QUANTUM Engineering
and Geologic Consulting

November 14, 2018

Ted Uecker
Washington Department of Ecology
4601 Monroe, Suite 202
Spokane, WA 99205-1295

Re: Dusty Four Star Supply-Semi Annual Monitoring Report
Correspondence #117.43

Dear Mr. Uecker:

Semi annual monitoring was performed at Four Star Supply, (formerly Dusty Farm Coop) on October 30, 2018. This report provides data regarding samples collected at that time. All wells were sampled with the exception of GW5, GW7, GW9 and the onsite water supply wellhead. The four afore-mentioned well/sampling locations have revealed numerous, consecutive samples below the minimum detection limits of the laboratory for the constituents of concern at the site. Sampling of these wells is not considered critical for operation of the groundwater treatment system, but will be included in the future sampling plan when the site nears closure. MW1 was damaged by a snow plow in 2009 and was abandoned. Replacement of MW1 is not considered necessary for operation and monitoring of the on-site treatment system.

Wells MW2 through MW5, GW1 and GW3 were opened and allowed to equilibrate to atmospheric pressure prior to collection of static water levels. All wells were sampled using low-flow sampling techniques and samples were collected in laboratory certified containers, placed on ice and transported to the laboratory for analyses. Samples were analyzed using Method 8260C for benzene, toluene, ethylbenzene and total xylene (BTEX). Gasoline analyses were performed using method NWTPH-Gx.

The most recent samples were below the Model Toxic Control Act (MTCA) Method A standard for groundwater except for MW2. MW2 revealed benzene at 12.0 μg/L and ethylbenzene at 58.0 μg/L compared to the MTCA Method A groundwater standard of 5.0μg/L and 30.0 μg/L respectively.

Methyl tert-butyl ether (MTBE) was revealed at low levels in all of the wells sampled. All wells were below the current MTCA Method A standard for groundwater of 20.0 μg/L except for MW3. MW3 revealed MTBE at 36.0 μg/L compared to a MTCA Method A groundwater standard of 20 μg/L. Since site remedial action was initiated in 2001 under the 1993 MTCA,

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MTBE is not actually a chemical of concern for this site. MTBE is being reported as part of the analytical procedure by the laboratory and is provided here as supplemental information.

Operation of the collection and treatment system had been suspended due to an inability of the recharge basin pump to deliver adequate flow to the recharge trench during the spring. This situation triggered high alarm condition in the recharge basin when it is out-paced by discharge from the collection trench pump and the air stripper.

Attempts to restart the treatment system in July of 2018 were unsuccessful since the collection basin pump failed during troubleshooting efforts. The collection basin pump has since been replaced and delivery from the recharge basin to the recharge trench was tested on October 30, 2018 at approximately 50 gpm for approximately 5-minutes (approximately 250 gallons). This suggests that the delivery piping to the recharge trench and perforations in the distribution piping are functioning properly and not clogged. Prior alarm conditions are now suspected to be the result of seasonally high groundwater conditions at the site during spring. The treatment system was reenergized and all systems placed on automatic operation. The upcoming spring will determine whether alarm conditions return due to high ambient groundwater conditions. If this is the case, then the system will be shut down temporarily for that period.

A data summary table and supporting laboratory data are attached for your review. If you have any questions or need any additional information, please feel free to call.

Sincerely,

James S. De Smet, PE, PG

Cc: Don Boyd, CDA Service
Terry Miller, Four Star Supply

Groundwater Data Summary
Dusty Four Star Supply

Well ID	Date	TPH-G	Benzene	Toluene	Ethylbenzene	Xylene	MTBE	DRO	Heavy Oil	SWL
	8/10/2001*			ND						9.20
	3/25/02	129000.00	13700.00	30600.00	2410.00	14200.00				3.11
	6/27/02	120000.00	19700.00	38500.00	2310.00	15000.00				6.11
MW1	12/3/02*									
	1/24/2003**									4.73
	4/3/03	108000.00	13100.00	21000.00	1870.00	11500.00				4.18
	7/30/03	98200.00	4670.00	11100.00	1250.00	7550.00	ND	6900.00	633.00	7.13
	12/10/03*									8.30
	4/9/2004**									5.10
	9/7/2004**									8.30
	2/17/2005**									5.77
	5/12/2005**									5.40
	10/25/2005**									8.00
	3/15/2006**									3.60
	7/26/2006**									7.13
	11/21/2006**									8.10
	3/13/2007**									5.00
	6/28/2007**									6.69
	9/26/2007*									9.30
	12/21/2007*									7.20
	3/25/2008*									4.06
	6/30/2008*									6.02
	9/23/2008*									7.98
	12/4/2008*									7.28
	3/19/2009*	Well Abandone								
	6/25/09	Well Abandone								
	12/3/09	Well Abandone								
	4/25/11	Well Abandone								
	5/8/12	Well Abandone								
	11/16/12	Well Abandone								
	5/2/13	Well Abandone								
	10/1/13	Well Abandone								
	3/11/15	Well Abandone								
	9/10/15	Well Abandone								
	5/21/16	Well Abandone								
	4/19/17	Well Abandone								
	9/16/17	Well Abandone								
	3/14/18	Well Abandone								
	10/30/18	Well Abandone								
	8/10/01	32000.00	838.00	ND	389.00	4410.00				7.45
	3/25/02	12700.00	19900.00	29800.00	1850.00	12200.00				3.33
	6/27/02	72300.00	13300.00	21500.00	1130.00	8230.00				5.95
	12/03/02*									
MW2	1/24/2003**									4.95
	4/3/03	218000.00	24900.00	53100.00	3330.00	18100.00				4.22
	7/30/03*									7.50
	12/10/2003*									7.85
	4/9/04	1420.00	192.00	280.00	32.60	208.00				4.75
	9/7/2004**									8.02
	2/17/2005**									5.67
	5/12/2005**									5.53
	10/25/2005**									7.77
	3/15/2006**									
	7/26/2006**									7.15
	11/21/2006**									8.20
	3/13/07									4.20
	6/28/07									6.80
	9/26/07									9.33
	12/21/07									7.10
	3/25/08									4.35
	6/30/08									6.20
	9/23/08									8.25
	12/4/08									7.32
	3/19/09									3.19
	6/25/09									6.20
	12/3/09									6.76
	3/31/10	29600.00	2730.00	ND	1480.00	3190.00				4.95
	6/24/10	23500.00	3020.00	ND	69.40	3080.00				5.35
	11/12/10	Not Sampled								
	4/25/11	Not Sampled								
	11/21/11	Not Sampled								
	5/8/12	Not Sampled								
	11/16/12	6750.00	591.00	10.00	6.80	274.30				
	5/2/13	6360.00	614.00	10.30	ND	ND				
	10/1/13	3710.00	527.00	4.27	ND	34.20				
	4/23/14	2860.00	65.20	ND	1.05	9.38				5.15
	10/7/14	2100.00	201.00	2.28	20.50	39.82				9.23
	3/11/15	2000.00	98.00	ND	6.80	11.00	ND			5.32
	9/10/15	1600.00	110.00	4.70	98.00	23.10				8.67
	5/21/16	1600.00	46.00	1.80	5.40	11.00	2.70			4.70
	9/20/16	1500.00	50.00	5.70	84.00	43.00				8.27
	4/19/17	560.00	16.00	ND	ND	ND	3.90			
	9/16/17	610.00	20.00	ND	9.00	10.00	3.00			7.20
	3/14/18	220.00	4.40	ND	ND	ND	4.30			2.20
	10/30/18	580.00	12.00	1.00	58.00	ND	3.50			7.95
	8/10/01	25900.00	2380.00	ND	515.00	3180.00				9.20
	3/25/02	42500.00	4540.00	8900.00	758.00	4380.00				4.97
	6/27/02	3760.00	1320.00	474.00	25.90	168.00				7.68
	12/3/02	10500.00	6750.00	91.00	5.47	43.10				
MW3	1/24/2003**									6.55
	4/3/03	3550.00	1760.00	56.70	2.93	47.70				5.94
	7/30/03	24400.00	4820.00	431.00	ND	358.00	462.00	3470.00	1290.00	8.95
	12/10/03	13100.00	9140.00	12.90	ND	1.82				9.20
	4/9/04	3540.00	1590.00	68.60	5.04	91.20				6.55
	9/7/04	18000.00	8760.00	182.00	ND	113.00				9.65

