Groundwater Monitoring Report Quarterly Monitoring 2007 Support Terminal Operating Partnership (STOP), LP Vancouver Terminal Vancouver, Washington

> Prepared for: Cascadia Law Group

> > January 28, 2008 1126-02



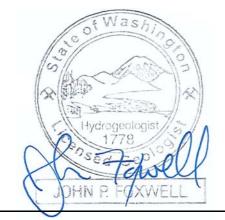


Groundwater Monitoring Report Quarterly Monitoring 2007 Support Terminal Operating Partnership (STOP), LP Vancouver Terminal Vancouver, Washington

> Prepared for: Cascadia Law

January 28, 2007 1126-02

Amanda L. Spencer Principal Hydrogeologist, Ash Creek Associates



John P. Foxwell, L.H.G. Senior Associate, Ash Creek Associates

9615 Southwest Allen Boulevard, Suite 106 Portland, Oregon 97005-4814 (503) 924-4704 Portland (360) 567-3977 Vancouver (503) 924-4707 Fax www.ashcreekassociates.com

GROUNDWATER MONITORING REPORT QUARTERLY MONITORING 2007

Support	Terminal Operating Partnership (Vancouver, Was	
Site Name and Address:	11 1 2	rtnership (STOP), LP Vancouver Terminal
	5420 Fruit Valley Road	
	Vancouver, WA 98660	
Owner (Contact):	NuStar Energy, LP	
	2330 North Loop 1604 West	
	San Antonio, Texas 78248	
	Joseph A. Aldridge	(210) 918-2723
Consultant (Contact):	Ash Creek Associates, Inc.	
	9615 SW Allen Boulevard, Suite	e 106
	Portland, Oregon 97005	
	John Foxwell	(503) 924-4704 x 115

Quarterly Groundwater Monitoring Summary

A one-year quarterly groundwater monitoring program was initiated at the STOP, LP Vancouver Terminal (the Facility) in the second guarter of 2007. Second, third, and fourth guarter monitoring events were completed by Ash Creek Associates on May 25, August 24, and November 26, 2007, respectively. Additionally, the location and elevations of each well were surveyed by Statewide Land Surveying in October 2007. A site location map is provided as Figure 1. A site plan showing the facility details is provided as Figure 2.

Groundwater Sampling Methods

Four wells are present at the Facility (MW-1 through MW-4). Each well was purged and groundwater samples were collected using a new disposable bailer. Water quality parameters (pH, temperature, specific conductance, and dissolved oxygen) were measured after each casing volume removed and were noted on field sampling sheets. Copies of the field sampling sheets are included in Appendix A.

Groundwater Elevations

Depth to groundwater was measured to the nearest 0.01 foot using an electric interface probe (Table 1). Groundwater depths ranged from 14.92 to 28.35, 18.67 to 32.12, and 17.91 to 31.40 feet below the top of casing for the May, August, and November events, respectively. Figures 3 through 5 present the estimated groundwater gradient for the second, third, and fourth guarter measurements, respectively. The groundwater elevation data suggest a southerly groundwater flow direction.



Groundwater Analyses

Laboratory analyses were completed by TestAmerica in Beaverton, Oregon. A copy of the laboratory report is included in Appendix B. Tables 2 and 3 present the analytical results from the three sampling events, as well as historical analytical results collected by others. Figure 6 illustrates the distribution of total petroleum hydrocarbons as gasoline (TPHg) and Figure 7 illustrates the distribution of benzene, toluene, ethylbenzene, and total xylenes (BTEX) and MTBE observed in groundwater samples during the second, third, and fourth quarter 2007 events.

Total Petroleum Hydrocarbons. Groundwater samples were analyzed for TPHg by method NW-TPHgx, and diesel- and oil-range petroleum hydrocarbons (TPHd and TPHho, respectively) by method NW-TPHdx with silica gel cleanup. TPHg was detected in wells MW-2 (May and August 2007 events) and MW-3 (May 3007 event only). TPHd and TPHho were not detected (Table 2).

BTEX and Fuel Oxygenates. Groundwater samples were analyzed for BTEX and fuel oxygenates by U.S. Environmental Protection Agency (EPA) Method 8260B. BTEX compounds or fuel oxygenates were not detected in wells MW-1 and MW-4 during the three events. As can be seen on Table 3, most of the constituent concentrations are below the method reporting limits (MRLs). The only results that exceeded the Washington State Department of Ecology (DOE) Model Toxics Control Act (MTCA) Method A Cleanup level was benzene in the May 2007 groundwater sample from well MW-2 (71 micrograms per liter [μ g/L]), and the methyl tert-butyl ether (MTBE) concentration in the groundwater sample from well MW-2 during the August and November 2007 events (59 and 83 μ g/L, respectively). Benzene was non-detect in well MW-2 during the past two sampling events.

Quality Assurance/Quality Control (QA/QC) Results Summary:

- One trip blank and one duplicate sample (collected from well MW-2 during the May 2007 event) were collected and submitted to the laboratory.
- All samples were analyzed within holding times.
- No compounds were detected above laboratory MRLs in the trip or method blanks.
- For the duplicate sample collected from well MW-2 (May 2007 event), the relative percent difference (RPD) was less than 10 percent.

The evaluation of the field and laboratory QC results indicates that the analytical data are of sufficient quality and are considered complete.



Attachments

Tables

Table 1	Groundwater Elevation Data: Quarterly Monitoring 2007
Table 2	Groundwater Analytical Results: Total Petroleum Hydrocarbons
Table 3	Groundwater Analytical Results: BTEX and Fuel Oxygenates

Figures

Figure 1	Site Location Map
Figure 2	Site Plan
Figure 3	Relative Groundwater Elevations – May 2007
Figure 4	Relative Groundwater Elevations – August 2007
Figure 5	Relative Groundwater Elevations – November 2007
Figure 6	Total Petroleum Hydrocarbons – Quarterly Monitoring 2007
Figure 7	BTEX and Fuel Oxygenates – Quarterly Monitoring 2007

Appendices

Appendix A	Field Sampling Sheets
Appendix B	Laboratory Analytical Reports



Table 1Groundwater Elevation Data:Quarterly Monitoring 2007Support Terminal Operating Partnership (STOP), LP Vancouver TerminalVancouver, Washington

Well Number	Top of Casing Elevation (feet above MSL) ¹	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
MW-1	26.66	05/25/07	14.92	11.74
MW-1	26.66	08/24/07	18.67	7.99
MW-1	26.66	11/26/07	17.91	8.75
MW-2	38.21	05/25/07	26.46	11.75
MW-2	38.21	08/24/07	30.17	8.04
MW-2	38.21	11/26/07	29.42	8.79
MW-3	39.11	05/25/07	27.17	11.94
MW-3	39.11	08/24/07	31.04	8.07
MW-3	39.11	11/06/07	30.36	8.75
MW-4	40.17	05/25/07	28.35	11.82
MW-4	40.17	08/24/07	32.12	8.05
MW-4	40.17	11/06/07	31.40	8.77

Notes:

1. Survey elevations determined by Statewide Land Surveying, October, 2007.

2. feet above MSL = Feet above mean sea level

3. feet BTOC = Feet below top of casing

Table 2 Groundwater Analytical Results: Total Petroleum Hydrocarbons Support Terminal Operating Partnership (STOP), LP Vancouver Terminal Vancouver, Washington

Well Number	Sample Date	TPHg	TPHd	TPHho
		Cond	centration in μ g/L	(ppb)
MW-1	05/25/07	<80	<238	<476
MW-1	08/24/07	<100	<238	<476
MW-1	11/26/07	<80	<236	<472
MW-2	05/25/07	439	<238	<476
MW-2	08/24/07	102	<238	<476
MW-2	11/26/07	<80	<236	<472
MW-3	05/25/07	361	<238	<476
MW-3	08/24/07	<100	<238	<476
MW-3	11/26/07	<80	<236	<472
MW-4	05/25/07	<80	<238	<476
MW-4	08/24/07	<100	<238	<476
MW-4	11/26/07	<80	<236	<472
Washington DOE MTCA Me	thod A cleanup level	800 7.	500	500

Notes:

1. TPHg = Total petroleum hydrocarbons in gasoline carbon range by NW-TPHgx method

2. TPHd = Total petroleum hydrocarbons in diesel carbon range by NW-TPHdx method with silica gel cleanup

3. TPHho = Total petroleum hydrocarbons ion heavy oil carbon range NW-TPHdx method with silica gel cleanup

4. Boldface values represent detected concentrations of listed analyte.

5. < = Not detected at or above the specified laboratory method reporting limit (MRL)

6. µg/L (ppb) = micrograms per liter (parts per billion)

7. TPHg cleanup level dependent on presence of benzene in groundwater. Cleanup level = $800 \mu g/L$ if benzene is present and 1,000 $\mu g/L$ if benzene is not present.

8. Washington DOE MTCA Method A cleanup level = Washington Department of Ecology Model Toxics Control Act Method A cleanup level

Table 3 Groundwater Analytical Results: BTEX and Fuel Oxygenates Support Terminal Operating Partnership (STOP), LP Vancouver Terminal Vancouver, Washington

										Conc	entration in μ g/L	(ppb)						
Well Number	Sample Date	Benzene	Toluene	Ethylbenzene	Xylenes	1,2- Dibromoethane	1,2-Dichloroethane	Ethanol	tert-Butyl alcohol	Ethyl tert-Butyl Ether (ETBE)	Diisopropyl Ether (DIPE)	Methyl tert-butyl ether (MTBE)	Tert-Amyl Methyl Ether (TAME)	Naphthalene	1,2,4- Trimethylbenzene	1,3,5- Trimethylbenzene	Isopropylbenzene	n-Propylbenzene
	05/19/03	<1.0	<1.0	<1.0	<2.0							<1.0		<2.0	<1.0	<1.0	<2.0	<1.0
MW-1	05/25/07	<0.20	<0.50	<0.50	<1.00	< 0.50	<0.50	<150	<25.0	<1.00	<1.00	<2.00	<1.00	<2.00	<1.00	< 0.50	<2.00	<0.50
	08/24/07	<1.0	<2.0	<2.0	<6.0	< 0.50	<0.50	<100	<20	<0.50	< 0.50	<0.50	< 0.50	<5.0	<1.0	<1.0	<2.0	<1.0
	11/26/07	<1.0	<2.0	<2.0	<6.0	<0.50	<0.50	<100	<20	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<1.0	<2.0	<1.0
	05/19/03	534	9.75	194	876							77.6		15	160	62.4	9.9	15.8
MW-2	05/25/07	71.0	1.14	36.1	45.3	< 0.50	<0.50	<150	<25.0	<1.00	<1.00	18.2	<1.00	<2.00	40.0	33.5	3.00	2.49
	08/24/07	<1.0	<2.0	<2.0	<6.0	< 0.50	<0.50	<100	<20	<0.50	<0.50	59	< 0.50	<5.0	<1.0	<1.0	3.20	<1.0
	11/26/07	<1.0	<2.0	<2.0	<6.0	<0.50	<0.50	<100	<20	<0.50	<0.50	83	<0.50	<5.0	<1.0	<1.0	<2.0	<1.0
	05/19/03	90.8	9.65	338	538.2							3.7		30.8	315	89.5	19.4	62.3
MW-3	05/25/07	< 0.50	<0.50	13.2	14.5	<0.50	<0.50	<150	<25.0	<1.00	<1.00	<2.00	<1.00	<2.00	10.7	3.48	5.32	9.30
	08/24/07	<1.0	<2.0	<2.0	<6.0	< 0.50	<0.50	<100	<20	<0.50	<0.50	<0.50	< 0.50	<5.0	<1.0	<1.0	<2.0	<1.0
	11/26/07	1.1	<2.0	6.6	<6.0	<0.50	<0.50	<100	<20	<0.50	<0.50	6.9	<0.50	<5.0	<1.0	<1.0	3.1	1.20
	05/19/03	<1.0	<1.0	<1.0	<2.0							<1.0		<2.0	<1.0	<1.0	<2.0	<1.0
MW-4	05/25/07	<0.20	<0.50	<0.50	<1.00	<0.50	<0.50	<150	<25.0	<1.00	<1.00	<2.00	<1.00	<2.00	<1.00	< 0.50	<2.00	<0.50
	08/24/07	<1.0	<2.0	<2.0	<6.0	<0.50	<0.50	<100	<20	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<1.0	<2.0	<1.0
	11/26/07	<1.0	<2.0	<2.0	<6.0	<0.50	<0.50	<100	<20	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<1.0	<2.0	<1.0
Washington DOE MTCA	A Method A cleanup level	5.0	1,000	700	1,000	NA	5	NA	NA	NA	NA	20	NA	160	NA	NA	NA	NA

Notes:

1. BTEX (Benzene, toluene, ethylbenzene, and xylenes) and fuel oxygenates by EPA Method 8260B. Results reported in micrograms per liter.

2. µg/L (ppb) = Micrograms per liter (parts per billion)

3. Boldface values represent detected concentrations of listed analyte.

4. -- = Not sampled or not analyzed

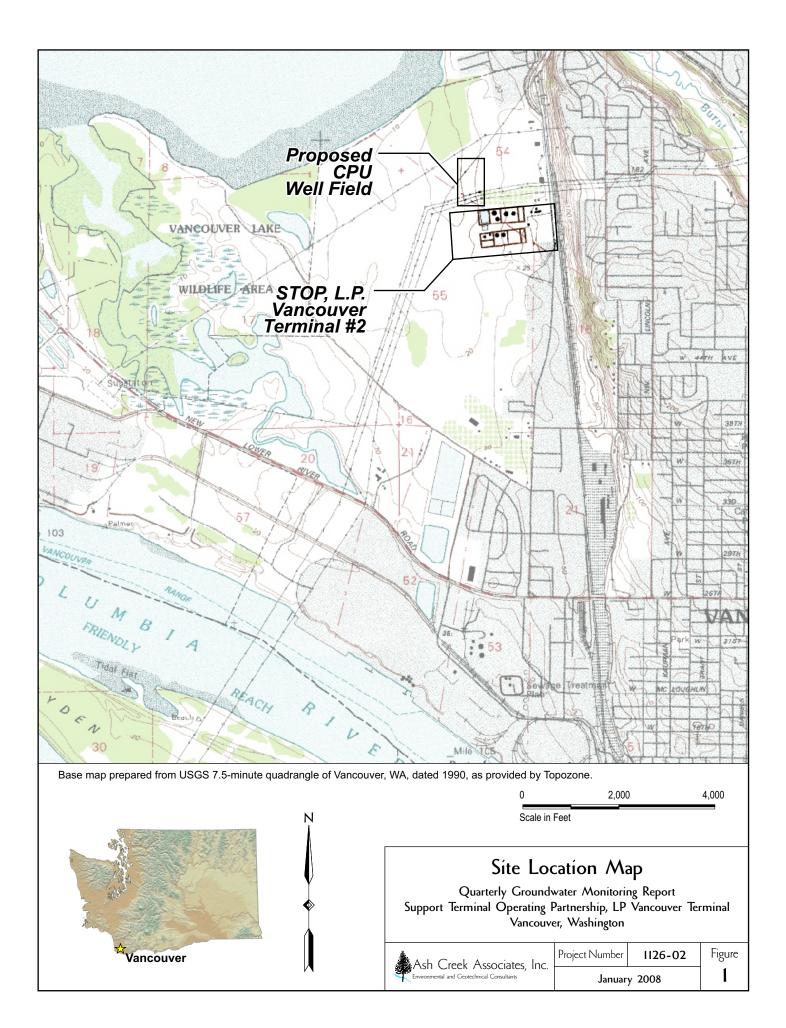
5. < = Not detected at or above the specified laboratory method reporting limit (MRL)

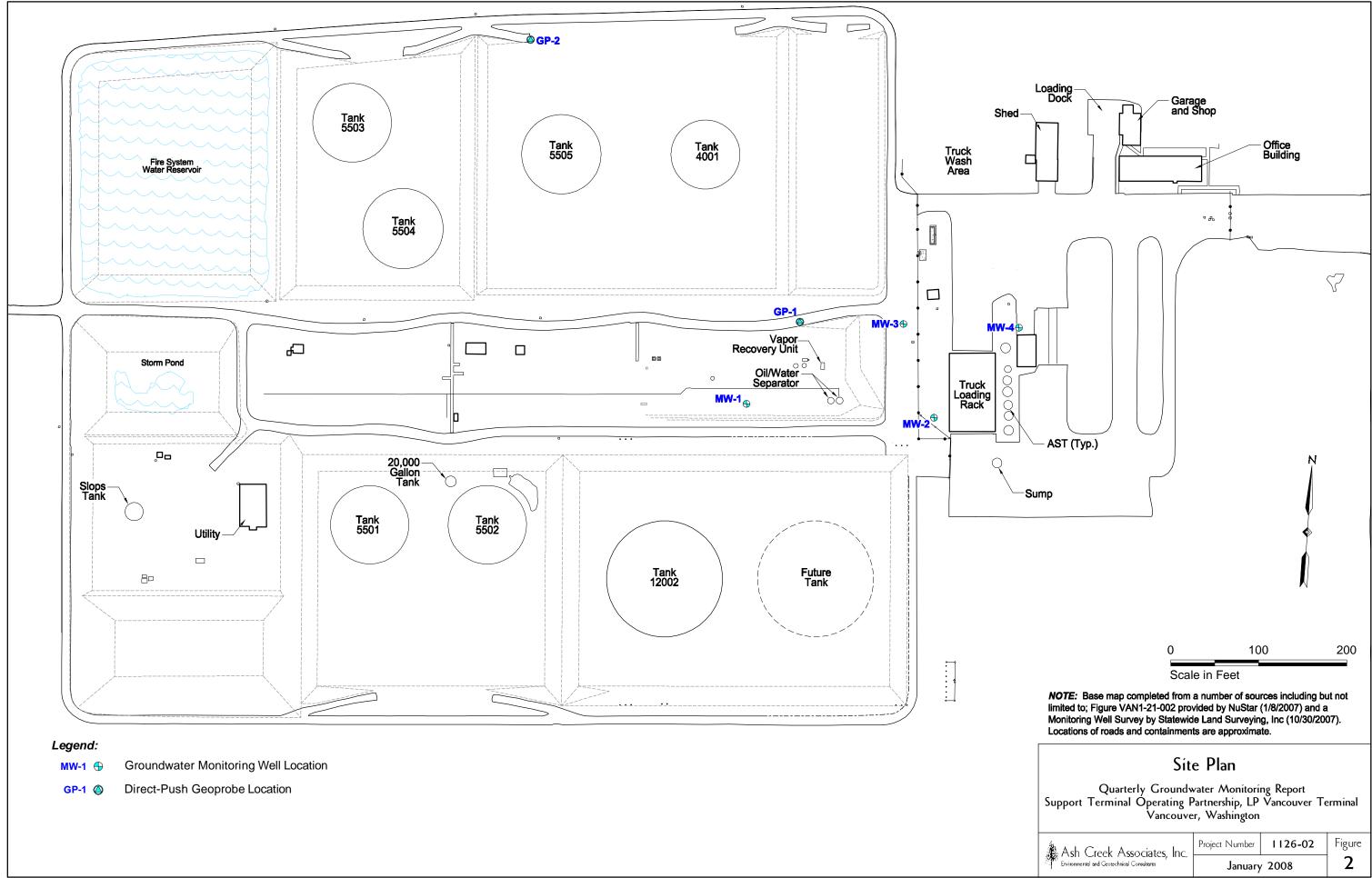
6. Detected concentration is estimated based on presence of analyte in blank.

