200	22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	2000	880	ug/l	
762-75-4	Tert-Butyl Formate	ND	2000	400	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	101%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	103%		79-1	25%	
2037-26-5	Toluene-D8	98%		85-1	12%	
460-00-4	4-Bromofluorobenzene	93%		83-1	18%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 MW-1

 Lab Sample ID:
 FA21494-1
 Date Sampled:
 01/16/15

 Matrix:
 AQ - Ground Water
 Date Received:
 01/17/15

 Method:
 SW846 8011
 SW846 3510C
 Percent Solids:
 n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

File ID DF Analyzed Prep Date **Analytical Batch** By Prep Batch Run #1 DD80167.D 1 01/26/15 NG 01/21/15 OP54661 GDD2377 Run #2

Run #1 35.9 ml Final Volume 2.0 ml

Run #2

CAS No. Compound Result RL MDL Units Q

106-93-4 1,2-Dibromoethane ND 0.019 0.0097 ug/l

CAS No. Surrogate Recoveries Run# 1 Run# 2 Limits

460-00-4 4-Bromofluorobenzene 69% 63-137%

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Method:

Project:

# Report of Analysis

Page 1 of 1

Client Sample ID: 18686 MW-2 Lab Sample ID: FA21494-2 Matrix:

AQ - Ground Water SW846 8260B Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

**Date Sampled:** 01/16/15 Date Received: 01/17/15

Percent Solids: n/a

	File ID	$\mathbf{DF}$	Analyzed	$\mathbf{B}\mathbf{y}$	Prep Date	Prep Batch	Analytical Batch	
Run #1	J0963323.D	50	01/24/15	MM	n∕a	n/a	VJ4880	
Run #2								ı

Purge Volume Run #1 5.0 ml Run #2

### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	3920	50	12	ug/l	
108-88-3	Toluene	3910	50	10	ug/l	
100-41-4	Ethylbenzene	181	50	14	ug/1	
1330-20-7	Xylene (total)	1000	150	33	ug/l	
1634-04-4	Methyl Tert Butyl Ether	26.1	50	10	ug/l	J
91-20-3	Naphthalene	69.9	250	50	ug/l	J
107-06-2	1,2-Dichloroethane	ND	50	12	ug/l	
108-20-3	Di-Isopropyl ether	ND	50	11	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	2500	190	ug/l	
64-17-5	Ethyl Alcohol	ND	5000	1200	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	100	10	ug/l	
75-85-4	Tert-Amyl Alcohol	5830	1000	370	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	100	11	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	1000	440	ug/l	
762-75-4	Tert-Butyl Formate	ND	1000	200	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	101%			18%	
17060-07-0	1,2-Dichloroethane-D4	103%		79-1		
2037-26-5	Toluene-D8	97%		85-1		
460-00-4	4-Bromofluorobenzene	95%		83-1	18%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

**Date Sampled:** 01/16/15

Date Received: 01/17/15

# Report of Analysis

Client Sample ID: 18686 MW-2 Lab Sample ID: FA21494-2

Matrix: AQ - Ground Water

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Method: SW846 8011 SW846 3510C Percent Solids: n/a Project:

File ID DF Analyzed **Analytical Batch** By Prep Date Prep Batch Run #1 a DD80169.D 1 01/26/15 NG 01/21/15 OP54661 GDD2377 Run #2

Initial Volume Final Volume 36.4 ml Run #1 2.0 ml

Run #2

CAS No. Compound Result RLMDL Units Q

106-93-4 1,2-Dibromoethane 0.17 0.019 0.0096 ug/1

CAS No. Run#1 Run# 2 Surrogate Recoveries Limits

460-00-4 4-Bromofluorobenzene 79% 63-137%

(a) All hits confirmed by dual column analysis.

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 MW-3 Lab Sample ID: FA21494-3

Matrix: AQ - Ground Water Method: SW846 8260B

 Date Sampled:
 01/16/15

 Water
 Date Received:
 01/17/15

 B
 Percent Solids:
 n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

**Analytical Batch** Prep Date Prep Batch File ID DF Analyzed By VJ4878 J0963256.D 01/22/15 MM n/a Run #1 1 n/a Run #2

Purge Volume

Run #1 5.0 ml

Run #2

### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	27.4	1.0	0.24	ug/l	
108-88-3	Toluene	19.1	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	7.5	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	65.8	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.48	1.0	0.20	ug/1	J
91-20-3	Naphthalene	1.1	5.0	1.0	ug/l	J
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/1	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	23.9	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	100%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	101%		79-1	25%	
2037-26-5	Toluene-D8	99%		85-1	12%	
460-00-4	4-Bromofluorobenzene	98%		83-1	18%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 MW-3 Lab Sample ID: FA21494-3 Matrix:

AQ - Ground Water

**Date Sampled:** 01/16/15 Date Received: 01/17/15

Method:

SW846 8011 SW846 3510C

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80171.D	1	01/26/15	NG	01/21/15	OP54661	GDD2377

Run #2

Initial Volume Final Volume Run #1 37.4 ml 2.0 ml

4-Bromofluorobenzene

Run #2

460-00-4

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.0094	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its	

67%

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

63-137%

B = Indicates analyte found in associated method blank

Client Sample ID: 18686 MW-6 Lab Sample ID: Matrix:

FA21494-4

AQ - Ground Water SW846 8260B

**Date Sampled:** 01/16/15 Date Received: 01/17/15

Percent Solids: n/a

Method: Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	J0963257.D	1	01/22/15	MM	n/a	n/a	VJ4878

Run #2

Purge Volume

Run #1 5.0 ml

Run #2

### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.24	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/1	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/1	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/1	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limit	ts	
1868-53-7	Dibromofluoromethane	101%		83-11	8%	
17060-07-0	1,2-Dichloroethane-D4	103%		79-12	:5%	
2037-26-5	Toluene-D8	102%		85-11	2%	
460-00-4	4-Bromofluorobenzene	96%		83-11	8%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 MW-6 Lab Sample ID: FA21494-4

Matrix: Method:

AQ - Ground Water SW846 8011 SW846 3510C **Date Sampled:** 01/16/15 Date Received: 01/17/15

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80172.D	1	01/26/15	NG	01/21/15	OP54661	GDD2377
Run #2							

Initial Volume Final Volume Run #1 36.6 ml 2.0 ml

Run #2

CAS No. Compound Result RLMDL Units Q 106-93-4 1,2-Dibromoethane ND 0.019 0.0096 ug/1 CAS No. Surrogate Recoveries Run#1 Run# 2 Limits 460-00-4 4-Bromofluorobenzene 69% 63-137%

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 MW-7 Lab Sample ID: FA21494-5

Matrix: Method: AQ - Ground Water SW846 8260B

**Date Sampled:** 01/16/15 Date Received: 01/17/15 Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

**Analytical Batch** File ID DF Analyzed  $\mathbf{B}\mathbf{y}$ **Prep Date** Prep Batch VJ4878 Run #1 J0963258.D 1 01/22/15 MMn/a n/a

Run #2

Purge Volume

5.0 ml Run #1

Run #2

### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.24	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	4.0	ug/1	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	101%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	102%		79-1	25%	
2037-26-5	Toluene-D8	100%		85-1	12%	
460-00-4	4-Bromofluorobenzene	99%		83-1	18%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 MW-7

Lab Sample ID: FA21494-5

Matrix:

AQ - Ground Water

Date Received: 01/17/15

Method:

SW846 8011 SW846 3510C

2.0 ml

Percent Solids: n/a

**Date Sampled:** 01/16/15

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80173.D	1	01/26/15	NG	01/21/15	OP54661	GDD2377
Run #2							

Initial Volume Final Volume

35.7 ml

Run #1 Run #2

Result RL**MDL** CAS No. Compound Units 0

106-93-4 ND 0.020 0.0098 ug/l 1,2-Dibromoethane

CAS No. Surrogate Recoveries Run#1 Run# 2 Limits

460-00-4 76% 4-Bromofluorobenzene 63-137%

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

**Date Sampled:** 01/15/15

Client Sample ID: 18686 MW-8
Lab Sample ID: FA21494-6
Matrix: AQ - Ground Water

AQ - Ground Water

SW846 8260B

Date Received: 01/17/15

Percent Solids: n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch
Run #1 J0963259.D 1 01/22/15 MM n/a n/a VJ4878
Run #2

Purge Volume

Run #1 5.0 ml

Run #2

Method:

## Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.24	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	4.0	ug/1	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	102%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	103%		79-1	25%	
2037-26-5	Toluene-D8	100%		85-1	12%	
460-00-4	4-Bromofluorobenzene	99%		83-1	18%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

# Report of Analysis

Client Sample ID: 18686 MW-8 FA21494-6

Lab Sample ID: Matrix:

AQ - Ground Water

SW846 8011 SW846 3510C

Percent Solids: n/a

**Date Sampled:** 01/15/15 Date Received: 01/17/15

Method: Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80176.D	1	01/26/15	NG	01/21/15	OP54661	GDD2377
Run #2							

	Initial Volume	Final Volume
Run #1	36.0 ml	2.0 ml

Run #2

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.0097	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its	
460-00-4	4-Bromofluorobenzene	82%		63-13	37%	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

Page 1 of 1

Client Sample ID: 18686 MW-9 Lab Sample ID: FA21494-7 Matrix:

**Date Sampled:** 01/15/15 AQ - Ground Water Date Received: 01/17/15 SW846 8260B Percent Solids: n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

File ID DF Analyzed **Prep Date** Prep Batch **Analytical Batch** By VJ4878 Run #1 J0963260.D 01/22/15 MMn/a n/a Run #2

Purge Volume

Run #1 5.0 ml

Run #2

Method:

### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.24	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/1	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/1	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/1	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/1	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	101%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	102%		79-1	25%	
2037-26-5	Toluene-D8	101%		85-1	12%	
460-00-4	4-Bromofluorobenzene	98%		83-1	18%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 MW-9 Lab Sample ID: FA21494-7

Matrix:

AQ - Ground Water

Date Received: 01/17/15

**Date Sampled:** 01/15/15

Method:

SW846 8011 SW846 3510C

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

				Prep Batch	Analytical Batch
Run #1 DD80177.D 1 01/2	26/15	NG	01/21/15	OP54661	GDD2377

Run #2

Final Volume Initial Volume Run #1 36.8 ml 2.0 ml

Run #2

CAS No. Compound Result RL**MDL** O Units 106-93-4 1,2-Dibromoethane ND 0.019 0.0095 ug/1 CAS No. Surrogate Recoveries Run#1 Run# 2 Limits

460-00-4 4-Bromofluorobenzene 89% 63-137%

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

ND = Not detected

Page 1 of 1

Client Sample ID: 18686 MW-10 Lab Sample ID: FA21494-8 Matrix: AQ - Ground Wa

AQ - Ground Water SW846 8260B Date Sampled: 01/15/15
Date Received: 01/17/15
Percent Solids: n/a

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch Run #1 J0963261.D 1 01/22/15 MM n/a n/a VJ4878
Run #2

Purge Volume

Run #1 5.0 ml

Run #2

Method:

Project:

## Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.24	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
CAD I VOI	Surrogate Recoveries	Tuliii I	Ruin, 2	2		
1868-53-7	Dibromofluoromethane	102%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	104%		79-12	25%	
2037-26-5	Toluene-D8	101%		85-13	12%	
460-00-4	4-Bromofluorobenzene	97%		83-13	18%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

**Date Sampled:** 01/15/15

Date Received: 01/17/15

Percent Solids: n/a

# Report of Analysis

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Client Sample ID: 18686 MW-10 Lab Sample ID: FA21494-8

AQ - Ground Water

SW846 8011 SW846 3510C

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

File ID DF Analyzed By **Prep Date** Prep Batch **Analytical Batch** DD80178.D 1 01/26/15 NG Run #1 01/21/15 OP54661 GDD2377 Run #2

Run #1 S7.1 ml Final Volume 2.0 ml

Run #2

Matrix:

Method:

Project:

CAS No. Compound Result RL MDL Units Q

106-93-4 1,2-Dibromoethane ND 0.019 0.0094 ug/l

CAS No. Surrogate Recoveries Run# 1 Run# 2 Limits

460-00-4 4-Bromofluorobenzene 86% 63-137%

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

**Date Sampled:** 01/15/15

Client Sample ID: 18686 MW-13 Lab Sample ID: FA21494-9 Matrix: AQ - Ground Water

Date Received: 01/17/15 Percent Solids: n/a SW846 8260B

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC Project:

Prep Batch Analytical Batch File ID DF Prep Date Analyzed By VJ4878 Run #1 J0963262.D 01/22/15 MM n/a n/a Run #2

Purge Volume

5.0 ml Run #1

Run #2

Method:

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.24	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/1	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	9.8	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	5.1	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
1868-53-7	Dibromofluoromethane	98%		83-1		
17060-07-0	1,2-Dichloroethane-D4	102%		79-12		
2037-26-5	Toluene-D8	101%		85-1		
460-00-4	4-Bromofluorobenzene	97%		83-1	18%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 MW-13 Lab Sample ID: FA21494-9

Matrix: AQ - Ground Water

 AQ - Ground Water
 Date Received:
 01/17/15

 SW846 8011 SW846 3510C
 Percent Solids:
 n/a

**Date Sampled:** 01/15/15

Project:

Method:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80179.D	1	01/26/15	NG	01/21/15	OP54661	GDD2377
Run #2							

	Initial Volume	Final Volume		
Run #1	37.4 ml	2.0 ml		
Run #2			•	

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.0094	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
460-00-4	4-Bromofluorobenzene	73%		63-13	37%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank N = Indicates presumptive evidence of a compound Method:

# Report of Analysis

Page 1 of 1

**Date Sampled:** 01/16/15

Client Sample ID: 18686 MW-14
Lab Sample ID: FA21494-10
Matrix: AQ - Ground Water

AQ - Ground Water

Date Received: 01/17/15

SW846 8260B

Percent Solids: n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J0963263.D	1	01/22/15	MM	n/a	n/a	VJ4878
Run #2							

	Purge Volume	•	
Run #1	5.0 ml		
Run #2			

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.73	1.0	0.24	ug/l	J
108-88-3	Toluene	0.27	1.0	0.20	ug/l	J
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/1	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its	
1868-53-7 17060-07-0	Dibromofluoromethane 1,2-Dichloroethane-D4	99% 102%		83-1 79-1	25%	
2037-26-5	Toluene-D8	100%		85-1		
460-00-4	4-Bromofluorobenzene	97%		83-1	18%	

ND = Not detected

MDL = Method Detection Limit

WIDE Wellow Det

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 MW-14 Lab Sample ID: FA21494-10

Matrix:

AQ - Ground Water

**Date Sampled:** 01/16/15 **Date Received:** 01/17/15

Date Received: 01/17/15 Percent Solids: n/a

Method: Project: SW846 8011 SW846 3510C Percent S Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80180.D	1	01/26/15	NG	01/21/15	OP54661	GDD2377
Run #2							

Run #1 Run #2	Initial Volume 37.4 ml	Final Volume 2.0 ml							
CAS No.	Compound	1	Result	RL	MDL	Units	Q	 	

CAS No.	Compound	Result	KL	MDL	Units	,
106-93-4	1,2-Dibromoethane	ND	0.019	0.0094	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
460-00-4	4-Bromofluorobenzene	85%		63-13	37%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

**Date Sampled:** 01/16/15

Client Sample ID: 18686 MW-15 Lab Sample ID: FA21494-11 Matrix: AQ - Ground Wa

AQ - Ground Water Date Received: 01/17/15 SW846 8260B Percent Solids: n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

File ID DF Analyzed By Prep Date Prep Batch **Analytical Batch** Run #1 J0963264.D 01/22/15 MMVJ4878 1 n/a n/a Run #2

Purge Volume

Run #1 5.0 ml

Run #2

Method:

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.24	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75 <b>-</b> 65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	101%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	101%		79-1	25%	
2037-26-5	Toluene-D8	100%		85-1	12%	
460-00-4	4-Bromofluorobenzene	97%		83-1	18%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 MW-15 Lab Sample ID: FA21494-11 Matrix:

AQ - Ground Water SW846 8011 SW846 3510C **Date Sampled:** 01/16/15 Date Received: 01/17/15

Percent Solids: n/a

Method: Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80181.D	1	01/26/15	NG	01/21/15	OP54661	GDD2377
Run #2							

	Initial Volume	Final Volume
Run #1	37.4 ml	2.0 ml
	57.11111	2.0 1111
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q	
106-93-4	1,2-Dibromoethane	ND	0.019	0.0094	ug/l		
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its		
460-00-4	4-Bromofluorobenzene	73%		63-13	37%		

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

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 Client Sample ID:
 18686 MW-19

 Lab Sample ID:
 FA21494-12
 Date Sampled:
 01/15/15

 Matrix:
 AQ - Ground Water
 Date Received:
 01/17/15

 Method:
 SW846 8260B
 Percent Solids:
 n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J0963277.D	1	01/23/15	MM	n/a	n/a	VJ4879
Run #2							

Purge Volume
Run #1 5.0 ml
Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.24	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75 <b>-</b> 4	Tert-Butyl Formate <sup>a</sup>	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
1868-53-7	Dibromofluoromethane	101%		83-11	8%	
17060-07-0	1,2-Dichloroethane-D4	104%		79-12	25%	
2037-26-5	Toluene-D8	100%		85-11	2%	
460-00-4	4-Bromofluorobenzene	99%		83-11	.8%	

<sup>(</sup>a) Associated BS recovery outside control limits.

ND = Not detected MDI

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Page 1 of 1

Client Sample ID: 18686 MW-19 Lab Sample ID: FA21494-12 Matrix:

AQ - Ground Water

**Date Sampled:** 01/15/15 Date Received: 01/17/15

Percent Solids: n/a

Method: Project:

SW846 8011 SW846 3510C Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80182.D	1	01/26/15	NG	01/21/15	OP54661	GDD2377
Run #2							

	Initial Volume	Final Volume
4/1		
Run #1	36.3 ml	2.0 ml
Run #2		
ream //2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.0096	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
460-00-4	4-Bromofluorobenzene	81%		63-13	37%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 MW-20 **Date Sampled:** 01/15/15 Lab Sample ID: FA21494-13 Date Received: 01/17/15 Matrix: AQ - Ground Water Method: SW846 8260B Percent Solids: n/a

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC Project:

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J0963278.D	1	01/23/15	MM	n/a	n/a	VJ4879
Run #2	J0963313.D	5	01/24/15	MM	n/a	n/a	VJ4880

Purge Volume 5.0 ml Run #1 Run #2 5.0 ml

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	4.5	1.0	0.24	ug/l	
108-88-3	Toluene	0.35	1.0	0.20	ug/l	J
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	93.7	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	1.6	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/1	
637-92-3	Ethyl Tert Butyl Ether	1.9	2.0	0.20	ug/1	J
75-85-4	Tert-Amyl Alcohol	1880 a	100	37	ug/l	
994-05-8	Tert-Amyl Methyl Ether	3.6	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	105	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate <sup>b</sup>	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	101%	101%	83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	100%	103%	79-1	25%	
2037-26-5	Toluene-D8	99%	98%	85-1	12%	
460-00-4	4-Bromofluorobenzene	98%	97%	83-1	18%	

<sup>(</sup>a) Result is from Run# 2

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

<sup>(</sup>b) Associated BS recovery outside control limits.