Well ID	Date	TPH-G	Benzene	Toluene	Ethylbenzene	Xylene	MTBE	DRO	Heavy Oil	SWL
	2/17/05	3990.00	490.00	77.40	9.13	50.80				4.45
	5/12/05	4090.00	733.00	588.00	45.30	274.00				7.45
	10/25/05	18600.00	1140.00	1890.00	233.00	1210.00				9.52
	3/15/06	2440.00	88.70	176.00	54.90	381.00				5.55
	7/26/06	6700.00	1620.00	124.00	ND	253.00				8.94
	11/21/06	10500.00	1640.00	839.00	210.00	1170.00				9.70
	3/13/07	ND	224.00	144.00	55.40	379.00				6.50
	6/28/07	555.00	197.00	14.70	5.57	25.60				8.53
	9/26/07	3720.00	954.00	217.00	87.00	467.00				11.01
	12/21/07	5440.00	1170.00	296.00	144.00	778.00				8.92
	3/25/08	977.00	32.70	10.70	19.80	140.00				6.00
	6/30/08	888.00	71.10	7.25	24.20	165.00				7.97
	9/23/08	927.00	461.00	17.00	27.70	118.00		524.00	ND	9.95
	12/4/08	3640.00	352.00	210.00	125.00	354.00				9.38
	3/19/09	843.00	15.40	11.40	15.20	185.00				4.83
	6/25/09	605.00	37.30	2.24	7.10	94.80				6.99
	12/3/09	1450.00	125.00	10.90	66.30	217.00				8.78
	3/31/10	721.00	31.80	ND	22.70	82.10				6.81
	6/24/10	447.00	979.00	4.13	ND	6.29				7.05
	11/12/10	263.00	31.50	ND	5.77	6.46				Bad Probe
	4/25/11	ND	1.18	ND	ND	ND				5.29
	11/21/11	ND	ND	ND	ND	ND				9.56
	5/8/12	ND	12.60	ND	ND	ND				4.54
	11/16/12	413.00	67.50	0.74	22.10	5.22				8.77
	5/2/13	98.00	10.90	ND	ND	ND				***
	10/1/13	259.00	34.30	ND	3.64	1.12				
	4/23/14	165.00	9.31	ND	ND	ND				6.91
	10/7/14	135.00	22.00	ND	ND	0.50				10.86
	3/11/15	ND	8.40	ND	ND	ND	20.00			7.02
	9/10/15	120.00	36.00	ND	ND	ND				10.36
	5/21/16	ND	19.00	ND	ND	ND	17.00			6.60
	9/20/16	ND	3.00	ND	ND	ND				9.98
	4/19/17	ND	19.00	ND	ND	ND	11.00			3.25
	9/16/17	ND	6.40	ND	ND	ND	21.00			8.81
	3/14/18	ND	7.00	ND	ND	ND	12.00			3.50
	10/30/18	ND	0.48	ND	ND	ND	36.00			9.71
	8/10/01	736.00	79.30	ND	2.22	114.00				9.65
	3/25/02	1130.00	199.00	4.87	ND	14.30				5.75
	6/27/02	1530.00	541.00	29.20	4.24	28.10				8.11
	12/3/02	2680.00	728.00	8.80	ND	46.70				
MW4	1/24/2003**									4.32
	4/3/03	3350.00	1450.00	13.40	ND	2.61				6.41
	8/13/03	5420.00	199.00	2.26	ND	ND	160.00	551.00	ND	9.36
	12/10/03	2860.00	1170.00	6.24	ND	ND				9.69
	4/9/04	5300.00	8000.00	18.80	ND	7.19				7.12
	9/7/04	4460.00	2220.00	9.93	ND	6.24				10.04
	2/17/05	3270.00	452.00	8.85	ND	ND				8.06
	5/12/05	3950.00	1390.00	7.06	ND	ND				8.04
	10/25/05	1810.00	323.00	8.10	ND	ND				9.99
	3/15/06	1650.00	489.00	ND	ND	ND				6.09
	7/26/06	1660.00	180.00	2.75	ND	2.00				9.31
	11/21/06	674.00	61.00	ND	ND	ND				10.24
	3/13/07	1270.00	48.00	ND	ND	ND				7.19
	6/28/07	576.00	38.50	ND	ND	ND				9.01
	9/26/07	125.00	9.09	ND	ND	ND				10.70
	12/21/07	192.00	30.00	ND	ND	2.72				9.54
	3/25/08	ND	7.90	ND	ND	ND				6.65
	6/30/08	ND	2.27	ND	ND	ND				8.41
	9/23/08	275.00	17.20	ND	ND	ND		ND	274.00	10.42
	12/4/08	350.00	5.01	ND	ND	ND				9.94
	3/19/09	177.00	1.68	ND	ND	ND				5.56
	6/25/09	385.00	2.37	ND	ND	ND				7.31
	12/3/09	ND	1.22	ND	ND	ND				9.33
	3/31/10	157.00	0.80	ND	ND	ND				7.19
	6/24/10	326.00	1.65	ND	ND	ND				7.50
	11/12/10	320.00	1.94	ND	ND	ND				Bad Probe
	4/25/11	105.00	0.68	ND	ND	ND				5.66
	11/21/11	119.00	0.70	ND	ND	ND				9.97
	5/8/12	121.00	ND	ND	ND	ND				5.06
	11/16/12	454.00	ND	ND	ND	ND				9.35
	5/2/13	189.00	ND	ND	ND	ND				***
	10/1/13	353.00	2.84	ND	ND	ND				
	4/23/14	124.00	ND	ND	ND	ND				7.50
	10/7/14	123.00	ND	ND	ND	ND				11.37
	3/11/15	120.00	ND	ND	ND	ND	15.00			7.71
	9/10/15	240.00	ND	ND	ND	ND				10.90
	5/21/16	300.00	ND	ND	ND	ND	11.00			7.14
	9/20/16	300.00	0.80	ND	ND	ND				10.55
	4/19/17	ND	ND	ND	ND	ND	21.00			3.79
	9/16/17	ND	3.30	ND	ND	ND	7.50			9.35
	3/14/18	ND	ND	ND	ND	ND	15.00			4.10
	10/30/18	ND	ND	ND	ND	ND	8.90			10.20
	8/10/01	3380.00	535.00	ND	90.90	663.00				7.50
	3/25/02	3690.00	933.00	56.10	3.01	406.00				3.32
	6/27/02	779.00	183.00	46.30	5.05	61.70				6.07
	12/3/02	525.00	185.00	6.02	ND	49.40				
MW5	1/24/2003**									4.90
	4/3/03	915.00	245.00	4.51	ND	40.30				4.34
	8/13/03	539.00	102.00	3.21	3.09	40.80	ND	ND	ND	7.25
	12/10/03	411.00	121.00	ND	ND	32.30				7.47
	4/9/04	514.00	226.00	ND	ND	16.70				4.90
	9/7/04	395.00	158.00	ND	ND	28.20				7.91
	2/17/05	1880.00	203.00	2.42	ND	125.00				5.61
	5/12/05	842.00	189.00	ND	ND	9.66				5.59
	10/25/05	154.00	12.20	ND	ND	ND				
	3/15/06	1630.00	53.10	2.84	ND	148.00				3.60
	7/26/06	457.00	21.40	ND	ND	3.09				7.20
	11/21/06	119.00	1.74	ND	ND	ND				7.93
	3/13/07	431.00	5.00	ND	ND	ND				4.39