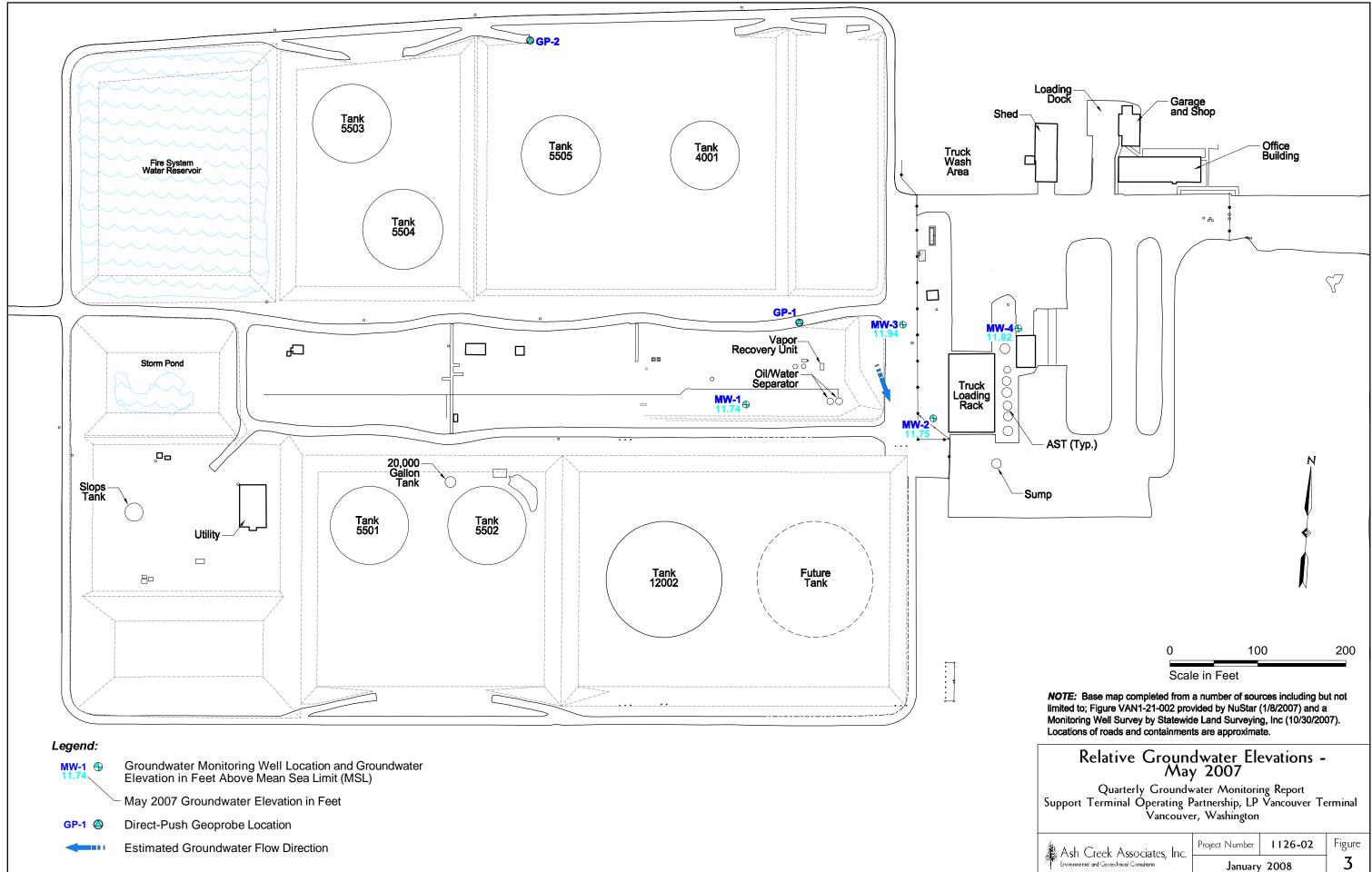
7. NA = Cleanup level not available

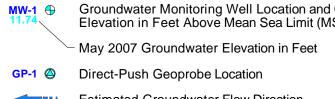
8. Shaded values represent detected concentrations that exceed MTCA Method A cleanup level.

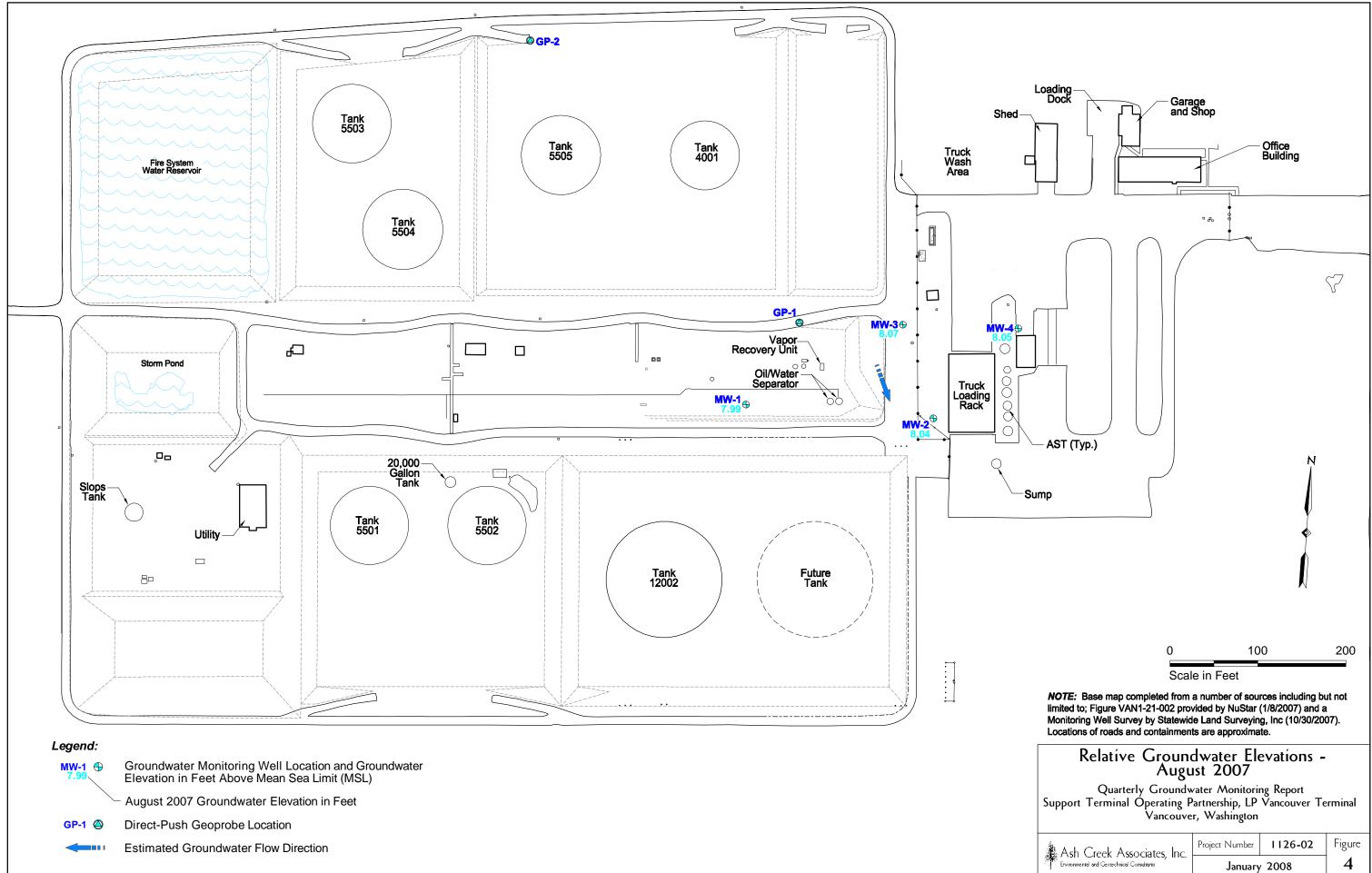
9. Washington DOE MTCA Method A cleanup level = Washington Department of Ecology Model Toxics Control Act Method A cleanup level