E = Indicates value exceeds calibration range

B = Indicates analyte found in associated method blank

Page 1 of 1

**Date Sampled:** 01/15/15

Date Received: 01/17/15

Client Sample ID: 18686 MW-20 Lab Sample ID: FA21494-13 Matrix: AQ - Ground Wa

Matrix: AQ - Ground Water Method: SW846 8011 SW84

SW846 8011 SW846 3510C Percent Solids: n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80183.D	1	01/26/15	NG	01/21/15	OP54661	GDD2377
Run #2							

	Initial Volume	Final Volume
Run #1	37.0 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.0095	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its	
460-00-4	4-Bromofluorobenzene	88%		63-1	37%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

 Client Sample ID:
 18686 MW-21

 Lab Sample ID:
 FA21494-14
 Date Sampled:
 01/15/15

 Matrix:
 AQ - Ground Water
 Date Received:
 01/17/15

 Method:
 SW846 8260B
 Percent Solids:
 n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	J0963310.D	1	01/24/15	MM	n/a	n/a	VJ4880
Run #2							

Purge Volume
Run #1 5.0 ml
Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.93	1.0	0.24	ug/l	J
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
1868-53-7 17060-07-0	Dibromofluoromethane 1,2-Dichloroethane-D4	102% 105%		83-11 79-12	25%	
460-00-4	4-Bromofluorobenzene	97%		83-11		
1868-53-7 17060-07-0 2037-26-5	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8	102% 105% 98%	Run# 2	83-11 79-12 85-11	18% 25% 12%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

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Client Sample ID: 18686 MW-21 Lab Sample ID: FA21494-14

AQ - Ground Water

**Date Sampled:** 01/15/15 **Date Received:** 01/17/15

Matrix: Method:

SW846 8011 SW846 3510C

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80184.D	1	01/26/15	NG	01/21/15	OP54661	GDD2377
Run #2							

	Initial Volume	Final Volume
Run #1	35.6 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	0.0098	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
460-00-4	4-Bromofluorobenzene	89%		63-13	37%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

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**Date Sampled:** 01/15/15

Client Sample ID: 18686 MW-22
Lab Sample ID: FA21494-15
Matrix: AQ - Ground Water
Method: SW846 8260B

AQ - Ground Water

SW846 8260B

Date Received: 01/17/15

Percent Solids: n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J0963280.D	1	01/23/15	MM	n/a	n/a	VJ4879
Run #2	J0963314.D	10	01/24/15	MM	n/a	n/a	VJ4880

	<del></del>	 	 
1	Purge Volume		
Run #1	5.0 ml		
Run #2	5.0 ml		

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	312 a	10	2.4	ug/l	
108-88-3	Toluene	15.6	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	18.8	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	6.2	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	134 <sup>a</sup>	10	2.0	ug/l	
91-20-3	Naphthalene	4.9	5.0	1.0	ug/l	J
107-06-2	1,2-Dichloroethane	0.99	1.0	0.24	ug/l	J
108-20-3	Di-Isopropyl ether	3.7	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	6.6	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	8180 a	200	74	ug/l	
994-05-8	Tert-Amyl Methyl Ether	22.6	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate b	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
1868-53-7	Dibromofluoromethane	99%	102%	83-13		
17060-07-0	1,2-Dichloroethane-D4	101%	102%	79-12		
2037-26-5	Toluene-D8	98%	98%	85-11		
460-00-4	4-Bromofluorobenzene	98%	97%	83-11	18%	

<sup>(</sup>a) Result is from Run# 2

ND = Not detected

MDL = Method Detection Limit

ection Limit J = Indicates an estimated value

RL = Reporting Limit

E = Indicates value exceeds calibration range

B = Indicates analyte found in associated method blank

<sup>(</sup>b) Associated BS recovery outside control limits.

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Client Sample ID: 18686 MW-22 Lab Sample ID: FA21494-15 Matrix:

AQ - Ground Water

**Date Sampled:** 01/15/15

Date Received: 01/17/15

Method: Project:

SW846 8011 SW846 3510C Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80185.D	I	01/26/15	NG	01/21/15	OP54661	GDD2377
Run #2							

	Initial Volume	Final Volume
Run #1	36.9 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.0095	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its	
460-00-4	4-Bromofluorobenzene	81%		63-1	37%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

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Client Sample ID: 18686 MW-23 **Lab Sample ID:** FA21494-16

Matrix: AQ - Ground Water Method: SW846 8260B

SW846 8260B Percent S Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

**Date Sampled:** 01/15/15 **Date Received:** 01/17/15

Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J0963312.D	10	01/24/15	MM	n/a	n/a	VJ4880
Run #2							

Purge Volume

Run #1 5.0 ml

Run #2

Project:

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	18.6	10	2.4	ug/l	
108-88-3	Toluene	ND	10	2.0	ug/l	
100-41-4	Ethylbenzene	ND	10	2.8	ug/l	
1330-20-7	Xylene (total)	ND	30	6.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	161	10	2.0	ug/l	
91-20-3	Naphthalene	ND	50	10	ug/l	
107-06-2	1,2-Dichloroethane	ND	10	2.4	ug/l	
108-20-3	Di-Isopropyl ether	2.9	10	2.3	ug/l	J
624-95-3	3,3-Dimethyl-1-Butanol	ND	500	38	ug/l	
64-17-5	Ethyl Alcohol	ND	1000	230	ug/l	
637-92-3	Ethyl Tert Butyl Ether	4.5	20	2.0	ug/l	J
75-85-4	Tert-Amyl Alcohol	4730	200	74	ug/l	
994-05-8	Tert-Amyl Methyl Ether	19.3	20	2.2	ug/l	J
75-65-0	Tert-Butyl Alcohol	339	200	88	ug/l	
762-75-4	Tert-Butyl Formate	ND	200	40	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
1868-53-7 17060-07-0	Dibromofluoromethane 1,2-Dichloroethane-D4	100% 104%		83-11 79-12		
2037-26-5	Toluene-D8	99%		85-13	12%	
460-00-4	4-Bromofluorobenzene	96%		83-13	18%	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

E = Indicates value exceeds calibration range

B = Indicates analyte found in associated method blank

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Client Sample ID: 18686 MW-23 Lab Sample ID: FA21494-16

Matrix: AQ - Ground Water Method:

SW846 8011 SW846 3510C

Date Received: 01/17/15

**Date Sampled:** 01/15/15

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80188.D	1	01/26/15	NG	01/21/15	OP54661	GDD2377
D 42							

Run #2

Initial Volume Final Volume Run #1 37.2 ml 2.0 ml

Run #2

CAS No. Compound Result RLMDL Units Q 106-93-4 0.019 1,2-Dibromoethane ND 0.0094 ug/1

CAS No. Surrogate Recoveries Run#1 Run# 2 Limits

460-00-4 4-Bromofluorobenzene 102% 63-137%

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

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**Date Sampled:** 01/15/15 **Date Received:** 01/17/15

 Client Sample ID:
 18686 MW-24

 Lab Sample ID:
 FA21494-17

 Matrix:
 AQ - Ground Water

 Method:
 SW846 8260B

Method: SW846 8260B Percent Solids: n/a
Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	J0963311.D	1	01/24/15	MM	n/a	n/a	VJ4880
Run #2							1

Purge Volume
Run #1 5.0 ml
Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

Compound	Result	RL	MDL	Units	Q
Benzene	ND	1.0	0.24	ug/l	
		1.0	0.20	_	
	ND	1.0	0.28	_	
-	ND	3.0	0.66	-	
	ND	1.0	0.20		
	ND	5.0	1.0		
1,2-Dichloroethane	ND	1.0	0.24	ug/l	
Di-Isopropyl ether	ND	1.0	0.23	ug/l	
3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
Ethyl Alcohol	ND	100	23	ug/l	
Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
Tert-Amyl Alcohol	ND	20	7.4	ug/l	
Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
Tert-Butyl Alcohol	ND	20	8.8	ug/l	
Tert-Butyl Formate	ND	20	4.0	ug/1	
Surrogate Recoveries	Run# 1	Run# 2	Limi	its	
Dibromofluoromethane	101%		83-1	18%	
1,2-Dichloroethane-D4	103%		79-1	25%	
Toluene-D8	99%		85-1	12%	
4-Bromofluorobenzene	96%		83-1	18%	
	Benzene Toluene Ethylbenzene Xylene (total) Methyl Tert Butyl Ether Naphthalene 1,2-Dichloroethane Di-Isopropyl ether 3,3-Dimethyl-1-Butanol Ethyl Alcohol Ethyl Tert Butyl Ether Tert-Amyl Alcohol Tert-Amyl Methyl Ether Tert-Butyl Alcohol Tert-Butyl Formate  Surrogate Recoveries  Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8	Benzene ND Toluene ND Ethylbenzene ND Xylene (total) ND Methyl Tert Butyl Ether ND Naphthalene ND 1,2-Dichloroethane ND 3,3-Dimethyl-1-Butanol ND Ethyl Alcohol ND Ethyl Tert Butyl Ether ND Tert-Amyl Alcohol ND Tert-Amyl Methyl Ether ND Tert-Butyl Alcohol ND Tert-Butyl Formate ND  Surrogate Recoveries Run# 1  Dibromofluoromethane 101% 1,2-Dichloroethane-D4 Toluene-D8 99%	Benzene         ND         1.0           Toluene         ND         1.0           Ethylbenzene         ND         1.0           Xylene (total)         ND         3.0           Methyl Tert Butyl Ether         ND         1.0           Naphthalene         ND         1.0           1,2-Dichloroethane         ND         1.0           1,2-Dichloroethane         ND         1.0           3,3-Dimethyl-1-Butanol         ND         50           Ethyl Alcohol         ND         100           Ethyl Tert Butyl Ether         ND         2.0           Tert-Amyl Alcohol         ND         20           Tert-Butyl Alcohol         ND         20           Tert-Butyl Formate         ND         20           Surrogate Recoveries         Run# 1         Run# 2           Dibromofluoromethane         101%           1,2-Dichloroethane-D4         103%           Toluene-D8         99%	Benzene         ND         1.0         0.24           Toluene         ND         1.0         0.20           Ethylbenzene         ND         1.0         0.28           Xylene (total)         ND         3.0         0.66           Methyl Tert Butyl Ether         ND         1.0         0.20           Naphthalene         ND         1.0         0.20           Naphthalene         ND         1.0         0.24           Di-Isopropyl ether         ND         1.0         0.24           Di-Isopropyl ether         ND         1.0         0.23           3,3-Dimethyl-1-Butanol         ND         50         3.8           Ethyl Alcohol         ND         100         23           Ethyl Tert Butyl Ether         ND         2.0         0.20           Tert-Amyl Alcohol         ND         20         7.4           Tert-Butyl Alcohol         ND         20         8.8           Tert-Butyl Formate         ND         20         8.8           Surrogate Recoveries         Run#1         Run#2         Limi           Dibromofluoromethane         101%         83-1           1,2-Dichloroethane-D4         103%         79-12	Benzene

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

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Client Sample ID: 18686 MW-24 Lab Sample ID: FA21494-17 Matrix:

AQ - Ground Water

**Date Sampled:** 01/15/15 Date Received: 01/17/15

Method:

SW846 8011 SW846 3510C

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch		
Run #1	DD80189.D	1	01/26/15	NG	01/21/15	OP54661	GDD2377		
Run #2									

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.0095	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
460-00-4	4-Bromofluorobenzene	85%		63-13	7%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

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**Date Sampled:** 01/15/15

Date Received: 01/17/15

Client Sample ID: 18686 MW-25
Lab Sample ID: FA21494-18
Matrix: AQ - Ground Water

Method: SW846 8260B Percent Solids: n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	J0963283.D	1	01/23/15	MM	n/a	n/a	VJ4879
Run #2							

Purge Volume
Run #1 5.0 ml
Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.24	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/1	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/1	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate <sup>a</sup>	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
1868-53-7	Dibromofluoromethane	101%		83-11	18%	
17060-07-0	1,2-Dichloroethane-D4	101%		79-12	25%	
2037-26-5	Toluene-D8	101%		85-11	12%	
460-00-4	4-Bromofluorobenzene	98%		83-11	8%	

<sup>(</sup>a) Associated BS recovery outside control limits.

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

**Date Sampled:** 01/15/15

Date Received: 01/17/15

Client Sample ID: 18686 MW-25 Lab Sample ID: FA21494-18

Matrix: AQ - Ground Water Method:

SW846 8011 SW846 3510C

Percent Solids: n/a Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Project:

File ID DF Analyzed  $\mathbf{B}\mathbf{y}$ Prep Date Prep Batch Analytical Batch GDD2377 Run #1 DD80190.D 1 01/26/15 NG 01/21/15 OP54661 Run #2

Initial Volume Final Volume Run #1 36.5 ml 2.0 ml

Run #2

CAS No. Compound Result RL**MDL** Q Units

106-93-4 0.0096 ug/l 1,2-Dibromoethane ND 0.019

CAS No. Surrogate Recoveries Run#1 Run# 2 Limits

460-00-4 4-Bromofluorobenzene 98% 63-137%

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 MW-26 Date Sampled: 01/15/15 FA21494-19 Lab Sample ID: Date Received: 01/17/15 AQ - Ground Water Matrix: Percent Solids: n/a SW846 8260B Method:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC Project:

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J0963284.D	1	01/23/15	MM	n/a	n/a	VJ4879
Run #2							

Purge Volume Run #1 5.0 ml Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.24	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/1	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/1	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/1	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate <sup>a</sup>	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its	
1868-53-7 17060-07-0	Dibromofluoromethane 1,2-Dichloroethane-D4	99% 102%		83-1 79-1		
2037-26-5	Toluene-D8	100%		85-1		
460-00-4	4-Bromofluorobenzene	97%		83-1		

<sup>(</sup>a) Associated BS recovery outside control limits.

MDL = Method Detection Limit ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Page 1 of 1

Client Sample ID: 18686 MW-26 Lab Sample ID: FA21494-19

Matrix:

AQ - Ground Water

Date Received: 01/17/15

**Date Sampled:** 01/15/15

Method:

SW846 8011 SW846 3510C

Percent Solids: n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80191.D	1	01/26/15	NG	01/21/15	OP54661	GDD2377
Run #2							

	Initial Volume	Final Volume
Run #1	36.4 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.0096	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its	
460-00-4	4-Bromofluorobenzene	100%		63-1	37%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank N = Indicates presumptive evidence of a compound

Page 1 of 1

 Client Sample ID:
 18686 MW-27

 Lab Sample ID:
 FA21494-20
 Date Sampled:
 01/15/15

 Matrix:
 AQ - Ground Water
 Date Received:
 01/17/15

 Method:
 SW846 8260B
 Percent Solids:
 n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Analytical Batch File ID DF Analyzed  $\mathbf{B}\mathbf{y}$ Prep Date Prep Batch VJ4879 Run #1 J0963285.D 1 01/23/15 MM n/a n/a Run #2

Purge Volume

Run #1 5.0 ml

Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.87	1.0	0.24	ug/1	J
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	1.3	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/1	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	11.5	20	7.4	ug/l	J
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate <sup>a</sup>	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	101%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	101%		79-1	25%	
2037-26-5	Toluene-D8	100%		85-1	12%	
460-00-4	4-Bromofluorobenzene	96%		83-1	18%	

<sup>(</sup>a) Associated BS recovery outside control limits.

ND = Not detected MDL

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

Page 1 of 1

Client Sample ID: 18686 MW-27 Lab Sample ID: FA21494-20

AQ - Ground Water

**Date Sampled:** 01/15/15 **Date Received:** 01/17/15

Matrix: Method:

SW846 8011 SW846 3510C

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80192.D	1	01/26/15	NG	01/21/15	OP54661	GDD2377
Run #2							

	Initial Volume	Final Volume
Run #1	36.0 ml	2.0 ml
un #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.0097	ug/1	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its	
460-00-4	4-Bromofluorobenzene	102%		63-11	37%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank N = Indicates presumptive evidence of a compound

Page 1 of 1

**Date Sampled:** 01/15/15

Date Received: 01/17/15

Percent Solids: n/a

Client Sample ID: 18686 MW-28 Lab Sample ID: FA21494-21

Matrix: AQ - Ground Water Method: SW846 8260B

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch
Run #1 J0963286.D 1 01/23/15 MM n/a n/a VJ4879

Run #2

Purge Volume

Run #1 5.0 ml

Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.24	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate a	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
1868-53-7	Dibromofluoromethane	98%		83-11		
17060-07-0	1,2-Dichloroethane-D4	104%		79-12		
2037-26-5	Toluene-D8	99%		85-11		
460-00-4	4-Bromofluorobenzene	96%		83-11	.8%	

<sup>(</sup>a) Associated BS recovery outside control limits.

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

E = Indicates value exceeds calibration range

B = Indicates analyte found in associated method blank

Page 1 of 1

**Date Sampled:** 01/15/15

Client Sample ID: 18686 MW-28
Lab Sample ID: FA21494-21
Matrix: AQ - Ground Water

 Matrix:
 AQ - Ground Water
 Date Received: 01/17/15

 Method:
 SW846 8011
 SW846 8011
 Percent Solids: n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80196.D	1	01/26/15	NG	01/23/15	OP54691	GDD2377
Run #2							

	Initial Volume	Final Volume
Run #1	36.8 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.0095	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
460-00-4	4-Bromofluorobenzene	68%		63-13	37%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

**Date Sampled:** 01/15/15

Client Sample ID: 18686 MW-29
Lab Sample ID: FA21494-22
Matrix: AQ - Ground Water

AQ - Ground Water

SW846 8260B

Date Received: 01/17/15

Percent Solids: n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Prep Batch **Analytical Batch** File ID DF Analyzed  $\mathbf{B}\mathbf{y}$ Prep Date VJ4879 Run #1 J0963287.D 1 01/23/15 MMn/a n/a Run #2

Purge Volume

Run #1 5.0 ml

Run #2

Method:

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.24	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50 .	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate a	ND	20	4.0	ug/1	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
1868-53-7	Dibromofluoromethane	100%		83-11	.8%	
17060-07-0	1,2-Dichloroethane-D4	104%		79-12	25%	
2037-26-5	Toluene-D8	99%		85-11	2%	
460-00-4	4-Bromofluorobenzene	97%		83-11	.8%	

<sup>(</sup>a) Associated BS recovery outside control limits.

ND = Not detected MDL =

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

E = Indicates value exceeds calibration range

B = Indicates analyte found in associated method blank

Page 1 of 1

**Date Sampled:** 01/15/15

Client Sample ID: 18686 MW-29 Lab Sample ID: FA21494-22

Matrix: AQ - Ground Water Method: SW846 8011 SW84

 AQ - Ground Water
 Date Received:
 01/17/15

 SW846 8011
 SW846 8011
 Percent Solids:
 n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

 File ID
 DF
 Analyzed
 By
 Prep Date
 Prep Batch
 Analytical Batch

 Run #1
 DD80197.D
 1
 01/26/15
 NG
 01/23/15
 OP54691
 GDD2377

 Run #2
 OP54691
 OP54691
 OP54691
 OP54691
 OP54691
 OP54691

Run #1 36.9 ml Final Volume 2.0 ml

Run #2

CAS No. Compound Result RL MDL Units Q

106-93-4 1,2-Dibromoethane ND 0.019 0.0095 ug/l

CAS No. Surrogate Recoveries Run# 1 Run# 2 Limits

460-00-4 4-Bromofluorobenzene 69% 63-137%

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

**Date Sampled:** 01/15/15

Date Received: 01/17/15

Client Sample ID: 18686 MW-30 Lab Sample ID: FA21494-23 Matrix:

AQ - Ground Water Method: SW846 8260B

Percent Solids: n/a

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC Project:

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	J0963288.D	1	01/23/15	MM	n/a	n/a	VJ4879
Run #2							

Purge Volume

5.0 ml Run #1

Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.24	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate <sup>a</sup>	ND	20	4.0	ug/1	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
1868-53-7	Dibromofluoromethane	102%		83-11	18%	
17060-07-0	1,2-Dichloroethane-D4	103%		79-12	25%	
2037-26-5	Toluene-D8	100%		85-11	2%	
460-00-4	4-Bromofluorobenzene	97%		83-11	8%	

<sup>(</sup>a) Associated BS recovery outside control limits.