Well ID	Date	TPH-G	Benzene	Toluene	Ethylbenzene	Xylene	MTBE	DRO	Heavy Oil	SWL
	6/28/07	428.00	1.25	ND	ND	ND				6.73
	9/26/07	105.00	ND	ND	ND	ND				9.28
	12/21/07	ND	0.93	ND	ND	ND				6.92
	3/25/08	485.00	1.05	ND	ND	ND				3.65
	6/30/08	182.00	ND	ND	ND	ND				5.97
	9/23/08	ND	0.94	ND	ND	ND		282.00	ND	8.19
	12/4/08	119.00	ND	ND	ND	ND				7.41
	3/19/09	ND	ND	ND	ND	ND				2.81
	6/25/09	101.00	ND	ND	ND	ND				5.04
	12/3/09	142.00	ND	ND	ND	ND				6.79
	3/31/10	ND	ND	ND	ND	ND				4.25
	6/24/10	ND	ND	ND	ND	ND				4.69
	11/12/10	ND	ND	ND	ND	ND				Bad Probe
	4/25/11	ND	ND	ND	ND	ND				2.62
	11/21/11	ND	ND	ND	ND	ND				7.80
	5/8/12	ND	ND	ND	ND	ND				2.99
	11/16/12	ND	ND	ND	ND	ND				7.06
	5/2/13	ND	ND	ND	ND	ND				***
	10/1/13	ND	ND	ND	ND	ND				
	4/23/14	ND	ND	ND	ND	ND				5.10
	10/7/14	ND	ND	ND	ND	ND				9.29
	3/11/15	ND	ND	ND	ND	ND	11.00			4.73
	9/10/15	ND	ND	ND	ND	ND				7.65
	5/21/16	ND	ND	ND	ND	ND	12.00			4.24
	9/20/16	ND	ND	ND	ND	ND				8.21
	4/19/17	ND	ND	ND	ND	ND	6.40			1.97
	9/16/17	ND	ND	ND	ND	ND	7.20			7.22
	3/14/18	ND	ND	ND	ND	ND	4.10			2.25
	10/30/18	ND	ND	ND	ND	ND	3.60			7.92
	5/11/01	85.50	ND	ND	ND	1.52				
	3/25/02	ND	ND	ND	ND	ND				
Well Head	6/27/02	ND	ND	ND	ND	ND				
	12/3/02	ND	0.51	ND	ND	ND				
	4/3/03	ND	ND	ND	ND	ND				
	8/13/03	100.00	ND	ND	ND	ND	ND	ND	ND	
	12/10/03	ND	ND	ND	ND	ND				
	4/9/04	ND	ND	ND	ND	ND				
	9/7/04	ND	ND	ND	ND	ND				
	2/17/05	ND	ND	ND	ND	ND				
	5/12/05	ND	ND	ND	ND	ND				
	3/15/06	ND	ND	ND	ND	ND				
	7/26/06	ND	ND	ND	ND	ND				
	11/21/06	ND	ND	ND	ND	ND				
	3/13/07	ND	ND	ND	ND	ND				
	6/27/07	ND	ND	ND	ND	ND				
	9/26/07	ND	ND	ND	ND	ND				
	12/21/07	ND	ND	ND	ND	ND				
	3/25/08	ND	ND	ND	ND	ND				
	6/30/08	ND	ND	ND	ND	ND				
	9/23/08	ND	ND	ND	ND	ND		ND	ND	
	12/4/08	ND	ND	ND	ND	ND				
	3/19/09	Not Sampled								
	6/25/09	Not Sampled								
	12/3/09	Not Sampled								
	12/3/09	Not Sampled								
	3/31/10	Not Sampled								
	6/30/10	Not Sampled								
	5/8/12	Not Sampled								
	11/16/12	Not Sampled								
	5/2/13	Not Sampled								
	10/1/13	Not Sampled								
	4/23/14	Not Sampled								
	10/7/14	Not Sampled								
	3/11/15	Not Sampled								
	9/10/15	Not Sampled								
	5/21/16	Not Sampled								
	9/20/16	Not Sampled								
	4/19/17	Not Sampled								
	9/16/17	Not Sampled								
	3/14/18	Not Sampled								
	10/30/18	Not Sampled								
	1/24/03	120.00	ND	ND	ND	ND				4.95
	4/3/03	ND	2.66	ND	ND	ND				4.67
GW1	7/30/03	148.00	1.28	2.12	3.37	31.40	ND	ND	ND	7.51
	12/10/03	ND	ND	ND	ND	ND				7.77
	4/9/04	ND	ND	ND	ND	ND				4.14
	9/7/04	ND	8.78	ND	ND	ND				7.79
	2/17/05	ND	13.70	ND	MD	ND				5.84
	5/12/05	ND	3.20	ND	ND	ND				
	10/25/2005*									
	3/15/06	ND	0.79	ND	ND	ND				4.00
	7/26/06	1540.00	684.00	ND	ND	8.77				7.95
	11/21/06	ND	2.24	ND	ND	ND				8.35
	3/13/07	ND	ND	ND	ND	ND				4.55
	6/28/07	1850.00	1090.00	ND	ND	3.59				7.33
	9/26/07	3720.00	954.00	217.00	87.00	467.00				9.72
	12/21/07	ND	1.68	ND	ND	ND				7.53
	3/25/08	ND	ND	ND	ND	ND				3.94
	6/30/08	ND	ND	ND	ND	ND				6.57
	9/23/08	ND	ND	ND	ND	ND		ND	ND	8.31
	12/4/08	ND	ND	ND	ND	ND				7.66
	3/19/09	ND	ND	ND	ND	ND				2.48
	6/25/09	ND	ND	ND	ND	ND				6.50
	12/3/09	ND	ND	ND	ND	ND				6.96
	3/31/10	ND	ND	ND	ND	ND				4.71
	6/24/10	ND	ND	ND	ND	ND				5.19
	11/12/10	ND	ND	ND	ND	ND				Bad Probe
	4/25/11	ND	ND	ND	ND	ND				3.01
	11/21/11	ND	ND	ND	ND	ND				8.12