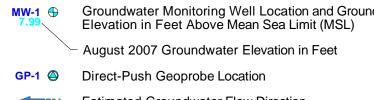


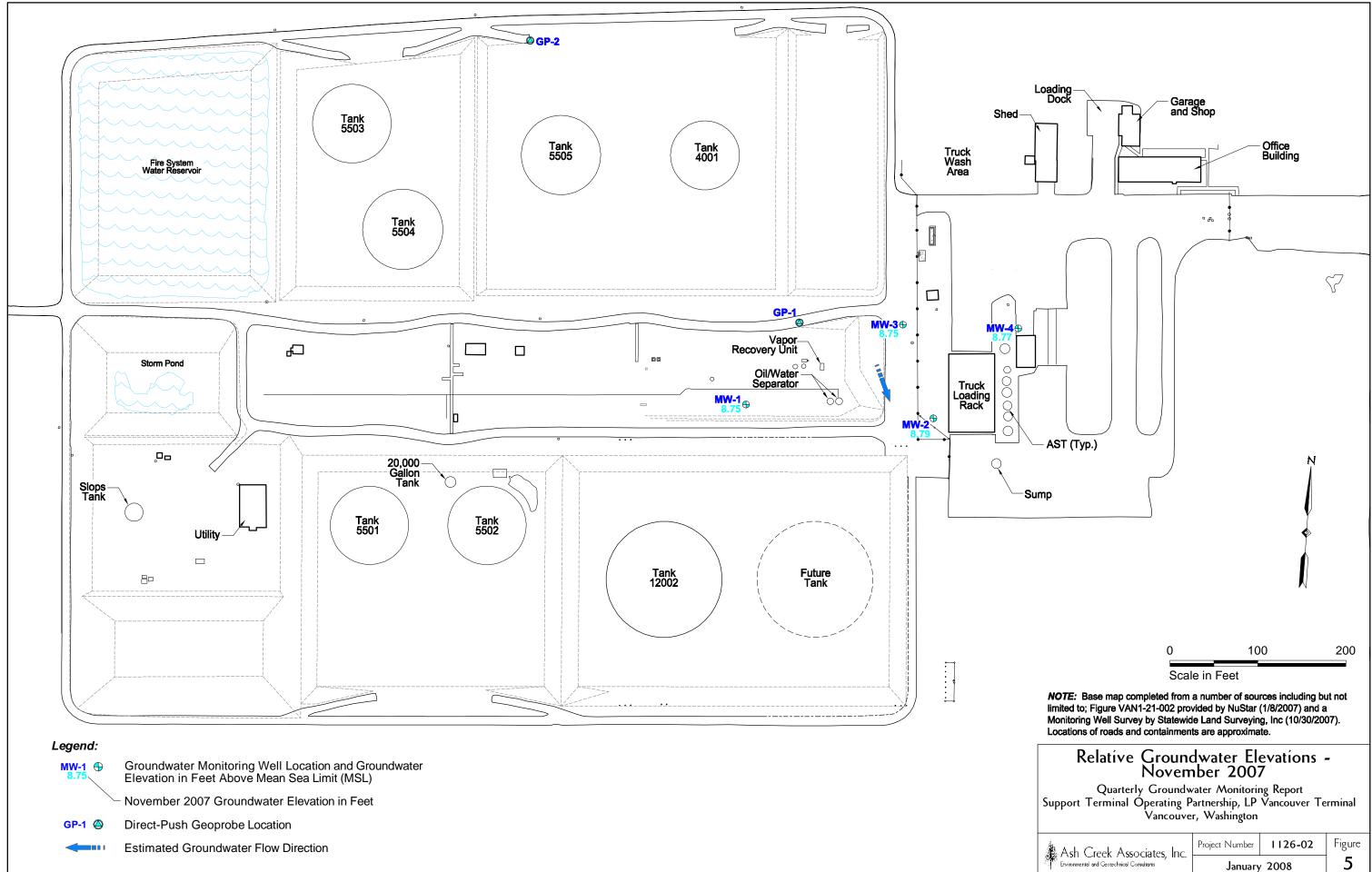


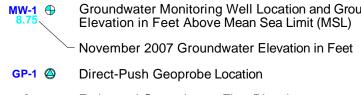


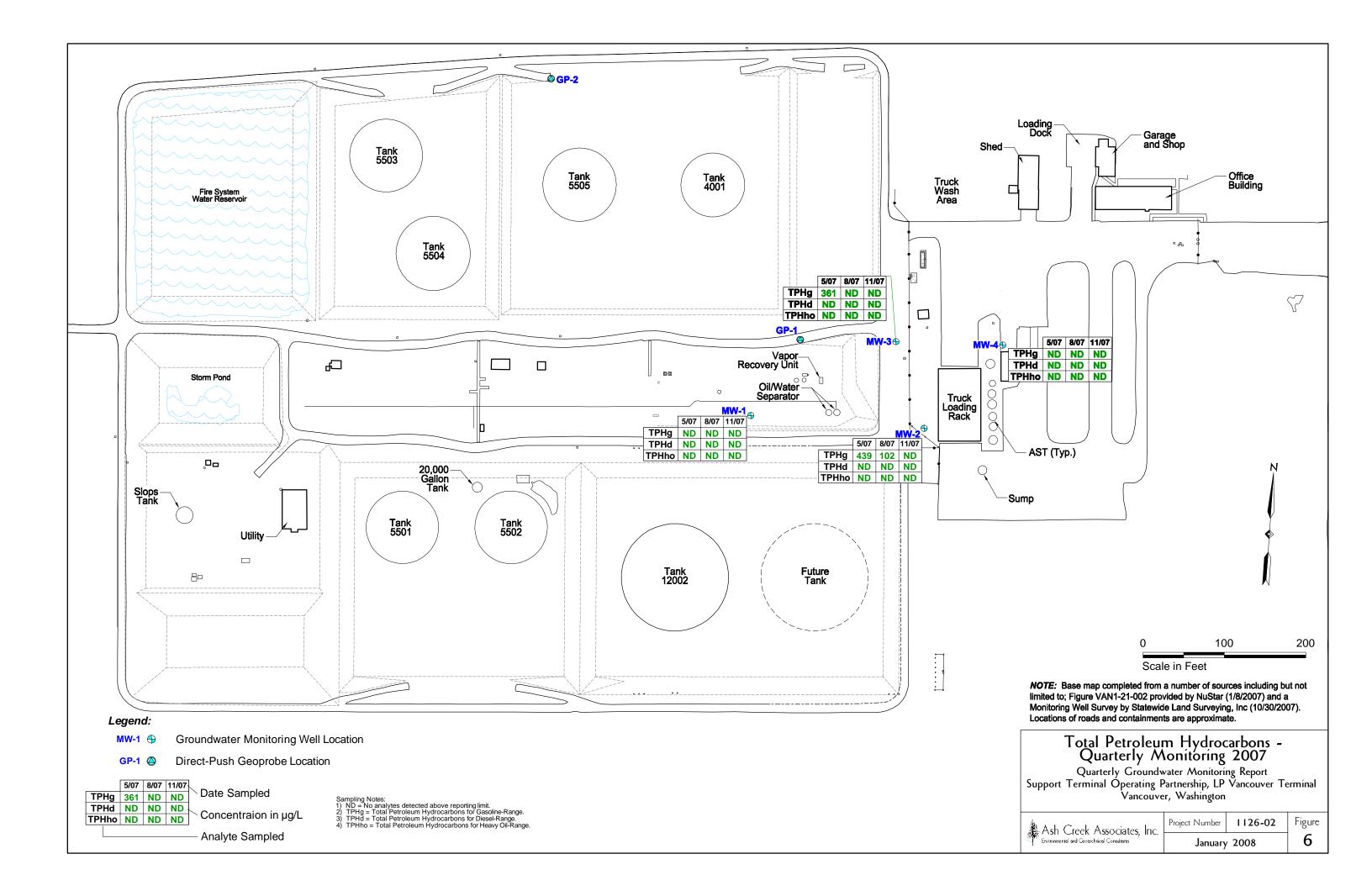


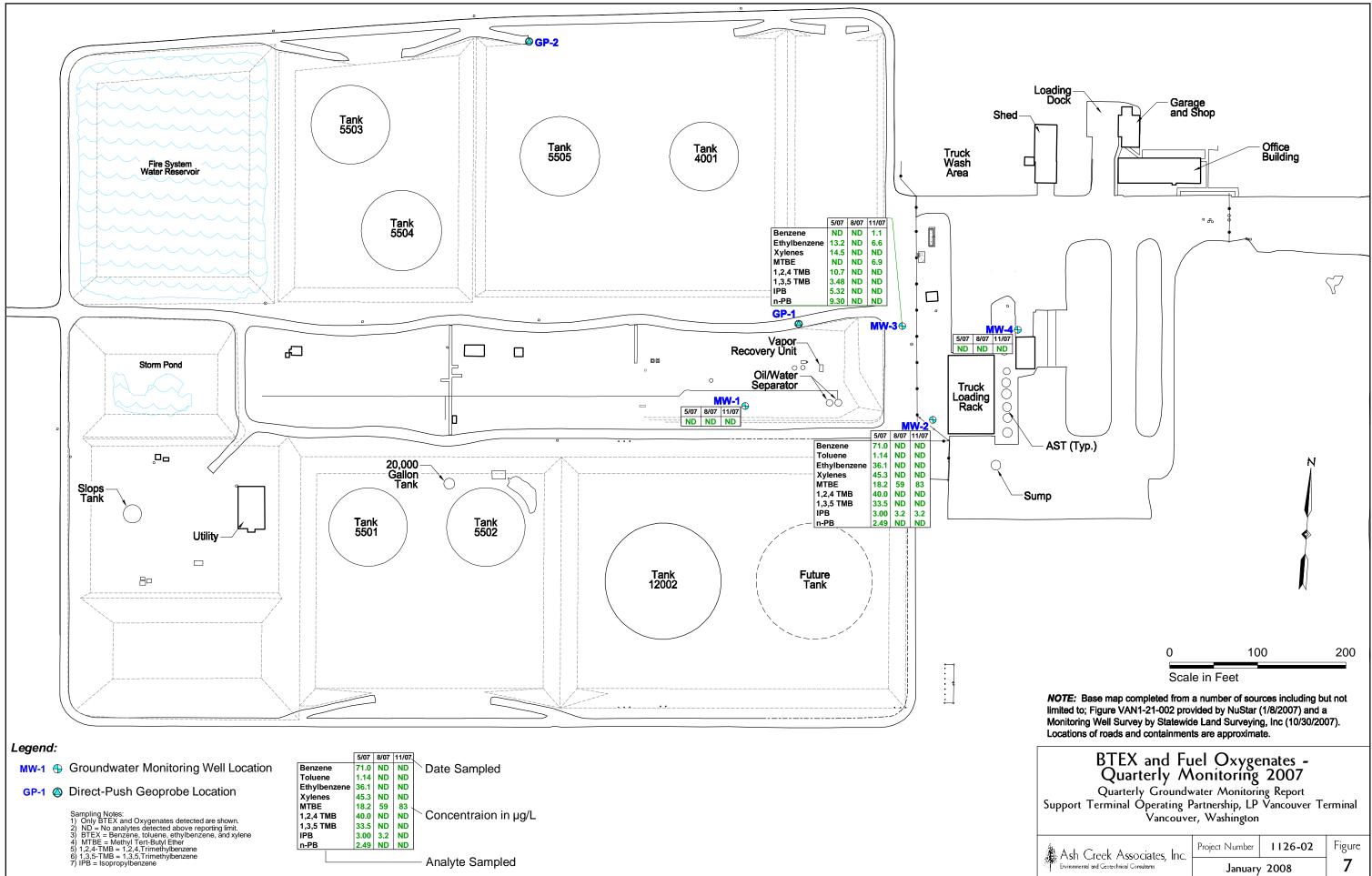












Appendix A

Field Sampling Sheets

WELL GAGING DATA SHEET

							Job Number:	1126-02
Å.		x ,	,	Client:	NuSt		Date:	5/25/07
As Envir	sh Creek / ronmental and Geolectre	NSSOCIates, nical Consultants	Inc.			Sampler:	K.Boris	
-				Weather:		<u> </u>	Time In/Out:	
					EVEL DATA			
Well I.D.	Time	Depth to Free Product (feet)	Depth to Water (feet)	Depth to Well Bottom (feet)	Product Thickness (feet)	Water Column Height (feet)	Not	es/Other Remarks
MW-1	926	N/A	14.92	24.50	D N/A			
MW-3	930		27.17	34.60				
MW-2	935		26.46	34.63				
MW-4	937	- ↓	28.35	34.96	↓			
		· · · ·						
							·	
			<u> </u>					
							<u> </u>	
4	* **							
5.4		~		1				
		`````````````````````````````	M.	· · · · · · · · · · · · · · · · · · ·				
N	A. S. AMAN		1			· · · · · · · · · · · · · · · · · · ·		
	1.11.			$\sum_{i=1}^{m_{i}}  u_{i} $				
	. <b>н</b> .	: 						
				4				
							·	
		· · · · ·	1					
			· · ·					

· • •

#### WELL MONITORING DATA SHEET

				Well I.D.	MW-			Job Number:	11220	-02
				Client:	NUS	ᡰ ₩~~/~		Date:		5/07
Ash Cree		Varge		•			/			
	Concernation of the second			Project:	<u>  ^~</u>	nney	<u></u>	Sampler:		ionis .
—— <u> </u>		Weather:	UELL DATA			Time In/Out:	<u> </u>			
	24.50	~		T	•	2"				9.58
Well Depth:				Well Diamet		<u>-</u>		Water Heigh	<u>n</u>	
Depth to Water:	14.92			Screened In				x Multiplier	•	3
Water Column Length:				Depth to Fre	=			x Casing Vo		
Purge Volume:		5 201				. •		= Purge Volu		4.65ga
Water Height Multip	iliers (gal)	1-inch :	= 0.041		= 0.162 RGING DATA		n = 0.653	1 gallon = 3	.785 liters	└────┨
	diame			1			/A			
Purge Method:	•	ane		Pump Intake			/A			Comments
Sampling Method:	Cumulative	whe		Tubing Type	<u>;</u>	Ny	/ <b>m</b>	<u> </u>		ľ
Volume Time Purged (liters)	Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	рН	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
			<u> </u>	+/-0.1	+/-10%	+/-3%	+/- 0.2 ppm	+/-20mV	+/-10%	< Stabilization Criteria
1250 1000	ganor	10 0112M	e	7.02	14.38	633	6.31	88.8		
3.2	gallor sing v	5~		6.94	14.28	625	6.40	101.9	<b>E</b> 10	
1307 3 00	austre	volun	00	6.72	14.30	606	6.24	110,4		
	aing	VOLUV	~ 5	W, 7 E	1100	- +	0.41			
			l	ļ						
1			1			ļ				
	Clari	ty: VC = v	ery cloudy,		SC = slightly of		= almost clea	ır, C = clear	<u> </u>	
		<u></u>				<u> </u>				
Sample ID:	KALAKAD IN	<u>11W)</u>	Sampling F	121 3	N/A		Analytical Lat		TA	
Sample Time:	1315			oth to Water:	4.94		Did Well Dew		No	
# Containers/Type	Preserv			is/Method ଅଧିକାର	Field Fil		Filter	Size	MS/MSD	Duplicate ID
6 VOAS HCI NNTPHO.		IMAG)	B260 Day	yes						
I L Amber	- HCI		NHAN	<u>~ jež</u>	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	<u></u>				<u> </u>
					yes	no	<u> </u>			
			<u> </u>		yes	no				
			<u> </u>		yes	on				<u></u>
<u> </u>	1		-147 74		yes	no			[	



#### WELL MONITORING DATA SHEET

Water Column Length:       Depth to Free Product:       x Casing Volumes       3         Purge Volume:       Free Product Thickness:       = Purge Volume       4         Water Height Multipliers (gal)       1-inch = 0.041       2-inch = 0.162       4-inch = 0.653       1 gallon = 3.785 liters         PURGING DATA         Purge Method:       Comment         Comment         Sampling Method:       Cumulative       DTW       Purge       PH       Temp       Cond       DO       ORP       Turbidity       Clari         Time       Volume       DTW       Rate       pH       Temp       Cond       DO       ORP       Turbidity       Clari         (liters)       (liters)       (btc)       (btc)       pH       Temp       Cond       DO       ORP       Turbidity       Clari	
Instruction         Control         Project:         VONCOUVER Annex         Sampler:         K           Weather:         Weather:         Time In/Out:         Time In/Out:         Time In/Out:         Sampler:         K         Sampler:         Sample	
Indext         Index         Index         Index <td></td>	
WELL DATA           Well Depth:         3.43         Well Diameter:         2."         Water Height         5.           Depth to Water:         2	
Weil Depth:         3.4. 6.3         Weil Diameter:         2.11         Water Height         8.           Depth to Water:         245.3         2.0.4.4         Screened Interval:         x. Multiplier         0.1           Water Column Length:         Depth to Free Product:         x. Casing Volume         3         =         Purge Volume         4           Water Height Multipliers (gal)         1-inch = 0.041         2-inch = 0.162         4-inch = 0.653         1 galon = 3.785 liters         9           Purge Method:         9         9         9         9         9         1 galon = 3.785 liters         1           Sampling Method:         9         9         9         9         9         9         1         1000         0RP         1         1000         0RP         1         1000         0RP         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1	<u> </u>
Depth to Water:         Zur. 4 4         Screened Interval:         x Multiplier         0.1           Water Column Length:         Depth to Free Product:         x Casing Volumes         3           Purge Volume:         Free Product Thickness:         - Purge Volume         4           Water Height Multipliers (gal)         1-inch = 0.041         2-inch = 0.162         4-inch = 0.653         1 gaton = 3.785 liters           Purge Method:         Comment         Purge Method:         Comment         Comment         Comment           Sampling Method:         Giscossite         Purge Interval:         N/A         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -<	10
Water Column Length:         Depth to Free Product:         x Casing Volumes         3           Purge Volume:         Free Product Thickness:         = Purge Volume         4           Water Height Multiplers (gal)         1-inch = 0.041         2-inch = 0.162         4-inch = 0.653         1 galion = 3.785 liters         1           Purge Method:         Commutative         Purge Intake Depth:         N/A         Comment           Sampling Method:         Commutative         DTW         Purge         N/A         Comment           Time         Volume (titres)         DTW         Purge         PH         Temp         Cond         DO         OPP         Turbidity         Class           10.42         1: 3 QULCATS -         #4/0.1         #4/10%         #/3%         #/-0.2 ppm         #/20mV         #/10%         -70.1         So           10.42         1: 3 QULCATS -         #/0.1         #/10%         #/3%         #/-0.2 ppm         #/20mV         #/10%         -78.848           10.42         1: 3 QULCATS -         1: 4.70         1: 4.12         55.6         1.71         -77.7         1           110.5         3 cc Arives Volume So         0: 72         14.19         15.47         1.71         -77.7         1     <	162
Purge Volume:         Free Product Thickness:         = Purge Volume         4           Water Height Multipliers (gal)         1-inch = 0.041         2-inch = 0.162         4-inch = 0.653         1 galion = 3.785 liters           Purge Method:         Comment of the second part	
Water Height Multipliers (ga)         1-inch = 0.041         2-inch = 0.162         4-inch = 0.683         1 galon = 3.785 liters           PURGING DATA           PURGING DATA           Sampling Method:         Comment         Comment           Volume         Commutative         DTW         Purge Rate         N/M         Comment           Time         Volume         DTW         Purge Rate         PH         Temp Cond         DD         ORP         Turbidity         Class           10 42         1.3         Colume S         (liters)         +/-01         +/-01         +/-3%         +/-02 ppm         +/-01         satisfier	aau
Purge Method:       Comment       Comment         Sampling Method:       Commutative       Tubing Type:       N/A         Time       Volume       DTW       Purged       purged       DTW       Purged       Purged       Cond       DO       ORP       Turbidity       Clarit         1042       1,30       QUUME       DTW       Purged       H-101       H-10%       H-3%       H-202ppn       H-10%       H-20mV	0
Sampling Method:         Currulative Purged (iters)         Currulative Purged (iters)         Tubing Type:         N/A           Time         Volume Purged (iters)         Currulative Purged (iters)         DTW Purged (bc) (iters)         Purge PH         Temp (°C)         Cond (µS/cm)         DO (ppm)         ORP (mV)         Turbidity (NTUs)         Clari Other           1042         1:30         QULONS - (ICOS) (VOLONS)         6.109         14.36         561         1.81         -710.1         Soft           1050         2.100         QULONS - (ICOS) (VOLONS)         6.109         14.27         556         1.714         -777.7         1           1105         3.00         Give QULONS - (VOLONS)         6.109         14.27         556         1.714         -777.7         1           1105         3.00         Give QULONS - (VOLONS)         6.109         14.27         556         1.71         -79.5         V           1105         3.00         Give QULONS - (VOLONS)         6.109         14.20         547         1.71         -79.5         V           1105         0.00         VOLONS - (VOLONS)	
Sampling Method.         Cumulative Volume (iters)         DTW Volume (iters)         Purge (bbc) (iters)         DTW (bbc) (iters)         Purge Plate (iters)         DTW Plate (iters)         Purge Plate (iters)         DTW Plate (iters)         Purge Plate (iters)         DTW Plate (iters)         Purge Plate (iters)         DTW Plate (iters)         Purge Plate (iters)         DTW Plate (iters)         Purge Plate (iters)         DO (iters)         ORP (iters)         Turbidity (NTUS)         Other (NTUS)           10.42         1.32         3000000000000000000000000000000000000	ts
Time         Volume Purged (iters)         DTW (bits)         DTW (bits)         PH Rate (L/min)         Temp (°C)         Cond (µS/m)         DO (ppm)         ORP (mV)         Turbidity (NTUs)         Chan Other Other           1042         1:30000005         +/01         +/01         +/01         +/01         +/010         +/201V         +/201	
1:3       0.10       +/-0.1       +/-0.1%       +/-3%       +/-0.2 ppm       +/-20mV       +/-10%	ity/Color Remarks
1042       1 c.a.s.ing, volume       6.70       14.36       561       1.81       -10.1       50         10 50       2.6       columns       6.69       14.27       556       1.74       -77.7       1         105       3.6       5.6       1.71       -79.5       1.71       -79.5       1.71         105       3.6       5.6       1.71       -79.5       1.71       -79.5       1.71         105       3.6       5.6       1.71       -79.5       1.71       -79.5       1.71         105       3.6       5.7       1.71       -79.5       1.71       -79.5       1.71         105       3.6       5.7       1.71       -79.5       1.71       -79.5       1.71         105       5.7       1.71       -79.5       1.71       -79.5       1.71       -79.5         105       5.7       1.7       1.71       -79.5       1.71       -79.5       1.71         105       5.7       1.7       1.71       -79.5       1.71       -71.71       1.71         105       5.7       1.7       1.71       -71.7       1.71       -71.71       1.71         105       <	ation Criteria
10 50 2 colding would whes       6.64       14.21       556       1.17       -11.1         1105       3 coldinas       10.17       547       1.71       -79.5       1.71         1105       3 coldinas       10.17       547       1.71       -79.5       1.71         1105       3 coldinas       10.17       -79.5       1.71       -79.5       1.71         1105       3 coldinas       1.71       -79.5       1.71       -79.5       1.71         1105       3 coldinas       1.71       -79.5       1.71       -79.5       1.71         1105       3 coldinas       1.71       1.71       -79.5       1.71       1.71         1105       1.71       1.71       1.71       1.71       1.71       1.71       1.71         1105       1.71       1.71       1.71       1.71       1.71       1.71       1.71       1.71       1.71         1105       1.71       1.71       1.71       1.71       1.71       1.71       1.71       1.71       1.71       1.71       1.71       1.71       1.71       1.71       1.71       1.71       1.71       1.71       1.71       1.71       1.71       1.71	<u>د</u>
Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear         Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear         Sample ID:       MM - 2         Sample Time:       []]15         Final Depth to Water:       2.6.7.4B         Bid Well Dewater?       NLO         # Containers/Type       Preservative         Analysis/Method       Field Filtered         J L Arnoer       H C.1         Yes       no         Yes       yes         Yes       no         Yes       no	
SAMPLING DATA         Sample ID:       MW-2       Sampling Flow Rate       Analytical Laboratory:       TA         Sample Time:       1115       Final Depth to Water:       2.6.48       Did Well Dewater?       No         # Containers/Type       Preservative       Analysis/Method       Field Filtered       Filter Size       MS/MSD       Dupli         10 VOAs       H CI       NWTPHdx       B2.00       yes       10       Image: Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspa="2"Colspa="2"Colspa="2"Colspan="2"Colspan="2"Colspan="2"Colspa="	
SAMPLING DATA         Sample ID:       MW-2       Sampling Flow Rate       Analytical Laboratory:       TA         Sample Time:       1115       Final Depth to Water:       2.6.48       Did Well Dewater?       No         # Containers/Type       Preservative       Analysis/Method       Field Filtered       Filter Size       MS/MSD       Dupli         (b VOAs       H CI       NWTPHdx       82.90       A yes       10       Image: Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2">Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"C	
Sample ID:       MW-2       Sampling Flow Rate       Analytical Laboratory:       TA         Sample Time:       1115       Final Depth to Water:       26,48       Did Well Dewater?       No         # Containers/Type       Preservative       Analysis/Method       Field Filtered       Filter Size       MS/MSD       Dupli         (b VOAs       H CI       MN-4       82.00       yes       no	
Sample Time:       1115       Final Depth to Water:       26,48       Did Well Dewater?       No         # Containers/Type       Preservative       Analysis/Method       Field Filtered       Filter Size       MS/MSD       Dupli         10 VOAs       H CI       MS/Hg/ox y3 & RBCA       yes       no	
# Containers/Type       Preservative       Analysis/Method       Field Filtered       Filter Size       MS/MSD       Dupli         10 VOAs       H CI       HBHA / 0x y 5 8 R8CA       yes       10	<u>_</u>
Is VOAs     H CI     HB Ha /ox y > 8 RBCA yes     Is       1 L Amber     H CI     NWTFHdx     Yes     Image: Comparison of the second seco	
1 L Amber     HCl     NWTPHUX     Weilico     yes     mo       yes     no     yes     no	-
yes no yes no	~
yes no	
yes no	
yes no	
COMMENTS	

			W	ELL MONIT	ORING DA	TA SHEET	T			
			_	Well I.D.	MW-3			Job Number:	1126	-02
Ach Crow	al Arcoci	inter loc		Client:	NUST	700		Date:	5/22	5/07
Environmental and C	Ash Creek Associates, Inc.						threw	Sampler:	K'B	bris
				Weather:				Time In/Out:		
				N	ELL DATA					······································
Well Depth:	34.00	>		Well Diamet	er:	2"		Water Heigh	nt	7.40
Depth to Water:	27.14		-	Screened Int	terval:	T.	/	x Multiplier		0,162
Nater Column Length:	7.40			Depth to Fre	e Product:			x Casing Vo	lumes	3
Purge Volume:			د	Free Produc				= Purge Volu		3.63
Water Height Multip	bliers (gal)	1-inch	= 0.041		= 0.162	4-incl	า = 0.653	1 gallon = 3		
		A.A.		PUI		<u>.                                    </u>				
Purge Method:	giebas G	able	-	Pump Intake	Depth:				c	omments
Sampling Method:		ame		Tubing Type				<u> </u>		
Time Volume (liters)	Cumulative Volume Purged	DTW (btc)	Purge Rate (L/min)	pH	Temp (⁰C)	Cond (μS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
(11(615)	(liters)			+/-0.1	+/-10%	+/-3%	+/- 0.2 ppm	+/-20mV	+/-10%	< Stabilization Criteria
1200 1000	gallor ing vo	is-		7.07	14.37	275	1.76	4,3		
1207 2.cd	atton	s-lum	es	7,01	14.10	270	2,02	2.7		
12.15 3.75	gaud	volu	mes	6.93	13.98	294	1.28	-8,8		
	~~~~~~				-					
			·····	1						
						-				
	Ciar	ity: VC = v	ery cloudy,		SC = slightly		= almost clea	ır, C = clear		
Sample ID:	MW-3/1	MUL-3DIF	Sampling I		<u></u>		Analytical La	boratory:	TA	
		th to Water:	27.20	>	Did Well Dew		No	1 <u>2</u> .		
		is/Method	Field Fi		Filter		MS/MSD	Duplicate ID		
2 VOAS HCI TEHA		A RBCA	yes	no				MW-3		
2 L Ambers	HOL		NWTPH	N 2	yes	(no)	·			MW-3
			••••	New York	yes	no			、 、	
					yes	no	<u></u>			
		<u> </u>	<u>_</u>		yes	no				
					yes	no	~	1		

#### WELL MONITORING DATA SHEET

<b></b>					Well I.D.			-	Job Number:	100	0-02
<u>A</u>						MW-4		<u></u>	Date:		
A 🍕	Ash Creek Associates, Inc.				Client:	NuStar				5/25	, –
יי <b>ן</b> . נח				Project: Vancouver Annex			rnnes	Sampler:	K.B	oris	
					Weather:	 /ELL DATA			Time In/Out:	1	
		240	<u>,</u>				2"		Motor Hoigh	-+	1.1.1
Well Depth:		34.9			Well Diamet		<u> </u>		Water Heigh	n <u></u>	6.6
Depth to Wa		28.35			Screened In				x Multiplier		<u>0.162</u> 3
Water Colun		<u>ما. م)</u>	l		Depth to Fre				x Casing Vo		
Purge Volun		lines (mal)		0.041	Free Produc		d in al	0.653	= Purge Vol		3.21
Water H	eight Multip	oliers (gal)		= 0.041		= 0.162 RGING DATA	· · · · · · · · · · · · · · · · · · ·	n = 0.653	1 gallon = 3		
Burgo Motho	vd.	aispo	eable		Pump Intake		N	100			comments
Purge Metho Sampling Me			vne				N	<u> </u>			Joininenta
Sampling with	Volume	Cumulative		Purge	Tubing Type			1		1	
Time	Purged (illigre)	Volume Purged (liters)	DTW (btc)	Rate (L/min)	рН	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-10%	+/-3%	+/- 0.2 ppm	+/-20mV	+/-10%	< Stabilization Criteria
955	1/902	lon <u>asina</u>	lopme	2	6.85	14,67	399	2,72	197.5		CL
1001	2 900	rong			6.52	14,51	397	2,22	179.1		
1008	S B	alor	19		6.27	14,109	396	1.79	158.9		CL
-											
											· · · · · · · · · · · · · · · · · · ·
											and an and a second sec
ļļ					Cl = Cloudy,	00 olimbili		- almost also			I
		Ciar	ny: VC = V	ery ciouay,		SC = slightly			$a_1 \cup = clear$		
Sampi	e ID:	MW-	. A.	Sampling I	Flow Rate			Analytical La	boratory:	TA	
Sample		1010	·		oth to Water:	23.3	8	Did Well Dev		No	
				is/Method	Field Fi			r Size	MS/MSD	Duplicate ID	
			MBH0/	B260 DXY	syes	Ô					
	Nber	HCI		NUT	How Kilisa	, yes	Ĩ	est property			
					8	yes	no				
						yes	no			Ī	
						yes	no		· · · · · · · · · · · · · · · · · · ·		
						yes	no				
					C	OMMENTS				<u>.</u>	·
							<u> </u>				
						<u> </u>					

ŧ

				¥¥	ELL GAGING	A DATA SHE					
		∖sh Creek⊅		le c	Client:	Nu Star	md	Job Number: Date:	<del>1185-01</del> 812-	1126-01	
		NSTE CIEEK 7 wironmental and Georech	¬\SSOCI∂ICS, nical Consultants	INC,	Project:	Port of Portla	NNCX Fuel Farm	Sampler:	A	14	
					Weather:	Clear	900	Time In/Out:	1146	1204	
		- <u></u>				EVEL DATA		14110 112042	11102		-
	Weil I.D.	Time	Depth to Free Product (feet)	Depth to Water (feet)	Depth to Well Bottom (feet)	Product	Water Column Height (feet)	Not	es/Other R	emarks	
	MW-	11148		32.12	35.0		(	Cup no	tseal	ed	
÷,	MW-2	1153		30.17	32.6			1			
•	<u>MW-3</u>	1157		31.04	34.6						
×.	MW-1	1200		18.67	24.5			Southof	<u> </u>	running	pipes
	* A11	MW'S	had		n-AC						{
		1000 3	nao	a no	n-AL	<u>la Ke</u>	<u>'</u>				-
		· r									
		<u> </u>									-
	· · · ·				· · · · ·						-
- 										·	-
										· · · · ·	1
1		-					1				1
											]
I										<u> </u>	
	<u>.</u>			]							
L								-			
											·
$\mathbf{F}$	<u></u>										
ł			-								
		24								·	
	·		· · ·								
$\left  \right $	<u></u>										
┞		ļ									
L					1						

¢,

•

Γ				¥	1	TORING DA	IA SHEE		· ·		A 0
	· · · ·			· · ·	Well I.D.	MW-1	· · ·		Job Numbe		-02
	Ash Cre	ek Assoc	iates, Ind	Ξ.	Client:	Nusta		·	Date:	824	107
	invironmental and	Geotechnical Consult	ants		Project:	STOP	Ann	<u>ex</u>	Sampler:	AKH	1 <u> </u>
ļ					Weather:	VELL DATA	mid-	90'5°	Time In/Out	1508	1550
Well Depth:		24.5	5		Well Diame	· · · · · · · · · · · · · · · · · · ·	2	h.	Water Heig	ht	5,814
Depth to W	1. A. C. A.	18.0	091		Screened Ir				x Multiplier		0.162
Water Colu			<b>* 1</b>		Depth to Fre			•	x Casing Vo	olumes	3
Purge Volui	ne:		·		Free Produc	ct Thickness:			= Purge Vo	lume	2,829
Water H	leight Multi	pliers (gal)	1-inch	= 0.041	2-inch	= 0.162	4-inc	h = 0.653	1 gallon = (	3.785 liters	10.69
		1.		-	PU	RGING DAT	<b>A</b> .				
Purge Meth		disposal		uler	Pump Intake	e Depth:				C	omments
Sampling M		50 Cumulative	me		Tubing Type	<u>}:</u>		· · · · ·	I	· ·	<u></u>
Time	Volume Purged (liters)	Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pН	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Co Other Rema
				-	+/-0.1	+/-10%	+/-3%	+/- 0.5 ppm	+/-20mV	+/-10%	< Stabilization Cr
1523			ч. 		9.46	15,19	484	2,92	194.9		<u> </u>
_											
											-
											· · · · · ·
											· · · · · · · · · · · · · · · · · · ·
											<u></u>
		Clarit	y: VC = ve	ery cloudy,		SC = slightly o PLING DATA		= almost clea	r, C = clear	l	
Sample	e ID:	MW-1		Sampling F				Analytical Lat	poratory:		
Sample		1538			th to Water:	18.69		Did Well Dew		Ν٥	
# Containe		Preserva	ative	Analysi	s/Method	Field Fill		Filter		MS/MSD	Duplicate II
6×VOA	'S	HCL	·	EPA 8260) NW T	3 KC3A 40xy PH- (7 x	yes	ho				
2×11 A	tmber	HCL	<u> </u>	NWT	эн-Дх	yes	(no)				
						yes	no				
			h			yes yes	no no				
						yes	no				
						DMMENTS	- 1			1	

				N	ELL MONI	TORING DA	TA SHEE	т			
· .					Well I.D.	MW	-2	`	Job Number	1126	-02
Å.	Ash Cre	ek Assoc	iates In	c	Client:	Nusta	ir		Date:	82	4 07
	Environmental and	Geotechnical Consu	itanis	<b></b>	Project:	STOP	' Ann	ex	Sampler:	AK	F.
					Weather:	Clean	Mi	1-90°5	Time In/Out	131	9 1406
					1	VELL DATA					
Well Depth	:	32.	61		Well Diame	ter:	2	11	Water Heig	ht	2.41 gal
Depth to W	ater:	36,	191	.•	Screened in	iterval:			x Multiplier		0.162
Water Colu	mn Length				Depth to Fre	e Product:			x Casing Vo	olumes	3
Purge Volu	me:				Free Produc	t Thickness:			= Purge Vo	lume	1.17gal
Water H	leight Multi	pliers (gal)	1-inch	= 0.041		= 0.162	4-inc	h = 0.653	1 gallon = 3		4.43 L
					PU	RGING DATA					
Purge Meth	iod:	dispos	able k	ailer	Pump Intake	e Depth:				· . c	comments
Sampling M	lethod:		me		Tubing Type						
	Volume	Cumulative		Purge		1	Ormal	<b></b>	000	<b>T</b>	Olarit (Oalar
Time	Purged (liters)	Volume Purged (liters)	DTW (btc)	Rate (L/min)	рН	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-10%	+/-3%	+/- 0.5 ppm	+/-20mV	+/-10%	< Stabilization Criteria
1340					8.17	16.12	423	2.35	-66.3		C
12.1											<u> </u>
			:								
		Clari	ty: VC = v	ery cloudy,		SC = slightly c PLING DATA		= almost clea	r, C = clear		
Sample	e ID:	MW-	2	Sampling F	1			Analytical Lat	oratory		
Sample		1349			th to Water:	30.20		Did Well Dew		No	······································
# Containe		Preserv			i			Filter		MS/MSD	Duplicate ID
bx VOA	1	HC	<u></u>	EPA 82608	s/Method R84A 40×yd -G×	Photes	ho	riiler_	0126		Dupilitate ID
	Amber	140		NWTPH		yes					
<u> </u>	nevuer	1-10	· <b>· ·</b> ·	INVITE		yes	$\square$	<u> </u>		·	
	····					yes	no				
						yes		. —			
· · · ·							no				
					cc	yes	no	· · ·			
	·										
<del></del>		• •				<u>_</u>		·····			·

·

•

¢.