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 MW-30 Lab Sample ID: FA21494-23

Matrix:

AQ - Ground Water

**Date Sampled:** 01/15/15 Date Received: 01/17/15

Method:

SW846 8011 SW846 8011

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

File ID DF Prep Date Prep Batch Analytical Batch Analyzed By Run #1 DD80200.D 01/26/15 NG 01/23/15 OP54691 GDD2377

Run #2

Final Volume Initial Volume

Run #1 Run #2 36.6 ml 2.0 ml

CAS No. Compound Result RLMDL Units Q

106-93-4 0.019 1,2-Dibromoethane ND 0.0096 ug/1

CAS No. Surrogate Recoveries Run#1 Run# 2 Limits

460-00-4 4-Bromofluorobenzene 63% 63-137%

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Client Sample ID: 18686 MW-31 Lab Sample ID: FA21494-24

Matrix: AQ - Ground Water Method:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Date Sampled: 01/15/15 Date Received: 01/17/15 Percent Solids: n/a SW846 8260B Project:

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J0963289.D	1	01/23/15	MM	n/a	n/a	VJ4879
Run #2							

Purge Volume Run #1 5.0 ml

Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.24	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND -	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate a	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
1868-53-7	Dibromofluoromethane	100%		83-11	18%	
17060-07-0	1,2-Dichloroethane-D4	102%		79-12	25%	
2037-26-5	Toluene-D8	100%		85-11	12%	
460-00-4	4-Bromofluorobenzene	97%		83-11	18%	

<sup>(</sup>a) Associated BS recovery outside control limits.

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

E = Indicates value exceeds calibration range

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 MW-31 Lab Sample ID: FA21494-24

Matrix:

AQ - Ground Water

Date Received: 01/17/15

**Date Sampled:** 01/15/15

Method:

SW846 8011 SW846 8011

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80201.D	1	01/26/15	NG	$01/\overline{2}3/15$	OP54691	GDD2377

Run #2

Initial Volume Final Volume Run #1 36.3 ml 2.0 ml

Run #2

CAS No. Compound Result RLMDL Q Units

106-93-4 0.0096 ug/l 1,2-Dibromoethane ND 0.019

CAS No. Surrogate Recoveries Run#1 Run# 2 Limits

460-00-4 4-Bromofluorobenzene 85% 63-137%

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 MW-1A Lab Sample ID: FA21494-25

Matrix: AQ - Ground Water Method: SW846 8260B

Date Sampled: 01/15/15
Date Received: 01/17/15
Percent Solids: n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J0963290.D	5	01/23/15	MM	n/a	n/a	VJ4879
Run #2	J0963315.D	20	01/24/15	MM	n/a	n/a	VJ4880
Run #3	J0963346.D	50	01/26/15	MM	n/a	n/a	VJ4881

	Purge Volume	<u>, (, , , , , , , , , , , , , , , , , , </u>	 	
Run #1	5.0 ml			
Run #2	5.0 ml			
Run #3	5.0 ml			

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	; Q
71-43-2	Benzene	1040 a	20	4.9	ug/l	
108-88-3	Toluene	4950 <sup>b</sup>	50	20	ug/l	
100-41-4	Ethylbenzene	583 a	20	5.6	ug/l	
1330-20-7	Xylene (total)	5130 a	60	13	ug/l	
1634-04-4	Methyl Tert Butyl Ether	78.8	5.0	1.0	ug/l	
91-20 <b>-</b> 3	Naphthalene	474	25	5.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	1.2	ug/l	
108-20-3	Di-Isopropyl ether	2.1	5.0	1.1	ug/l	J
624-95-3	3,3-Dimethyl-1-Butanol	ND	250	19	ug/l	
64-17-5	Ethyl Alcohol	ND	500	120	ug/l	
637-92-3	Ethyl Tert Butyl Ether	3.3	10	1.0	ug/l	J
75-85-4	Tert-Amyl Alcohol	11900 a	400	150	ug/l	
994-05-8	Tert-Amyl Methyl Ether	12.2	10	1.1	ug/l	
75-65-0	Tert-Butyl Alcohol	386	100	44	ug/l	
762-75-4	Tert-Butyl Formate c	ND	100	20	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run	# 3	Limits
1868-53-7	Dibromofluoromethane	101%	98%	1009	6	83-118%
17060-07-0	1,2-Dichloroethane-D4	100%	103%	1039	<b>6</b>	79-125%
2037-26-5	Toluene-D8	96%	99%	1019	<b>6</b>	85-112%
460-00-4	4-Bromofluorobenzene	91%	93%	1029	6	83-118%

<sup>(</sup>a) Result is from Run# 2

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

<sup>(</sup>b) Result is from Run# 3

<sup>(</sup>c) Associated BS recovery outside control limits.

Page 1 of 1

Client Sample ID: 18686 MW-1A Lab Sample ID: FA21494-25

Matrix: Method:

Project:

AQ - Ground Water

SW846 8011 SW846 8011

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

**Date Sampled:** 01/15/15

Date Received: 01/17/15

Percent Solids: n/a

	File ID	DF	Analyzed	$\mathbf{B}\mathbf{y}$	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80202.D	1	01/26/15	NG	01/23/15	OP54691	GDD2377
Run #2							

	Initial Volume	Final Volume
Run #1	36.4 ml	2.0 ml

Run #2

CAS No. RLMDL Compound Result Units Q 106-93-4 1,2-Dibromoethane ND 0.019 0.0096 ug/l

CAS No. Surrogate Recoveries Run#1 Run# 2 Limits

460-00-4 4-Bromofluorobenzene 64% 63-137%

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 MW-2A Lab Sample ID: FA21494-26

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

**Date Sampled:** 01/15/15 Date Received: 01/17/15 Matrix: AQ - Ground Water Percent Solids: n/a Method: SW846 8260B Project:

	File ID	DF	Analyzed	$\mathbf{B}\mathbf{y}$	Prep Date	Prep Batch	Analytical Batch
Run #1	J0963316.D	250	01/24/15	MM	n/a	n/a	VJ4880
Run #2							

Purge Volume Run #1 5.0 ml

Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	17900	250	61	ug/1	
108-88-3	Toluene	20900	250	50	ug/l	
100-41-4	Ethylbenzene	1680	250	70	ug/l	
1330-20-7	Xylene (total)	8520	750	170	ug/l	
1634-04-4	Methyl Tert Butyl Ether	281	250	50	ug/l	
91-20-3	Naphthalene	571	1300	250	ug/1	J
107-06-2	1,2-Dichloroethane	ND	250	60	ug/1	
108-20-3	Di-Isopropyl ether	ND	250	57	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	13000	950	ug/l	
64-17-5	Ethyl Alcohol	ND	25000	5800	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	500	50	ug/l	
75-85-4	Tert-Amyl Alcohol	60900	5000	1900	ug/1	
994-05-8	Tert-Amyl Methyl Ether	103	500	55	ug/l	J
75-65-0	Tert-Butyl Alcohol	ND	5000	2200	ug/1	
762-75-4	Tert-Butyl Formate	ND	5000	1000	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	99%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	103%		79-1	25%	
2037-26-5	Toluene-D8	101%		85-1	12%	
460-00-4	4-Bromofluorobenzene	94%		83-1	18%	

MDL = Method Detection Limit ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 MW-2A Lab Sample ID: FA21494-26

AQ - Ground Water

**Date Sampled:** 01/15/15 Date Received: 01/17/15 Percent Solids: n/a

Matrix: Method:

SW846 8011 SW846 8011

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

File ID DF Analyzed  $\mathbf{B}\mathbf{y}$ **Prep Date** Prep Batch **Analytical Batch** Run #1 a DD80203.D 1 01/26/15 NG 01/23/15 OP54691 GDD2377

Run #2

Initial Volume Final Volume 2.0 ml

Compound

Run #1 35.7 ml

Run #2

CAS No.

Result RL **MDL** Units Q

106-93-4 1,2-Dibromoethane 0.12 0.020 0.0098 ug/1

CAS No. Surrogate Recoveries Run# 1 Run# 2 Limits

460-00-4 4-Bromofluorobenzene 67% 63-137%

(a) All hits confirmed by dual column analysis.

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Date Sampled: 01/15/15

Date Received: 01/17/15

Client Sample ID: 18686 MW-3A Lab Sample ID: FA21494-27

Matrix:
Method:

AQ - Ground Water

SW846 8260B Percent Solids: n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J0963317.D	100	01/24/15	ММ	n/a	n/a	VJ4880
Run #2							!

Purge Volume Run #1 5.0 ml

Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	$\mathbf{RL}$	MDL	Units	Q
71-43-2	Benzene	2930	100	24	ug/l	
108-88-3	Toluene	8310	100	20	ug/l	
		875	100	28	ug/l ug/l	
100-41-4	Ethylbenzene				_	
1330-20-7	Xylene (total)	8780	300	66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	100	20	ug/l	
91-20-3	Naphthalene	556	500	100	ug/l	
107-06-2	1,2-Dichloroethane	ND	100	24	ug/l	
108-20-3	Di-Isopropyl ether	ND	100	23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	5000	380	ug/l	
64-17-5	Ethyl Alcohol	ND	10000	2300	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	200	20	ug/l	
75-85-4	Tert-Amyl Alcohol	1690	2000	740	ug/l	J
994-05-8	Tert-Amyl Methyl Ether	ND	200	22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	2000	880	ug/l	
762-75-4	Tert-Butyl Formate	ND	2000	400	ug/1	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ite	
CAS No.	Surrogate Recoveries	Kull# 1	Kuli# 2	Ziiii		
1868-53-7	Dibromofluoromethane	99%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	104%		79-12	25%	
2037-26-5	Toluene-D8	100%		85-112%		
460-00-4	4-Bromofluorobenzene	94%		83-1	18%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 MW-3A Lab Sample ID: FA21494-27

AQ - Ground Water

**Date Sampled:** 01/15/15 **Date Received:** 01/17/15

Matrix: Method:

SW846 8011 SW846 8011

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1 a	DD80204.D	1	01/26/15	NG	01/23/15	OP54691	GDD2377
Run #2							

	Initial Volume	Final Volume
Run #1	35.5 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	0.029	0.020	0.0099	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its	
460-00-4	4-Bromofluorobenzene	71%		63-11	37%	

<sup>(</sup>a) All hits confirmed by dual column analysis.

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 MW-4A Lab Sample ID:

FA21494-28

Matrix:

AQ - Ground Water

Date Received: 01/17/15

**Date Sampled:** 01/15/15

Method: SW846 8260B

File ID

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

D.,		ш1
Rυ	ın	#1
-		110

DF J0963318.D 200 Analyzed By 01/24/15 MM Prep Date n/a

Prep Batch n/a

**Analytical Batch** VJ4880

Run #2

Purge Volume

Run #1

5.0 ml

Run #2

Purgeable Aromatics, MTBE, Naphthalene

Compound	Result	RL	MDL	Units	Q
Benzene	2300	200	49	ug/l	
Toluene	11500	200	40	ug/l	
Ethylbenzene	1010	200	56	ug/l	
Xylene (total)	12300	600	130	ug/l	
Methyl Tert Butyl Ether	50.9	200	40	ug/l	J
Naphthalene	511	1000	200	ug/l	J
1,2-Dichloroethane	ND	200	48	ug/l	
Di-Isopropyl ether	ND	200	45	ug/l	
3,3-Dimethyl-1-Butanol	ND	10000	760	ug/l	
Ethyl Alcohol	ND	20000	4600	ug/l	
Ethyl Tert Butyl Ether	ND	400	40	ug/l	
Tert-Amyl Alcohol	2110	4000	1500	ug/l	J
Tert-Amyl Methyl Ether	ND	400	44	ug/l	
Tert-Butyl Alcohol	ND	4000	1800	ug/l	
Tert-Butyl Formate	ND	4000	810	ug/l	
S No. Surrogate Recoveries		Run# 2	Lim	its	
	Benzene Toluene Ethylbenzene Xylene (total) Methyl Tert Butyl Ether Naphthalene 1,2-Dichloroethane Di-Isopropyl ether 3,3-Dimethyl-1-Butanol Ethyl Alcohol Ethyl Tert Butyl Ether Tert-Amyl Alcohol Tert-Amyl Methyl Ether Tert-Butyl Alcohol Tert-Butyl Formate	Benzene 2300 Toluene 11500 Ethylbenzene 1010 Xylene (total) 12300 Methyl Tert Butyl Ether 50.9 Naphthalene 511 1,2-Dichloroethane ND Di-Isopropyl ether ND 3,3-Dimethyl-1-Butanol ND Ethyl Alcohol ND Ethyl Tert Butyl Ether ND Tert-Amyl Alcohol 2110 Tert-Amyl Methyl Ether ND Tert-Butyl Alcohol ND Tert-Butyl Alcohol ND Tert-Butyl Formate ND	Benzene         2300         200           Toluene         11500         200           Ethylbenzene         1010         200           Xylene (total)         12300         600           Methyl Tert Butyl Ether         50.9         200           Naphthalene         511         1000           1,2-Dichloroethane         ND         200           Di-Isopropyl ether         ND         200           3,3-Dimethyl-1-Butanol         ND         10000           Ethyl Alcohol         ND         20000           Ethyl Tert Butyl Ether         ND         400           Tert-Amyl Alcohol         2110         4000           Tert-Butyl Alcohol         ND         400           Tert-Butyl Alcohol         ND         4000           Tert-Butyl Formate         ND         4000	Benzene         2300         200         49           Toluene         11500         200         40           Ethylbenzene         1010         200         56           Xylene (total)         12300         600         130           Methyl Tert Butyl Ether         50.9         200         40           Naphthalene         511         1000         200           1,2-Dichloroethane         ND         200         48           Di-Isopropyl ether         ND         200         45           3,3-Dimethyl-1-Butanol         ND         10000         760           Ethyl Alcohol         ND         20000         4600           Ethyl Tert Butyl Ether         ND         400         40           Tert-Amyl Alcohol         2110         4000         1500           Tert-Amyl Methyl Ether         ND         400         44           Tert-Butyl Alcohol         ND         4000         1800           Tert-Butyl Formate         ND         4000         810	Benzene         2300         200         49         ug/l           Toluene         11500         200         40         ug/l           Ethylbenzene         1010         200         56         ug/l           Xylene (total)         12300         600         130         ug/l           Methyl Tert Butyl Ether         50.9         200         40         ug/l           Naphthalene         511         1000         200         ug/l           1,2-Dichloroethane         ND         200         48         ug/l           Di-Isopropyl ether         ND         200         45         ug/l           3,3-Dimethyl-1-Butanol         ND         10000         760         ug/l           Ethyl Alcohol         ND         20000         4600         ug/l           Ethyl Tert Butyl Ether         ND         400         40         ug/l           Tert-Amyl Alcohol         2110         4000         1500         ug/l           Tert-Butyl Alcohol         ND         400         44         ug/l           Tert-Butyl Alcohol         ND         4000         1800         ug/l           Tert-Butyl Formate         ND         4000         810

101%

104%

99%

95%

ND = Not detected

1868-53-7

2037-26-5

460-00-4

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

Dibromofluoromethane

4-Bromofluorobenzene

17060-07-0 1.2-Dichloroethane-D4

Toluene-D8

J = Indicates an estimated value

83-118%

79-125%

85-112%

83-118%

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 MW-4A Lab Sample ID: FA21494-28

Matrix: Method:

AQ - Ground Water SW846 8011 SW846 8011 **Date Sampled:** 01/15/15 Date Received: 01/17/15

Percent Solids: n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 a	DD80205.D	1	01/26/15	NG	01/23/15	OP54691	GDD2377
In 1/0							

Run #2

Initial Volume Final Volume Run #1 36.8 ml 2.0 ml

Run #2

CAS No. Compound Result RL**MDL** Units Q

106-93-4 0.052 0.019 1,2-Dibromoethane 0.0095 ug/l

CAS No. Surrogate Recoveries Run#1 Run# 2 Limits

460-00-4 4-Bromofluorobenzene 81% 63-137%

(a) All hits confirmed by dual column analysis.

ND = Not detected RL = Reporting Limit MDL = Method Detection Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 TW-1 Lab Sample ID: FA21494-29

Matrix: AQ - Ground Water SW846 8260B

Date Received: 01/17/15 Percent Solids: n/a

**Date Sampled:** 01/16/15

Method: Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Prep Batch Analytical Batch File ID DF Analyzed By Prep Date VJ4879 Run #1 J0963294.D 1 01/23/15 MM n/a n/a

Run #2

Purge Volume

Run #1 5.0 ml

Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.24	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate a	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	100%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	104%		79-1	25%	
2037-26-5	Toluene-D8	95%		85-112%		
460-00-4	4-Bromofluorobenzene	96%		83-1	18%	

<sup>(</sup>a) Associated BS recovery outside control limits.

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 TW-1 Lab Sample ID: FA21494-29

Matrix:

AQ - Ground Water

Date Sampled: 01/16/15

Date Received: 01/17/15

Method:

SW846 8011 SW846 8011

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	$\mathbf{B}\mathbf{y}$	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80206.D	1	01/26/15	NG	01/23/15	OP54691	GDD2377
Run #2							

	Initial Volume	Final Volume
Run #1	36.4 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.0096	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
460-00-4	4-Bromofluorobenzene	79%		63-13	37%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 TW-2 FA21494-30

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC Project:

**Date Sampled:** 01/15/15 Lab Sample ID: Date Received: 01/17/15 Matrix: AQ - Ground Water Percent Solids: n/a Method: SW846 8260B

 $\mathbf{B}\mathbf{y}$ **Prep Date** Prep Batch **Analytical Batch** File ID DF Analyzed VJ4879 01/23/15 Run #1 J0963295.D 1 MM n/a n/a Run #2

Purge Volume

Run #1 5.0 ml

Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.26	1.0	0.24	ug/l	J
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate <sup>a</sup>	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	101%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	103%		79-1	25%	
2037-26-5	Toluene-D8	100%		85-1	12%	
460-00-4	4-Bromofluorobenzene	97%		83-1	18%	

<sup>(</sup>a) Associated BS recovery outside control limits.

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

**Date Sampled:** 01/15/15

Date Received: 01/17/15

Client Sample ID: 18686 TW-2 Lab Sample ID: FA21494-30

Matrix: AQ - Ground Water Method:

SW846 8011 SW846 8011 Percent Solids: n/a Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Project:

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80207.D	1	01/26/15	NG	01/23/15	OP54691	GDD2377
Run #2							

Final Volume Initial Volume

37.1 ml 2.0 ml Run #1

Run #2

RLMDL Q CAS No. Compound Result Units

106-93-4 ND 0.019 0.0094 ug/1 1,2-Dibromoethane

Surrogate Recoveries CAS No. Run#1 Run# 2 Limits

460-00-4 4-Bromofluorobenzene 76% 63-137%

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 WSW-1 Lab Sample ID: FA21494-31 Matrix: AQ - Ground Water

SW846 8260B

Date Received: 01/17/15
Percent Solids: n/a

**Date Sampled:** 01/16/15

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	J0963296.D	1	01/23/15	MM	n/a	n/a	VJ4879
Run #2							

Purge Volume

Run #1 5.0 ml

Run #2

Method:

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.24	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/1	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/1	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate a	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
1868-53-7	Dibromofluoromethane	100%		83-11	18%	
17060-07-0	1,2-Dichloroethane-D4	103%		79-12	25%	
2037-26-5	Toluene-D8	100%		85-11	2%	
460-00-4	4-Bromofluorobenzene	97%		83-11	8%	

<sup>(</sup>a) Associated BS recovery outside control limits.