Well ID	Date	TPH-G	Benzene	Toluene	Ethylbenzene	Xylene	MTBE	DRO	Heavy Oil	SWL
	5/8/12	ND	ND	ND	ND	ND				3.13
	11/16/12	ND	ND	ND	ND	ND				7.33
	5/2/13	ND	ND	ND	ND	ND				***
	10/1/13	ND	ND	ND	ND	ND				
	4/23/14	ND	ND	ND	ND	ND				5.23
	10/7/14	ND	ND	ND	ND	ND				9.41
	3/11/15	ND	ND	ND	ND	ND	14.00			5.27
	9/10/15	ND	ND	ND	ND	ND				8.85
	5/21/16	ND	ND	ND	ND	ND	9.10			4.78
	9/20/16	ND	ND	ND	ND	ND				8.44
	4/19/17	ND	ND	ND	ND	ND	ND			1.90
	9/16/17	ND	ND	ND	ND	ND	11.00			7.39
	3/14/18	ND	ND	ND	ND	ND	1.80			2.00
	10/30/18	ND	ND	ND	ND	ND	9.80			8.22
	1/24/03	100.00	ND	ND	ND	ND				5.09
	4/3/03	179.00	50.70	6.20	ND	ND				4.68
GW3	7/30/03	294.00	84.40	2.00	2.38	25.90	ND	ND	ND	7.65
	12/10/03	107.00	12.50	ND	ND	ND				7.91
	4/9/04	232.00	47.00	ND	ND	23.00				5.20
	9/7/04	642.00	375.00	ND	ND	ND				8.34
	2/17/05	ND	8.16	ND	ND	ND				6.19
	5/12/05	ND	7.25	ND	ND	ND				6.38
	10/25/2005*									
	3/15/06	119.00	3.12	ND	ND	ND				4.09
	7/26/06	200.00	62.20	ND	ND	ND				7.77
	11/21/06	ND	ND	ND	ND	ND				8.49
	3/13/07	ND	ND	ND	ND	ND				5.20
	6/28/07	ND	8.68	ND	ND	ND				7.25
	9/26/07	ND	ND	ND	ND	ND				9.74
	12/21/07	ND	1.04	ND	ND	ND				7.55
	3/25/08	ND	ND	ND	ND	ND				4.55
	6/30/08	ND	ND	ND	ND	ND				6.60
	9/23/08	ND	17.40	ND	ND	ND		276.00	ND	8.36
	12/4/08	ND	ND	ND	ND	ND				7.94
	3/19/09	ND	2.43	ND	ND	ND				2.25
	6/25/09	ND	2.69	ND	ND	ND				5.98
	12/3/09	ND	ND	ND	ND	ND				7.38
	3/31/10	ND	0.75	ND	ND	ND				5.19
	6/24/10	ND	ND	ND	ND	ND				5.52
	11/12/10	ND	ND	ND	ND	ND				Bad Probe
	4/25/11	ND	ND	ND	ND	ND				3.78
	11/21/11	ND	ND	ND	ND	ND				8.29
	5/8/12	ND	2.14	ND	ND	ND				3.43
	11/16/12	126.00	ND	ND	ND	ND				7.42
	5/2/13	ND	ND	ND	ND	ND				
	10/1/13	183.00	ND	ND	ND	ND				
	4/23/14	ND	1.78	ND	ND	1.03				5.40
	10/7/14	Not Sampled								
	3/11/15	Not Sampled								
	9/10/15	ND	ND	ND	ND	ND				
	5/21/16	ND	ND	ND	ND	ND	1.40			5.13
	9/20/16	ND	ND	ND	ND	ND				8.80
	4/19/17	ND	ND	ND	ND	ND	2.80			2.45
	9/16/17	ND	0.98	ND	ND	ND	20.00			7.58
	3/14/18	ND	0.98	ND	ND	ND	2.70			2.10
	10/30/18	ND	ND	ND	ND	ND	17.00			8.40
	1/24/03	ND	ND	ND	ND	ND				6.29
	4/3/03	ND	21.50	2.61	ND	ND				5.53
	7/30/03	108.00	2.07	ND	1.17	17.80	40.90	ND	ND	8.58
GW5	12/10/03	164.00	1.14	11.20	ND	15.40				8.89
	4/9/04	ND	3.05	ND	ND	3.38				
	9/7/04	329.00	172.00	ND	ND	ND				9.30
	2/17/05	1680.00	340.00	ND	ND	ND				7.55
	5/12/05	1200.00	416.00	ND	ND	ND				
	10/25/2005*									
	3/15/06	233.00	47.80	ND	ND	ND				5.53
	7/26/06	227.00	83.30	ND	ND	ND				8.95
	11/21/06	1380.00	535.00	ND	ND	ND				9.65
	3/13/07	1980.00	894.00	ND	ND	1.64				6.93
	6/28/07	197.00	59.80	ND	ND	ND				8.65
	9/26/07	284.00	106.00	ND	ND	ND				10.93
	12/21/07	245.00	86.60	ND	ND	ND				8.69
	3/25/08	ND	6.19	ND	ND	ND				5.63
	6/30/08	ND	2.17	ND	ND	ND				7.75
	9/23/08	ND	0.62	ND	ND	ND		ND	ND	9.51
	12/4/08	ND	ND	ND	ND	ND				8.96
	3/19/09	ND	ND	ND	ND	ND				4.28
	6/25/09	ND	ND	ND	ND	ND				6.41
	12/3/09	ND	ND	ND	ND	ND				8.62
	3/31/10	ND	ND	ND	ND	ND				6.20
	6/24/10	Not Sampled								6.82
	11/12/10	ND	ND	ND	ND	ND				Bad Probe
	4/25/11	ND	ND	ND	ND	ND				4.75
	11/21/11	ND	ND	ND	ND	ND				10.88
	5/8/12	ND	ND	ND	ND	ND				4.64
	11/16/12	141.00	ND	ND	ND	ND				8.48
	5/2/13	ND	ND	ND	ND	ND				***
	10/1/13	124.00	ND	ND	ND	ND				
	4/23/14	ND	ND	ND	ND	ND				6.70
	10/7/14	Not Sampled								
	3/11/15	Not Sampled								
	9/10/15	Not Sampled								
	5/21/16	Not Sampled								
	9/20/16	Not Sampled								
	4/19/17	Not Sampled								
	9/16/17	Not Sampled								
	3/14/18	Not Sampled								
	10/30/18	Not Sampled								