					Well I.D.	MW-3	· · · · · · · · · · · · · · · · · · ·		Job Number	1126	,-02
<u>Å</u> .					Client:	NuStar			Date:	812	
		ek Associ Geotechnical Consult		-	Project:		Inner	,	Sampler:	AKE	
					Weather:		mid	-96's°	Time In/Out		
						VELL DATA	MIG	- 10 3			11301
ell Depth	:	34.6	,H		Well Diame		21	(	Water Heig	ht	3.52
epth to W	-	31.0	81		Screened In				x Multiplier		0.162
	mn Length:		<u>.</u>		Depth to Fre				x Casing Vo	lumes	3
irge Volu					1	t Thickness:	1		= Purge Vol		1,71901
	leight Multi	pliers (gal)	1-inch	= 0.041	1	= 0.162	4-inc	h = 0.653	1 gallon = 3		6.482
·		· · · · ·		•	PU	RGING DATA	ι	·····	· · ·		
irge Meth	iod:				Pump Intake	e Depth:				c	comments
mpling M	lethod:		:		Tubing Type	):					
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	рн∘	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remark
					. +/-0.1	+/-10%	+/-3%	+/- 0.5 ppm	+/-20mV	+/-10%	< Stabilization Crite
438					8,28	15.15	372	2.95	46.1		AC
			<u>.</u>								
			<u>.</u>								
									<u> </u>		·
						· ·					
			-								
		Clarit	y: VC = v	ery cloudy,	Cl = Cloudy, S	SC = slightly c	loudy, AC	= almost clear	r, C = clear		
			,			PLING DATA					
Sampl Sample		<u>MW-3</u> 1440	5	Sampling F	low Rate	31.10		Analytical Lat		No	<mark></mark>
Containe		Preserva	ative					Filter		MS/MSD	Duplicate ID
X VO	A'S	HCL		EPA 5260 NWTPH	- GX	Field Fill Xygenules yes	no				
XII	Amber	HCL	-		H-Dx	yes	(10)				
						yes	no				·
						yes	no				<u> </u>
						yes	no				

	<u> </u>	•			Well I.D.	MW-			Job Number:	1171	0-02
								····			107
	Ash Cre	ek Assoc	iates, Ind	<b>-</b>	Client:	NuSt	<u></u>		Date:	X ZY	107
I	environmenial and	Geotechnical Consul	tants		Project:	SIDE	Anne		Sampler:	AKE	11211
<u> </u>					Weather:	<u>IClear</u>	92	0	Time In/Out:	1206	1316
		250			1	NELL DATA			l		2.88
ell Depth	<u>:</u>	35.0			Well Diame	ter:	2	11	Water Heigh	nt	53.34.1
epth to W	ater:	32.1	Z		Screened In	iterval:		····	x Multiplier		0.162
ater Colu	mn Length:				Depth to Fre	e Product:			x Casing Vo	lumes	3
urge Volu	me:	5.30	r .		Free Produc	t Thickness:			= Purge Volu	ume	1.3990
Water	leight Multi	pliers (gal)	1-inch	= 0.041	1	= 0.162		h = 0.653	1 gallon = 3	785 liters	<u>5.30 Ľ</u>
	·				PU	RGING DAT/	<u> </u>				· · · · ·
irge Meth	iod:	Dispos	<u>able B</u>	ailer	Pump Intake	e Depth:				· c	omments
mpling N	lethod:	່ວ	ame		Tubing Type						,,
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	рН	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remark
					+/-0.1	+/-10%	+/-3%	+/- 0.5 ppm	+/-20mV	+/-10%	< Stabilization Criteria
235					7.25	14.86	452	2.86	155.2		<u> </u>
										-	
						· · · ·					· · · · ·
			·								
											<u></u>
		Clari	hr: VC – v	en/ cloudy		SC - cliabtly	aloudy AC	= almost clea	r C – clear		
		Cian	<u>.</u>	ery cloudy,				~ amost ciea	1, 0 - Ciear		
Sampl	e ID:	<u>MW-'</u>	1	Sampling F	low Rate			Analytical Lat	ooratory:		
Sample	Time: '	124	7	Final Dept	h to Water:	32,0	)9	Did Well Dew	ater?	No	
Contain	ers/Type	Preserv	ative	Analysis	Method	Field Fil		Filter	Size	MS/MSD	Duplicate ID
<u>× V6</u>	<u>+'s</u>	HC			20CA+Oxyger H-GX	yes	no				
XIL	Amber	HC		NWTF	M-Dx	yes			14 49 18 19 19 19 19 19 19 19 19 19 19 19 19 19		
						yes yes	no				
<b>-</b>						yes	no		<i>i</i>		
						yes DMMENTS	no				
<u>.</u>		1 (		.163		ZAUNCIA 19	23	102	8£t	μA	
			- 7		<u> <u> </u></u>		<u> </u>	1 10	<u>9(0 i)</u>		<u> </u>

4

t

#### WELL GAGING DATA SHEET

							Job Number:	
. An	_			Client:	ł		Date:	
A	sh Creek A onmoniat and Gostechin	Associates,	Inc.	Project:			Sampler:	
,		and second second		Weather:			Time In/Out:	953/1011
	. · ·				LEVEL DATA			
Well I.D.	Time	Depth to Free Product (feet)	Depth to Water (feet)	Depth to Well Bottom (feet)	Product	Water Column Height (feet)	Not	es/Other Remarks
MW-4	954		31.40					<b>*</b> '
MW-2	957		29.42					· · · · · · · · · · · · · · · · · · ·
MW-3	1004		30.36					· · · · · · · · · · · · · · · · · · ·
MW-1	1010		17.91					
			-	e Na		3×.		
	· ·					- 2,3		
-		N.						
					9. 9.	~~~		
						ی اور		
					· · · ·			
						N		
			-				l 	
	•							

WELL MONITORING DATA SHEET

		. <u></u>		W	VELL MONIT					<u> </u>	
			*		Well I.D.	MW			Job Number:		6-02
	Ash Cree	ek Ássocia	iates. Inc	C. 🚕	Client:		<u>ustar</u>	2	Date:		607
2	Environmental and C	Georechnical Consulta	ants		Project:	STOP	<u>Ann</u>		Sampler:		nes
					Weather:	Cloud	4 42	0	Time In/Out:	1012	1053
		- <u></u> ,	ه. م		N	VELL DATA	<u> </u>	2			
Nell Depth	1:	24.5	<u>501</u>	A	Well Diamete	er:	2!		Water Heigh	nt	6.59'
Depth to W	Vater:	<u> </u>	91'		Screened Int	terval:		· · · · · · · · · · · · · · · · · · ·	x Multiplier		0.162
	umn Length:	1.6F	<u>59′</u>	,	Depth to Fre		.*	7_	x Casing Vol	lumes	3
Purge Volu		<u>_</u>			Free Product	2		7	i= Purge Volu	ume	3.20 ga
	Height Multip	oliers (gal) /~	1-inch	n = 0.041		= 0.162	4-inct	h = 0.653	1 gailon = 3		12.12
	ioig	1	· · · · · · · · · · · · · · · · · · ·			RGING DATA					
Purge Meth	had	disposa	able b	viller	Pump Intake					<u> </u>	comments
Sampling N		1 1	same		Tubing Type				<i>•</i> ••	<u> </u>	
Sattipining	Volume	<b>C</b> umulative	+	Purge	Tubbing . 21					Turkidity	Clarity/Color
Time	Purged	Volume Purged	DTW (btc)	Rate	рН	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Other Remarks
	(liters)	(liters)	(0,	(L/min)							< Stabilization Criteria
	<u> </u>	$\begin{bmatrix} \vdots & \vdots & \vdots \\ \vdots & \vdots & \vdots & \vdots \end{bmatrix}$	<b></b>		+/-0.1	+/-10%	+/-3%	+/- 0.5 ppm		+/-10%	
1623	4,2 .	<u>  4,2  </u>	t		7.2	13.61	<u>585</u>	4,80	140.2	<u> </u>	VC
1030	3.3	8.5			6.76	13.65	597	4.43	169.4		VC
	+		t	+					╇┈╧╌┷──	++	· · · · · · · · · · · · · · · · · · ·
1039	3.7	12.2			6.4	13.66	587	3,99	160.0	<u> </u>	<u>vc</u>
	Ţ,	[ '	ſ				1			. !	
<u>-</u>	<u>+`</u>	t1	1	+	+	<u>├</u> ───′		<u> </u>			
		<u>  · · · · · </u> /	L			<u> </u>	ļ'	<b></b>	<b></b>	<u>                                     </u>	ļ
			1	9 204 1 - 19 9			1			'	
		<b>├</b> ──'	t	1			<u> </u>	à.	<u> </u>	<u>†</u>	
	,	<b>↓</b> ′	<b></b>			<u> </u> '	<b>{</b> '	10) 	<b></b>	<b></b> '	<u> </u>
х і т		1 1	1	t.	*		а.				<u> </u>
<u> </u>	1	ļ;	<u> </u>					<u> </u>		1	• :
		<b> </b> ′		<b>_</b>	· · · · ·		<b>{</b> '			<b></b>	
		'	1		· .		'				
		Clar	ity: VC = v	very cloudy.	, CI = Cloudy,	SC = slightly		= almost clea	ar, C = clear		
		T AND	- 1							T -T	λ
	ple ID:	MU			Flow Rate	1-170	יור	Analytical La			÷
	le Time:			-h	opth to Water:	<u> </u>	<u> </u>	Did Well Dev			
	iners/Type			Analys	sis/Method	Field Fi	iltered	Filter	er Size	MS/MSD	Duplicate ID
6 XVC		HCI		1	18240 0X4	yes		<b> </b>			
×  L	AMBLY		<u>L</u>	NWTPHO	X all	yes		ł		<u> </u>	[
	<u> </u>	<u> </u>	<u> </u>	<u> </u>	V 0	yes	no	<b></b>		<u> </u>	<b> </b>
<u> </u>						yes	no	<b></b>		I	
						yes	no	<u> </u>	. <u>.</u>		
						yes	no			<u> </u>	
					C	OMMENTS					<u> </u>
							<u> </u>				
				5	S				. <u> </u>		

÷.

ł.

/

· · · · ·						TORING DA				11121	- 67
蛊					Well I.D.			<u>-</u>	Job Number	7 7	10- 10-7
	Ash Cre	ek Assoc Geotechnical Cons	ciates, In	-	Client:	NUST			Date:	11/2	
1 E	avsonmental and	Geotechnical Const	urrants		Project:	1126		<u> </u>	Sampler:		<u>ines</u>
					Weather:	1 Cloud	<u>y 45</u>	<u> </u>	Time In/Out:	1200	1/1310
		34	1 21			VELL DATA		1	<u> </u>		
Nell Depth:		$+ \frac{27}{20}$	<u>.63'</u>		Well Diame		21	, 	Water Heigl	ht	5.21'
Depth to W			1.72	<u> </u>	Screened In				x Multiplier		0.162
	mn Length	<u> </u>	2		Depth to Fre	e Product:			x Casing Vo	lumes	3
Purge Volui		l	1		Free Produc	t Thickness:			= Purge Vol	ume	2,53 ga
Water H	leight Multi	pliers (gal)	1-inch	= 0.041		= 0.162		h = 0.653	1 gallon = 3	3.785 liters	<u>9,58 L</u>
	<u> </u>	1.				RGING DAT	<u> </u>		~	r	
Purge Meth		015005		ailer	Pump Intake	e Depth:	· ·			<u>c</u>	omments
Sampling M		Cumulative	sar		Tubing Type	9: T		<u> </u>	I		
Time	Volume Purged (liters)	Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	рН	Temp (⁰C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remark
			$\square$		+/-0.1	+/-10%	+/-3%	+/- 0.5 ppm	+/-20mV	+/-10%	< Stabilization Criteri
1228	3.9	3,9			6.94	12.96	429	4.13	82,4		SC
1234	3.0	6.9		Ì	6,98	13.53	411	4.37	42.7		SC
1242	3.0	9.9	ĺ		6,90	13.12	411	2,91	5.0		50
	0.0		<u> </u>			1011-					00
			•								
~					·		<u></u>				
						•					
											·····.
						2 					
		Clar	ity: VC = v	ery cloudy,		SC = slightly		= almost clea	r, C = clear		
Sample	e ID:	Mu	1-2	Sampling F				Analytical Lat	oraton/		
Sample		124			th to Water:	29.421		Did Well Dew		No	<u> </u>
# Containe		Presen	vative		s/Method	Field Fi		Filter		MS/MSD	Duplicate ID
6×VC		HC			1260 oxy	yes					
	Amber	HC		NWTPHA	WEILIC	yes	(no/	<u>_</u>			
					" ' gr	yes	no	<u> </u>			<u>.</u>
						yes	no			1	<u> </u>
						yes	no				<u> </u>
<u>-</u>		<u></u> ;				yes	ло				
	<u></u>				C	OMMENTS	— — · · · · · · · · · · · · · · · · · ·				

	-			W	ELL MONIT	FORING DA	TA SHEE	<u> </u>				
				2 - ¹	Well I.D.	MU	<u>y-3</u>		Job Number	1126	02	
🕺 📥 Ash		ek Associ	iates Inc	-	Client:	NUST	UY		Date:	11/2	107	
Envaona	mental and C	ieotechnical Consult	tants		Project:	STUP	Ann	ex	Sampler:	<u>A!F;</u>	<u>nts</u>	
	_				Weather:	Claude			Time In/Out:	1054	1/11/37	
					V	VELL DATA				•	1	
Well Depth:		34	<u>'00'</u>		Well Diamet	ter:	2	211	Water Heigi	ht	4.24	<u>+'</u>
Depth to Water:		30	1.361		Screened In	terval:	-	1	x Multiplier		6.16	2
Water Column L	_ength:	Ч	.24'		Depth to Fre	e Product:		7	x Casing Vo	lumes	3	
Purge Volume:		_			Free Produc	t Thickness:	1	,	= Purge Vol	ume	2.06	naa
Water Heigh	nt Multip	liers (gal)	1-inch	= 0.041	2-inch	= 0.162	4-inc	h = 0.653	1 gallon = 3	3.785 liters	7.8	YĽ
	·				PU	RGING DAT	Ň					
Purge Method:		disposat	ole bu	uler	Pump Intake	e Depth:				с	omments	
Sampling Metho			ine		Tubing Type	e:	/				j.	
Time Pu	olume urged iters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	рН	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/C Other Rer	
					+/-0.1	+/-10%	+/-3%	+/- 0.5 ppm	+/-20mV	+/-10%	< Stabilization	Criteria
1107 2.	,3	2.3			6.93	12.55	668	5.83	139.0		SC	
1112 2	,8	5.1			6.97	13.03	679	3.80	101.1		SC	
1119 2	9	8.0	•		6,97	12.58	680	3.42	78.5		50	
				ai .	<u> </u>		、 、					
												že.
											<u> </u>	
												(
							· · · · · · · · · · · · · · · · · · ·					
										, , , , , , , , , , , , , , , , , , ,	¥	
		Clari	ty: VC = v	ery cloudy,	CI = Cloudy,	SC = slightly	cloudy, AC	= almost clea	r, C = clear	· · · · · · · · · · · · · · · · · · ·		
<b>A</b>		MW-	2				· · · ·			~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
Sample ID		1124		Sampling F		30	.35'	Analytical La		1	~	
Sample Tim					th to Water:			Did Well Dew			)	<u> </u>
# Containers/T			/ative	Analysi	is/Method	Field Fi	no	Filter	Size	MS/MSD	Duplicate	
			<u>ር</u> ነነ		WBILIEG							
I'IL AM	per	<u> </u>	/ <b>L</b>	NWTPH-d	<u>x 'a</u> el	yes yes	no					{
						yes . yes	no	<u></u>				{
						yes	no					
						yes	no			······································		
					C	OMMENTS						

					Well I.D.	M	W-4		Job Number:	1126	-02
		I A	· [		Client:	Nust		. <u></u>	Date:	11/26	<u> </u>
		ek Associ Geolechnical Consult	iates, inc		Project:	STOP	A		Sampler:		nes
					Weather:	Cloude	11 4 7		Time In/Out:	1.1.0.1	11208
				<del>,</del>							
Well Depth		34	.961		Well Diamet		2'	11	Water Heigh		3.56
Depth to W		31.	40'		Screened Int				x Multiplier		0.162
	imn Length:	-	56		Depth to Fre				x Casing Vol	lumes	3
Purge Volu					Free Produc				= Purge Volu		1.73991
	leight Multip	nliers (gal)	1-inch	= 0.041		= 0.162	4-inc'	h = 0.653	1 gallon = 3		6,55 2
	TOIGHT MAIL	Jilera (gui)		- 0.0+1		RGING DATA		1 - 0.000		.100	
Purge Meth	od.	disposal	nle hr	Tiler	Pump Intake					С	Comments
Sampling M			same		Tubing Type		[	<u> </u>	Ĩ		
Janping	Volume	Cumulative		Purge	Tubing 1765						
Time	Purged (liters)	Volume Purged (liters)	DTW (btc)	Rate (L/min)	рН	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
				[	+/-0.1	+/-10%	+/-3%	+/- 0.5 ppm		+/-10%	< Stabilization Criteria
1145	2,9	2.9			7.13	12.67	522	5.98	787		<u>C</u> ]
1148	2.0	4.9			6.83	13.28		4.56	92.4		VC
1156		6,6			6.63	12,91	513	3.75	95.3		VC
NUV		6.4		'		14114				<u>                                      </u>	
		ļ		<u> </u>		L!	<b>ــــــ</b> '	<u>  ·  </u>	<u> </u>	ļ]	
	l j	i		<b> </b>	'	1 1	1 /				
					<u> </u>	(	í'			i	
	<b> </b>			<b> </b> '	ġ	ļļ	ı'	──┤		<b>├</b> ───┦	<u> </u>
		l		l		[]	<u>''</u>				
		[					<u> </u>				
				(	· ·	r+	·'				
<u> </u>	L			<b> </b> '	ļ!	<b></b>	<u>،                                    </u>	<b>↓</b>	J	<b> </b>	<b> </b>
				I '	!		ı '				
		Clari	ty: VC = v	ery cloudy,	CI = Cloudy,	SC = slightly o	oloudy, AC	= almost clea	r, C = clear	·	·
	· · · · · · · · · · · · · · · · · · ·	MW	r l						• • • • •	T	λ
Samp		120	,	Sampling F		31,4		Analytical Lat			
Sample					oth to Water:	1		Did Well Dew		<u> </u>	
# Contain		Preserv	/ative	Analysi NWTPHg,	is/Method	Field Fill yes	Itered	Filter	Size	MS/MSD	Duplicate ID
$6\times\sqrt{0}$		HC HC	1.4		UV61170	yes				<b>—</b>	
11-1-1	Amber		L	NM-TPH9	x gu 1	yes yes	no	<u> </u>		$\square$	
						yes	no	<b> </b>	- <u>-</u>	<u> -</u>	
						yes yes	no	l		<u> </u>	
							no			25° . 4	
		1				yes OMMENTS		L	^	<u>í ··</u>	<u> </u>
	<u> </u>			· · · · ·							

Appendix B

Laboratory Analytical Reports



June 11, 2007

John Foxwell Ash Creek Associates, Inc. 9615 SW Allen Blvd. Suite 106 Beaverton, OR 97005

RE: Nustar Vancouver Annex

Enclosed are the results of analyses for samples received by the laboratory on 05/25/07 17:12. The following list is a summary of the Work Orders contained in this report, generated on 06/11/07 16:21.