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

**Date Sampled:** 01/16/15

Client Sample ID: 18686 WSW-1 Lab Sample ID: FA21494-31

Matrix: AQ - Ground Water Method:

Date Received: 01/17/15 SW846 8011 SW846 8011 Percent Solids: n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	$\mathbf{B}\mathbf{y}$	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80208.D	1	01/27/15	NG	01/23/15	OP54691	GDD2377
Run #2							

Initial Volume Final Volume

36.6 ml Run #1 2.0 ml

Run #2

CAS No. Compound Result RL**MDL** Units Q

106-93-4 1,2-Dibromoethane ND 0.019 0.0096 ug/l

CAS No. Surrogate Recoveries Run#1 Run# 2 Limits

460-00-4 4-Bromofluorobenzene 86% 63-137%

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: 18686 WSW-3 Lab Sample ID: FA21494-32

Matrix: AQ - Ground Water SW846 8260B

Date Received: 01/17/15
Percent Solids: n/a

**Date Sampled:** 01/15/15

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch
Run #1 J0963319.D 1 01/24/15 MM n/a n/a VJ4880
Run #2

Purge Volume

Run #1 5.0 ml

Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.24	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/I	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/1	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	99%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	103%		79-1	25%	
2037-26-5	Toluene-D8	101%		85-1	12%	
460-00-4	4-Bromofluorobenzene	95%		83-1	18%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

By

NG

**Prep Date** 

01/23/15

Page 1 of 1

Analytical Batch

GDD2377

**Date Sampled:** 01/15/15

Date Received: 01/17/15

Prep Batch

OP54691

Percent Solids: n/a

Client Sample ID: 18686 WSW-3 Lab Sample ID: FA21494-32

File ID

DD80209.D

Matrix: AQ - Ground Water Method:

SW846 8011 SW846 8011

DF

1

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Project:

Analyzed

01/27/15

	Initial Volume	Final Volume
Run #1	36.0 ml	2.0 ml

Run #2

Run #1

Run #2

CAS No. Compound Result RLMDL Q Units 106-93-4 0.0097 ug/l 1,2-Dibromoethane ND 0.019

CAS No. Surrogate Recoveries Run# 1 Run# 2 Limits

460-00-4 4-Bromofluorobenzene 83% 63-137%

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

 Client Sample ID:
 18686 DUP A

 Lab Sample ID:
 FA21494-33
 Date Sampled:
 01/15/15

 Matrix:
 AQ - Ground Water
 Date Received:
 01/17/15

 Method:
 SW846 8260B
 Percent Solids:
 n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J0963396.D	1	01/27/15	MM	n/a	n/a	VJ4883
Run #2							

Purge Volume
Run #1 5.0 ml
Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.40	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.51	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
108-20-3	Di-Isopropyl Ether	ND	1.0	0.20	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	10	ug/l	
64-17-5	Ethyl Alcohol	ND	100	35	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	8.1	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	5.4	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	4.0	ug/1	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
1868-53-7	Dibromofluoromethane	101%		83-11	.8%	
17060-07-0	1,2-Dichloroethane-D4	101%		79-12	25%	
2037-26-5	Toluene-D8	100%		85-11	2%	
460-00-4	4-Bromofluorobenzene	100%		83-11	8%	

ND = Not detected MDL = Metal

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

**Date Sampled:** 01/15/15

Date Received: 01/17/15

Client Sample ID: 18686 DUP A Lab Sample ID: FA21494-33

Matrix: AQ - Ground Water Method: SW846 8011 SW846 8011

Percent Solids: n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	$\mathbf{B}\mathbf{y}$	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80212.D	1	01/27/15	NG	01/23/15	OP54691	GDD2377
Run #2							

dun #2

Initial Volume Final Volume

Run #1 36.1 ml 2.0 ml

Run #2

CAS No. Compound Result RL**MDL** Units Q

106-93-4 0.019 1,2-Dibromoethane ND 0.0097 ug/l

CAS No. Surrogate Recoveries Run#1 Run# 2 Limits

460-00-4 4-Bromofluorobenzene 106% 63-137%

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

**Date Sampled:** 01/16/15

Date Received: 01/17/15

Client Sample ID: 18686 DUP B Lab Sample ID: FA21494-34 Matrix: AQ - Ground W

AQ - Ground Water

Method: SW846 8260B Percent Solids: n/a
Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	$\mathbf{B}\mathbf{y}$	Prep Date	Prep Batch	Analytical Batch
Run #1	J0963348.D	100	01/26/15	MM	n/a	n/a	VJ4881
Run #2							

Purge Volume

Run #1 5.0 ml

Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	3690	100	20	ug/l	
108-88-3	Toluene	8250	100	40	ug/1	
100-41-4	Ethylbenzene	623	100	20	ug/l	
1330-20-7	Xylene (total)	4860	300	51	ug/l	
1634-04-4	Methyl Tert Butyl Ether	105 -	100	30	ug/l	
91-20-3	Naphthalene	196	500	100	ug/l	J
107-06-2	1,2-Dichloroethane	ND	100	20	ug/l	
108-20-3	Di-Isopropyl Ether	ND	100	20	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	5000	1000	ug/l	
64-17-5	Ethyl Alcohol	ND	10000	3500	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	200	20	ug/l	
75-85-4	Tert-Amyl Alcohol	12300	2000	810	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	200	22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	2000	540	ug/1	
762-75-4	Tert-Butyl Formate	ND	2000	400	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	99%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	101%		79-1	25%	
2037-26-5	Toluene-D8	102%		85-1	12%	
460-00-4	4-Bromofluorobenzene	98%		83-1	18%	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

E = Indicates value exceeds calibration range

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Page 1 of 1

Client Sample ID: 18686 DUP B Lab Sample ID: FA21494-34

Matrix:

AQ - Ground Water

**Date Sampled:** 01/16/15

Date Received: 01/17/15

Method:

SW846 8011 SW846 8011

Percent Solids: n/a

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80213.D	1	01/27/15	NG	01/23/15	OP54691	GDD2377
D //O							

Run #2

Initial Volume Final Volume 36.2 ml 2.0 ml Run #1

Run #2

CAS No. Compound Result RL**MDL** Units Q

0.0097 ug/l 106-93-4 1,2-Dibromoethane ND 0.019

CAS No. Surrogate Recoveries Run# 1 Run# 2 Limits

460-00-4 4-Bromofluorobenzene 88% 63-137%

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

**Date Sampled:** 01/16/15

Client Sample ID: 18686 FIELD BLANK

Lab Sample ID: FA21494-35

Matrix:AQ - Field Blank WaterDate Received:01/17/15Method:SW846 8260BPercent Solids:n/a

Method: SW840 8200B Percent S

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch
Run #1 J0963308.D 1 01/24/15 MM n/a n/a VJ4880

Run #2

Purge Volume

Run #1 5.0 ml

Run #2

#### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.24	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	100%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	101%		79-1	25%	
2037-26-5	Toluene-D8	99%		85-1	12%	
460-00-4	4-Bromofluorobenzene	96%		83-1	18%	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

E = Indicates value exceeds calibration range

B = Indicates analyte found in associated method blank

Page 1 of 1

**Date Sampled:** 01/16/15

Date Received: 01/17/15

Client Sample ID: 18686 FIELD BLANK

Lab Sample ID:

FA21494-35

Matrix:

AQ - Field Blank Water

SW846 8011 SW846 8011

Method: Project:

Percent Solids: n/a

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD80214.D	1	01/27/15	NG	01/23/15	OP54691	GDD2377
Run #2							

Initial Volume Final Volume

4-Bromofluorobenzene

Run #1 Run #2 36.3 ml

2.0 ml

460-00-4

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.0096	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	

88%

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

63-137%

B = Indicates analyte found in associated method blank

### Report of Analysis

Client Sample ID: 18686 TRIP BLANK

Lab Sample ID:FA21494-36Date Sampled:01/15/15Matrix:AQ - Trip Blank WaterDate Received:01/17/15Method:SW846 8260BPercent Solids:n/a

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup> Run #2	J0963309.D	1	01/24/15	MM	n/a	n/a	VJ4880

Purge Volume

Run #1 5.0 ml

Run #2

### Purgeable Aromatics, MTBE, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.24	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/1	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	- 1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/1	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	4.0	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	102%		83-1	18%	
17060-07-0	1,2-Dichloroethane-D4	104%		79-1	25%	
2037-26-5	Toluene-D8	98%		85-1	12%	
460-00-4	4-Bromofluorobenzene	98%		83-1	18%	

<sup>(</sup>a) Sample vial(s) contained significant headspace; reported results are considered minimum values.

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Misc. Forms
Custody Documents and Other Forms
Includes the following where applicable:  Certification Exceptions Chain of Custody

# Parameter Certification Exceptions Job Number: FA21494

Page 1 of 1

Account: GRINCC GRI (Geological Resources Inc.)

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC Project:

The following parameters included in this report are exceptions to NELAC certification.

The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
3-Dimethyl-1-Butanol	624-95-3	SW846 8260B	AQ	Certified by SOP MS005
i-Isopropyl Ether	108-20-3	SW846 8260B	AQ	Certified by SOP MS005
i-Isopropyl ether	108-20-3	SW846 8260B	AQ	Certified by SOP MS005
ert-Amyl Alcohol	75-85-4	SW846 8260B	AQ	Certified by SOP MS005
ert-Butyl Formate	762-75-4	SW846 8260B	AQ	Certified by SOP MS005



ACCUTES		4405	Ch Vinelar	abo ain d Road, 1-425-67	of Suite	Cus	sto Orland	dy lo, Fl 3	2811	ıea	ast	t	Acci	test	A Couote		L	19	1 <b>4</b>	) (FF#	PAGE_	1	_of_4
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Samples of Manager (S. Coloredo	FALL.		Client Pure	hase Orde	r#								ξ <b>«</b>	- T	"	1	- 1			1		ł	SOL - Other Solid WP - Wipe
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2 18686 MW-2	HOT	YIYIS	0927	OES	GW	5	П	٨	$\top$	$\sqcap$	7	T	₹	X	7	$\neg$	$\neg$			T		$\Box$	
3 18686 MW-3	HOT	1415	0152	ŒB	GW	5	П	141				Т	<	K	X								·
4 18686 MW-6		116/15	1024	DCP	64	5	П	K		$\Box$	T	Т	~	~	X	7				T	1 1		<del></del>
5 18686 MW-7		145	1212	DEB	GW	5	П	14				T	X	1	α	$\top$	T		7	丁			
6 18686 mw-8		1/15/15	1448	DEP	GW	5				П		T	7	×	X	T	T			1			
7 18686 mw-9		115/15	1551	DEB	GW	5	П	1		T		T	Ҡ	×	K				1				
8 19686 MW-10		115/15	1600	DCB	CW	5	П	ス	$\top$		$\top$	T	4	7	X.	_			$\neg$	$\top$			
9 18686 MW-13		1/15/15	1613	OE A	GW	5	П	ス			T	Т	1	K	K	┪				7			
10 18686 MW-14		1415	1039	DEB	GW	5	П	K	$\neg$		$\top$	T	ス	K	Χ.		1						
11 18686 MW-15		145	1052	DEB	GW	5		K	$\top$	$\sqcap$	7	Τ	7	K	X				$\top$	$\top$	П		
12 18686 MW-19		1/15/15	1647	DEA	GW	5	П	oL			T	Т	d	×	X	T				$\top$	П		
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Lab Use Only: Custody Seal in Place	<del> </del>															1 _			١ ٢	•			

FA21494: Chain of Custody Page 1 of 6



ACCUTEST:	Chain of Custod: 4405 Vincland Road, Suite C-15 Orlando, F TEL. 407-425-6700 - FAX: 407-425-0 www.acoutest.com	Accutest	121494 DB#	PAGE 2 OF 4
Client / Reporting Information Company Name GEOLOGICAL RESOURCES Address 3502 HAYES Rd. Cay MONY DE State NC 2008 Proped Control of BALL E-mail WS6 Q GROVE: Phones 704 - 845-40(0) Sampler(s) Name(s) (Privace) DAN IEL BEALL	Project Information  IAL Project Name TIS DALE QUIC  Street 1989 THURGOOD M  10 City LIWGETREE	A K S HY IT BIND THE A CONTROL OF A CONTROL	. 801(	On Metrix Codes  DW - Driving Water GW - Ground Water WW - Water SW - Surface Whear SW - Surface Whear SW - County LC - Charles LC - Ch
14 18686 MW-21	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	C	7 Y ED8	LAR USE ONLY
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20 18686 MW-27 21 18686 MW-28 22 18686 MW-29 23 18686 MW-30	YESIS 1216 OCB GW 5 1	(	V X	
2 4   B6 86 MW - 3   TURNAROUND TIME (Business Days) Approved By, / Rush C	COMMERCIAL "A" (RESULTS	able Information	SCDIFEC UST MANA	nments / Remarks
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Emergency or Rush T/A Data Avaitable VIA Email or Labil Sample Custody must be Relinquished by Sampler: 1	documented below each time samples change posser Received By: 2 FEDGY 8054343431669 Received By:	Relinquished by: 7 Relinquished by: 7	1600	Received By:  A WWWW Ware and the second By:  Beceived By:
Lab Use Only: Custody Seal in Place: Y N Temp E	Blank Provided: Y N Preserved where App	olicable: Y N Total # of Coolers	Cooler Temperature (s)	Celsius:

FA21494: Chain of Custody Page 2 of 6

Client / Reporting Information Project Informa	ACCUTES		4405 Vii	Lai Chai neland Ro 407-425	n of	Cus C-15 C	sto Orland	<b>dy</b> 0, F13	32811		as	st	Acc	test	JOB	<u>*</u> *	1	4		₹ FF#	'AGE_	<u>3</u> _o	<u>4</u>
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2.5   19686 mW - 1A HOT	ample # Pleid tD / Point of Co			TIME F	MATRO	OF BOTTLES	SONE SONE	2	F 204	H2804	WCH-ZW	DI VECTERI	1F 10		0							LABU	SE ONLY
18666 mw-3A			5/5 15	278 DE	B GW	15	Ш	Ň	$\perp$				K	×	K								
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TURNAROUND TIME (Business Days)  Deta Deliverable Information  Desay Standard  COMMERCIAL "A" (RESULTS ONLY)  TO Days RUSH  COMMERCIAL "B" (RESULAGOUNDOT 3   PERMIT 18 686  REDTT 18 686  REDTT 18 686  PERMIT 18 686  PERMIT 18 686  PERMIT 18 686  PERMIT 18 686  PERMIT 18 686  POTHER  Emergency or Rush T/A Data Available VIA Email or Labilink  Emergency or Rush T/A Data Available VIA Email or Labilink  Sample Custody must be documented below each time semples change possession, including courier delivery.  Received By:  Date Time: Received By:  Received By:  Received By:  Received By:  Received By:  Received By:  Received By:  Received By:  Received By:  Received By:  Received By:  Received By:  Received By:  Received By:	5.7		//-	-			11	2	$\dashv$	+	Н	+		-			+	+-	+	╁──	<del>   </del>	<del></del>	
10 Day's Standard			ومراهبون	THE PERSON NAMED IN	randrak rangen		sta Del		Infor	mation	Ш	Щ		L	المن المناطقة	والمراجعة	المراجع والمنسوخ	1	Com	ments /	Remark	s	
S Day RUSH   REDTITE SEES QUIEN CITY DR   PERMIT 18 686     3 Day EMERGENCY   FULTI (EPA LEVEL 4] NC 23233     1 Day EMERGENCY   EDD'S     OTHER   Emergency or Rush T/A Data Available VIA Email or Labilink     Sample Custody must be documented below each time semples change possession, including courier delivery, elinquished by Sampler:   Date Time: Received By:   Refinquished by:   Date Time: Received By:   11-00   4 MMMM     Blinquished by:   Date Time: Received By:   Refinquished by:   Date Time: Received By:   Refinquished by:   Date Time: Received By:   Refinquished by:   Date Time: Received By:   Refinquished by:   Date Time: Received By:   Refinquished by:   Date Time: Received By:   Refinquished by:   Date Time: Received By:   Refinquished by:   Date Time: Received By:   Refinquished by:   Date Time: Received By:   Refinquished by:   Date Time: Received By:   Refinquished by:   Date Time: Received By:   Refinquished by:   Date Time:   Received By:   Refinquished by:   Date Time: Received By:   Refinquished by:   Date Time: Received By:   Refinquished by:   Date Time: Received By:   Refinquished by:   Date Time: Received By:   Refinquished by:   Date Time: Received By:   Refinquished by:   Date Time: Received By:   Refinquished by:   Date Time: Received By:   Refinquished by:   Date Time: Received By:   Refinquished by:   Date Time: Received By:   Refinquished by:   Refinquished by:   Refinquished by:   Date Time: Received By:   Refinquished by:   Refinquished by:   Date Time: Received By:   Refinquished by:   Refinquished by:   Refinquished by:   Date Time:   Received By:   Refinquished by:   Date Time:   Received By:   Refinquished by:   Refinqui	10 Days Standard	pproved By / Rush Coo	de	] [			-		: _		• T				SCDI	اؤد ن	157	M AN	асе Л	^EW7			
2 Day EMERGENCY	5 Day RUSH		-		-							ΤΥ	DF	•		PER	MIT		18	586			
Emergency or Rush T/A Data Available VIA Email or Labilink  Sample Custody must be documented below each time samples change possession, including courier delivery.  Ballonguished by Sampler:  Date Time: Received By:  1/45 1650 2 FCD> 805/3/422 1658 3 FC 01-17-15 11-0 4 MWW.  Belinquished by: Date Time: Received By:  Retinquished by: Date Time: Received By:  Retinquished by: Belinquished by: Be	2 Day EMERGENCY		-		-	PA LEVE	(4] ]	V	С	2	3	2) <u>3</u>	Ì										•
Sample Custody must be documented below each time samples change possession, including courier delivery.  Balle Time: Received By: Relinquished by: Date Time: Received By: 11-00 4 MWW.  Balle Time: Received By: Relinquished by: Date Time: Received By: Relinquished by: Date Time: Received By: 8  Balle Time: Received By: Relinquished by: Date Time: Received By: 8																						<del></del>	_
Date Time:   Received By:   Date Time:   Received By:   Date Time:   Received By:   Date Time:   Received By:   Date Time:   Received By:   Date Time:   Received By:   Date Time:   Received By:   Date Time:   Received By:   Retinquished by:   Date Time:   Received By:   Rec				and best assets												<del></del>							
Date Time: Received By: Retinquished by: Date Time: Received By: 6 7	lelinquished by Sampler:	Date Time	Receiv	red By			_	R	elinqu	JISTO	by.	;				7			B	ecelves	ıβy:	///	
ab Use Only Code Society Socie					0 <i>543</i>	<u>4221</u>	658						775						4	pe	W	un-	
ah Una Only Contact Contact Day V. N. T. T. T.	amiquaneo by.	1		red By:				- 1	eunqu	nspec	by	:					Date T	ime:	1		By:		
	ab Use Only: Custody Seal in Place:			vided: Y	N Pi	eserved	where		able	· v	N	Tota	l # of 6	onles		Coch	or Tem	nerativ					

FA21494: Chain of Custody Page 3 of 6

Accui	Choir of C4-		F4214	44 PAGE 4 OF 4
ACCLITEST: 4	Chain of Custod 105 Vineland Road, Suite C-15 Orlando	Accute	st JOB #	PAGE 4 OF 4
LABORATORIES	TEL. 407-425-6700 • FAX: 407-425	. 0202	ot Oueto #	
Client / Reporting Information	www.accutest.com	Accuse	st Quote #	SKIFF#
Company Name GEOLOGICAL RESOURCES INC	Description (Title)	The same of the sa	Analytical Info	ormation Matrix Codes
Accress 3502 HAYES Rds	TOBACE QUICK			DW - Drinking Water GW - Ground Water
ON MONPOE NO DOLLA	CIN K. 14 TALLEGOOD M	State CC		WW - Water SW - Surface Water
Project Contact . F-mail	Project 12 6 00	State SC		SO - Sall SL - Sludge
104- 245- UND	Project # 186 86			QI - OX
Sampler(s) Name(s) (Printed) DANIGL BEALL	Citeni Purchase Order #			AIR - Air SOL - Other Solid
DAVIEC SEAL	COLUECTION CONTAINS	4 IN-CHILLETION		WP - Wipe
Acculage   Fig. 10 / Paint of Oall of		1 1 1 13 1 1		1 1 1 1 1
Sample # Field ID / Point of Collection	SAMPLED MATRIX BOTTLES 5 2	HOH HACH HACH HACH HACH HACH HACH HACH H		
18686 TEMP BLANK				LAB USE ONLY
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			<del></del>	<del>                                      </del>
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	Deta Delive	rable information	AND AND AND AND AND AND AND AND AND AND	Comments / Remarks
Approved By / Rush Code	COMMERCIAL "A" (RESULT:	S ONLY)	SC DHEC UST N	MANAGE MENT PROGRAM
7 Day RUSH	COMMERCIAL B (RESULT:	SKUSCOTEST		
5 Day RUSH	REDT1 (EPA LEVES 31.0	QUEEN CITY DR	PERMIT 18686	5
3 Day EMERGENCY	FULT1 (EPA LEVEL 4 [ ]	FOTER OF DIV		
2 Day EMERGENCY		NC 28203		
OTHER	EDD'S			j
Emergency or Rush T/A Data Available VIA Email or Lablink				
Sample Custody must be docu	mented below each time samples change posse	ssion, including course delivery		
I to the state of	eceived by:	Helinguighed my	Date Time:	Received By:
Polynowski //5 18/00   2	FEDEX 805434221658	3 19 U/1/15 Relinquished by.		a RU Ul
56	•	7	Date Time:	Received By: 8
Lab Use Only: Custody Seal in Place. Y N Temp Blank	Provided: Y N Preserved where An	nlicable: V M. Total # of Conte	rs: Cooler Temperature	