Well ID	Date	TPH-G	Benzene	Toluene	Ethylbenzene	Xylene	MTBE	DRO	Heavy Oil	SWL
	1/24/03	ND	ND	ND	ND	ND				7.52
	4/3/03	ND	ND	ND	ND	ND				6.43
GW7	7/30/03	ND	ND	ND	ND	4.06	ND	ND	ND	9.44
	12/10/03	ND	ND	ND	ND	ND				9.79
	4/9/04	ND	1.06	ND	ND	ND				7.65
	9/7/04	ND	ND	ND	ND	ND				10.10
	2/17/05	ND	4.26	ND	ND	ND				8.32
	5/12/05	ND	ND	ND	ND	ND				8.20
	10/25/2005*									
	3/15/06	ND	ND	ND	ND	ND				6.05
	7/26/06	ND	1.45	ND	ND	ND				9.41
	11/21/06	ND	ND	ND	ND	ND				10.30
	3/13/07	ND	0.55	ND	ND	ND				7.35
	6/28/07	ND	ND	ND	ND	ND				9.02
	9/26/07	ND	ND	ND	ND	ND				11.45
	12/21/07	ND	ND	ND	ND	ND				9.62
	3/25/08	ND	ND	ND	ND	ND				6.55
	6/30/08	ND	ND	ND	ND	ND				8.35
	9/23/08	ND	ND	ND	ND	ND		ND	ND	10.36
	12/4/08	ND	ND	ND	ND	ND				9.87
	3/19/09	ND	ND	ND	ND	ND				5.38
	6/25/09	ND	ND	ND	ND	ND				7.26
	12/3/09	ND	ND	ND	ND	ND				9.36
	3/31/10	ND	ND	ND	ND	ND				7.10
	6/24/10	Not Sampled								7.97
	11/12/10	Not Sampled								
	4/25/11	Not Sampled								
	11/21/11	Not Sampled								
	5/8/12	Not Sampled								
	11/16/12	Not Sampled								
	5/2/13	Not Sampled								
	10/1/13	Not Sampled								
	4/23/14	Not Sampled								
	10/7/14	Not Sampled								
	3/11/15	Not Sampled								
	9/10/15	Not Sampled								
	5/21/16	Not Sampled								
	9/20/16	Not Sampled								
	4/19/17	Not Sampled								
	9/16/17	Not Sampled								
	3/14/18	Not Sampled								
	10/30/18	Not Sampled								
	1/24/03	ND	ND	ND	ND	ND				7.97
	4/3/03	ND	ND	ND	ND	ND				6.80
GW9	7/30/03	ND	0.70	ND	1.12	8.94	ND	ND	578.00	9.68
	12/10/03	118.00	0.89	5.71	ND	8.96				9.98
	4/9/04	ND	ND	ND	ND	ND				7.24
	9/7/04	ND	ND	ND	ND	3.49				10.30
	2/17/05	ND	2.39	ND	ND	ND				8.48
	5/12/05	ND	ND	ND	ND	ND				8.69
	10/25/2005*									
	3/15/06	ND	ND	ND	ND	ND				6.77
	7/26/06	119.00	0.85	ND	ND	ND				***
	11/21/06	ND	ND	ND	ND	ND				***
	3/13/07	ND	ND	ND	ND	ND				***
	6/28/07	ND	ND	ND	ND	ND				***
	9/26/07	ND	ND	ND	ND	ND				***
	12/21/07	ND	ND	ND	ND	ND				***
	3/25/08	ND	ND	ND	ND	ND				***
	6/30/08	ND	ND	ND	ND	ND				***
	9/23/08	ND	ND	ND	ND	ND		ND	ND	***
	12/4/08	ND	ND	ND	ND	ND				***
	3/19/09	ND	ND	ND	ND	ND				***
	6/25/09	ND	ND	ND	ND	ND				***
	12/3/09	ND	ND	ND	ND	ND				***
	3/31/10	ND	ND	ND	ND	ND				***
	6/30/10	Not Sampled								
	11/12/10	Not Sampled								
	4/25/11	Not Sampled								
	11/21/11	Not Sampled								
	5/8/12	Not Sampled								
	11/16/12	Not Sampled								
	5/2/13	Not Sampled								
	10/1/13	Not Sampled								
	4/23/14	Not Sampled								
	10/7/14	Not Sampled								
	3/11/15	Not Sampled								
	9/10/15	Not Sampled								
	5/21/16	Not Sampled								
	9/20/16	Not Sampled								
	4/19/17	Not Sampled								
	9/16/17	Not Sampled								
	3/14/18	Not Sampled								
	10/30/18	Not Sampled								
Method A Std. (µg/L)		1000.0	5.0	40.0	30.0	20.0	N/A	1000.00	1000.00	