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

Work Order	Project	ProjectNumber	
PQE1043	Nustar Vancouver Annex	1126-06	

TestAmerica - Portland, OR

el W. Am h

Darrell Auvil, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.





#### Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106 Beaverton, OR 97005

Project Name: Project Number: Project Manager:

Nustar Vancouver Annex 1126-06

John Foxwell

Report Created: 06/11/07 16:21

## ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	PQE1043-01	Water	05/25/07 13:15	05/25/07 17:12
MW-2	PQE1043-02	Water	05/25/07 11:15	05/25/07 17:12
MW-2 DUP	PQE1043-03	Water	05/25/07 11:15	05/25/07 17:12
MW-3	PQE1043-04	Water	05/25/07 12:25	05/25/07 17:12
MW-4	PQE1043-05	Water	05/25/07 10:10	05/25/07 17:12
Trip Blank	PQE1043-06	Water	05/25/07 00:00	05/25/07 17:12

TestAmerica - Portland, OR

Darrell Auvil, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.





Ash Creek Associates, Inc.			Project Name:		Nustar Vancouver Annex						
9615 SW Allen Blvd. Suite 106		Proje		oject Number: 1126-00					Report Creat		
Beaverton, OR 97005		Project Manager:			John Foxv	vell			06/11/07 16:21		
	Gase	oline Hydro	ocarbons estAmerica	-		Gx M	ethod				
Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes	
PQE1043-01RE1 (MW-1)		Water			Sampled: 05/25/07 13:15						
Gasoline Range Hydrocarbons	NW TPH-Gx	ND		80.0	ug/l	1x	7051496	05/31/07 10:53	05/31/07 23:39		
Surrogate(s): 4-BFB			86.8%		50 - 150 %	"			"		
PQE1043-02RE1 (MW-2)		Water			Sampled: 05/25/07 11:15						
Gasoline Range Hydrocarbons	NW TPH-Gx	439		80.0	ug/l	1x	7051496	05/31/07 10:53	06/01/07 00:07		
Surrogate(s): 4-BFB			103%		50 - 150 %	"			"		
PQE1043-03RE1 (MW-2 DUP)		Water			Sampled: 05/25/07 11:15						
Gasoline Range Hydrocarbons	NW TPH-Gx	427		80.0	ug/l	1x	7051496	05/31/07 10:53	06/01/07 00:34		
Surrogate(s): 4-BFB			99.2%		50 - 150 %	"			"		
PQE1043-04RE1 (MW-3)		Water			Sampled: 05/25/07 12:25						
Gasoline Range Hydrocarbons	NW TPH-Gx	361		80.0	ug/l	1x	7051496	05/31/07 10:53	06/01/07 01:02		
Surrogate(s): 4-BFB			105%		50 - 150 %	"			"		
POE1043-05RE1 (MW-4)		Wa	Water Sampled: 05/25/07 10:10								

7051496 NW TPH-Gx 80.0 1x05/31/07 10:53 06/01/07 01:29 Gasoline Range Hydrocarbons ND ----ug/l " " 87.4% 50 - 150 % Surrogate(s): 4-BFB

TestAmerica - Portland, OR

Danel W. Amil Darrell Auvil, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.





Ash Creek Associates, Inc.			Project Name: Nustar Vancouver Annex							
9615 SW Allen Blvd. Suite 106		Project Number: Project Manager:		1126-06				Report Created:		
Beaverton, OR 97005	John Foxwell			06/11/07 16:21						
Diesel and H	eavy Range H	•	<b>ns per N</b> estAmerica			hod v	vith Acid	/Silica Gel (	Cleanup	
Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQE1043-01 (MW-1)		Water			Sampled: 05/25/07 13:15					
Diesel Range Organics	NWTPH-Dx	ND		0.238	mg/l	1x	7051509	05/31/07 17:00	06/01/07 13:24	
Heavy Oil Range Hydrocarbons	"	ND		0.476		"		"	"	
Surrogate(s): 1-Chlorooctadecane			84.7%		50 - 150 %	"			"	
PQE1043-02 (MW-2)		Water			Sampled: 05/25/07 11:15					
Diesel Range Organics	NWTPH-Dx	ND		0.238	mg/l	1x	7051509	05/31/07 17:00	06/01/07 13:43	
Heavy Oil Range Hydrocarbons		ND		0.476	"	"	"		"	
Surrogate(s): 1-Chlorooctadecane			84.2%		50 - 150 %	"			"	
PQE1043-03 (MW-2 DUP)		Water			Sampled: 05/25/07 11:15					
Diesel Range Organics	NWTPH-Dx	ND		0.238	mg/l	1x	7051509	05/31/07 17:00	06/01/07 14:03	
Heavy Oil Range Hydrocarbons	"	ND		0.476		"		"	"	
Surrogate(s): 1-Chlorooctadecane			85.1%		50 - 150 %	"			"	
PQE1043-04 (MW-3)		Wa	Water			Sampled: 05/25/07 12:25				
Diesel Range Organics	NWTPH-Dx	ND		0.238	mg/l	1x	7051509	05/31/07 17:00	06/01/07 14:22	
Heavy Oil Range Hydrocarbons	"	ND		0.476	"	"	"		"	

Surrogate(s): 1-Chlorooctadecane

50 - 150 % "

PQE1043-05 (MW-4)		Wat	ter		Sample	ed: 05/2	5/07 10:10			
Diesel Range Organics Heavy Oil Range Hydrocarbons	NWTPH-Dx "	ND ND		0.238 0.476	mg/l "	1x "	7051509 "	05/31/07 17:00	06/01/07 14:41	
Surrogate(s): 1-Chlorooctadecar	ne		84.2%		50 - 150 %	"			"	

86.4%

TestAmerica - Portland, OR

Darrell Auvil, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

"





#### Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106

Beaverton, OR 97005

Project Name: Project Number: 1126-06 Project Manager: John Foxwell

Nustar Vancouver Annex

Report Created: 06/11/07 16:21

## **BTEX Compounds per EPA Method 8260B**

TestAmerica - Portland, OR

Analyte		Method	Method Result MDL* MRL Units Dil Batch		Prepared	Analyzed	Notes				
PQE1043-06	(Trip Blank)		Wa	ter		Sampl	led: 05/2	5/07 00:00			
Benzene		EPA 8260B	ND		0.500	ug/l	1x	7051407	05/30/07 08:16	05/30/07 11:22	
Toluene		"	ND		0.500		"		"	"	
Ethylbenzene		"	ND		0.500		"	"	"	"	
Xylenes (total)			ND		1.00		"		"	"	
Surrogate(s):	4-BFB			96.5%		80 - 120 %	"			"	
	1,2-DCA-d4			99.5%		80 - 120 %	"			"	
	Dibromofluoromethane			102%		80 - 120 %	"			"	
	Toluene-d8			98.0%		80 - 120 %	"			"	

TestAmerica - Portland, OR

Darrell Auvil, Project Manager





Ash Creek Associates, Inc.	Project Name:	Nustar V
9615 SW Allen Blvd. Suite 106	Project Number:	1126-06

9615 SW Allen Blvd. Suite 106 Beaverton, OR 97005 Project Number: Project Manager:

Nustar Vancouver Annex

John Foxwell

Report Created: 06/11/07 16:21

#### Oxygenates by EPA 8260B TestAmerica - Portland, OR

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQE1043-01 (MW-1)		Wa	ıter		Sampl	ed: 05/2	25/07 13:15			
1,2-Dibromoethane	SW846 8260B	ND		0.500	ug/L	1x	7060045	06/01/07 15:37	06/01/07 18:25	
1,2-Dichloroethane	"	ND		0.500		"	"		"	
Ethanol	"	ND		150	"	"	"	"	"	
tert-Butyl alcohol	"	ND		25.0	"	"	"	"	"	
Ethyl tert-Butyl Ether (ETBE)	"	ND		1.00		"	"			
Diisopropyl Ether (DIPE)	"	ND		1.00	"	"	"	"	"	
Methyl tert-butyl ether	"	ND		2.00		"	"			
Tert-Amyl Methyl Ether	"	ND		1.00		"	"		"	
Benzene	"	ND		0.200		"	"			
Toluene	"	ND		0.500		"	"			
Ethylbenzene	"	ND		0.500		"	"		"	
Xylenes (total)	"	ND		1.00		"	"			
Naphthalene	"	ND		2.00		"	"			
1,2,4-Trimethylbenzene	"	ND		1.00		"	"		"	
1,3,5-Trimethylbenzene	"	ND		0.500		"	"			
Isopropylbenzene	"	ND		2.00		"	"			
n-Propylbenzene	"	ND		0.500		"	"	"		
Surrogate(s): 1,2-DCA-d4			100%		80 - 120 %	"			"	
Dibromofluoromet	hane		102%		80 - 120 %	"			"	
Toluene-d8			100%		80 - 120 %	"			"	
4-BFB			104%		80 - 120 %	"			"	

PQE1043-02 (MW-2)		Wa	ter		Sample	ed: 05/2	25/07 11:15			
1,2-Dibromoethane	SW846 8260B	ND		0.500	ug/L	1x	7060045	06/01/07 15:37	06/01/07 20:04	
1,2-Dichloroethane	"	ND		0.500	"				"	
Ethanol	"	ND		150	"	"	"		"	
tert-Butyl alcohol	"	ND		25.0	"	"	"		"	
Ethyl tert-Butyl Ether (ETBE)	"	ND		1.00	"	"	"		"	
Diisopropyl Ether (DIPE)	"	ND		1.00	"	"			"	
Methyl tert-butyl ether	"	18.2		2.00	"	"	"		"	
Tert-Amyl Methyl Ether	"	ND		1.00	"	"			"	
Benzene	"	71.0		0.200	"	"			"	
Toluene	"	1.14		0.500	"	"		"	"	
Ethylbenzene	"	36.1		0.500	"	"		"	"	
Xylenes (total)	"	45.3		1.00	"	"			"	
Naphthalene	"	ND		2.00	"	"			"	
1,2,4-Trimethylbenzene	"	40.0		1.00	"	"			"	
1,3,5-Trimethylbenzene	"	33.5		0.500	"	"			"	
Isopropylbenzene	"	3.00		2.00	"	"		"	"	
n-Propylbenzene	"	2.49		0.500	"	"		"	"	
Surrogate(s): 1,2-DCA-d4			99%		80 - 120 %	"			"	

TestAmerica - Portland, OR

Quel W. Amil

Darrell Auvil, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain

of custody document. This analytical report shall not be reproduced except in full,

without the written approval of the laboratory.





Ash Creek Associates, Inc.	Project Name:	Nustar Vancouver Annex	
9615 SW Allen Blvd. Suite 106	Project Number:	1126-06	Report Created:
Beaverton, OR 97005	Project Manager:	John Foxwell	06/11/07 16:21

				y <b>genates</b> estAmerica							
Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQE1043-02	(MW-2)		W	ater		Sampl	ed: 05/2	25/07 11:15			
	Dibromofluoromethan	e		102%		80 - 120 %	lx			06/01/07 20:04	
	Toluene-d8			100%		80 - 120 %	"			"	
	4-BFB			104%		80 - 120 %	"			"	
PQE1043-03	(MW-2 DUP)		W	ater		Sampl	ed: 05/2	25/07 11:15			
1,2-Dibromoethane	2	SW846 8260B	ND		0.500	ug/L	1x	7060045	06/01/07 15:37	06/01/07 20:29	
1,2-Dichloroethane	e	"	ND		0.500	"	"	"	"	"	
Ethanol		"	ND		150	"	"	"		"	
tert-Butyl alcohol		"	ND		25.0		"	"		"	
Ethyl tert-Butyl Ether (ETBE) "		ND		1.00		"	"	"	"		
Diisopropyl Ether	(DIPE)	"	ND		1.00	"	"	"		"	
Methyl tert-butyl	ether	"	18.5		2.00	"	"	"	"	"	
Tert-Amyl Methyl	Ether	"	ND		1.00		"	"	"	"	
Benzene		"	73.4		0.200	"	"	"	"	"	
Toluene		"	1.05		0.500	"	"	"	"	"	
Ethylbenzene		"	35.0		0.500	"	"	"	"	"	
Xylenes (total)		"	46.3		1.00	"	"	"	"	"	
Naphthalene		"	2.00		2.00	"	"	"	"	"	
1,2,4-Trimethylbe	nzene	"	38.9		1.00		"	"		"	
1,3,5-Trimethylbe	nzene	"	32.6		0.500		"	"		"	
Isopropylbenzene		"	2.98		2.00	"	"	"		"	
n-Propylbenzene		"	2.40		0.500	"	"	"	"		
Surrogate(s):	1,2-DCA-d4			100%		80 - 120 %	"			"	
	Dibromofluoromethan	2		102%		80 - 120 %	"			"	
	Toluene-d8			100%		80 - 120 %	"			"	
	4-BFB			102%		80 - 120 %	"			"	

PQE1043-04 (MW-3)		Wat	er		Samı	pled: 05/2	5/07 12:25			
1,2-Dibromoethane	SW846 8260B	ND		0.500	ug/L	1x	7060045	06/01/07 15:37	06/01/07 19:39	
1,2-Dichloroethane	"	ND		0.500	"	"	"			
Ethanol	"	ND		150	"	"	"			
tert-Butyl alcohol	"	ND		25.0	"	"	"			
Ethyl tert-Butyl Ether (ETBE)	"	ND		1.00	"	"	"			
Diisopropyl Ether (DIPE)	"	ND		1.00	"	"	"			
Methyl tert-butyl ether	"	ND		2.00	"	"	"			
Tert-Amyl Methyl Ether	"	ND		1.00	"	"	"			
Benzene	"	ND		0.500	"	"	"			RL1
Toluene	"	ND		0.500	"	"	"			
Ethylbenzene	"	13.2		0.500		"	"		"	
Xylenes (total)	"	14.5		1.00		"	"	"		
Naphthalene	"	ND		2.00	"	"	"			

Quel W. Amil

Darrell Auvil, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain

of custody document. This analytical report shall not be reproduced except in full,

without the written approval of the laboratory.





Ash Creek Associates, Inc.	Project Name:	Nustar Vancouver Annex	
9615 SW Allen Blvd. Suite 106	Project Number:	1126-06	Report Created:
Beaverton, OR 97005	Project Manager:	John Foxwell	06/11/07 16:21

			•	g <b>enates</b> estAmerica	•	<b>A 8260B</b> and, OR					
Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQE1043-04	(MW-3)		Wa	iter		Sampl	ed: 05/2	5/07 12:25			
1,2,4-Trimethylben	zene	SW846 8260B	10.7		1.00	ug/L	1x	7060045	06/01/07 15:37	06/01/07 19:39	
1,3,5-Trimethylben	zene	"	3.48		0.500	"		"	"		
Isopropylbenzene		"	5.32		2.00			"			
n-Propylbenzene		"	9.30		0.500	"		"			
Surrogate(s):	1,2-DCA-d4			98%		80 - 120 %	"			"	
	Dibromofluoromethan	е		101%		80 - 120 %	"			"	
	Toluene-d8			99%		80 - 120 %	"			"	
	4-BFB			102%		80 - 120 %	"			"	

PQE1043-05 (MW-4)		Wa	ter		Sample	ed: 05/2	5/07 10:10		
1,2-Dibromoethane	SW846 8260B	ND		0.500	ug/L	1x	7060045	06/01/07 15:37	06/01/07 19:15
1,2-Dichloroethane	"	ND		0.500	"	"	"		
Ethanol	"	ND		150	"	"	"		
tert-Butyl alcohol	"	ND		25.0	"	"	"		
Ethyl tert-Butyl Ether (ETBE)	"	ND		1.00	"	"	"		
Diisopropyl Ether (DIPE)	"	ND		1.00	"	"	"		"
Methyl tert-butyl ether	"	ND		2.00	"	"	"		"
Tert-Amyl Methyl Ether	"	ND		1.00	"	"	"		"
Benzene	"	ND		0.200	"	"	"		"
Toluene	"	ND		0.500	"	"	"		"
Ethylbenzene	"	ND		0.500	"	"	"		"
Xylenes (total)	"	ND		1.00	"	"	"		"
Naphthalene	"	ND		2.00	"	"	"		"
1,2,4-Trimethylbenzene	"	ND		1.00	"	"	"		
1,3,5-Trimethylbenzene	"	ND		0.500	"	"	"		"
Isopropylbenzene	"	ND		2.00	"	"	"		"
n-Propylbenzene	"	ND		0.500	"	"	"	"	"
Surrogate(s): 1,2-DCA-d4			102%		80 - 120 %	"			"
Dibromofluorome	thane		102%		80 - 120 %	"			"
Toluene-d8			100%		80 - 120 %	"			"
<i>4-BFB</i>			102%		80 - 120 %	"			"

Quel W. Amil Darrell Auvil, Project Manager





Ash Creek Associates, Inc.				Project Nam	ie:	Nustar	Vancou	ver An	nex					
9615 SW Allen Blvd. Suite 106				Project Nurr	nber:	1126-06							Report Create	ed:
Beaverton, OR 97005				Project Man	ager:	John Fo	xwell						06/11/07 16:	21
	Gasoline Hy	drocarbor	•	<b>TPH-Gx M</b> estAmerica -			atory Qu	uality (	Contr	ol Resul	ts			
QC Batch: 7051496	Water 1	Preparation	Method:	EPA 5030B										
Analyte	Method	Result	MDI	.* MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	) Analyzed	Notes
Blank (7051496-BLK1)								Extr	acted:	05/31/07 10	):53			
Gasoline Range Hydrocarbons	NW TPH-Gx	ND		80.0	ug/l	1x							05/31/07 14:02	
Surrogate(s): 4-BFB		Recovery:	94.4%	Lin	uits: 50-150	% "							05/31/07 14:02	
LCS (7051496-BS1)								Extr	acted:	05/31/07 10	):53			
Gasoline Range Hydrocarbons	NW TPH-Gx	410		80.0	ug/l	1x		500	82.0%	(70-130)			05/31/07 13:06	
Surrogate(s): 4-BFB		Recovery:	102%	Lin	nits: 50-150	% "							05/31/07 13:06	
LCS Dup (7051496-BSD1)								Extr	acted:	05/31/07 10	):53			
Gasoline Range Hydrocarbons	NW TPH-Gx	365		80.0	ug/l	1x		500	73.0%	(70-130)	11.6%	(35)	05/31/07 13:34	
Surrogate(s): 4-BFB		Recovery:	99.4%	Lin	nits: 50-150	% "							05/31/07 13:34	
Duplicate (7051496-DUP1)				QC Source:	PQE1013	-04RE1		Extr	acted:	05/31/07 10	):53			
Gasoline Range Hydrocarbons	NW TPH-Gx	13900		800	ug/l	10x	14000				0.717%	6 (35)	05/31/07 16:46	
Surrogate(s): 4-BFB		Recovery:	113%	Lin	nits: 50-150	% 1x							05/31/07 16:46	
Duplicate (7051496-DUP2)				QC Source:	PQE1014	-01RE1		Extr	acted:	05/31/07 10	):53			
Gasoline Range Hydrocarbons	NW TPH-Gx	11400		800	ug/l	10x	11400				0.00%	(35)	05/31/07 19:04	
Surrogate(s): 4-BFB		Recovery:	98.4%	Lin	uits: 50-150	% 1x							05/31/07 19:04	

Darrell Auvil, Project Manager





Ash Creek Associates, Inc. 9615 SW Allen Blvd. Suite 106 Beaverton, OR 97005				Project Nar Project Nur Project Ma	mber:	Nustar 1126-06 John Fo		ver An	nex				Report Create 06/11/07 16:	
Diesel and Heavy Ran	ge Hydrocar	bons per l		<b>x Method</b> estAmerica -			Gel Cle	anup -	· Lab	oratory	Quali	ty Con	trol Results	
QC Batch: 7051509	Water I	Preparation	1 Method:	EPA 3510	Fuels									
Analyte	Method	Result	MDL	* MRL	Units	Dil	Source Result	Spike Amt	REC	(Limits)	% RPD	(Limits	) Analyzed	Notes
Blank (7051509-BLK1)								Ext	racted:	05/31/07 17	7:00			
Diesel Range Organics	NWTPH-Dx	ND		0.250	mg/l	1x							06/01/07 12:45	
Heavy Oil Range Hydrocarbons	"	ND		0.500	"									
Surrogate(s): 1-Chlorooctadecane		Recovery:	87.9%	Li	mits: 50-150	9% "							06/01/07 12:45	
LCS (7051509-BS1)								Ext	racted:	05/31/07 17	7:00			
Diesel Range Organics	NWTPH-Dx	2.51		0.250	mg/l	1x		2.58	97.3%	(50-150)			06/01/07 12:26	
Heavy Oil Range Hydrocarbons	"	1.81		0.500	"			1.56	116%					
Surrogate(s): 1-Chlorooctadecane		Recovery:	85.8%	Li	mits: 50-150	% "							06/01/07 12:26	
LCS Dup (7051509-BSD1)								Ext	racted:	05/31/07 17	7:00			
Diesel Range Organics	NWTPH-Dx	2.40		0.250	mg/l	1x		2.58	93.0%	(50-150)	4.48%	6 (50)	06/01/07 13:04	
Heavy Oil Range Hydrocarbons	"	1.73		0.500	"	"		1.56	111%		4.52%	ó "		
Surrogate(s): 1-Chlorooctadecane		Recovery:	80 7%	Li	mits: 50-150	0/ "							06/01/07 13:04	