FA21494: Chain of Custody Page 4 of 6

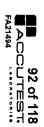
Cooler Temperature (s) Celsius:

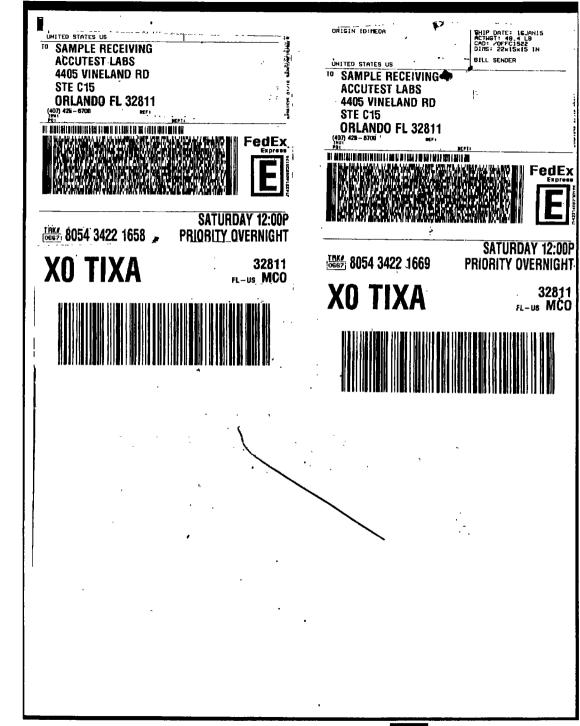
ACCUTEST LABORATORIE	S SAMPLE RECEIPT CONFIRMATION
— A D	T: CORT PROJECT: Tisdale's QUICK Stop
DATE/TIME RECEIVED: 01-17-15 11:00 (MM/DD/Y	Y 24:00} NUMBER OF COOLERS RECEIVED:
	TOTE COLINIED
	58
COOLER INFORMATION	TEMPERATURE INFORMATION
CUSTODY SEAL NOT PRESENT OR NOT INTACT CHAIN OF CUSTODY NOT RECEIVED (COC)	IR THERM ID CORR. FACTOR 40. 4
ANALYSIS REQUESTED IS UNCLEAR OR MISSING	OBSERVED TEMPS: 20 20 CORRECTED TEMPS: 22 2 4
SAMPLE DATES OR TIMES UNCLEAR OR MISSING	CORRECTED TEMPS: 22, 24  SAMPLE INFORMATION
TEMPERATURE CRITERIA NOT MET	INCORRECT NUMBER OF CONTAINERS USED
	SAMPLE RECEIVED IMPROPERLY PRESERVED
TRIP BLANK INFORMATION	INSUFFICIENT VOLUME FOR ANALYSIS
TRIP BLANK PROVIDED	DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
TRIP BLANK NOT PROVIDED TRIP BLANK NOT ON COC	ID'S ON COC DO NOT MATCH LABEL
TRIP BLANK INTACT	VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
TRIP BLANK NOT INTACT	BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
RECEIVED WATER TRIP BLANK	UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
RECEIVED SOIL TRIP BLANK	SAMPLE CONTAINER(S) RECEIVED BROKEN
MICC DECOMATION	5035 FIELD KITS NOT RECEIVED WITHIN 48 HOURS
MISC. INFORMATION	BULK VOA SOIL JARS NOT RECEIVED WITHIN 48 HOURS
NUMBER OF ENCORES ? 25-GRAM 5-GRAM NUMBER OF 5035 FIELD KITS ?	% SOLIDS JAR NOT RECEIVED
NUMBER OF LAB FILTERED METALS?	RESIDUAL CHLORINE PRESENT LOT#
	(APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS)
pH PAPER LOT#s WIDE RANGE A036122 NARE	ROW RANGE <u>HC421754</u> OTHER (specify) <u>405-230010</u>
SUMMARY OF COMMENTS: Received 2 Vial EDB	ver Sample
·	
	AA
11.11 11 11 15	01/1
TECHNICIAN SIGNATURE/DATE RULE OF 11-15	REVIEWER SIGNATURE/DATE AND DILITIS
NE 40/44	confirmation 102914,xls
	en en en en en en en en en en en en en e

FA21494: Chain of Custody

Page 5 of 6







FA21494: Chain of Custody
Page 6 of 6



GC/MS Volatiles
QC Data Summaries
Includes the following where applicable:

Method Blank SummariesBlank Spike Summaries

• Matrix Spike and Duplicate Summaries

Method: SW846 8260B

## **Method Blank Summary**

460-00-4 4-Bromofluorobenzene

Job Number: FA21494

Account:

GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample VJ4878-MB	<b>File ID</b> J0963244.D	<b>DF</b> 1	<b>Analyzed</b> 01/22/15	By MM	Prep Date	Prep Batch n/a	Analytical Batch VJ4878

The QC reported here applies to the following samples:

FA21494-3, FA21494-4, FA21494-5, FA21494-6, FA21494-7, FA21494-8, FA21494-9, FA21494-10, FA21494-11

CAS No.	Compound	Result	RL	MDL	Units Q	
71-43-2	Benzene	ND	1.0	0.24	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	4.0	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
CAS No.	Surrogate Recoveries		Limit	:s		
1868-53-7	Dibromofluoromethane	102%	83-11	8%		
17060-07-0	1,2-Dichloroethane-D4	103%	79-12	5%		
2037-26-5	Toluene-D8	98%	85-11	2%		

100%

83-118%

**Method:** SW846 8260B

## **Method Blank Summary**

Job Number: FA21494

460-00-4

4-Bromofluorobenzene

Account: GRINCC GRI (Geological Resources Inc.)

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample	<b>File ID</b>	<b>DF</b>	<b>Analyzed</b> 01/23/15	By	Prep Date	Prep Batch	Analytical Batch
VJ4879-MB	J0963276.D	1		MM	n/a	n/a	VJ4879

The QC reported here applies to the following samples:

FA21494-12, FA21494-13, FA21494-15, FA21494-18, FA21494-19, FA21494-20, FA21494-21, FA21494-22, FA21494-23, FA21494-24, FA21494-25, FA21494-29, FA21494-30, FA21494-31

83-118%

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.24	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l	
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
64-17-5	Ethyl Alcohol	ND	100	23	ug/l	
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l	
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l	
762-75-4	Tert-Butyl Formate	ND	20	4.0	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l	
CAS No.	Surrogate Recoveries		Limit	s		
1868-53-7	Dibromofluoromethane	101%	83-11	8%		
17060-07-0	1,2-Dichloroethane-D4	102%	79-12	5%		
2037-26-5	Toluene-D8	100%	85-11	2%		

99%

Method: SW846 8260B

## **Method Blank Summary**

Job Number: FA21494

460-00-4

4-Bromofluorobenzene

Account: GRINCC GRI (Geological Resources Inc.)

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample VJ4880-MB	<b>File ID</b> J0963306. D	<b>DF</b>	<b>Analyzed</b> 01/24/15	By MM	Prep Date n/a	Prep Batch	Analytical Batch VJ4880

#### The QC reported here applies to the following samples:

FA21494-1, FA21494-2, FA21494-13, FA21494-14, FA21494-15, FA21494-16, FA21494-17, FA21494-25, FA21494-26, FA21494-27, FA21494-28, FA21494-32, FA21494-35, FA21494-36

83-118%

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.24	ug/l
107-06-2	1,2-Dichloroethane	ND	1.0	0.24	ug/1
108-20-3	Di-Isopropyl ether	ND	1.0	0.23	ug/l
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	3.8	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l
64-17-5	Ethyl Alcohol	ND	100	23	ug/l
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.20	ug/l
91-20-3	Naphthalene	ND	5.0	1.0	ug/l
75-85-4	Tert-Amyl Alcohol	ND	20	7.4	ug/l
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l
75-65-0	Tert-Butyl Alcohol	ND	20	8.8	ug/l
762-75-4	Tert-Butyl Formate	ND	20	4.0	ug/l
108-88-3	Toluene	ND	1.0	0.20	ug/l
1330-20-7	Xylene (total)	ND	3.0	0.66	ug/l
CAS No.	Surrogate Recoveries		Limit	s	
0115 110.	Surrogate Meto (erres				
1868-53-7	Dibromofluoromethane	100%	83-11	8%	
17060-07-0	1,2-Dichloroethane-D4	103%	79-12	5%	
2037-26-5	Toluene-D8	100%	85-11	2%	
17060-07-0	1,2-Dichloroethane-D4	103%	79-12	5%	

100%

Method: SW846 8260B

## Method Blank Summary

Job Number: FA21494

Account: GRINCC GRI (Geological Resources Inc.)

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample File ID DF Analyzed By Prep Date Prep Batch Analytical Batch VJ4881-MB J0963345.D 1 01/26/15 MM n/a n/a VJ4881
---

The QC reported here applies to the following samples:

FA21494-25, FA21494-34

460-00-4

4-Bromofluorobenzene

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.20	ug/l
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l
108-20-3	Di-Isopropyl Ether	ND	1.0	0.20	ug/l
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	10	ug/l
64-17-5	Ethyl Alcohol	ND	100	35	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l
91-20-3	Naphthalene	ND	5.0	1.0	ug/l
75-85-4	Tert-Amyl Alcohol	ND	20	8.1	ug/l
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l
75-65-0	Tert-Butyl Alcohol	ND	20	5.4	ug/l
762-75-4	Tert-Butyl Formate	ND	20	4.0	ug/l
108-88-3	Toluene	ND	1.0	0.40	ug/l
1330-20-7	Xylene (total)	ND	3.0	0.51	ug/l
CAS No.	Surrogate Recoveries		Limit	ts	
1868-53-7	Dibromofluoromethane	99%	83-11	8%	
17060-07-0	1,2-Dichloroethane-D4	102%	79-12	.5%	
2037-26-5	Toluene-D8	101%	85-11	2%	

103%

83-118%

Method: SW846 8260B

# Method Blank Summary Job Number: FA21494

1868-53-7 Dibromofluoromethane

17060-07-0 1,2-Dichloroethane-D4

460-00-4 4-Bromofluorobenzene

2037-26-5 Toluene-D8

Account: GRINCC GRI (Geological Resources Inc.)

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample	<b>File ID</b>	<b>DF</b>	<b>Analyzed</b> 01/27/15	By	Prep Date	Prep Batch	Analytical Batch
VJ4883-MB	J0963395.D	1		MM	n/a	n/a	VJ4883

The QC reported here applies to the following samples:

FA21494-33

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.20	ug/l
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l
108-20-3	Di-Isopropyl Ether	ND	1.0	0.20	ug/l
624-95-3	3,3-Dimethyl-1-Butanol	ND	50	10	ug/l
64-17-5	Ethyl Alcohol	ND	100	35	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l
637-92-3	Ethyl Tert Butyl Ether	ND	2.0	0.20	ug/l
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l
91-20-3	Naphthalene	ND	5.0	1.0	ug/l
75-85-4	Tert-Amyl Alcohol	ND	20	8.1	ug/l
994-05-8	Tert-Amyl Methyl Ether	ND	2.0	0.22	ug/l
75-65-0	Tert-Butyl Alcohol	ND	20	5.4	ug/l
762-75-4	Tert-Butyl Formate	ND	20	4.0	ug/l
108-88-3	Toluene	ND	1.0	0.40	ug/l
1330-20-7	Xylene (total)	ND	3.0	0.51	ug/l
CAS No.	Surrogate Recoveries		Limits	S .	

100%

105%

100%

101%

83-118%

79-125%

85-112%

83-118%

Method: SW846 8260B

## **Blank Spike Summary**

Job Number: FA21494

Account: GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample	<b>File ID</b>	<b>DF</b>	<b>Analyzed</b> 01/22/15	By	Prep Date	Prep Batch	Analytical Batch
VJ4878-BS	J0963242. D	1		MM	n/a	n/a	VJ4878

The QC reported here applies to the following samples:

FA21494-3, FA21494-4, FA21494-5, FA21494-6, FA21494-7, FA21494-8, FA21494-9, FA21494-10, FA21494-11

	Spike	BSP	BSP	T,
Compound	ug/I	ug/I	%	Limits
Benzene	25	24.2	97	81-122
1,2-Dichloroethane	25	23.9	96	75-125
Di-Isopropyl ether	25	24.8	99	68-123
3,3-Dimethyl-1-Butanol	1250	1310	105	55-126
Ethylbenzene	25	24.6	98	81-121
Ethyl Alcohol	500	696	139	46-145
Ethyl Tert Butyl Ether	25	23.5	94	71-120
Methyl Tert Butyl Ether	25	22.6	90	72-117
Naphthalene	25	23.2	93	63-132
Tert-Amyl Alcohol	250	245	98	65-124
Tert-Amyl Methyl Ether	25	24.2	97	73-122
Tert-Butyl Alcohol	250	259	104	63-129
Tert-Butyl Formate	250	321	128	46-130
Toluene	25	23.9	96	80-120
Xylene (total)	75	77.1	103	80-126
Surrogate Recoveries	BSP	Lim	its	
Dibromofluoromethane	100%	83-1	18%	
1,2-Dichloroethane-D4	101%	79-1	.25%	
Toluene-D8	100%	85-1	12%	
4-Bromofluorobenzene	100%	83-1	18%	
	1,2-Dichloroethane Di-Isopropyl ether 3,3-Dimethyl-1-Butanol Ethylbenzene Ethyl Alcohol Ethyl Tert Butyl Ether Methyl Tert Butyl Ether Maphthalene Tert-Amyl Alcohol Tert-Amyl Methyl Ether Tert-Butyl Alcohol Tert-Butyl Formate Toluene Xylene (total)  Surrogate Recoveries  Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8	Compound         ug/l           Benzene         25           1,2-Dichloroethane         25           Di-Isopropyl ether         25           3,3-Dimethyl-1-Butanol         1250           Ethylbenzene         25           Ethyl Alcohol         500           Ethyl Tert Butyl Ether         25           Methyl Tert Butyl Ether         25           Naphthalene         25           Tert-Amyl Alcohol         250           Tert-Butyl Alcohol         250           Tert-Butyl Formate         250           Toluene         25           Xylene (total)         75           Surrogate Recoveries         BSP           Dibromofluoromethane         100%           1,2-Dichloroethane-D4         101%           Toluene-D8         100%	Compound         ug/l         ug/l           Benzene         25         24.2           1,2-Dichloroethane         25         23.9           Di-Isopropyl ether         25         24.8           3,3-Dimethyl-1-Butanol         1250         1310           Ethylbenzene         25         24.6           Ethyl Alcohol         500         696           Ethyl Tert Butyl Ether         25         23.5           Methyl Tert Butyl Ether         25         23.2           Tert-Amyl Alcohol         250         245           Tert-Amyl Methyl Ether         25         24.2           Tert-Butyl Alcohol         250         259           Tert-Butyl Formate         250         321           Toluene         25         23.9           Xylene (total)         75         77.1           Surrogate Recoveries         BSP         Lim           Dibromofluoromethane         100%         83-1           1,2-Dichloroethane-D4         101%         79-1           Toluene-D8         100%         85-1	Compound         ug/l         ug/l         %           Benzene         25         24.2         97           1,2-Dichloroethane         25         23.9         96           Di-Isopropyl ether         25         24.8         99           3,3-Dimethyl-1-Butanol         1250         1310         105           Ethylbenzene         25         24.6         98           Ethyl Alcohol         500         696         139           Ethyl Tert Butyl Ether         25         23.5         94           Methyl Tert Butyl Ether         25         22.6         90           Naphthalene         25         23.2         93           Tert-Amyl Alcohol         250         245         98           Tert-Amyl Methyl Ether         25         24.2         97           Tert-Butyl Formate         25         259         104           Tert-Butyl Formate         250         321         128           Toluene         25         23.9         96           Xylene (total)         75         77.1         103           Surrogate Recoveries         BSP         Limits           Dibromofluoromethane         100%         83-118%

<sup>\* =</sup> Outside of Control Limits.

**Method:** SW846 8260B

## **Blank Spike Summary**

Job Number: FA21494

Account: GRINCC GRI (Geological Resources Inc.)

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample VJ4879-BS	File ID J0963274. D	<b>DF</b> 1	<b>Analyzed</b> 01/23/15	By MM	Prep Date n/a	Prep Batch n/a	Analytical Batch VJ4879

The QC reported here applies to the following samples:

FA21494-12, FA21494-13, FA21494-15, FA21494-18, FA21494-19, FA21494-20, FA21494-21, FA21494-22, FA21494-23, FA21494-24, FA21494-25, FA21494-29, FA21494-30, FA21494-31

	Spike	BSP	BSP	
Compound	ug/l	ug/l	%	Limits
Benzene	25	24.2	97	81-122
1,2-Dichloroethane	25	24.3	97	75-125
Di-Isopropyl ether	25	24.9	100	68-123
3,3-Dimethyl-1-Butanol	1250	1180	94	55-126
Ethylbenzene	25	24.0	96	81-121
Ethyl Alcohol	500	579	116	46-145
Ethyl Tert Butyl Ether	25	23.6	94	71-120
Methyl Tert Butyl Ether	25	22.1	88	72-117
Naphthalene	25	21.8	87	63-132
Tert-Amyl Alcohol	250	218	87	65-124
Tert-Amyl Methyl Ether	25	23.5	94	73-122
Tert-Butyl Alcohol	250	245	98	63-129
Tert-Butyl Formate	250	335	134*	46-130
Toluene	25	23.5	94	80-120
Xylene (total)	75	75.8	101	80-126
Surrogata Dagovarios	DCD	т :.	mits	
Surrogate Recoveries	DSF	Li	mus	
Dibromofluoromethane	101%	83-	118%	
1,2-Dichloroethane-D4	102%	79-	125%	
Toluene-D8	99%	85-	112%	
	Benzene 1,2-Dichloroethane Di-Isopropyl ether 3,3-Dimethyl-1-Butanol Ethylbenzene Ethyl Alcohol Ethyl Tert Butyl Ether Methyl Tert Butyl Ether Naphthalene Tert-Amyl Alcohol Tert-Amyl Methyl Ether Tert-Butyl Alcohol Tert-Butyl Formate Toluene Xylene (total)  Surrogate Recoveries  Dibromofluoromethane 1,2-Dichloroethane-D4	Compoundug/lBenzene251,2-Dichloroethane25Di-Isopropyl ether253,3-Dimethyl-1-Butanol1250Ethylbenzene25Ethyl Alcohol500Ethyl Tert Butyl Ether25Methyl Tert Butyl Ether25Naphthalene25Tert-Amyl Alcohol250Tert-Amyl Methyl Ether25Tert-Butyl Alcohol250Tert-Butyl Formate25Toluene25Xylene (total)75Surrogate RecoveriesBSPDibromofluoromethane101%1,2-Dichloroethane-D4102%	Compound         ug/l         ug/l           Benzene         25         24.2           1,2-Dichloroethane         25         24.3           Di-Isopropyl ether         25         24.9           3,3-Dimethyl-1-Butanol         1250         1180           Ethylbenzene         25         24.0           Ethyl Alcohol         500         579           Ethyl Tert Butyl Ether         25         23.6           Methyl Tert Butyl Ether         25         22.1           Naphthalene         25         21.8           Tert-Amyl Alcohol         250         218           Tert-Butyl Alcohol         250         245           Tert-Butyl Formate         250         335           Toluene         25         23.5           Xylene (total)         75         75.8           Surrogate Recoveries         BSP         Lin           Dibromofluoromethane         101%         83-           1,2-Dichloroethane-D4         102%         79-	Compound         ug/l         ug/l         %           Benzene         25         24.2         97           1,2-Dichloroethane         25         24.3         97           Di-Isopropyl ether         25         24.9         100           3,3-Dimethyl-1-Butanol         1250         1180         94           Ethylbenzene         25         24.0         96           Ethyl Alcohol         500         579         116           Ethyl Tert Butyl Ether         25         23.6         94           Methyl Tert Butyl Ether         25         22.1         88           Naphthalene         25         21.8         87           Tert-Amyl Alcohol         250         218         87           Tert-Amyl Methyl Ether         25         23.5         94           Tert-Butyl Formate         25         23.5         94           Toluene         25         23.5         94           Xylene (total)         75         75.8         101           Surrogate Recoveries         BSP         Limits           Dibromofluoromethane         101%         83-118%           1,2-Dichloroethane-D4         102%         79-125%

98%

83-118%

4-Bromofluorobenzene

460-00-4

<sup>\* =</sup> Outside of Control Limits.