Shaded Cell Indicates Exceedence of WDOE Method A Cleanup Standards (WAC 173-340, December, 1993)

*No sample taken-free product in well

**Static Water Level Survey Only

***No SWL measurement-casing bent or probe malfunction

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Spokane
11922 East 1st Ave
Spokane, WA 99206
Tel: (509)924-9200

TestAmerica Job ID: 590-9822-1
Client Project/Site: Dusty/117

For:
Quantum Engineering
S. 2641 Silver Beach Lp.
Coeur d Alene, Idaho 83824

Attn: Jim DeSmet

Randee Arrington

Authorized for release by:
11/7/2018 2:50:37 PM

Randee Arrington, Project Manager II
(509)924-9200
randee.arrington@testamericainc.com

Table of Contents

Case Narrative

Client: Quantum Engineering
Project/Site: Dusty/117

TestAmerica Job ID: 590-9822-1

Job ID: 590-9822-1

Laboratory: TestAmerica Spokane

Narrative

Receipt
The samples were received on 10/31/2018 12:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 6.3º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: Quantum Engineering
Project/Site: Dusty/117

TestAmerica Job ID: 590-9822-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-9822-1	MW2	Water	10/30/18 00:00	10/31/18 12:30
590-9822-2	MW3	Water	10/30/18 00:00	10/31/18 12:30
590-9822-3	MW4	Water	10/30/18 00:00	10/31/18 12:30
590-9822-4	MW5	Water	10/30/18 00:00	10/31/18 12:30
590-9822-5	GW1	Water	10/30/18 00:00	10/31/18 12:30
590-9822-6	GW3	Water	10/30/18 00:00	10/31/18 12:30

Client: Quantum Engineering
Project/Site: Dusty/117

TestAmerica Job ID: 590-9822-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample ID: MW2

Date Collected: 10/30/18 00:00
Date Received: 10/31/18 12:30

Lab Sample ID: 590-9822-1
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**12**		0.40		ug/L			11/02/18 14:37	1
Ethylbenzene	**58**		1.0		ug/L			11/02/18 14:37	1
m,p-Xylene	**2.2**		2.0		ug/L			11/02/18 14:37	1
Methyl tert-butyl ether	**3.5**		1.0		ug/L			11/02/18 14:37	1
o-Xylene	ND		1.0		ug/L			11/02/18 14:37	1
Toluene	**1.0**		1.0		ug/L			11/02/18 14:37	1
Xylenes, Total	ND		3.0		ug/L			11/02/18 14:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 125*		*11/02/18 14:37*	*1*
4-Bromofluorobenzene (Surr)	*92*		*69 - 120*		*11/02/18 14:37*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 120*		*11/02/18 14:37*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*11/02/18 14:37*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	**580**		150		ug/L			11/02/18 14:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*68.7 - 141*		*11/02/18 14:37*	*1*

Client Sample ID: MW3

Date Collected: 10/30/18 00:00
Date Received: 10/31/18 12:30

Lab Sample ID: 590-9822-2
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.48**		0.40		ug/L			11/02/18 14:58	1
Ethylbenzene	ND		1.0		ug/L			11/02/18 14:58	1
m,p-Xylene	ND		2.0		ug/L			11/02/18 14:58	1
Methyl tert-butyl ether	**36**		1.0		ug/L			11/02/18 14:58	1
o-Xylene	ND		1.0		ug/L			11/02/18 14:58	1
Toluene	ND		1.0		ug/L			11/02/18 14:58	1
Xylenes, Total	ND		3.0		ug/L			11/02/18 14:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 125*		*11/02/18 14:58*	*1*
4-Bromofluorobenzene (Surr)	*96*		*69 - 120*		*11/02/18 14:58*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*		*11/02/18 14:58*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*11/02/18 14:58*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		150		ug/L			11/02/18 14:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*68.7 - 141*		*11/02/18 14:58*	*1*