Darrell Auvil, Project Manager





#### Nustar Vancouver Annex Ash Creek Associates, Inc. Project Name: 9615 SW Allen Blvd. Suite 106 Project Number: 1126-06 Report Created: Beaverton, OR 97005 Project Manager: John Foxwell 06/11/07 16:21 BTEX Compounds per EPA Method 8260B - Laboratory Quality Control Results TestAmerica - Portland, OR QC Batch: 7051407 Water Preparation Method: EPA 5030B Source Spike 0/ % RPD Analyte Method Result MDL* MRL Units Dil (Limits) (Limits) Analyzed Notes REC Result Amt Blank (7051407-BLK1) Extracted: 05/30/07 08:16 EPA 8260B 05/30/07 10:28 Benzene ND 0 500 1x --ug/l ---____ ------Toluene .. ND 0.500 ---------------.. ND 0.500 Ethylbenzene ---------------.. 1.00 Xvlenes (total) ND --------------------4-BFB Surrogate(s): Recovery: 98.0% Limits: 80-120% 05/30/07 10:28 1,2-DCA-d4 102% 80-120% " " Dibromofluoromethane 104% 80-120% " 100% 80-120% Toluene-d8 LCS (7051407-BS1) Extracted: 05/30/07 08:16 EPA 8260B 20.2 0.500 1x 20.0 101% (80-120) 05/30/07 08:40 Benzene ---ug/l ------Toluene " 20.4 0.500 102% (80-125) ---____ ---Ethylbenzene .. 21.2 0.500 ., 106% (80-130) Xvlenes (total) .. 65.2 1.00 ... 60.0 109% .. ---.. ---------4-BFB 05/30/07 08:40 98.5% Limits: 80-120% Surrogate(s): Recovery: 1.2-DCA-d4 98.5% 80-120% Dibromofluoromethane 102% 80-120% 97.0% 80-120% Toluene-d8 Matrix Spike (7051407-MS1) QC Source: PQE0971-01 Extracted: 05/30/07 08:16 20.1 Benzene EPA 8260B 0.500 1x ND 20.0 100% (80-125) 05/30/07 09:07 --ug/l ------Toluene 20.0 0.500 ND 100% (65-135) ------.. Ethylbenzene 21.1 0.500 ND 106% (80-125) .. ... Xylenes (total) 65.6 1.00 ND 60.0 109% (70-130) --------4-BFB 104% Limits: 80-120% " 05/30/07 09:07 Surrogate(s): Recovery: 1,2-DCA-d4 103% 80-120% " " " Dibromofluoromethane 106% 80-120% 102% 80-120% Toluene-d8 Matrix Spike Dup (7051407-MSD1) OC Source: POE0971-01 Extracted: 05/30/07 08:16 EPA 8260B 19.9 0.500 ND 99.5% (25) 05/30/07 09:34 Benzene 1x 20.0 (80-125) 1.00% --ug/l Toluene 20.0 0 500 ND 100% 0.00% (65 - 135)" .. " Ethylbenzene 21.0 0.500 ND 105% (80-125) 0.475% ---.. 64.5 1.00 ., .. ., .. Xylenes (total) ---ND 60.0 108% (70-130) 1.69% Surrogate(s): 4-BFB 106% Limits: 80-120% 05/30/07 09:34 Recovery: 1,2-DCA-d4 106% 80-120% " ... Dibromofluoromethane 108% 80-120% Toluene-d8 104% 80-120% " ,

TestAmerica - Portland, OR

Darrell Auvil, Project Manager

And W. Amil

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full,

without the written approval of the laboratory.





#### Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106

Beaverton, OR 97005

Project Name: Nustar Van Project Number: 1126-06 Project Manager: John Foxwell

Nustar Vancouver Annex

Report Created: 06/11/07 16:21

#### **Oxygenates by EPA 8260B** - Laboratory Quality Control Results TestAmerica - Portland, OR QC Batch: 7060045 Water Preparation Method: EPA 5030B Source Spike 0/ Analyte Method Result MDL* MRL Units Dil (Limits) (Limits) Analyzed Notes RPD REC Result Amt Blank (7060045-BLK1) Extracted: 06/01/07 15:37 SW846 06/01/07 18:50 ND 0.500 1x 1,2-Dibromoethane --ug/L ------8260B ND 0 500 1.2-Dichloroethane ---------" Ethanol ND 150 ____ ------.. .. ND 25.0 tert-Butyl alcohol ------Ethyl tert-Butyl Ether (ETBE) ND 1.00 ------------Diisopropyl Ether (DIPE) ND 1.00 ---2.00 Methyl tert-butyl ether ND 1.00 Tert-Amyl Methyl Ether ND ------0 200 Benzene ND ----------Toluene ND 0.500 ------____ --Ethylbenzene ND 0.500 ---Xylenes (total) ND ---1.00 ---------------Naphthalene ND 2.00 ---------1,2,4-Trimethylbenzene ND 1.00 1,3,5-Trimethylbenzene ND 0.500 --------Isopropylbenzene ND 2.00 -----------------n-Propylbenzene ND 0.500 ___ ------___ ---___ Surrogate(s): 1,2-DCA-d4 98% Limits: 80-120% 06/01/07 18:50 Recovery: " Dibromofluoromethane 101% 80-120% Toluene-d8 100% 80-120% 4-BFB 103% 80-120% Extracted: 06/01/07 15:37 LCS (7060045-BS1) 1,2-Dibromoethane SW846 20.6 0.500 ug/L 1x 20.0 103% (80-140) 06/01/07 16:19 8260B 101% 20.2 0.500 ., 1,2-Dichloroethane " (80-130) .. .. 100% Ethanol 200 150 200 (70 - 130)---------.. .. ... 118% tert-Butyl alcohol 237 25.0 -----Ethyl tert-Butyl Ether (ETBE) 19.5 1.00 ---20.0 98% .. .. .. Diisopropyl Ether (DIPE) 20.2 1.00 ., 101% Methyl tert-butyl ether 37.9 2.00 --40.0 95% (85-135) Tert-Amyl Methyl Ether 21.3 1.00 --20.0 106% (70-130) Benzene 20.5 0.200 ., 102% (80-125) Toluene 20.1 0.500 100% (80-120) ---., Ethvlbenzene 20.7 0.500 ---104% (80-130) ---Xylenes (total) 63.8 1.00 ---60.0 106% Naphthalene 22.8 2.00 20.0 114% (70-150) 1,2,4-Trimethylbenzene 21.0 1.00 ---105% (75 - 125)---1,3,5-Trimethylbenzene 22.4 ---0.500 ---112% (70-140)---

TestAmerica - Portland, OR

Isopropylbenzene

And W. Amil

Darrell Auvil, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain

-- --

104%

(80-130)

of custody document. This analytical report shall not be reproduced except in full,

without the written approval of the laboratory.



2.00

20.9



Ash Creek	Associates, Inc.				Project Name: Nustar			Nustar Vancouver Annex							
9615 SW A	llen Blvd. Suite 106				Project Number: 1126-06				126-06						ed:
Beaverton,					Project Mar	nager:	John Foxwell							06/11/07 16	:21
		(	Oxygenates	•			• -	ity Contr	ol Resu	ılts					
				Tes	tAmerica -	Portland,	OR								
QC Bate	ch: 7060045	Water	Preparation <b>N</b>	Method: E	EPA 5030B										
Analyte		Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits	) Analyzed	Note
LCS (706004	5-BS1)								Extr	acted:	06/01/07 15	:37			
n-Propylbenzene		SW846 8260B	21.0		0.500	ug/L	1x		20.0	105%	(80-130)			06/01/07 16:19	
Surrogate(s):	1,2-DCA-d4			100%	Lii	nits: 80-120								06/01/07 16:19	
	Dibromofluoromethane			100%		80-12								"	
	Toluene-d8 4-BFB			100% 100%		80-12 80-12								"	
	(7060045-MS1)				QC Source						06/01/07 15				
1,2-Dibromoethane		SW846 8260B	18.6		0.500	ug/L	1x	ND	20.0	93%	(80-125)			06/01/07 16:46	
1,2-Dichloroethane		"	18.5		0.500	"		ND	"	92%	(75-120)			"	
Ethanol		"	193		150	"		ND	200	96%	(70-130)			"	
ert-Butyl alcohol		"	190		25.0	"		ND	"	95%	"			"	
Ethyl tert-Butyl Eth	er (ETBE)	"	18.6		1.00	"		ND	20.0	93%	"			"	
Diisopropyl Ether (I	DIPE)	"	19.4		1.00	"		ND	"	97%	"			"	
Methyl tert-butyl eth	her	"	34.3		2.00	"		ND	40.0	86%	(75-130)			"	
Tert-Amyl Methyl F	Ether	"	20.0		1.00	"		ND	20.0	100%	(70-130)			"	
Benzene		"	19.9		0.200	"		ND	"	100%	(75-125)			"	
Toluene		"	19.6		0.500	"		ND	"	98%	(80-120)				
Ethylbenzene		"	20.9		0.500	"		ND	"	104%	(75-125)			"	
Xylenes (total)		"	64.5		1.00	"		ND	60.0	108%	(70-130)			"	
Naphthalene		"	20.1		2.00	"		0.840	20.0	96%	(65-150)				
1,2,4-Trimethylbenz	zene	"	20.8		1.00	"		ND	"	104%	(85-135)			"	
1,3,5-Trimethylbenz	zene	"	22.0		0.500			ND	"	110%	(70-140)			"	
Isopropylbenzene		"	20.8		2.00			ND	"	104%	(80-130)			"	
n-Propylbenzene		"	21.2		0.500		"	ND	"	106%	"			"	
Surrogate(s):	1,2-DCA-d4		Recovery:	94%		nits: 80-120	0% "							06/01/07 16:46	
San Ogure(3).	Dibromofluoromethane		necovery.	99%	Lii	80-120 80-12								"	
	Toluene-d8			98%		80-12								"	
	4-BFB			102%		80-12	0% "							"	
<u>Matrix Spike I</u>	Dup (7060045-MSD	1)			QC Source	PQE1043	-01		Extr	acted:	06/01/07 15	:37			
1,2-Dibromoethane		SW846 8260B	20.3		0.500	ug/L	1x	ND	20.0	102%	(80-125)	9%	(25)	06/01/07 17:10	
1,2-Dichloroethane		8200B "	19.7		0.500		"	ND	"	98%	(75-120)	6%	"	"	
Ethanol		"	208		150			ND	200	104%	(70-130)	7%	"	"	
tert-Butyl alcohol		"	226		25.0			ND	"	113%	"	17%	"	"	
Ethyl tert-Butyl Eth	er (ETBE)	"	19.3		1.00			ND	20.0	96%	"	4%	"	"	
Diisopropyl Ether (I		"	19.7		1.00			ND	"	98%		2%	"	"	
Methyl tert-butyl eth			37.2		2.00			ND	40.0	93%	(75-130)	8%	"		
Fert-Amyl Methyl F			21.0		1.00			ND	20.0	105%	(70-130)	5%	"		
· · · · · · · · · · · · · · · · ·			21.0		1.00				20.0	100/0	(, 0 150)	570			

Benzene

handle W. Amil

"

19.9

Darrell Auvil, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain

of custody document. This analytical report shall not be reproduced except in full,

0% "

without the written approval of the laboratory.



0.200

----

"

..

ND

"

100% (75-125)



#### Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106

Beaverton, OR 97005

Project Name: Project Number: Project Manager: John Foxwell

Nustar Vancouver Annex 1126-06

Report Created: 06/11/07 16:21

	Oxygenates by EPA 8260B - Laboratory Quality Control Results TestAmerica - Portland, OR														
QC Batch: 70	60045 W	ater Preparation	Method:	EPA 5030E	3										
Analyte	Metho	l Result	MDL;	* MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes	
Matrix Spike Dup (7	7060045-MSD1)			QC Source	: PQE1043-01			Extr	acted:	06/01/07 15	5:37				
Toluene	SW84 8260			0.500	ug/L	1x	ND	20.0	99%	(80-120)	1%	(25)	06/01/07 17:10		
Ethylbenzene	"	20.3		0.500	"	"	ND	"	102%	(75-125)	3%	"			
Xylenes (total)	"	62.2		1.00	"	"	ND	60.0	104%	(70-130)	4%	"	"		
Naphthalene	"	22.1		2.00	"	"	0.840	20.0	106%	(65-150)	9%	"			
1,2,4-Trimethylbenzene	"	19.7		1.00	"	"	ND	"	98%	(85-135)	5%	"	"		
1,3,5-Trimethylbenzene	"	21.3		0.500	"	"	ND	"	106%	(70-140)	3%	"	"		
Isopropylbenzene	"	20.4		2.00	"	"	ND	"	102%	(80-130)	2%	"	"		
n-Propylbenzene	"	20.6		0.500			ND	"	103%		3%	"	"		
Surrogate(s): 1,2-DO	CA-d4	Recovery:	100%	Li	mits: 80-120%	"							06/01/07 17:10	)	
Dibron	nofluoromethane		102%		80-120%	"							"		
Toluen	ne-d8		100%		80-120%	"							"		
4-BFB			100%		80-120%	"							"		

TestAmerica - Portland, OR

Darrell Auvil, Project Manager





#### Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106 Beaverton, OR 97005 Project Name: Project Number: Project Manager: Nustar Vancouver Annex 1126-06 John Foxwell

Report Created: 06/11/07 16:21

#### Notes and Definitions

#### Report Specific Notes:

RL1 - Reporting limit raised due to sample matrix effects.

#### Laboratory Reporting Conventions:

- DET Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only. ND Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate). NR/NA _ Not Reported / Not Available Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight. dry Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported wet on a Wet Weight Basis. RPD RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries). METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table. MRL MDL* METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. _ *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results. Dil Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution
- Dil Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic
   Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*.

   Signature
   Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory.

   Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica - Portland, OR

Jule W. Amil



# Test Analytical testing corporation

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 11922 E. First Ave, Spokane, WA 99206-5302 9405 SW Nimbus Ave, Beaverton, OR 97008-7145 2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 425-420-9200 FAX 420-9210 509-924-9200 FAX 924-9290 503-906-9200 FAX 906-9210 907-563-9200 FAX 563-9210

CHAIN OF CUSTOD	Y REPORT	Work Order #: POEIDH 3
CLIENT: KASSESSAS ASH Creek	VOICE TO:	TURNAROUND REQUEST
ADDRESS: 9615 SW Allen Blud. Ste. 106 Beaverton, OF 97005	Same NUMBER.	in Business Days * Organic & Inorganic Analyses 7 5 4 3 2 1 < 1 S7D. Petroleum Hydrocarbon Analyses
PROJECT NAME: NUSTOr Vancouver of	4     3     2     1     <1	
PROJECT NUMBER: 1126-06 SAMPLED BY: KKB	OTHER Specify: * Turnaround Requests less than standard may incur Rush Charges.	
SAMPLED BY:     KKB       CLIENT SAMPLE     SAMPLING       IDENTIFICATION     DATE/TIME		MATRIX # OF LOCATION / TA (W, S, O) CONT. COMMENTS WO ID
MW-1 5/25/07 1315 X X X		W 7
MW-2 5/25/07 1115 X X X		W 7
, MW-2 DUP 5/25/07 115 X X X		W 7
MW-3 5/25/07 1225 X X X		W 7
MW-4 5/25/07 1010 X X X		W 7
« MW-4 5/25/07 1010 X X X «Trip Blank X X	ζ	W 1
7		
RELEASED BY RIPS THE ASK CURE K	TIME 1200 PRINT NAME MULTO STEVENS	FIRM. ACA THE 1700
RELEASED BY: MAR Store MAN		
ADDITIONAL REMARKS:	ILME: 1/12 PRINT NAME: STIFFFFFFCON II W	
COC REV 09 2004		PAGE OF

	Tes	tAmerica Sample R	Receipt Checklist	Cipoler (Dis).
Received by:	Unpacked by:	Logged-in by:	Work Order No.	1043 Ja
*rsection A) Date: <u>6176107</u> Time: <u>1712</u> Initials: <u>171</u> ***ESI Clients (see Section C)	Tisection B) Date: <u>5.29</u> Initials:	Date: <u>5729</u> Initials: <u>11</u>	Project: <u>KLASA G.V.</u> A	CLEDICIULES VILATIONAL VILATIONAL re out of range: No ice No ice
LOT Olients (see Section of	Cooler Temperature	(IR): <u>2.2</u> °C plastic 🥳	lass/ NA (oil/air samples, ESI client)	
A <u>Custody Seals</u> : (#	#Other:) gs Cubbies	ed from: TA Courier Senvoy UPS Fed Ex Client TDP DHL SDS Mid-Valley GS/Senvoy Other:	B Sample Status (If N circled, see No General: Intact? # Containers Match COC? IDs Match COC? For Analyses Requested: Correct Type & Preservation? Adequate Volume? Within Hold Time? Volatiles: VOAs Free of Headspace? TB on COC? not provided Metals: HNO3 Preserved?	
C ***ESI Clients Only:				er (ticks/min):
Temperature Blank: _ All preserved bot All preserved acc	tles checked Y N	NA (voas/soils/all unp.) NOD) NA (voas/soils/all unp.)	Temperatures (IR):°C (left)(middle	
		Project	Managers:	
Comments:		PM Reviewed:	(Initial/Date)	

. . .



September 20, 2007

John Foxwell Ash Creek Associates, Inc. 9615 SW Allen Blvd. Suite 106 Beaverton, OR 97005

RE: NuStar STOP Vancouver

Enclosed are the results of analyses for samples received by the laboratory on 08/27/07 12:01. The following list is a summary of the Work Orders contained in this report, generated on 09/20/07 09:19.

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

Work Order	Project	ProjectNumber
PQH1138	NuStar STOP Vancouver	1126-02

TestAmerica - Portland, OR

el W. An h

Darrell Auvil, Project Manager





#### Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106 Beaverton, OR 97005

Project Name: Project Number: Project Manager:

NuStar STOP Vancouver 1126-02 John Foxwell

Report Created: 09/20/07 09:19

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	PQH1138-01	Water	08/24/07 00:00	08/27/07 12:01
MW-2	PQH1138-02	Water	08/24/07 00:00	08/27/07 12:01
MW-3	PQH1138-03	Water	08/24/07 00:00	08/27/07 12:01
MW-4	PQH1138-04	Water	08/24/07 00:00	08/27/07 12:01

TestAmerica - Portland, OR

Darrell Auvil, Project Manager





Ash Creek Associates, Inc.	Project Name:	NuStar STOP Vancouver	
9615 SW Allen Blvd. Suite 106	Project Number:	1126-02	Report Created:
Beaverton, OR 97005	Project Manager:	John Foxwell	09/20/07 09:19

#### Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method with Acid/Silica Gel Cleanup TestAmerica - Portland OR

TestAmerica - Portland, OR													
Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes			
PQH1138-01 (MW-1)		Wa	nter		Sampl	ed: 08/2	24/07 00:00						
Diesel Range Organics	NWTPH-Dx	ND		0.238	mg/l	1x	7081409	08/29/07 11:00	08/31/07 07:07				
Heavy Oil Range Hydrocarbons		ND		0.476		"	"	"	"				
Surrogate(s): 1-Chlorooctadecane			79.8%		50 - 150 %	"			"				
PQH1138-02 (MW-2)		Water			Sampl	ed: 08/2	24/07 00:00						
Diesel Range Organics	NWTPH-Dx	ND		0.238	mg/l	1x	7081409	08/29/07 11:00	08/31/07 07:43				
Heavy Oil Range Hydrocarbons		ND		0.476		"	"	"	"				
Surrogate(s): 1-Chlorooctadecane			85.0%		50 - 150 %	"			"				
PQH1138-03 (MW-3)		Wa	ater		Sampl	ed: 08/2	24/07 00:00						
Diesel Range Organics	NWTPH-Dx	ND		0.238	mg/l	1x	7081409	08/29/07 11:00	08/31/07 09:22				
Heavy Oil Range Hydrocarbons		ND		0.476		"	"	"	"				
Surrogate(s): 1-Chlorooctadecane			86.5%		50 - 150 %	"			"				
PQH1138-04 (MW-4)		Wa	nter		Sampl	ed: 08/2	24/07 00:00						
Diesel Range Organics	NWTPH-Dx	ND		0.238	mg/l	1x	7081409	08/29/07 11:00	08/31/07 09:58				
Heavy Oil Range Hydrocarbons		ND		0.476		"	"	"	"				
Surrogate(s): 1-Chlorooctadecane			88.1%		50 - 150 %	"			"				