Method: SW846 8260B

## Blank Spike Summary Job Number: FA21494

GRINCC GRI (Geological Resources Inc.) Account:

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample	File ID	ÐF	Analyzed	$\mathbf{B}\mathbf{y}$	Prep Date	Prep Batch	Analytical Batch
VJ4880-BS	J0963304.D	1	01/24/15	MM	n/a	n/a	VJ4880

The QC reported here applies to the following samples:

FA21494-1, FA21494-2, FA21494-13, FA21494-14, FA21494-15, FA21494-16, FA21494-17, FA21494-25, FA21494-26, FA21494-27, FA21494-28, FA21494-32, FA21494-35, FA21494-36

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	26.1	104	81-122
107-06-2	1,2-Dichloroethane	25	26.0	104	75-125
108-20-3	Di-Isopropyl ether	25	26.7	107	68-123
624-95-3	3,3-Dimethyl-1-Butanol	1250	1150	92	55-126
100-41-4	Ethylbenzene	25	26.6	106	81-121
64-17-5	Ethyl Alcohol	500	595	119	46-145
637-92-3	Ethyl Tert Butyl Ether	25	25.0	100	71-120
1634-04-4	Methyl Tert Butyl Ether	25	23.2	93	72-117
91-20-3	Naphthalene	25	24.6	98	63-132
75-85-4	Tert-Amyl Alcohol	250	232	93	65-124
994-05-8	Tert-Amyl Methyl Ether	25	24.6	98	73-122
75-65-0	Tert-Butyl Alcohol	250	259	104	63-129
762-75-4	Tert-Butyl Formate	250	341	136*	46-130
108-88-3	Toluene	25	25.3	101	80-120
1330-20-7	Xylene (total)	75	81.5	109	80-126
CAS No.	Surrogate Recoveries	BSP	Limi	its	
1868-53-7 17060-07-0 2037-26-5 460-00-4	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	102% 102% 98% 98%	83-1 79-1 85-1 83-1	25% 12%	

<sup>\* =</sup> Outside of Control Limits.

Method: SW846 8260B

### Blank Spike Summary

Job Number: FA21494

Account: GRINCC GRI (Geological Resources Inc.)

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC Project:

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
VJ4881-BS	J0963343.D	1	01/26/15	MM	n/a	n/a	VJ4881

The QC reported here applies to the following samples:

FA21494-25, FA21494-34

		Spike	BSP	BSP	
CAS No.	Compound	ug/l	ug/l	%	Limits
	_		• • •		04.400
71-43-2	Benzene	25	25.8	103	81-122
107-06-2	1,2-Dichloroethane	25	26.4	106	75-125
108-20-3	Di-Isopropyl Ether	25	24.6	98	68-123
624-95-3	3,3-Dimethyl-1-Butanol	1250	1100	88	55-126
64-17-5	Ethyl Alcohol	500	424	85	46-145
100-41-4	Ethylbenzene	25	26.5	106	81-121
637-92-3	Ethyl Tert Butyl Ether	25	24.1	96	71-120
1634-04-4	Methyl Tert Butyl Ether	25	23.2	93	72-117
91-20-3	Naphthalene	25	22.1	88	63-132
75-85-4	Tert-Amyl Alcohol	250	227	91	65-124
994-05-8	Tert-Amyl Methyl Ether	25	24.4	98	73-122
75-65-0	Tert-Butyl Alcohol	250	225	90	63-129
762-75-4	Tert-Butyl Formate	250	271	108	46-130
108-88-3	Toluene	25	26.0	104	80-120
1330-20-7	Xylene (total)	75	84.4	113	80-126
CAS No.	Surrogate Recoveries	BSP	Lir	nits	

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	83-118%
17060-07-0	1,2-Dichloroethane-D4	100%	79-125%
2037-26-5	Toluene-D8	101%	85-112%
460-00-4	4-Bromofluorobenzene	101%	83-118%

<sup>\* =</sup> Outside of Control Limits.

**Method:** SW846 8260B

### Blank Spike Summary

Job Number: FA21494

Account: GRINCC GRI (Geological Resources Inc.)

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample VJ4883-BS	<b>File ID</b> J0963393.D	<b>DF</b> 1	<b>Analyzed</b> 01/27/15	By MM	Prep Date n/a	Prep Batch n/a	Analytical Batch VJ4883

The QC reported here applies to the following samples:

FA21494-33

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	25.6	102	81-122
107-06-2	1,2-Dichloroethane	25	26.1	104	75-125
108-20-3	Di-Isopropyl Ether	25	25.5	102	68-123
624-95-3	3,3-Dimethyl-1-Butanol	1250	1110	89	55-126
64-17-5	Ethyl Alcohol	500	490	98	46-145
100-41-4	Ethylbenzene	25	26.2	105	81-121
637-92-3	Ethyl Tert Butyl Ether	25	24.6	98	71-120
1634-04-4	Methyl Tert Butyl Ether	25	23.6	94	72-117
91-20-3	Naphthalene	25	24.7	99	63-132
75-85-4	Tert-Amyl Alcohol	250	226	90	65-124
994-05-8	Tert-Amyl Methyl Ether	25	24.9	100	73-122
75-65-0	Tert-Butyl Alcohol	250	221	88	63-129
762-75-4	Tert-Butyl Formate	250	274	110	46-130
108-88-3	Toluene	25	25.2	101	80-120
1330-20-7	Xylene (total)	75	83.4	111	80-126
CAS No.	Surrogate Recoveries	BSP	Lir	nits	

102%

103%

99%

97%

83-118%

79-125%

85-112%

83-118%

1868-53-7 Dibromofluoromethane

17060-07-0 1,2-Dichloroethane-D4

4-Bromofluorobenzene

2037-26-5 Toluene-D8

460-00-4

<sup>\* =</sup> Outside of Control Limits.

**Method:** SW846 8260B

### Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA21494

Account: GRINCC GRI (Geological Resources Inc.)

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
FA21494-3MS	J0963265.D	1	01/22/15	MM	n/a	n/a	VJ4878
FA21494-3MSD	J0963266.D	1	01/22/15	MM	n/a	n/a	VJ4878
FA21494-3	J0963256.D	1	01/22/15	MM	n/a	n/a	VJ4878

The QC reported here applies to the following samples:

FA21494-3, FA21494-4, FA21494-5, FA21494-6, FA21494-7, FA21494-8, FA21494-9, FA21494-10, FA21494-11

		FA2149		Spike	MS	MS	Spike	MSD	MSD	200	Limits
CAS No.	Compound	ug/l	Q	ug/l	ug/l	%	ug/l	ug/l	%	RPD	Rec/RPD
71-43-2	Benzene	27.4		25	51.6	97	25	51.8	98	0	81-122/14
107-06-2	1,2-Dichloroethane	ND		25	23.4	94	25	24.0	96	3	75-125/14
108-20-3	Di-Isopropyl ether	ND		25	24.4	98	25	25.4	102	4	68-123/16
624-95-3	3,3-Dimethyl-1-Butanol	ND		1250	1090	87	1250	I160	93	6	55-126/17
100-41-4	Ethylbenzene	7.5		25	30.9	94	25	31.6	96	2	81-121/14
64-17-5	Ethyl Alcohol	ND		500	347	69	500	523	105	40*	46-145/30
637-92-3	Ethyl Tert Butyl Ether	ND		25	22.8	91	25	23.6	94	3	71-120/14
1634-04-4	Methyl Tert Butyl Ether	0.48	J	25	21.5	84	25	22.2	87	3	72-117/14
91-20-3	Naphthalene	1.1	J	25	21.9	83	25	24.0	92	9	63-132/25
75-85-4	Tert-Amyl Alcohol	23.9		250	211	75	250	237	85	12	65-124/23
994-05-8	Tert-Amyl Methyl Ether	ND		25	22.5	90	25	23.1	92	3	73-122/13
75-65-0	Tert-Butyl Alcohol	ND		250	314	126	250	368	147*	16	63-129/27
762-75-4	Tert-Butyl Formate	ND		250	10.7	4*	250	8.4	3*	24	46-130/33
108-88-3	Toluene	19.1		25	42.0	92	25	41.6	90	1	80-120/14
1330-20-7	Xylene (total)	65.8		75	139	98	75	138	96	1	80-126/15
CAS No.	Surrogate Recoveries	MS		MSD	FA	21494-3	Limits				
1868-53-7	Dibromofluoromethane	100%		101%	10	0%	83-1189	<b>%</b>			
17060-07-0	1,2-Dichloroethane-D4	99%		100%	10	1%	79-1259	<b>%</b>			
2037-26-5	Toluene-D8	99%		98%	999	%	85-1129	<b>%</b>			
460-00-4	4-Bromofluorobenzene	93%		97%	989	%	83-1189	<b>%</b>			

<sup>\* =</sup> Outside of Control Limits.

Method: SW846 8260B

### Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA21494

Account:

GRINCC GRI (Geological Resources Inc.)

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
FA21494-12MS	J0963297.D	1	01/23/15	MM	n/a	n/a	VJ4879
FA21494-12MSD	J0963298.D	1	01/23/15	MM	n/a	n/a	VJ4879
FA21494-12	J0963277.D	1	01/23/15	MM	n/a	n/a	VJ4879

The QC reported here applies to the following samples:

FA21494-12, FA21494-13, FA21494-15, FA21494-18, FA21494-19, FA21494-20, FA21494-21, FA21494-22, FA21494-23, FA21494-24, FA21494-25, FA21494-29, FA21494-30, FA21494-31

CAS No.	Compound	FA21494-12 ug/l Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	25	24.0	96	25	23.3	93	3	81-122/14
107-06-2	1,2-Dichloroethane	ND	25	23.6	94	25	23.2	93	2	75-125/14
108-20-3	Di-Isopropyl ether	ND	25	24.4	98	25	24.1	96	1	68-123/16
624-95-3	3,3-Dimethyl-1-Butanol	ND	1250	1140	91	1250	1120	90	2	55-126/17
100-41-4	Ethylbenzene	ND	25	23.2	93	25	23.1	92	0	81-121/14
64-17-5	Ethyl Alcohol	ND	500	439	88	500	641	128	37*	46-145/30
637-92-3	Ethyl Tert Butyl Ether	ND	25	22.7	91	25	22.2	89	2	71-120/14
1634-04-4	Methyl Tert Butyl Ether	ND	25	21.1	84	25	21.0	84	0	72-117/14
91-20-3	Naphthalene	ND	25	20.1	80	25	21.2	85	5	63-132/25
75-85-4	Tert-Amyl Alcohol	ND	250	206	82	250	204	82	1	65-124/23
994-05-8	Tert-Amyl Methyl Ether	ND	25	22.1	88	25	22.1	88	0	73-122/13
75-65-0	Tert-Butyl Alcohol	ND	250	336	134*	250	338	135*	1	63-129/27
762-75-4	Tert-Butyl Formate	ND	250	43.9	18*	250	36.8	15*	18	46-130/33
108-88-3	Toluene	ND	25	22.5	90	25	22.4	90	0	80-120/14
1330-20-7	Xylene (total)	ND	75	71.6	95	75	71.5	95	0	80-126/15
CAS No.	Surrogate Recoveries	MS	MSD	FA	21494-12	Limits				
1868-53-7	Dibromofluoromethane	103%	100%	101	%	83-118%	, 0			
17060-07-0	1,2-Dichloroethane-D4	102%	101%	104	%	79-125%	ó			
2037-26-5	Toluene-D8	97%	99%	100	%	85-112%	, 0			
460-00-4	4-Bromofluorobenzene	95%	96%	99%	, 0	83-118%	, 0			

<sup>\* =</sup> Outside of Control Limits.

Method: SW846 8260B

#### Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA21494

Account: GRINCC GRI (Geological Resources Inc.)

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
FA21494-32MS	J0963327.D	1	01/24/15	MM	n/a	n/a	VJ4880
FA21494-32MSD	J0963328.D	1	01/24/15	MM	n/a	n/a	VJ4880
FA21494-32	J0963319.D	1	01/24/15	MM	n/a	n/a	VJ4880

The QC reported here applies to the following samples:

FA21494-1, FA21494-2, FA21494-13, FA21494-14, FA21494-15, FA21494-16, FA21494-17, FA21494-25, FA21494-26, FA21494-27, FA21494-28, FA21494-32, FA21494-35, FA21494-36

CAS No.	Compound	FA21494-32 ug/l Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	25	25.3	101	25	24.8	99	2	81-122/14
107-06-2	1,2-Dichloroethane	ND	25	25.2	101	25	24.9	100	1	75-125/14
108-20-3	Di-Isopropyl ether	ND	25	25.6	102	25	25.6	102	0	68-123/16
624-95-3	3,3-Dimethyl-1-Butanol	ND	1250	1070	86	1250	1140	91	6	55-126/17
100-41-4	Ethylbenzene*	ND	25	24.5	98	25	24.5	98	0	81-121/14
64-17-5	Ethyl Alcohol	ND	500	503	101	500	583	117	15	46-145/30
637-92-3	Ethyl Tert Butyl Ether	ND	25	24.0	96	25	24.3	97	1	71-120/14
1634-04-4	Methyl Tert Butyl Ether	ND	25	22.7	91	25	23.1	92	2	72-117/14
91-20-3	Naphthalene	ND	25	22.8	91	25	24.1	96	6	63-132/25
75-85-4	Tert-Amyl Alcohol	ND	250	214	86	250	226	90	5	65-124/23
994-05-8	Tert-Amyl Methyl Ether	ND	25	23.6	94	25	24.5	98	4	73-122/13
75-65-0	Tert-Butyl Alcohol	ND	250	353	141*	250	372	149*	5	63-129/27
762-75-4	Tert-Butyl Formate	ND	250	8.7	3*	250	7.3	3*	18	46-130/33
108-88-3	Toluene	ND	25	23.8	95	25	23.7	95	0	80-120/14
1330-20-7	Xylene (total)	ND	75	75.3	100	75	74.7	100	1	80-126/15
CAS No.	Surrogate Recoveries	MS	MSD	F	<b>A</b> 21494-32	Limits				
1868-53-7	Dibromofluoromethane	101%	99%	99	%	83-118%	6			
17060-07-0	1,2-Dichloroethane-D4	105%	104%	10	3%	79-125%	6			
2037-26-5	Toluene-D8	98%	98%	10	1%	85-112%	6			
460-00-4	4-Bromofluorobenzene	92%	92%	95	%	83-1189	6			

<sup>\* =</sup> Outside of Control Limits.

Method: SW846 8260B

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA21494

Account: GRINCC GRI (Geological Resources Inc.)

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample	File ID	DF	Analyzed	$\mathbf{B}\mathbf{y}$	Prep Date	Prep Batch	Analytical Batch
FA21580-4MS	J0963360.D	50	01/26/15	MM	n/a	n/a	VJ4881
FA21580-4MSD	J0963361.D	50	01/26/15	MM	n/a	n/a	VJ4881
FA21580-4	J0963354.D	50	01/26/15	MM	n/a	n/a	VJ4881

The QC reported here applies to the following samples:

FA21494-25, FA21494-34

		FA21580-4	Spike	MS	MS	Spike	MSD	MSD		Limits
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	ug/l	ug/l	%	RPD	Rec/RPD
<b>-1</b> 40 0	_	50 II	1250	1010	105	1050	1210	105	^	01 100/14
71-43-2	Benzene	50 U	1250	1310	105	1250	1310	105	0	81-122/14
107-06-2	1,2-Dichloroethane	50 U	1250	1320	106	1250	1340	107	2	75-125/14
108-20-3	Di-Isopropyl Ether	50 U	1250	1270	102	1250	1300	104	2	68-123/16
624-95-3	3,3-Dimethyl-1-Butanol	2500 U	62500	57300	92	62500	59400	95	4	55-126/17
64-17-5	Ethyl Alcohol	5000 U	25000	24400	98	25000	26300	105	7	46-145/30
100-41-4	Ethylbenzene	50 U	1250	1330	106	1250	1280	102	4	81-121/14
637-92-3	Ethyl Tert Butyl Ether	100 U	1250	1220	98	1250	1220	98	0	71-120/14
1634-04-4	Methyl Tert Butyl Ether	50 U	1250	1120	90	1250	1160	93	4	72-117/14
91-20-3	Naphthalene	250 U	1250	1150	92	1250	1230	98	7	63-132/25
75-85-4	Tert-Amyl Alcohol	1000 U	12500	12100	97	12500	12400	99	2	65-124/23
994-05-8	Tert-Amyl Methyl Ether	100 U	1250	1210	97	1250	1240	99	2	73-122/13
75-65-0	Tert-Butyl Alcohol	1000 U	12500	12400	99	12500	12500	100	1	63-129/27
762-75-4	Tert-Butyl Formate	1000 U	12500	12100	97	12500	12400	99	2	46-130/33
108-88-3	Toluene	50 U	1250	1300	104	1250	1260	101	3	80-120/14
1330-20-7	Xylene (total)	150 U	3750	4200	112	3750	4080	109	3	80-126/15
CAS No.	Surrogate Recoveries	MS	MSD	FA2	21580-4	Limits				
1868-53-7	Dibromofluoromethane	100%	101%	100		83-118%				
17060-07-0	1,2-Dichloroethane-D4	98%	100%	98%		79-125%				
2037-26-5	Toluene-D8	100%	98%	100		85-112%	, D			
460-00-4	4-Bromofluorobenzene	94%	100%	1019	%	83-118%	, D			

<sup>\* =</sup> Outside of Control Limits.

**Method:** SW846 8260B

### Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA21494

Account: GRINCC GRI (Geological Resources Inc.)

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC Project:

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
FA21586-2MS	J0963416.D	1	01/27/15	MM	n/a	n/a	VJ4883
FA21586-2MSD	J0963417.D	1	01/27/15	MM	n/a	n/a	VJ4883
FA21586-2	J0963407.D	1	01/27/15	MM	n/a	n/a	VJ4883

The QC reported here applies to the following samples:

FA21494-33

CAS No.	Compound	FA21586-2 ug/l Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	25	26.9	108	25	25.7	103	5 .	81-122/14
107-06-2	1,2-Dichloroethane	ND	25	27.1	108	25	26.7	107	1	75-125/14
108-20-3	Di-Isopropyl Ether	ND	25	26.5	106	25	26.1	104	2	68-123/16
624-95-3	3,3-Dimethyl-1-Butanol	ND	1250	1130	90	1250	1150	92	2	55-126/17
64-17-5	Ethyl Alcohol	ND	500	501	100	500	514	103	3	46-145/30
100-41-4	Ethylbenzene	ND	25	25.9	104	25	25.0	100	4	81-121/14
637-92-3	Ethyl Tert Butyl Ether	ND	25	25.2	101	25	24.7	99	2	71-120/14
1634-04-4	Methyl Tert Butyl Ether	ND	25	24.1	96	25	23.8	95	1	72-117/14
91-20-3	Naphthalene	ND	25	21.1	84	25	23.1	92	9	63-132/25
75-85-4	Tert-Amyl Alcohol	ND	250	230	92	250	233	93	1	65-124/23
994-05-8	Tert-Amyl Methyl Ether	ND	25	25.6	102	25	25.3	101	1	73-122/13
75-65-0	Tert-Butyl Alcohol	ND	250	306	122	250	316	126	3	63-129/27
762-75-4	Tert-Butyl Formate	ND	250	100	40*	250	87.6	35*	13	46-130/33
108-88-3	Toluene	ND	25	25.4	102	25	24.4	98	4	80-120/14
1330-20-7	Xylene (total)	ND	75	80.0	107	75	76.9	103	4	80-126/15
CAS No.	Surrogate Recoveries	MS	MSD	F	A21586-2	Limits				
1868-53-7	Dibromofluoromethane	101%	102%	16	01%	83-118%	ó			
17060-07-0	1,2-Dichloroethane-D4	102%	102%	10	)2%	79-125%	, o			
2037-26-5	Toluene-D8	96%	97%	98	3%	85-112%	, 0			
460-00-4	4-Bromofluorobenzene	95%	96%	9:	5%	83-118%	ó			

<sup>\* =</sup> Outside of Control Limits.