Client Sample ID: MW4

Date Collected: 10/30/18 00:00
Date Received: 10/31/18 12:30

Lab Sample ID: 590-9822-3
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ug/L			11/02/18 15:20	1
Ethylbenzene	ND		1.0		ug/L			11/02/18 15:20	1
m,p-Xylene	ND		2.0		ug/L			11/02/18 15:20	1
Methyl tert-butyl ether	**8.9**		1.0		ug/L			11/02/18 15:20	1
o-Xylene	ND		1.0		ug/L			11/02/18 15:20	1
Toluene	ND		1.0		ug/L			11/02/18 15:20	1
Xylenes, Total	ND		3.0		ug/L			11/02/18 15:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 125*		*11/02/18 15:20*	*1*
4-Bromofluorobenzene (Surr)	*96*		*69 - 120*		*11/02/18 15:20*	*1*
Dibromofluoromethane (Surr)	*106*		*80 - 120*		*11/02/18 15:20*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*11/02/18 15:20*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		150		ug/L			11/02/18 15:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*68.7 - 141*		*11/02/18 15:20*	*1*

Client Sample ID: MW5

Date Collected: 10/30/18 00:00
Date Received: 10/31/18 12:30

Lab Sample ID: 590-9822-4
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ug/L			11/02/18 16:02	1
Ethylbenzene	ND		1.0		ug/L			11/02/18 16:02	1
m,p-Xylene	ND		2.0		ug/L			11/02/18 16:02	1
Methyl tert-butyl ether	**3.6**		1.0		ug/L			11/02/18 16:02	1
o-Xylene	ND		1.0		ug/L			11/02/18 16:02	1
Toluene	ND		1.0		ug/L			11/02/18 16:02	1
Xylenes, Total	ND		3.0		ug/L			11/02/18 16:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 125*		*11/02/18 16:02*	*1*
4-Bromofluorobenzene (Surr)	*97*		*69 - 120*		*11/02/18 16:02*	*1*
Dibromofluoromethane (Surr)	*106*		*80 - 120*		*11/02/18 16:02*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*11/02/18 16:02*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		150		ug/L			11/02/18 16:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*68.7 - 141*		*11/02/18 16:02*	*1*

Client Sample ID: GW1

Date Collected: 10/30/18 00:00
Date Received: 10/31/18 12:30

Lab Sample ID: 590-9822-5
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ug/L			11/02/18 16:24	1
Ethylbenzene	ND		1.0		ug/L			11/02/18 16:24	1
m,p-Xylene	ND		2.0		ug/L			11/02/18 16:24	1
Methyl tert-butyl ether	**9.8**		1.0		ug/L			11/02/18 16:24	1
o-Xylene	ND		1.0		ug/L			11/02/18 16:24	1
Toluene	ND		1.0		ug/L			11/02/18 16:24	1
Xylenes, Total	ND		3.0		ug/L			11/02/18 16:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 125*		*11/02/18 16:24*	*1*
4-Bromofluorobenzene (Surr)	*96*		*69 - 120*		*11/02/18 16:24*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 120*		*11/02/18 16:24*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*11/02/18 16:24*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		150		ug/L			11/02/18 16:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*68.7 - 141*		*11/02/18 16:24*	*1*

Client Sample ID: GW3

Date Collected: 10/30/18 00:00
Date Received: 10/31/18 12:30

Lab Sample ID: 590-9822-6
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ug/L			11/02/18 16:45	1
Ethylbenzene	ND		1.0		ug/L			11/02/18 16:45	1
m,p-Xylene	ND		2.0		ug/L			11/02/18 16:45	1
Methyl tert-butyl ether	**17**		1.0		ug/L			11/02/18 16:45	1
o-Xylene	ND		1.0		ug/L			11/02/18 16:45	1
Toluene	ND		1.0		ug/L			11/02/18 16:45	1
Xylenes, Total	ND		3.0		ug/L			11/02/18 16:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 125*		*11/02/18 16:45*	*1*
4-Bromofluorobenzene (Surr)	*98*		*69 - 120*		*11/02/18 16:45*	*1*
Dibromofluoromethane (Surr)	*108*		*80 - 120*		*11/02/18 16:45*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*11/02/18 16:45*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		150		ug/L			11/02/18 16:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*68.7 - 141*		*11/02/18 16:45*	*1*

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 590-19752/5
Matrix: Water
Analysis Batch: 19752

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ug/L			11/02/18 11:57	1
Ethylbenzene	ND		1.0		ug/L			11/02/18 11:57	1
m,p-Xylene	ND		2.0		ug/L			11/02/18 11:57	1
Methyl tert-butyl ether	ND		1.0		ug/L			11/02/18 11:57	1
o-Xylene	ND		1.0		ug/L			11/02/18 11:57	1
Toluene	ND		1.0		ug/L			11/02/18 11:57	1
Xylenes, Total	ND		3.0		ug/L			11/02/18 11:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 125*		*11/02/18 11:57*	*1*
4-Bromofluorobenzene (Surr)	*100*		*69 - 120*		*11/02/18 11:57*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*		*11/02/18 11:57*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*11/02/18 11:57*	*1*

Lab Sample ID: LCS 590-19752/1003
Matrix: Water
Analysis Batch: 19752

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene			10.0	11.3		ug/L		113	80 - 120		
Ethylbenzene			10.0	11.4		ug/L		114	80 - 120		
m,p-Xylene			10.0	11.6		ug/L		116	80 - 120		
Methyl tert-butyl ether			10.0	11.5		ug/L		115	71 - 128		
o-Xylene			10.0	11.5		ug/L		115	80 - 120		
Toluene			10.0	11.2		ug/L		112	80 - 123		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 125*
4-Bromofluorobenzene (Surr)	*97*		*69 - 120*
Dibromofluoromethane (Surr)	*101*		*80 - 120*
Toluene-d8 (Surr)	*98*		*80 - 120*