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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary Page 1 of 1

Job Number: FA21494

Account: GRINCC GRI (Geological Resources Inc.)

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample OP54661-MB	File ID DD80166.D	<b>DF</b> 1	<b>Analyzed</b> 01/26/15	<b>By</b> NG	<b>Prep Date</b> 01/21/15	Prep Batch OP54661	Analytical Batch GDD2377

#### The QC reported here applies to the following samples: Method: SW846 8011

FA21494-1, FA21494-2, FA21494-3, FA21494-4, FA21494-5, FA21494-6, FA21494-7, FA21494-8, FA21494-9, FA21494-10, FA21494-11, FA21494-12, FA21494-13, FA21494-14, FA21494-15, FA21494-16, FA21494-17, FA21494-18, FA21494-19, FA21494-20

CAS No.	Compound	Result	RL	MDL	Units Q
106-93-4	1,2-Dibromoethane	ND	0.020	0.010	ug/l
CAS No.	Surrogate Recoveries		Limits		
460-00-4	4-Bromofluorobenzene	82%	63-137	%	

5.1.1

Method: SW846 8011

# 6.1.2

#### **Method Blank Summary**

Job Number: FA21494

Account: GRINCC GRI (Geological Resources Inc.)

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample OP54691-MB	File ID DD80195.D	<b>DF</b> 1	<b>Analyzed</b> 01/26/15	<b>By</b> NG	Prep Date 01/23/15	Prep Batch OP54691	Analytical Batch GDD2377

The QC reported here applies to the following samples:

FA21494-21, FA21494-22, FA21494-23, FA21494-24, FA21494-25, FA21494-26, FA21494-27, FA21494-28, FA21494-29, FA21494-30, FA21494-31, FA21494-32, FA21494-33, FA21494-34, FA21494-35

CAS No.	Compound	Result	RL	MDL	Units Q
106-93-4	1,2-Dibromoethane	ND	0.020	0.010	ug/l
CAS No.	Surrogate Recoveries		Limit	S	
460-00-4	4-Bromofluorobenzene	78%	63-137	7%	

Method: SW846 8011

## Blank Spike Summary

Job Number: FA21494

Account:

GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
OP54661-BS	DD80164.D	1	01/26/15	NG	01/21/15	OP54661	GDD2377

#### The QC reported here applies to the following samples:

FA21494-1, FA21494-2, FA21494-3, FA21494-4, FA21494-5, FA21494-6, FA21494-7, FA21494-8, FA21494-9, FA21494-10, FA21494-11, FA21494-12, FA21494-13, FA21494-14, FA21494-15, FA21494-16, FA21494-17, FA21494-18, FA21494-19, FA21494-20

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
106-93-4	1,2-Dibromoethane	0.25	0.18	72	72-134
CAS No.	Surrogate Recoveries	BSP	Lin	uits	
460-00-4	4-Bromofluorobenzene	77%	63-	137%	

<sup>\* =</sup> Outside of Control Limits.

Method: SW846 8011

#### Blank Spike Summary

Job Number: FA21494

Account:

GRINCC GRI (Geological Resources Inc.)

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample OP54661-BS2	File ID DD80165.D	<b>DF</b> 1	<b>Analyzed</b> 01/26/15	<b>By</b> NG	<b>Prep Date</b> 01/21/15	Prep Batch OP54661	Analytical Batch GDD2377

The QC reported here applies to the following samples:

FA21494-1, FA21494-2, FA21494-3, FA21494-4, FA21494-5, FA21494-6, FA21494-7, FA21494-8, FA21494-9, FA21494-10, FA21494-11, FA21494-12, FA21494-13, FA21494-14, FA21494-15, FA21494-16, FA21494-17, FA21494-18, FA21494-19, FA21494-20

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
106-93-4	1,2-Dibromoethane	0.25	0.23	92	72-134
CAS No.	Surrogate Recoveries	BSP	Liı	nits	
460-00-4	4-Bromofluorobenzene	87%	63-	137%	

<sup>\* =</sup> Outside of Control Limits.

Method: SW846 8011

#### **Blank Spike Summary**

Job Number: FA21494

Account:

GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample OP54691-BS	File ID DD80193.D	<b>DF</b> 1	<b>Analyzed</b> 01/26/15	By NG	Prep Date 01/23/15	Prep Batch OP54691	Analytical Batch GDD2377

The QC reported here applies to the following samples:

FA21494-21, FA21494-22, FA21494-23, FA21494-24, FA21494-25, FA21494-26, FA21494-27, FA21494-28, FA21494-29, FA21494-30, FA21494-31, FA21494-32, FA21494-33, FA21494-34, FA21494-35

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
106-93-4	1,2-Dibromoethane	0.25	0.18	72	72-134
CAS No.	Surrogate Recoveries	BSP	Limits		
460-00-4	4-Bromofluorobenzene	76%	63-1	37%	

<sup>\* =</sup> Outside of Control Limits.

Method: SW846 8011

#### **Blank Spike Summary**

Job Number: FA21494

Account:

GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample OP54691-BS2	File ID DD80194.D	<b>DF</b> 1	<b>Analyzed</b> 01/26/15	<b>By</b> NG	Prep Date 01/23/15	Prep Batch OP54691	Analytical Batch GDD2377

The QC reported here applies to the following samples:

FA21494-21, FA21494-22, FA21494-23, FA21494-24, FA21494-25, FA21494-26, FA21494-27, FA21494-28, FA21494-29, FA21494-30, FA21494-31, FA21494-32, FA21494-33, FA21494-34, FA21494-35

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
106-93-4	1,2-Dibromoethane	0.25	0.24	96	72-134
CAS No.	Surrogate Recoveries	BSP	Liı	nits	
460-00-4	4-Bromofluorobenzene	83%	63-	137%	

<sup>\* =</sup> Outside of Control Limits.

Method: SW846 8011

### **Matrix Spike Summary**

Job Number: FA21494

Account: GRINCC GRI (Geological Resources Inc.)

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP54661-MS	DD80168.D	1	01/26/15	NG	01/21/15	OP54661	GDD2377
FA21494-1	DD80167.D	1	01/26/15	NG	01/21/15	OP54661	GDD2377

#### The QC reported here applies to the following samples:

FA21494-1, FA21494-2, FA21494-3, FA21494-4, FA21494-5, FA21494-6, FA21494-7, FA21494-8, FA21494-9, FA21494-10, FA21494-11, FA21494-12, FA21494-13, FA21494-14, FA21494-15, FA21494-16, FA21494-17, FA21494-18, FA21494-19, FA21494-20

CAS No.	Compound	FA21494-1 ug/l Q	Spike ug/l	MS ug/l	MS %	Limits
106-93-4	1,2-Dibromoethane	ND	0.24	0.21	87	72-134
CAS No.	Surrogate Recoveries	MS	FA21494	4-1 Lim	its	
460-00-4	4-Bromofluorobenzene	83%	69%	63-1	37%	

<sup>\* =</sup> Outside of Control Limits.

# 3.4.1

Page 1 of 1

Method: SW846 8011

# O

#### Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA21494

Account:

GRINCC GRI (Geological Resources Inc.)

Project:

Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

File ID	DF	Analyzed	$\mathbf{B}\mathbf{y}$	Prep Date	Prep Batch	Analytical Batch
DD80216.D	1	01/27/15	NG	01/23/15	OP54691	GDD2377
DD80217.D	1	01/27/15	NG	01/23/15	OP54691	GDD2377
DD80215.D	1	01/27/15	NG	01/23/15	OP54691	GDD2377
DD80215.D	1	01/27/15	NG	01/23/15	OP54691	
	DD80216.D DD80217.D	DD80216.D 1 DD80217.D 1	DD80216.D 1 01/27/15 DD80217.D 1 01/27/15	DD80216.D 1 01/27/15 NG DD80217.D 1 01/27/15 NG	DD80216.D 1 01/27/15 NG 01/23/15 DD80217.D 1 01/27/15 NG 01/23/15	DD80216.D 1 01/27/15 NG 01/23/15 OP54691 DD80217.D 1 01/27/15 NG 01/23/15 OP54691

The QC reported here applies to the following samples:

FA21494-21, FA21494-22, FA21494-23, FA21494-24, FA21494-25, FA21494-26, FA21494-27, FA21494-28, FA21494-29, FA21494-30, FA21494-31, FA21494-32, FA21494-33, FA21494-34, FA21494-35

CAS No.	Compound	FA21511-18 ug/l Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
106-93-4	1,2-Dibromoethane	ND	0.241	0.25	104	0.24	0.22	92	13	72-134/28
CAS No.	Surrogate Recoveries	MS	MSD	FA	21511-18	3 Limits				
460-00-4	4-Bromofluorobenzene	93%	88%	78%	6	63-1379	6			

<sup>\* =</sup> Outside of Control Limits.

Method: SW846 8011

#### **Duplicate Summary**

Job Number: FA21494

Account: GRINCC GRI (Geological Resources Inc.)

Project: Tisdale's Quick Stop; 1989 Thurgood Marshall Blvd, Kingston, SC

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
OP54661-DUP	DD80170.D	1	01/26/15	NG	01/21/15	OP54661	GDD2377
FA21494-2 <sup>a</sup>	DD80169.D	1	01/26/15	NG	01/21/15	OP54661	GDD2377

#### The QC reported here applies to the following samples:

FA21494-1, FA21494-2, FA21494-3, FA21494-4, FA21494-5, FA21494-6, FA21494-7, FA21494-8, FA21494-9, FA21494-10, FA21494-11, FA21494-12, FA21494-13, FA21494-14, FA21494-15, FA21494-16, FA21494-17, FA21494-18, FA21494-19, FA21494-20

CAS No.	Compound	FA21494-2 ug/l Q	DUP ug/l Q	RPD	Limits
106-93-4	1,2-Dibromoethane	0.17	0.20	16	28
CAS No.	Surrogate Recoveries	DUP	FA21494-2	Limits	
460-00-4	4-Bromofluorobenzene	78%	79%	63-137	%

<sup>(</sup>a) All hits confirmed by dual column analysis.

#### APPENDIX B

**Ground Water Sampling Data Sheets** 

		_				_					
Date (mm/dd/yy):	4/15/14	1/16/15		]	Facility Name:	TISDALES	QUICH	< 500	ρ	<del></del>	
Fleid Personnel:	DANIE			1	Site ID #	18686		Monitoria	·	MW-	
General Weather C		CLOUDY		]	Well Diameter	(D):		0,167	-	<del></del>	
Ambient Air Tempe		50° Assurance	<b>F</b>		Conversion fac	etor (C): 3.14 X (D	/2)2 for a 2 inch for a 4 inch	well C = 0.	.163		
pH Meter Conductivity Meter serial no. pH=4.0 Standard pH=7.0 Standard pH=10.0 Standard Chain of Custody				Total Well Dep	nd Water (DGW) th (TWD) vater column (LW ne (CV = LWC X C	·	1.0	.53  .9    6.38	_feet _feet _feet _feet		
MANUA 7525	CALIBRATED VIYIY		Total volume o	f Water Purged B	efore Sampling						
Relinquished by	Date/Time	Total volume of Water Purged for Post Sampling gal Tot Tot till free product is present over 1/8 inch, sampling will not be required.							jed		
			initial	2-10-1							
Cumulativa Value	Danner of Courtle		0.25	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sampl	e
Cumulative Volume Time (military)	e Purged (gallon	s)	0939						<u>,                                     </u>	0939	7
pH (s.u.)											
Specific Cond. (um	hos/cm)										
Water Temperature	(degrees C)						<del> </del>				
Turbidity (subjective	ve: clear, slightly	y cloudy, cloudy)						<b> </b>			
Dissolved Oxygen	(mg/l)		1.54								
PID readings, if req Remarks:	uired										

No PURGE

Date (mm/dd/yy):	45/14 V16/15		7					·	
Field Personnel:	DANIEL BEALL		1	Facility Name: Site ID #	TIS DALES	> Quich		<del> </del>	
General Weather C	onditions: CLOUDY		1	1		<del></del>	Monitoria	ng Well #	MW-2
Ambient Air Tempe			1	Well Diameter (	(D):		0,167	_feet	
	Quality Assurance	F		Conversion fac	tor (C): 3.14 X (D	/2)2 for a 2 inch for a 4 inch	well C = 0.0 vell C = 0.0	.163 352	
PH Meter serial no. pH=4.0 pH=7.0 pH=10.0 FMANUA 7535 Relinquished by	Conductivity Meter serial no. Standard Standard Standard Chain of Custody  YS 1 13 B 1 000 13/13 A 34  Date/Time Received by	CALIBRATED VIYIY  Date/Time		1 casing volum 3 casing volum Total volume of	d Water (DGW) h (TWD) rater column (LW e (CV = LWC X C	) = 5. 7 efore Sampling or Post Sampling	13. 25. 1.9 gals (star	Didard purge volui	_feet _feet _feet _feet me) _gals _gals _Total Purged
		Initial	1st Vol.	2nd Vol.	3rd Vol.	1 20-14-1		1	
Cumulative Volume	Purged (gallons)	0.25		Alia Voli	olu voi.	4th Vol.	5th Vol.	Post Sampling	Sample
Time (military)		0927							₽927
рН (s.u.)						<del> </del>			160 (
Specific Cond. (uml	hos/cm)								
Water Temperature	(degrees C)								
Turbidity (subjectiv	e: clear, slightly cloudy, cloudy)					<u> </u>			
Dissolved Oxygen (		0.59							
PID readings, if req Remarks:	uired								

Date (mm/dd/yy):	713/24	716/24 Y	16/15	7		T1/5/11//	6	~~~~ <u>~</u>	<del></del>	
Field Personnel:	DANIE	<del></del>	70		Facility Name: Site ID #	TIS DALES	QUICK		·	
General Weather Co	onditions:	CLOUDY					<del>-</del>	Monitorin	g Well #	MW-3
1	-	50°		1	Well Diameter (	D):		0.167	feet	
Ambient Air Tempe	_	Assurance	_F		Conversion fac	tor (C): 3.14 X (D/	2)2 for a 2 inch v for a 4 inch w	well C = 0. rell C = 0.6	163 352	
pH Meter serial no. pH≃4.0 pH≃7.0 pH=10.0	s s	Conductivity Meter erial no. itandard itandard itandard				d Water (DGW) h (TWD) rater column (LW) e (CV = LWC X C)	=	1, 90	52 .09 	feet feet feet
MANUA 7525	YS113B	1000 13/13 A34	CALIBRATED VIYIY		Total volume of	Water Purged Be Water Purged fo	efore Sampling		O.	gals
Relinquished by	Date/Time	Received by	Date/Time			is present over 1				gals Total Purged
				<del></del>						
			Initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulative Volume	Purged (gallon	is)	0.25		<u> </u>					
Time (military)			0952							0952
pH (s.u.)										
Specific Cond. (uml	hos/cm)							<del></del>		
Water Temperature	(degrees C)									
Turbidity (subjectiv	e: clear, slighti	y cloudy, cloudy)								
Dissolved Oxygen (			1.16							
PID readings, if req Remarks:	uired									

NO PURGE

Date (mm/dd/yy):	116/15		7	Facility Name:	TISDALES	Quich	/ /==	5	
Field Personnel: DANII			]	Site ID #	18686	QUICE		·	MIL
General Weather Conditions:	Cloudy			Well Diameter (			Monitorir 0,167		MW-6
Ambient Air Temperature:  Quality	50° y Assurance	_F		Conversion fac	tor (C): 3.14 X (D/	(2)2 for a 2 inch for a 4 inch v	well C = 0. vell C = 0.6	163 352	
pH≂7.0	Conductivity Meter serial no. Standard Standard Standard			1 casing volume	d Water (DGW) h (TWD) vater column (LW e (CV ≈ LWC X C)	) <b>=</b>	1.0	7 50 7.43	feet feet feet feet
Chain of Cus    HANN A 7535   YS113 [   Relinquished by Date/Time	Noco 13/13 A34 Received by	CALIBRATED		Total volume of	e 3 X CV =  Water Purged Be Water Purged fo  is present over 1	r Post Sampling	3	D O	ne) gals gals Total Purged
		Initial	1st Vol.						
Cumulative Volume Purged (galic	ons)	0.25	151 401,	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Time (military)		1024						<u></u>	1024
pH (s.u.)									
Specific Cond. (umhos/cm)				- X &					
Water Temperature (degrees C)	· · · · · · · · · · · · · · · · · · ·								
Turbidity (subjective: clear, sligh	itly cloudy, cloudy)								
Dissolved Oxygen (mg/l)		2.09	<u> </u>						
PID readings, if required Remarks:			<u> </u>	<u> </u>					

40 barge

					_				
Date (mm/dd/yy): 1/15/	74 1/16/15	•	7	Facility Name:	TISDALES	Quic	K 5701	)	
Field Personnel:	ANIEL BEALL		]	Site ID #	18686	<u> </u>	Monitorin		MW- 7
General Weather Condition	s: CLOUDY	_				<del></del>			IMM-
Ambient Air Temperature:	50"	_	1	Well Diameter	•		0,167	-	
		F		Conversion fac	tor (C): 3.14 X (D	/2)2 for a 2 incl	well C = 0.	163	
٥	Quality Assurance		ł			for a 4 inch	well C = 0.6	52	
pH Meter	Conductivity Meter			* Free Product	Thickness: id Water (DGW)		C		feet
serial no.	serial no.			Total Well Dept	th (TWD)		1a. 21,1		feet
pH=4.0 pH=7.0	Standard		]		rater column (LW	C = TWD-DGW	<u> </u>	8.32	_feet _feet
pH=10.0	Standard	<del></del>					•		. reer
<del></del>	Standard		-	1 casing volum	e (CV = LWC X C	)= // ~~	<u> </u>		
Chain c	of Custody			3 casing volum	e 3 X CV =	4.05	gais (stan	dard purge volui	ne)
	12 0 mm 12 ( 5 A2)	CALIBRATED		Total volume of	f Water Purged B	efore Sampling	i	0.	gais
<del></del>	13 B1000 13/13 A34	Y14/14	]		f Water Purged fo			0	gais
Relinquished by Date/Ti	me Received by	Date/Time		•				<u>~_</u>	Total Purged
		····	]	*if free product	is present over 1	/8 inch, sampli	ng will not b	e required.	, rotal rurged
									<del></del>
		Initial	detVal		مير				
0		0.25	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulative Volume Purged	(galions)	<del></del>		<u> </u>					
Time (military)		1012						<del></del>	1012
рН (s.u.)			<del></del>			<del> </del>			1000
		<del></del>	<del>                                     </del>	<del></del>		<del> </del>			
Specific Cond. (umhos/cm)						<u> </u>			
Water Temperature (degree	s C)								
Turbidity (subjective: clear,	slightly cloudy, cloudy)								
Dissolved Oxygen (mg/li)		2-86		1					
PID readings, if required			1				1		
Remarks:			<u></u>		<del></del>	L			<u> </u>