Lab Sample ID: LCSD 590-19752/6
Matrix: Water
Analysis Batch: 19752

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene			10.0	11.1		ug/L		111	80 - 120	2	25
Ethylbenzene			10.0	11.3		ug/L		113	80 - 120	2	25
m,p-Xylene			10.0	11.3		ug/L		113	80 - 120	2	25
Methyl tert-butyl ether			10.0	11.7		ug/L		117	71 - 128	3	12
o-Xylene			10.0	11.1		ug/L		111	80 - 120	3	25
Toluene			10.0	10.8		ug/L		108	80 - 123	4	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 125*
4-Bromofluorobenzene (Surr)	*95*		*69 - 120*

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 590-19752/6
Matrix: Water
Analysis Batch: 19752

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*104*		*80 - 120*
Toluene-d8 (Surr)	*99*		*80 - 120*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Lab Sample ID: MB 590-19753/5
Matrix: Water
Analysis Batch: 19753

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		150		ug/L			11/02/18 11:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*68.7 - 141*		*11/02/18 11:57*	*1*

Lab Sample ID: LCS 590-19753/1004
Matrix: Water
Analysis Batch: 19753

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Gasoline			1000	1080		ug/L		108	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*93*		*68.7 - 141*

Lab Sample ID: LCSD 590-19753/1015
Matrix: Water
Analysis Batch: 19753

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline			1000	1080		ug/L		108	80 - 120	0	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*90*		*68.7 - 141*

Lab Chronicle

Client: Quantum Engineering
Project/Site: Dusty/117

TestAmerica Job ID: 590-9822-1

Client Sample ID: MW2
Date Collected: 10/30/18 00:00
Date Received: 10/31/18 12:30

Lab Sample ID: 590-9822-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	19752	11/02/18 14:37	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	43 mL	43 mL	19753	11/02/18 14:37	MRS	TAL SPK

Client Sample ID: MW3
Date Collected: 10/30/18 00:00
Date Received: 10/31/18 12:30

Lab Sample ID: 590-9822-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	19752	11/02/18 14:58	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	43 mL	43 mL	19753	11/02/18 14:58	MRS	TAL SPK

Client Sample ID: MW4
Date Collected: 10/30/18 00:00
Date Received: 10/31/18 12:30

Lab Sample ID: 590-9822-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	19752	11/02/18 15:20	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	43 mL	43 mL	19753	11/02/18 15:20	MRS	TAL SPK

Client Sample ID: MW5
Date Collected: 10/30/18 00:00
Date Received: 10/31/18 12:30

Lab Sample ID: 590-9822-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	19752	11/02/18 16:02	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	43 mL	43 mL	19753	11/02/18 16:02	MRS	TAL SPK

Client Sample ID: GW1
Date Collected: 10/30/18 00:00
Date Received: 10/31/18 12:30

Lab Sample ID: 590-9822-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	19752	11/02/18 16:24	MRS	TAL SPK
Total/NA	Analysis	NWTPH-Gx		1	43 mL	43 mL	19753	11/02/18 16:24	MRS	TAL SPK

Client Sample ID: GW3
Date Collected: 10/30/18 00:00
Date Received: 10/31/18 12:30

Lab Sample ID: 590-9822-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	19752	11/02/18 16:45	MRS	TAL SPK

Lab Chronicle

Client: Quantum Engineering
Project/Site: Dusty/117

TestAmerica Job ID: 590-9822-1

Client Sample ID: GW3
Date Collected: 10/30/18 00:00
Date Received: 10/31/18 12:30

Lab Sample ID: 590-9822-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	NWTPH-Gx		1	43 mL	43 mL	19753	11/02/18 16:45	MRS	TAL SPK

Laboratory References:

TAL SPK = TestAmerica Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

Accreditation/Certification Summary

Client: Quantum Engineering
Project/Site: Dusty/117

TestAmerica Job ID: 590-9822-1

Laboratory: TestAmerica Spokane

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Washington	State Program	10	C569	01-06-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte

Method Summary

Client: Quantum Engineering
Project/Site: Dusty/117

TestAmerica Job ID: 590-9822-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL SPK
NWTPH-Gx	Northwest - Volatile Petroleum Products (GC/MS)	NWTPH	TAL SPK
5030C	Purge and Trap	SW846	TAL SPK

Protocol References:

NWTPH = Northwest Total Petroleum Hydrocarbon

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SPK = TestAmerica Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11922 E. First Ave., Spokane WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave., Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT:

INVOICE TO: Quantum

REPORT TO: Quantum
ADDRESS:

PHONE: 208-664-5200 FAX:

P.O. NUMBER:

PROJECT NAME: Dusty
PROJECT NUMBER: 117
SAMPLED BY: JD

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [10] STD. | 7 | 5 | 4 | 3 | 2 | 1 | <1

Petroleum Hydrocarbon Analyses: [5] STD. | 4 | 3 | 2 | 1 | <1

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE	REQUESTED ANALYSES: NWTPH	REQUESTED ANALYSES: GRO	REQUESTED ANALYSES: BTEX	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1	MW2	10/30/18					W	2	4°C HCl	
2	MW3									
3	MW4									
4	MW5									
5	GW1									
6	GW3									
7										
8										
9										
10										

RELEASED BY: [signature] DATE: 10/31/18
PRINT NAME: Jim Resinet FIRM: Quantum TIME: 12:30 P

RECEIVED BY: Angela Kral DATE: 10/31/18
PRINT NAME: Sheila Kratz FIRM: TA SPO TIME: 1230

RELEASED BY: DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

TEMP: 6.3 IR only

PAGE 1 OF 1

590-9822 Chain of Custody

Login Sample Receipt Checklist

Client: Quantum Engineering

Job Number: 590-9822-1

Login Number: 9822
List Number: 1
Creator: Kratz, Sheila J

List Source: TestAmerica Spokane

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	No analysis requiring residual chlorine check assigned.