No PURGE

Date (mm/dd/yy):	1/15/14 1/15/15		7						
Field Personnel:	DANIEL BEALL		1	Facility Name: Site ID #	TIS DALES	Quich		·	- 30
General Weather C			1	Well Diameter (			Monitorir 	-	MW-B
Ambient Air Tempe	Quality Assurance	F		Conversion fac	tor (C): 3.14 X (D	/2)2 for a 2 inch for a 4 inch v	well C = 0.	.163	
pH Meter serial no. pH=4.0 pH=7.0 pH=10.0	Conductivity Meter serial no. Standard Standard Standard			Total Well Dept Length of the w	id Water (DGW) h (TWD) rater column (LW e (CV = LWC X C	) =	<u> </u>	27 08 _7.81	_feet _feet _feet _feet
MANUA 7525	YSI 13 BIDOO 13/13 A34	CALIBRATED VIYIY			e 3 X CV = f Water Purged B f Water Purged fo			ndard purge volu	_gals
Relinquished by	Date/Time Received by	Date/Time	]	1.	is present over 1			; 4	_gals _Total Purged
								be required.	
		Initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulative Volume	Purged (gallons)	0.25							Junipio
Time (military)		1448				<del></del>		· · · · · · · · · · · · · · · · · · ·	1448
рН (s.u.)									
Specific Cond. (um	hos/cm)								
Water Temperature	(degrees C)								
Turbidity (subjective	e: clear, slightly cloudy, cloudy)	-			`		<u> </u>		
Dissolved Oxygen	(mg/l)	4.47							
PID readings, if req Remarks:	uired								

NO PURGE

Date (mm/dd/yy):	/14 Y15/15		7						
	)ANIEL BEALL	<del></del>	1	Facility Name:	TIS DALES	Quick	50	P	
General Weather Conditio	ns: CLOUDY		1	Site ID #	18686	<del></del>	Monitorin	ng Well #	MW- 9
1	(- b		ł	Well Diameter	(D):		0.167	feet	
Ambient Air Temperature:		F		Conversion fac	tor (C): 3.14 X (D/	/2)2 for a 2 inch	well C = 0.	163	
·	Quality Assurance					for a 4 inch v	veil C = 0.6	352	
ĺ	Conductivity Meter serial no. Standard Standard Standard Of Custody  113 B100013/13 A34  Time Received by	CALIBRATED VIYIY  Date/Time		Total Well Deprice Length of the volume 3 casing volume of Total volume of Total volume of the column of the colum	nd Water (DGW) th (TWD) vater column (LW) ne (CV = LWC X C) ne 3 X CV = f Water Purged Bo f Water Purged fo	= 3,30 efore Sampling r Post Sampling	ı	5 9 3 4 6 . 6 5 Indard purge volument	feet feet feet me) gals gals Total Purged
		Initial			is present over 1		g Will not i	be required.	
Cumulative Volume Purge	41	0.25	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Time (military)	d (galions)	1551						<u> </u>	1551
pH (s.u.)					<del></del>				1221
Specific Cond. (umhos/cm	1)								
Water Temperature (degre	es C)								
Turbidity (subjective: clea	r, slightly cloudy, cloudy)								
Dissolved Oxygen (mg/l)		5.02		<u>.                                    </u>					
PID readings, if required Remarks:									

NO PURGE

Date (mm/dd/yy):	4/15/14	115/15		7	Facility Name:	TISDALES	Ource	/	<u> </u>	
Fleid Personnei:	_ DANI			1	Site ID #	18686	Quick		ng Well #	MW- 10
General Weather Co		CLOUDY			Well Diameter				_feet	mw- jo
Ambient Air Temper		50°	F		Conversion fac	etor (C): 3.14 X (D	/2)2 for a 2 inch for a 4 inch w	well C = 0 vell C = 0.0	.163 852	
pH Meter serial no. pH=4.0 pH=7.0 pH=10.0		Conductivity Meter serial no. Standard Standard Standard			Total Well Dept Length of the w	nd Water (DGW) th (TWD) vater column (LW e (CV = LWC X C	· ) =	15,	9,33	_feet _feet _feet _feet
HANNA 7525	Chain of Cu	stody B1000 13/13 A34	CALIBRATED VIYIY			e 3 X CV = f Water Purged B f Water Purged fo			ndard purge volui	gals
Relinquished by	Date/Time	Received by	Date/Time	]		is present over 1				_gals _Total Purged
			initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	T 0
Cumulative Volume	Purged (gall	ons)	0.25				7411 7011	JUI 101.	rost Sampling	Sample
Time (military)			1600							1600
pH (s.u.)										
Specific Cond. (umh	os/cm)									<del></del>
Water Temperature (	(degrees C)									
Turbidity (subjective	: clear, sligi	ntly cloudy, cloudy)				`			- <del> </del>	
Dissolved Oxygen (n	ng/l)		6.38							
PID readings, if requ Remarks:	ilred									
Ir contacts			No	purbe						

						_				
Date (mm/dd/yy):	715/14	115/15		]	Facility Name:	TISDALES	Quick	- 370	ρ	
Field Personnel:	DANIE			]	Site ID #	18686		Monitorir	·	MW-13
General Weather Co	onditions:	Cloudy		j	Well Diameter (	'D):	_			
Ambient Air Temper	•	So" Assurance	_ <b>F</b>		1 .	tor (C): 3.14 X (D/	/2)2 for a 2 inch for a 4 inch v	0,167 well C = 0, vell C = 0,6	- 163	
pH Meter serial no. pH≈4.0 pH≈7.0 pH≈10.0		Conductivity Meter serial no. Standard Standard Standard				id Water (DGW) h (TWD) vater column (LW e (CV ≖ LWC X C)	•	23.	9.44	_feet _feet _feet _feet _me)
HANNIA 7525		1000 13/13 A34	CALIBRATED VIYIY			Water Purged Be			0	_gals
Relinquished by	Date/Time	Received by	Date/Time		Total volume of	Water Purged fo	r Post Sampling	l		_gals _Total Purged
			· · · · · · · · · · · · · · · · · · ·			is present over 1		3 11111001	oe reguired.	
	······································		Initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulative Volume	Purged (gallo	ns)	0.25						, cot campang	Campie
Time (military)			1613						/»	1613
pH (s.u.)										1017
Specific Cond. (umh	ios/cm)									
Water Temperature	(degrees C)					<del></del>				
Turbidity (subjective	e: clear, slight	ly cloudy, cloudy)				`				
Dissolved Oxygen (r			5.28					. <del></del>		
PID readings, if requ Remarks:	ıired									

No purge

Date (mm/dd/yy): 1/15/79 1/16/	75	7		-1000100				
	BEALL		Facility Name: Site ID #	TIS DALES	Quici		·	
General Weather Conditions:	104		Well Diameter		<del></del>		ng Well #	MW-14
Ambient Air Temperature: 50°	F			tor (C): 3.14 X (D)	/2)2 for a 2 inch	well C = 0	_feet .163	
Quality Assurance	<b>CQ</b>	ł	1		for a 4 inch	well C = 0.0	352	
pH Meter       Condustrial         serial no.       serial no.         pH=4.0       Standard         pH=7.0       Standard         pH=10.0       Standard	ctivity Meter		1 casing volum	id Water (DGW) h (TWD) rater column (LW e (CV = LWC X C	·	14, 23		feet feet feet feet
Chain of Custody  MANUA 7525 YS113 B100013	CALIBRATED  /13 A 34  /14/14			Water Purged Bo	efore Sampling		dard purge volui	me) gals
Relinquished by Date/Time Red	ceived by Date/Time		. '	Water Purged fo		_	be required.	gals Total Purged
				Ą				
	initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulative Volume Purged (gallons)	0.25							
Time (military)	1039				<del>                                     </del>			1039
pH (s.u.)								
Specific Cond. (umhos/cm)								
Water Temperature (degrees C)								
Turbidity (subjective: clear, slightly cloudy,	cloudy)							
Dissolved Oxygen (mg/l)	4.29							
PID readings, if required Remarks:								

No PURGE

Data (market)	1-1-0		•					
Date (mm/dd/yy):	DANIEL BEALL	· · · · · · · · · · · · · · · · · · ·		Facility Name:	TISDALES	QUICK	STOP	· · · · · · · · · · · · · · · · · · ·
l —			1	Site ID #	18686		Monitoring Well	# MW-15
General Weather Cond	<del></del>			Well Diameter (	(D):		0,167 feet	
Ambient Air Temperatu	ire: 50°	F	}	1 ,	•	/2\2 fo 0 !!		
	Quality Assurance	<del></del>		Control of 120	tor (C): 3.14 X (D	for a 4 inch w	veli C = 0.163 veli C = 0.852	
pH Meter serial no. pH≈4.0 pH≈7.0 pH=10.0 Ch	Conductivity Meter serial no. Standard Standard Standard ain of Custody  YS113 B1000 13/13 A34	CALIBRATED VIYIY		1 casing volum 3 casing volum Total volume of	id Water (DGW) ih (TWD) rater column (LW e (CV = LWC X C) e 3 X CV = f Water Purged B	= 4, 3.5 efore Sampling	. 45 gals (standard pu	gals
	te/Time Received by	Date/Time		1	Water Purged fo		will not be requi	Total Purged
		1-101-1	<del></del>					
		Initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol. Post S	ampling Sample
Cumulative Volume Pu	rged (gallons)	0.25						
Time (military)		1052					•	1052
pH (s.u.)	7							
Specific Cond. (umhos	/cm)							
Water Temperature (de	grees C)	•						
Turbidity (subjective: c	lear, slightly cloudy, cloudy)				,			
Dissolved Oxygen (mg		4.13						
PID readings, if require Remarks:	d							

No Purge

Date (mm/dd/yy):	715/14 VIS/15		7		T1/ 5 A1 (/			<u></u>	· · · · · · · · · · · · · · · · · · ·
Fleid Personnei:	DANIEL BEALL		1	Facility Name: Site ID #	TIS DALES	s Quick			
General Weather C				Well Diameter			Monitorir 0.167		MW-19
Ambient Air Tempe	Prature: 50° Quality Assurance	F		Conversion fac	etor (C): 3.14 X (D	/2)2 for a 2 inch for a 4 inch v	well C = 0. vell C = 0.6	163 352	
pH Meter serial no. pH≃4.0 pH=7.0 pH=10.0	Conductivity Meterserial noStandardStandardStandard			Total Well Dept Length of the w	nd Water (DGW) th (TWD) vater column (LW e (CV = LWC X C		a.	7.26 1.21 6.95	_feet _feet _feet _feet
MANUA 7525	Chain of Custody  YS113 B1000 13/13 A34	CALIBRATED VIYIY		Total volume of	e 3 x CV ≊ f Water Purged B f Water Purged fo	efore Sampling		ndard purge volu	me) gals gals
Relinquished by	Date/Time Received by	Date/Time		1.	is present over 1			be required.	Total Purged
		1-10101	<del></del>						
Cumulative Volume	Duna de la companya della companya della companya della companya de la companya della companya d	0.25	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Cumulative Volume Time (military)	e Purged (gallons)	1647							1645
pH (s.u.)									
Specific Cond. (um	hos/cm)								
Water Temperature	(degrees C)	,							
Turbidity (subjective	ve: clear, slightly cloudy, cloudy)								
Dissolved Oxygen	(mg/l)	5.48							
PID readings, if req Remarks:	quired								

NO PURGE

Date (mm/dd/yy):	715/14	1/15/15		7					· _ · · · · · · · · · · · · · · · · · ·	
Field Personnel:	DANIEL				Facility Name: Site ID #	TIS DALES	QUICK	<del></del>	· · · · · · · · · · · · · · · · · · ·	M14 20
General Weather Con	ditions:	CLOUDY			Well Diameter (		_	Monitorir		MW- 20
Ambient Air Tempera	_	50°	F		1 .	tor (C): 3.14 X (D/	/2)2 for a 2 inch of for a 4 inch w	0,167 well C = 0.	.163	
pH Meter serial no. pH=4.0 pH=7.0 pH=10.0		Assurance  Conductivity Meter erial no. tandard tandard tandard			Total Well Dept Length of the w	d Water (DGW) h (TWD) rater column (LW e (CV ≈ LWC X C)	C = TWD-DGW)	14. 83	9.88 - 8.88 - 8.88	_feet _feet _feet _feet _me)
MANUA 7525		000 13/13 A34	CALIBRATED /14/14			Water Purged Bo Water Purged fo		ı	0.	_gals gals
Relinquished by	Date/Time	Received by	Date/Time			is present over 1			be required.	Total Purged
			initial	1 de 1/21						
Cumulative Volume P	urged (gallon	e)	0.25	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample
Time (military)	and (gallot)	97	1636		<del> </del>					1636
pH (s.u.)										16.76
Specific Cond. (umho	s/cm)									
Water Temperature (d	degrees C)							<del></del>		
Turbidity (subjective:	clear, slightly	/ cloudy, cloudy)								
Dissolved Oxygen (m	. ,		2.98							
PID readings, if requi Remarks:	red									

Date (mm/dd/yy): 1/15/14 1/15/15		7		T1 ( 5 A) ( (		,		<del></del>	
Field Personnel: DANIEL BEALL			Facility Name: Site ID #	TISDALES QUI					
General Weather Conditions: CLOUDY				_	Monitoring !		MW-21		
Ambient Air Temperature: 50°	1	Well Diameter (		<del></del>		_feet			
Quality Assurance	Conversion factor (C): 3.14 X (D/2)2 for a 2 inch well C = 0.163 for a 4 inch well C = 0.652								
pH Meter Conductivity Meter serial no. pH=4.0 serial no. pH=7.0 Standard pH=10.0 Standard Chain of Custody	CALI BRATED		1 casing volume	d Water (DGW) h (TWD) rater column (LWo	3,30	0 13.48 20.33 6.85 1.10 gais (standard purge volu		_feet _feet _feet _feet	
MANUA 7525 YS113 B100013/13 A34	14/14			Water Purged for	_	O gals			
Relinquished by Date/Time Received by	Date/Time	]		in any or in	r ost Sampini	<del>,</del>		gals Total Purged	
	Initial	1st Vol.	2nd Vol.	is present over 1/	4th Vol.	5th Vol.	Post Sampling	Sample	
Cumulative Volume Purged (gallons)	0.25								
Time (military)	1253						,,	1253	
pH (s.u.)									
Specific Cond. (umhos/cm)					<del></del>				
Water Temperature (degrees C)									
Turbidity (subjective: clear, slightly cloudy, cloudy)									
Dissolved Oxygen (mg/l)	5.89								
PID readings, if required Remarks:									

No PULGE

Date (mm/dd/yy):	415/14 V15/15	· · · · · · · · · · · · · · · · · · ·	7							
Field Personnel:	DANIEL BEALL	<u> </u>	1	Facility Name: Site ID #	TISDALES	s Quick		<del> </del>		
General Weather C	onditions: CLOUDY		1	Well Diameter		_	Monitoria		MW- 22	
Ambient Air Tempe	erature: 50°	E	1	1 .	•		0,167	<del></del>		
·	Quality Assurance	,		Conversion fac	tor (C): 3.14 X (D	/2)2 for a 2 inch for a 4 inch v	nch well C = 0,163 Ch well C = 0,652			
pH Meter serial no. pH=4.0 pH=7.0 pH=10.0	Conductivity Meter serial no. Standard Standard Standard Standard			* Free Product Depth to Grour Total Well Dept Length of the w	/C = TWD-DGW)	0 14.17 23.31 9.14		feet feet feet feet		
MNWA 7525	Chain of Custody  YS1 13 B1000 13/13 A34	CALIBRATED		3 casing volum Total volume o	e 3 X CV ≂ f Water Purged B	4.50 efore Sampling	gals (standard purge vo		rlume) gals	
Relinquished by	Date/Time Received by	Date/Time		1.	f Water Purged fo		gals  Ch, sampling will not be required.			
		Initial	1st Vol.	2nd Vol.						
Cumulative Volume	Purged (gallons)	0.25	130 701.	Ziiu voi.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample	
Time (military)		1232		1					1232	
pH (s.u.)									10.32	
Specific Cond. (um	hos/cm)									
Water Temperature	(degrees C)									
Turbidity (subjective	/e: clear, slightly cloudy, cloudy)				,					
Dissolved Oxygen	(mg/l)	2.97								
PID readings, if req Remarks:	uired									

NO PURGE

				_									
Date (mm/dd/yy):	1/15/14	V15/15		]	Facility Name:	TISDALES	QUICK	50	ρ	···			
Field Personnel:	DANIEL	- BEALL			Site ID#	18686		Monitorin		MW-23			
General Weather Conditions: CLOUDY				ļ	Well Diameter (		_			<u> </u>			
Amblent Air Temperature: 50"				]				0.167	-				
					Conversion factor (C): 3.14 X (D/2)2 for a 2 inch well C = 0.163  for a 4 inch well C = 0.652								
	Quality A	Assurance											
pH Meter Conductivity Meter				Ì	* Free Product				-	feet			
serial no.		erial no.		ļ	Depth to Groun Total Well Dept				1, 89	feet			
pH=4.0	s	tandard		1		rater column (LW	C = TWD_DCM	- <u> </u>					
pH≈7.0		tandard				ass. solulliti (EII	0 - 111D-DG44)						
pH=10.0	S	tandard			1 casing volum	e (CV = LWC X C)	m						
	Chain of Custody  YS1 13 B1000 13/13 A34				3 casing volum	e 3 X CV =	4.05	gals (standard purge volume)					
			CALIBRATED		<b>L</b>				_	•			
MANNA 7525			71414			Water Purged Be							
Relinquished by	Date/Time Received by			Total volume of	Water Purged fo	r Post Sampling							
	Dutortime	Received by	Date/Time						<del></del>	Total Purged			
			<del></del>	L	II Itaa brodact	is present over 1	8 inch, samplin	will not	be required.				
	· · · · · · · · · · · · · · · · · · ·		Initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	0			
Cumulative Volume	Purged (gallon	s)	0.25				44.10.	301 YUL	Fost Sampling	Sample			
		₹ <i>I</i>	1042		<del> </del>				4	<u> </u>			
Time (military)			1070		ļ					1042			
pH (s.u.)													
Specific Cond. (uml	nos/cm)												
Water Temperature	(degrees C)												
Turbidity (subjectiv	e: clear, slightly	cloudy, cloudy)											
Dissolved Oxygen (			4.02										
PID readings, if req	ules d												
Remarks:	an Ad			L	<u> </u>	<u> </u>	<u> </u>		<u> </u>	L			

No Puxec

Date (mm/dd/yy):	1/15/14	1/15/15		7			-				
Field Personnel: DANIEL BEALL				Facility Name:		TISDALES	QUICI	CK STOP			
				┨	Site ID #	18686	_	Monitorir	ng Well #	MW-24	
General Weather Conditions: CLOUDY					Weil Diameter	(D):		0,167	' feet		
Ambient Air Temperature: 50° F					Conversion fac	etor (C): 3.14 X (D	<del></del>				
pH Meter Conductivity Meter serial no. pH=4.0 Standard pH=7.0 Standard pH=10.0 Standard Chain of Custody  MANNA 7535 YS113 B1000 13/13 A34				* Free Product Thickness: Depth to Ground Water (DGW) Total Well Depth (TWD) Length of the water column (LWC = TWD-DG			1.50				
		- <del></del>	CALIBRATED VIYIY			e 3 X CV ≖ f Water Purged Bo f Water Purged fo		pling gals			
Relinquished by	Date/Time	Received by	Date/Time			_	galsTotal Purged be required.				
							ie men eampin	ig will flot	pe reduited.		
	<del></del>		Initial	1st Vol.	2nd Vol.	3rd Vol.	4th Vol.	5th Vol.	Post Sampling	Sample	
Cumulative Volume	Purged (gailor	ns)	0.25								
Time (military)	·-		1029					<del> </del>	, is	1029	
pH (s.u.)											
Specific Cond. (um	hos/cm)										
Water Temperature	(degrees C)									<u> </u>	
Turbidity (subjective	/e: clear, slighti	y cloudy, cloudy)									
Dissolved Oxygen		· ·	5.71					<del> </del>			
PID readings, if req Remarks:											

No PURGE