TestAmerica - Portland, OR

Quel W. Amil

Darrell Auvil, Project Manager





#### Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106

Beaverton, OR 97005

Project Name: NuStar STC Project Number: 1126-02 Project Manager: John Foxwell

NuStar STOP Vancouver

Report Created: 09/20/07 09:19

#### Volatile Organic Compounds by EPA Method 8260B TestAmerica - Morgan Hill, CA

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQH1138-01 (MW-1)		Wa	iter		Sampl	ed: 08/2	24/07 00:00			
Benzene	EPA 8260B	ND		1.0	ug/l	1x	7106030	09/06/07 15:14	09/07/07 05:27	
Toluene	"	ND		2.0	"	"	"	"	"	
Ethylbenzene	"	ND		2.0	"	"	"	"	"	
Xylenes (total)		ND		6.0	"	"	"		"	
Isopropylbenzene	"	ND		2.0	"	"	"	"	"	
Naphthalene	"	ND		5.0	"	"	"	"	"	
tert-Amyl methyl ether	"	ND		0.50	"	"	"	"		
tert-Butyl alcohol	"	ND		20	"	"	"	"	"	
Di-isopropyl ether	"	ND		0.50	"	"	"	"		
1,2-Dibromoethane (EDB)	"	ND		0.50	"	"	"	"	"	
1,2-Dichloroethane	"	ND		0.50	"	"	"	"	"	
Ethanol	"	ND		100	"	"	"	"		
Ethyl tert-butyl ether	"	ND		0.50	"	"	"	"	"	
Methyl tert-butyl ether	"	ND		0.50	"	"	"	"	"	
n-Propylbenzene	"	ND		1.0	"	"	"	"	"	
1,2,4-Trimethylbenzene	"	ND		1.0	"	"	"	"	"	
1,3,5-Trimethylbenzene	"	ND		1.0		"		"	"	
Surrogate(s): Dibromofluorometh	ane		95%		75 - 120 %	"			"	
1,2-Dichloroethane	-d4		90%		60 - 125 %	"			"	
Toluene-d8			92%		80 - 120 %	"			"	
4-Bromofluorobenzo	ene		89%		60 - 135 %	"			"	

PQH1138-02 (MW-2)		Wa	ter		Sample	ed: 08/2	24/07 00:00		
Benzene	EPA 8260B	ND		1.0	ug/l	1x	7106030	09/06/07 15:14	09/07/07 06:00
Toluene	"	ND		2.0	"	"	"		
Ethylbenzene	"	ND		2.0	"	"	"		
Xylenes (total)	"	ND		6.0	"	"	"		
Isopropylbenzene	"	3.2		2.0	"	"	"	"	
Naphthalene	"	ND		5.0	"	"	"		"
tert-Amyl methyl ether	"	ND		0.50	"	"	"		
tert-Butyl alcohol	"	ND		20	"	"	"		
Di-isopropyl ether	"	ND		0.50	"	"	"		
1,2-Dibromoethane (EDB)	"	ND		0.50	"	"	"		
1,2-Dichloroethane	"	ND		0.50	"	"	"		
Ethanol	"	ND		100	"	"	"		"
Ethyl tert-butyl ether	"	ND		0.50	"	"	"		
Methyl tert-butyl ether	"	59		0.50	"	"	"	"	
n-Propylbenzene	"	ND		1.0	"	"	"		"
1,2,4-Trimethylbenzene	"	ND		1.0	"	"	"		
1,3,5-Trimethylbenzene	"	ND		1.0	"		"		n
Surrogate(s): Dibromofluorometh	ane		89%		75 - 120 %	"			"

TestAmerica - Portland, OR

Charle W. Amil

Darrell Auvil, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain

of custody document. This analytical report shall not be reproduced except in full,

without the written approval of the laboratory.





#### Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106

Beaverton, OR 97005

 Project Name:
 NuStar STC

 Project Number:
 1126-02

 Project Manager:
 John Foxwell

NuStar STOP Vancouver 1126-02

Report Created: 09/20/07 09:19

TestAmerica - Morgan Hill, CA													
Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Note		
PQH1138-02	(MW-2)		W٤	ater		Sampl	ed: 08/2	24/07 00:00					
	1,2-Dichloroethane-d4			82%		60 - 125 %	1x			09/07/07 06:00			
	Toluene-d8			95%		80 - 120 %	"			"			
	4-Bromofluorobenzene			90%		60 - 135 %	"			"			
PQH1138-03	(MW-3)		Wa	ater		Sampl	ed: 08/2	24/07 00:00					
Benzene		EPA 8260B	ND		1.0	ug/l	1x	7106030	09/06/07 15:14	09/07/07 06:37			
Foluene		"	ND		2.0	"	"	"	"				
Ethylbenzene		"	ND		2.0	"	"	"	"				
Xylenes (total)		"	ND		6.0	"	"	"		"			
sopropylbenzene		"	ND		2.0	"	"	"	"	"			
Japhthalene		"	ND		5.0	"	"	"	"	"			
ert-Amyl methyl	ether	"	ND		0.50	"	"	"	"	"			
ert-Butyl alcohol		"	ND		20	"	"	"					
Di-isopropyl ether		"	ND		0.50	"	"	"					
,2-Dibromoethan			ND		0.50	"	"	"	"				
,2-Dichloroethan	. ,	"	ND		0.50	"	"	"	"	"			
thanol		"	ND		100	"	"	"		"			
thyl tert-butyl et	her	"	ND		0.50	"	"	"		"			
Iethyl tert-butyl		"	ND		0.50	"		"		"			
-Propylbenzene		"	ND		1.0	"	"	"		"			
,2,4-Trimethylbe	enzene	"	ND		1.0	"	"	"		"			
,3,5-Trimethylbe		"	ND		1.0		"		"	"			
Surrogate(s):	: Dibromofluoromethane			94%		75 - 120 %	"			"			
	1,2-Dichloroethane-d4			95%		60 - 125 %	"			"			
	Toluene-d8			85%		80 - 120 %	"			"			
	4-Bromofluorobenzene			86%		60 - 135 %	"			"			
QH1138-04	(MW-4)		Wa	ater		Sampl	ed: 08/2	24/07 00:00					
enzene		EPA 8260B	ND		1.0	ug/l	1x	7106030	09/06/07 15:14	09/07/07 07:10			
oluene		"	ND		2.0	"	"	"	"				
thylbenzene		"	ND		2.0	"	"	"	"				
(ylenes (total)			ND		6.0	"	"	"					
sopropylbenzene			ND		2.0	"	"	"					
laphthalene			ND		5.0	"	"	"					
ert-Amyl methyl	ether		ND		0.50	"	"	"					
rt-Butyl alcohol		"	ND		20	"	"	"		"			
i-isopropyl ether		"	ND		0.50	"	"	"		"			
2-Dibromoethan		"	ND		0.50	"	"	"	"				
,2-Dichloroethan		"	ND		0.50	"	"	"	"	"			
thanol		"	ND		100	"	"	"	"	"			
thyl tert-butyl et	her		ND		0.50	"	"	"					
fethyl tert-butyl			ND		0.50								

TestAmerica - Portland, OR

Darrell Auvil, Project Manager

Quel W. Amil

The results in this report apply to the samples analyzed in accordance with the chain

of custody document. This analytical report shall not be reproduced except in full,

without the written approval of the laboratory.





#### Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106 Beaverton, OR 97005 Project Name: Project Number: Project Manager:

NuStar STOP Vancouver

1126-02

John Foxwell

Report Created: 09/20/07 09:19

#### Volatile Organic Compounds by EPA Method 8260B TestAmerica - Morgan Hill, CA

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQH1138-04	(MW-4)		Wa	Water				4/07 00:00			
n-Propylbenzene		EPA 8260B	ND		1.0	ug/l	1x	7106030	09/06/07 15:14	09/07/07 07:10	
1,2,4-Trimethylbenz	zene	"	ND		1.0	"			"	"	
1,3,5-Trimethylbenz	zene		ND		1.0		"		"	"	
Surrogate(s):	Dibromofluoromethane			98%		75 - 120 %	"			"	
	1,2-Dichloroethane-d4			92%		60 - 125 %	"			"	
	Toluene-d8			96%		80 - 120 %	"			"	
	4-Bromofluorobenzene			86%		60 - 135 %	"			"	

TestAmerica - Portland, OR

And W. Amil

Darrell Auvil, Project Manager





Ash Creek Associates, Inc.	Project Name:	NuStar STOP Vancouver	
9615 SW Allen Blvd. Suite 106	Project Number:	1126-02	Report Created:
Beaverton, OR 97005	Project Manager:	John Foxwell	09/20/07 09:19

	Gasoline Hydroc	•	NWTPH estAmerica			by E	PA Meth	od 8021B		
Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQH1138-01 (MW-1)		Wa	ter		Sampl	ed: 08/2	24/07 00:00			
Gasoline Range Hydrocarbons	NWTPH-G/8021 B	ND		100	ug/l	1x	7090020	09/05/07 09:55	09/05/07 13:32	
Surrogate(s): 4-BFB (FID)			79.0%		50 - 150 %	"			"	
PQH1138-02 (MW-2)		Wa	ter		Sampl	ed: 08/2	24/07 00:00			
Gasoline Range Hydrocarbons	NWTPH-G/8021 B	102		100	ug/l	1x	7090020	09/05/07 09:55	09/05/07 13:56	
Surrogate(s): 4-BFB (FID)			103%		50 - 150 %	"			"	
PQH1138-03 (MW-3)		Wa	ter		Sampl	ed: 08/2	24/07 00:00			
Gasoline Range Hydrocarbons	NWTPH-G/8021 B	ND		100	ug/l	1x	7090020	09/05/07 09:55	09/05/07 14:21	
Surrogate(s): 4-BFB (FID)			74.5%		50 - 150 %	"			"	
PQH1138-04 (MW-4)		Wa	ter		Sampl	ed: 08/2	24/07 00:00			
Gasoline Range Hydrocarbons	NWTPH-G/8021 B	ND		100	ug/l	1x	7090020	09/05/07 09:55	09/05/07 14:45	
Surrogate(s): 4-BFB (FID)			72.9%		50 - 150 %	"			"	

Danel W. Amil

Darrell Auvil, Project Manager





Ash Creek Associates, Inc.				Project Nan	ne: I	NuStar	r STOP V	ancou	ver					
9615 SW Allen Blvd. Suite 106	6			Project Nur	nber: 1	126-02	2						Report Create	ed:
Beaverton, OR 97005				Project Mar	nager: J	ohn Fo	xwell						09/20/07 09:	19
Diesel and Heavy Ran	ge Hydrocar	bons per l		<b>x Method</b> estAmerica -			Gel Clea	anup -	Lab	oratory	Quali	ty Con	trol Results	
QC Batch: 7081409	Water I	Preparation	n Method:	EPA 3520/6	600 Series									
Analyte	Method	Result	MDL	* MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits	) Analyzed	Notes
Blank (7081409-BLK1)								Extr	acted:	08/29/07 11	:00			
Diesel Range Organics	NWTPH-Dx	ND		0.250	mg/l	1x							08/31/07 03:32	
Heavy Oil Range Hydrocarbons	"	ND		0.500	"	"							"	
Surrogate(s): 1-Chlorooctadecane		Recovery:	89.7%	Lin	nits: 50-150%	5 ″							08/31/07 03:32	
LCS (7081409-BS1)								Extr	acted:	08/29/07 11	:00			
Diesel Range Organics	NWTPH-Dx	2.59		0.250	mg/l	1x		2.50	103%	(50-150)			08/31/07 02:20	
Heavy Oil Range Hydrocarbons	"	1.76		0.500	"	"		1.51	117%					
Surrogate(s): 1-Chlorooctadecane		Recovery:	103%	Lin	nits: 50-150%	5 ″							08/31/07 02:20	
LCS Dup (7081409-BSD1)								Extr	acted:	08/29/07 11	:00			
Diesel Range Organics	NWTPH-Dx	2.32		0.250	mg/l	1x		2.50	92.8%	(50-150)	10.8%	6 (50)	08/31/07 02:56	
Heavy Oil Range Hydrocarbons	"	1.63		0.500	"	"		1.51	108%	"	7.99%	, "	"	
Surrogate(s): 1-Chlorooctadecane		Recovery:	04.00/		nits: 50-150%								08/31/07 02:56	

Darrell Auvil, Project Manager





#### Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106

Beaverton, OR 97005

Project Name: Project Number: Project Manager:

**NuStar STOP Vancouver** 1126-02 John Foxwell

Report Created: 09/20/07 09:19

## Volatile Organic Compounds by EPA Method 8260B - Laboratory Quality Control Results TestAmerica - Morgan Hill, CA

QC Batch:	7106030	Water P	reparation	Method: EP	A 5030B	P/T									
Analyte		Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (7106030-	BLK1)								Extr	acted:	09/06/07 00	:00			
Benzene		EPA 8260B	ND		1.0	ug/l	1x						(	09/07/07 02:00	
Toluene		"	ND		2.0	"	"							"	
Ethylbenzene		"	ND		2.0	"	"							"	
Xylenes (total)		"	ND		6.0	"								"	
Isopropylbenzene		"	ND		2.0	"								"	
Naphthalene		"	ND		5.0									"	
tert-Amyl methyl ether		"	ND		0.50	"	"							"	
tert-Butyl alcohol		"	ND		20	"								"	
Di-isopropyl ether		"	ND		0.50									"	
1,2-Dibromoethane (EI	DB)	"	ND		0.50	"	"								
1,2-Dichloroethane			ND		0.50	"	"								
Ethanol		"	ND		100	"	"								
Ethyl tert-butyl ether		"	ND		0.50		"							"	
Methyl tert-butyl ether		"	ND		0.50	"								"	
n-Propylbenzene		"	ND		1.0										
1,2,4-Trimethylbenzen	2	"	ND		1.0	"									
1,3,5-Trimethylbenzeno		"	ND		1.0	"									
	Dibromofluoromethane		Recovery:	93%		nits: 75-1209	× "							09/07/07 02:00	
	,2-Dichloroethane-d4		Recovery.	91%	Lin	60-125								"	,
	foluene-d8			96%		80-120								"	
4	-Bromofluorobenzene			91%		60-135	% "							"	
LCS (7106030-E	81)								Extr	acted:	09/06/07 00	:00			
Benzene	~-)	EPA 8260B	7.62		1.0	ug/l	1x		10.0	76%	(75-120)		(	09/07/07 00:21	
Toluene		"	9.25		2.0	"				92%					
Ethylbenzene		"	9.32		2.0	"				93%					
Xylenes (total)		"	27.2		6.0				30.0	91%	(75-130)				
Isopropylbenzene		"	8.66		2.0	"			10.0	87%	(60-120)				
tert-Amyl methyl ether			8.67		0.50				"	87%	(65-135)				
Naphthalene			8.52		5.0	"				85%	(05 155)				
tert-Butyl alcohol		"	196		20	"	"		200	98%	(60-135)			"	
-		"	8.43		0.50	"			10.0	98% 84%	(70-130)				
Di-isopropyl ether		"	8.43 8.94		0.50	"			10.0	84% 89%					
1,2-Dibromoethane (EI 1,2-Dichloroethane	, ac				0.50						(70-135)				
			8.61		0.50	"				86%	(70-125)				
Ethanol Ethad text histed ather			186						200	93%	(15-150)				
Ethyl tert-butyl ether			8.96		0.50				10.0	90%	(65-130)				
Methyl tert-butyl ether			8.46		0.50					85%	(50-140)				
n-Propylbenzene			8.83		1.0	"			"	88%	(70-120)			"	
1,2,4-Trimethylbenzene	e	"	9.32		1.0	"			"	93%	(75-120)			"	

TestAmerica - Portland, OR

Darrell Auvil, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain

of custody document. This analytical report shall not be reproduced except in full,

without the written approval of the laboratory.





#### Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106

Beaverton, OR 97005

Project Name: Project Number: Project Manager:

NuStar STOP Vancouver ar: 1126-02 er: John Foxwell

Report Created: 09/20/07 09:19

## Volatile Organic Compounds by EPA Method 8260B - Laboratory Quality Control Results

TestAmerica - Morgan Hill, CA

QC Batch: 7106030	Water F	reparation	Method: El	PA 5030B	P/T									
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	⁰‰ REC	(Limits)	% RPD	(Limits)	) Analyzed	Note
LCS (7106030-BS1)								Extr	acted:	09/06/07 00	:00			
1,3,5-Trimethylbenzene	EPA 8260B	10.1		1.0	ug/l	1x		10.0	101%	(70-120)			09/07/07 00:21	
Surrogate(s): Dibromofluorometha 1,2-Dichloroethane-a Toluene-d8 4-Bromofluorobenze	d4	Recovery:	90% 89% 96% 97%	Lim	hits: 75-120% 60-125% 80-120% 60-135%	" " "							09/07/07 00:21 " "	
Matrix Spike (7106030-MS1)				QC Source:	MQ10084-04			Extr	acted:	09/06/07 00	:00			
Benzene	EPA 8260B	9.23		1.0	ug/l	1x	ND	10.0	92%	(75-120)			09/07/07 02:42	
Toluene	"	10.2		2.0	"		ND	"	102%					
Ethylbenzene	"	8.79		2.0	"		ND	"	88%					
Xylenes (total)	"	26.8		6.0	"		ND	30.0	89%	(75-130)				
Isopropylbenzene	"	7.53		2.0	"		ND	10.0	75%	(60-120)				
Naphthalene	"	11.6		5.0	"		ND	"	116%	(65-135)				
tert-Amyl methyl ether	"	10.4		0.50	"		ND	"	104%	"				
tert-Butyl alcohol	"	194		20	"		5.63	200	94%	(60-135)				
Di-isopropyl ether	"	9.86		0.50	"		ND	10.0	99%	(70-130)				
1,2-Dibromoethane (EDB)	"	11.2		0.50	"		ND	"	112%	(70-135)				
1,2-Dichloroethane	"	9.97		0.50	"		ND	"	100%	(70-125)				
Ethanol	"	169		100	"		ND	200	85%	(15-150)				
Ethyl tert-butyl ether	"	10.4		0.50	"		ND	10.0	104%	(65-130)				
Methyl tert-butyl ether	"	11.2		0.50	"		ND	"	112%	(50-140)				
n-Propylbenzene	"	9.58		1.0	"		ND	"	96%	(70-120)				
1,2,4-Trimethylbenzene	"	10.6		1.0	"		ND	"	106%	(75-120)				
1,3,5-Trimethylbenzene	"	10.4		1.0	"	"	ND	"	104%	(70-120)			"	
Surrogate(s): Dibromofluorometha	ine	Recovery:	104%	Lim	nits: 75-120%	"							09/07/07 02:42	
1,2-Dichloroethane-	d4		105%		60-125%	"							"	
Toluene-d8			101%		80-120%	"							"	
4-Bromofluorobenze	ne		85%		60-135%	"							"	
Matrix Spike Dup (7106030-M	SD1)			QC Source:	MQI0084-04			Extr	acted:	09/06/07 00	:00			
Benzene	EPA 8260B	8.39		1.0	ug/l	1x	ND	10.0	84%	(75-120)	10%	(20)	09/07/07 03:15	
Toluene	"	9.30		2.0	"		ND	"	93%		9%	(25)	"	
Ethylbenzene	"	8.37		2.0	"		ND	"	84%		5%	(20)	"	
Xylenes (total)	"	26.0		6.0	"	"	ND	30.0	87%	(75-130)	3%	"	"	
Isopropylbenzene	"	7.85		2.0	"	"	ND	10.0	78%	(60-120)	4%	"		
Naphthalene	"	9.16		5.0	"	"	ND	"	92%	(65-135)	24%	(25)		
tert-Amyl methyl ether	"	9.33		0.50	"	"	ND	"	93%		11%	"		
tert-Butyl alcohol	"	203		20	"	"	5.63	200	98%	(60-135)	4%	"		
Di-isopropyl ether	"	9.29		0.50	"		ND	10.0	93%	(70-130)	6%	"	"	
1,2-Dibromoethane (EDB)		9.30		0.50	"		ND	"	93%	(70-135)	19%	(30)		

TestAmerica - Portland, OR

Charle W. Amil

Darrell Auvil, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain

of custody document. This analytical report shall not be reproduced except in full,

without the written approval of the laboratory.





#### Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106

Beaverton, OR 97005

Project Name: Project Number: Project Manager:

**NuStar STOP Vancouver** 1126-02 John Foxwell

Report Created: 09/20/07 09:19

#### Volatile Organic Compounds by EPA Method 8260B - Laboratory Quality Control Results TestAmerica - Morgan Hill, CA

QC Batch: 7106030	Water P	reparation	Method: E	PA 5030B P	?/T									
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits	) Analyzed	Notes
Matrix Spike Dup (7106030	)-MSD1)			QC Source: 1	MQ10084-04			Extr	acted:	09/06/07 00	:00			
1,2-Dichloroethane	EPA 8260B	9.82		0.50	ug/l	1x	ND	10.0	98%	(70-125)	2%	(25)	09/07/07 03:15	
Ethanol	"	196		100	"	"	ND	200	98%	(15-150)	15%	"	"	
Ethyl tert-butyl ether	"	8.90		0.50	"	"	ND	10.0	89%	(65-130)	16%		"	
Methyl tert-butyl ether	"	9.54		0.50	"	"	ND	"	95%	(50-140)	16%	"		
n-Propylbenzene	"	9.28		1.0	"	"	ND	"	93%	(70-120)	3%	"		
1,2,4-Trimethylbenzene	"	10.3		1.0	"	"	ND	"	103%	(75-120)	3%	(35)		
1,3,5-Trimethylbenzene	"	9.94		1.0	"	"	ND	"	99%	(70-120)	5%	(25)	"	
Surrogate(s): Dibromofluoron	nethane	Recovery:	92%	Limit.	s: 75-120%	"							09/07/07 03:15	
1,2-Dichloroeth	ane-d4		93%		60-125%	"							"	
Toluene-d8			91%		80-120%	"							"	
4-Bromofluorob	penzene		88%		60-135%	"							"	

TestAmerica - Portland, OR

Darrell Auvil, Project Manager





Ash Creek Associates, Inc.				Project Nam	ie: I	NuSta	r STOP V	ancou	ver					
9615 SW Allen Blvd. Suite 10	6			Project Num	iber: ]	126-02	2						Report Create	ed:
Beaverton, OR 97005				Project Man	ager: J	ohn Fo	xwell						09/20/07 09:	19
Gasoline Hy	vdrocarbons b	y NWTP		<b>TEX by E</b> America - S			21B - La	aborato	ory Q	uality C	Control	Resul	ts	
QC Batch: 7090020	Water P	reparation	n Method: C	GC Volatile	s									
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits	) Analyzed	Notes
Blank (7090020-BLK1)								Extra	acted:	09/05/07 09	9:55			
Gasoline Range Hydrocarbons	NWTPH-G/8 021B	ND		100	ug/l	1x							09/05/07 10:52	
Surrogate(s): 4-BFB (FID)		Recovery:	81.0%	Lim	nits: 50-150%	ó "							09/05/07 10:52	
LCS (7090020-BS1)								Extra	acted:	09/05/07 09	9:55			
Gasoline Range Hydrocarbons	NWTPH-G/8 021B	987		100	ug/l	1x		1000	98.7%	(80-120)			09/05/07 16:00	
Surrogate(s): 4-BFB (FID)		Recovery:	112%	Lim	nits: 50-150%	ó "							09/05/07 16:00	
Duplicate (7090020-DUP1)				QC Source:	SQH0197-0	4		Extra	acted:	09/05/07 09	9:55			
Gasoline Range Hydrocarbons	NWTPH-G/8 021B	176		100	ug/l	1x	219				21.5%	(20)	09/05/07 15:10	R
Surrogate(s): 4-BFB (FID)		Recovery:	87.4%	Lim	nits: 50-150%	ó "							09/05/07 15:10	
Matrix Spike (7090020-MS1)				QC Source:	SQH0197-0	4		Extra	acted:	09/05/07 09	9:55			
Gasoline Range Hydrocarbons	NWTPH-G/8 021B	1110		100	ug/l	1x	219	1000	89.0%	(70-130)			09/05/07 15:35	
Surrogate(s): 4-BFB (FID)		Recovery:	120%	Lim	its: 50-150%	ó "							09/05/07 15:35	

TestAmerica - Portland, OR

Darrell Auvil, Project Manager





#### Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106 Beaverton, OR 97005 Project Name: Project Number: Project Manager:

1126-02 John Foxwell

NuStar STOP Vancouver

Report Created: 09/20/07 09:19

#### **Notes and Definitions**

#### Report Specific Notes:

R9 - Sample RPD exceeded the laboratory control limit.

#### Laboratory Reporting Conventions:

- DET Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only. ND Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate). NR/NA _ Not Reported / Not Available Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight. dry Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported wet on a Wet Weight Basis. RPD RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries). METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table. MRL MDL* METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. _ *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic
   Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*.

   Signature
   Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory.

   Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica - Portland, OR

Jule W. Amil





#### CHAIN OF CUSTODY RECORD

Client Name:Ash Creek AssociatesAddress:9615 SW Allen Blvd #106City/State/Zip:Beaverton, OR 97005

Telephone Number:

Fax No.:

503.924.4704 503.924.4707 PUPH 1133

Project Manager: John Foxwell

Project Name: 8655 SW Canyon Road

Project Number: 1370

Sampler Name: John Foxwell

								F	res	erva	tive				Ma	atrix	A	naly.	ze				A	naly	ze F	For:						
Sample ID / Description	Date Sampled	Time Sampled	No. of Containers Shipped	Grab	Composite	Field Filtered	lce	HNO ₃ (Red Label)	HCI (Blue Label) NaOH ( Orande Label)	H2SO4 Plastic (Yellow Label)	H ₂ SO ₄ Glass(Yellow Label)	None (Black Label)	Other ( Specify) Groundwater	Wastewater	Drinking Water	Sludge	Soil	Other (specify):				nduwuxygeriates-8200								RUSH TAT (Pre-Schedule	Standard TAT	Fax Results Send OC with report
MW-1	8/24/07		8				x		x	Τ	Π		T	x		Π		T	٦,				T								x	
MW-2	8/24/07		8				х		x	Τ			Τ	x				T	Τ,			~			T		Ť		1	$\uparrow$	x	
MW-3	8/24/07		8				x		x		Π		Τ	x		Π		T	٦,	$\langle \rangle$	$\langle , \rangle$	<				T	T		T	Τ	x	
MW-4	8/24/07		8				x		x	Τ	Π			x	Π			Τ	Τ,	; ,	$\langle \rangle$	~								T	x	$\square$
										Τ	Π					Π		T		Τ	Τ	T				T				T		
									Τ	1							T	T	T	T	T	Τ		T							Π	
										Τ	Π		Т	Τ		Π		Т	Τ	T	Τ			T				T		Τ	Π	Π
								Τ	Τ	Τ			Τ	Τ			Τ		Τ	1	Τ				Τ						Π	$\square$
													Τ																			
Special Instructions:							Me	tho	d of	Shi	pme	ent:									L	Τe	əmp	erat	ure	•	on R	eceij pace		Y		N
Relinquished by: Name/Company	Date	е	Tir	me	Rece	ived b	y: N	ame	e/Cor	mpa	ny			Τ	Da	ate			Time		1											
ing a state of the	و مورد		د. مرجعه اربا	i. A	~					بستية				2	η'n.	10	1	1	$\begin{bmatrix} i \\ f \end{bmatrix}$	C												
Relinquished by: Name/Company	Date	e	Tir	me	Rece	ived b	y: N	ame	Col	mpa	ny				Da				Time													
	8/27/0	ッン	120	51	£/	lo	a	K	$\rightarrow$		$\overline{7}$	4	0		8[	2	7	12	Н	71												
Belinquished by: Name/Company	Date		Tir		Rece	ivedb	y: N	ame	c/Cor	mpa	ny			T	Da	_			Time													
Relinquished by: Name/Company	Date	Э	Tir	me	Rece	ived b	y: N	ame	/Cor	mpa	ny			╀	Da	ate	╉		Time	1			(	Э	•	F						

Analytical Lab: Test America Report To: John Foxwell

Page: 1 of 1

Т	estAmerica Sample Re	eceipt Checklist	
Received by:Unpacked by:Insection RIInsection RIDate:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127Date:\$127 </th <th>Logged-in by: Date: <u>ST271</u>C Initials: <u>H3</u>0</th> <th>Work Order Ho. PUH133 Ole Ulient: <u>204 (Alck</u> Project: <u>SUSS SU)</u> <u>Canyon</u> Pd. Iomporture cut of range:</th> <th>3</th>	Logged-in by: Date: <u>ST271</u> C Initials: <u>H3</u> 0	Work Order Ho. PUH133 Ole Ulient: <u>204 (Alck</u> Project: <u>SUSS SU)</u> <u>Canyon</u> Pd. Iomporture cut of range:	3
Λ		No ice ice Meiled Win 4 Hours Other	
A       Custody Seals: (#)         Signature: Y       N       Dated:	Every difference of the series	Sample: Status:         (If N circled: see NOD)         General:         Intact?       N         # Containers Match COC?       N         # Containers Match COC?       N         IDs Match COC?       N         IDs Match COC?       N         IDs Match COC?       N         Match COC?       N         IDs Match COC?       N         Vorrect Type & Preservation?       N         Volatiles       N         Volatiles:       N         Volatiles:       N         IDs OCC?       N         IDs Occ       N         IDs Occc       N	
C *** <u>ESI Clients Only</u> : Temperature Blank:C not provide All preserved bottles checked Y N All preserved accordingly? Y N (se	1	Imy Corp:       Geiger (ticks/min):         Temperatures (IR):       *C       *C       C         (left)       (mid/lle)       (right)       (air)	
Comments:	Project Mana		



Amended Report

Page 1 of 16

December 12, 2007

John Foxwell Ash Creek Associates, Inc. 9615 SW Allen Blvd. Suite 106 Beaverton, OR 97005

RE: NuStar Vancouver Annex

Enclosed are the results of analyses for samples received by the laboratory on 11/26/07 17:05. The following list is a summary of the Work Orders contained in this report, generated on 12/12/07 13:46.

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

Work Order	Project	ProjectNumber	
PQK0883	NuStar Vancouver Annex	1126-06	

TestAmerica Portland		The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full.
Danell W. Amil	Amended Report	without the written approval of the laboratory.
Darrell Auvil, Project Manager		



THE LEADER IN ENVIRONMENTAL TESTING

**Amended Report** 

Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106 Beaverton, OR 97005

Project Name: Project Number: Project Manager:

NuStar Vancouver Annex 1126-06

John Foxwell

Report Created: 12/12/07 13:46

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	PQK0883-01	Water	11/26/07 10:45	11/26/07 17:05
MW-2	PQK0883-02	Water	11/26/07 12:45	11/26/07 17:05
MW-3	PQK0883-03	Water	11/26/07 11:24	11/26/07 17:05
MW-4	PQK0883-04	Water	11/26/07 12:01	11/26/07 17:05

TestAmerica Portland

And W. Amil

**Amended Report** 

Darrell Auvil, Project Manager





THE LEADER IN ENVIRONMENTAL TESTING

**Amended Report** 

Project Manager:

Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106

Beaverton, OR 97005

NuStar Vancouver Annex Project Name: Project Number:

1126-06 John Foxwell

Report Created: 12/12/07 13:46

Gasoline Hydrocarbons per NW TPH-Gx Method TestAmerica Portland										
Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQK0883-01 (MW-1)		Wat	er		Sampl	ed: 11/2	6/07 10:45			
Gasoline Range Hydrocarbons	NW TPH-Gx	ND		80.0	ug/l	1x	7110982	11/27/07 12:56	11/27/07 21:00	
Surrogate(s): 4-BFB			90.3%		50 - 150 %	"			"	
PQK0883-02 (MW-2)		Wat	er		Sampl	ed: 11/2	6/07 12:45			
Gasoline Range Hydrocarbons	NW TPH-Gx	ND		80.0	ug/l	1x	7110982	11/27/07 12:56	11/27/07 21:27	
Surrogate(s): 4-BFB			91.5%		50 - 150 %	"			"	
PQK0883-03 (MW-3)		Wat	er		Sampl	ed: 11/2	6/07 11:24			
Gasoline Range Hydrocarbons	NW TPH-Gx	ND		80.0	ug/l	1x	7110982	11/27/07 12:56	11/27/07 21:54	
Surrogate(s): 4-BFB			99.9%		50 - 150 %	"			"	
PQK0883-04 (MW-4)		Wat	er		Sampl	ed: 11/2	6/07 12:01			
Gasoline Range Hydrocarbons	NW TPH-Gx	ND		80.0	ug/l	1x	7110982	11/27/07 12:56	11/27/07 22:21	
Surrogate(s): 4-BFB			90.7%		50 - 150 %	"			"	

TestAmerica Portland

Darrell Auvil, Project Manager

**Amended Report** 





THE LEADER IN ENVIRONMENTAL TESTING

**Amended Report** 

Ash Creek Associates, Inc.	Project Name:	NuStar Vancouver Annex	
9615 SW Allen Blvd. Suite 106	Project Number:	1126-06	Report Created:
Beaverton, OR 97005	Project Manager:	John Foxwell	12/12/07 13:46

#### Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method with Acid/Silica Gel Cleanup Test A marian Dortland

TestAmerica Portland											
Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes	
PQK0883-01 (MW-1)		Wa	nter		Sampl	ed: 11/2	26/07 10:45				
Diesel Range Organics	NWTPH-Dx	ND		0.236	mg/l	1x	7111160	11/30/07 14:15	11/30/07 16:40		
Heavy Oil Range Hydrocarbons	"	ND		0.472		"	"	"	"		
Surrogate(s): 1-Chlorooctadecane			84.8%		50 - 150 %	"			"		
PQK0883-02 (MW-2)		Wa	nter		Sampl	ed: 11/2	26/07 12:45				
Diesel Range Organics	NWTPH-Dx	ND		0.236	mg/l	1x	7111160	11/30/07 14:15	11/30/07 16:59		
Heavy Oil Range Hydrocarbons	"	ND		0.472		"	"	"	"		
Surrogate(s): 1-Chlorooctadecane			85.7%		50 - 150 %	"			"		
PQK0883-03 (MW-3)		Wa	nter		Sampl	ed: 11/2	26/07 11:24				
Diesel Range Organics	NWTPH-Dx	ND		0.236	mg/l	1x	7111160	11/30/07 14:15	11/30/07 17:19		
Heavy Oil Range Hydrocarbons	"	ND		0.472		"	"	"	"		
Surrogate(s): 1-Chlorooctadecane			94.4%		50 - 150 %	"			"		
PQK0883-04 (MW-4)		Wa		Sampl	ed: 11/2	26/07 12:01					
Diesel Range Organics	NWTPH-Dx	ND		0.236	mg/l	1x	7111160	11/30/07 14:15	11/30/07 17:38		
Heavy Oil Range Hydrocarbons	"	ND		0.472	"	"	"	"	"		
Surrogate(s): 1-Chlorooctadecane			86.0%		50 - 150 %	"			"		

TestAmerica Portland

Quel W. Amil

**Amended Report** 

Darrell Auvil, Project Manager



without the written approval of the laboratory.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full,



THE LEADER IN ENVIRONMENTAL TESTING

Project Name:

Project Number:

Project Manager:

Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106

Beaverton, OR 97005

Amended Report
----------------

NuStar Vancouver Annex

1126-06

John Foxwell

Report Created: 12/12/07 13:46

#### Volatile Organic Compounds by EPA Method 8260B TestAmerica Morgan Hill

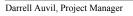
Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQK0883-01 (MW-1)		Wa	iter		Sampl	ed: 11/2	26/07 10:45			
Benzene	EPA 8260B	ND		1.0	ug/l	1x	7L01004	12/01/07 00:00	12/01/07 17:35	
Toluene	"	ND		2.0	"	"	"	"	"	
Ethylbenzene		ND		2.0	"	"	"	"		
Xylenes (total)	"	ND		6.0	"	"	"		"	
1,2-Dichloroethane	"	ND		2.0	"	"	"	"	"	
Isopropylbenzene	"	ND		2.0	"	"	"	"	"	
Naphthalene	"	ND		5.0	"	"	"	"	"	
tert-Amyl methyl ether		ND		0.50	"	"	"		"	
tert-Butyl alcohol	"	ND		20	"	"	"	"	"	
Di-isopropyl ether		ND		0.50	"	"	"			
1,2-Dibromoethane (EDB)		ND		0.50	"	"	"		"	
1,2-Dichloroethane		ND		0.50	"	"	"		"	
Ethanol		ND		100	"	"	"		"	
Ethyl tert-butyl ether		ND		0.50	"	"	"	"	"	
Methyl tert-butyl ether		ND		0.50	"	"	"		"	
n-Propylbenzene		ND		1.0	"	"	"	"	"	
1,2,4-Trimethylbenzene	"	ND		1.0	"	"	"		"	
1,3,5-Trimethylbenzene		ND		1.0	"	"	"	"		
Surrogate(s): Dibromofluoromethane	2		95%		75 - 130 %	"			"	
1,2-Dichloroethane-d4			100%		60 - 150 %	"			"	
Toluene-d8			100%		75 - 120 %	"			"	
4-Bromofluorobenzene			93%		55 - 130 %	"			"	

PQK0883-02 (MW-2)		Wat	Water			pled: 11/2	6/07 12:45		
Benzene	EPA 8260B	ND		1.0	ug/l	1x	7L04004	12/04/07 08:53	12/04/07 12:23
Toluene	"	ND		2.0	"	"	"	"	"
Ethylbenzene	"	ND		2.0	"	"	"	"	"
Xylenes (total)	"	ND		6.0	"	"	"		"
1,2-Dichloroethane	"	ND		2.0	"	"	"	"	"
Isopropylbenzene	"	ND		2.0	"	"	"		"
Naphthalene	"	ND		5.0	"	"	"		"
tert-Amyl methyl ether	"	ND		0.50	"	"	"		"
tert-Butyl alcohol	"	ND		20	"	"	"		"
Di-isopropyl ether	"	ND		0.50	"	"	"		"
1,2-Dibromoethane (EDB)	"	ND		0.50	"	"	"		"
1,2-Dichloroethane	"	ND		0.50	"	"	"		"
Ethanol	"	ND		100	"	"	"		"
Ethyl tert-butyl ether	"	ND		0.50	"	"	"		"
Methyl tert-butyl ether	"	83		0.50	"	"	"	"	"
n-Propylbenzene	"	ND		1.0	"	"	"		"
1,2,4-Trimethylbenzene	"	ND		1.0	"		"		"
1,3,5-Trimethylbenzene	"	ND		1.0	"	"	"	"	"

TestAmerica Portland

And W. Amil

**Amended Report** 







THE LEADER IN ENVIRONMENTAL TESTING

Amended Report

Project Number:

Project Manager:

Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106

Beaverton, OR 97005

Project Name: NuStar Vancouv

John Foxwell

NuStar Vancouver Annex 1126-06

Report Created: 12/12/07 13:46

### Volatile Organic Compounds by EPA Method 8260B TestAmerica Morgan Hill

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQK0883-02	(MW-2)		Wa	ıter		Sample	ed: 11/2	6/07 12:45			
Surrogate(s):	Dibromofluoromethane			90%		75 - 130 %	<i>1x</i>			12/04/07 12:23	
	1,2-Dichloroethane-d4			92%		60 - 150 %	"			"	
	Toluene-d8			92%		75 - 120 %	"			"	
	4-Bromofluorobenzene			90%		55 - 130 %	"			"	

PQK0883-03 (MW	/-3)	W	ater		Sampl	ed: 11/2	26/07 11:24		
Benzene	EPA 826	)B 1.1		1.0	ug/l	1x	7L01004	12/01/07 00:00	12/01/07 18:37
Toluene	"	ND		2.0	"	"	"		"
Ethylbenzene	"	6.6		2.0	"	"	"		"
Xylenes (total)	"	ND		6.0	"	"	"		"
1,2-Dichloroethane	"	ND		2.0	"	"	"		"
Isopropylbenzene	"	3.1		2.0	"	"	"		"
Naphthalene	"	ND		5.0	"	"	"		"
tert-Amyl methyl ether	"	ND		0.50	"	"	"		"
tert-Butyl alcohol	"	ND		20	"	"			"
Di-isopropyl ether	"	ND		0.50	"	"			"
1,2-Dibromoethane (EDB	) "	ND		0.50	"	"			"
1,2-Dichloroethane	"	ND		0.50	"	"	"	"	"
Ethanol	"	ND		100	"	"	"	"	"
Ethyl tert-butyl ether	"	ND		0.50	"	"	"	"	"
Methyl tert-butyl ether	"	6.9		0.50	"	"	"		"
n-Propylbenzene	"	1.2		1.0	"	"	"		"
1,2,4-Trimethylbenzene	"	ND		1.0	"	"		"	"
1,3,5-Trimethylbenzene	"	ND		1.0		"	"		"
Surrogate(s): Dibr	romofluoromethane		99%		75 - 130 %	"			"
	Dichloroethane-d4		102%		60 - 150 %	"			"
Tolu	ene-d8		101%		75 - 120 %	"			"
4-Br	romofluorobenzene		100%		55 - 130 %	"			"

PQK0883-04 (MW-4)	Water			Samj	pled: 11/2	26/07 12:01				
Benzene	EPA 8260B	ND		1.0	ug/l	1x	7L01004	12/01/07 00:00	12/01/07 19:08	
Toluene	"	ND		2.0	"	"	"			
Ethylbenzene	"	ND		2.0	"	"	"	"	"	
Xylenes (total)	"	ND		6.0	"	"	"			
1,2-Dichloroethane	"	ND		2.0	"	"	"	"	"	
Isopropylbenzene	"	ND		2.0	"	"	"			
Naphthalene	"	ND		5.0	"	"	"			
tert-Amyl methyl ether	"	ND		0.50	"	"	"	"	"	
tert-Butyl alcohol	"	ND		20	"	"	"			
Di-isopropyl ether	"	ND		0.50	"		"	"		
1,2-Dibromoethane (EDB)	"	ND		0.50	"		"	"		

TestAmerica Portland

And W. Amil Darrell Auvil, Project Manager

Amended Report

.



without the written approval of the laboratory.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full,



THE LEADER IN ENVIRONMENTAL TESTING

**Amended Report** 

Project Name:

Project Number:

Project Manager:

Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106

Beaverton, OR 97005

NuStar Vancouver Annex

1126-06

John Foxwell

Report Created: 12/12/07 13:46

#### Volatile Organic Compounds by EPA Method 8260B TestAmerica Morgan Hill

					U						
Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQK0883-04 (MW-4)			Wa	ater		Sampl	ed: 11/2	26/07 12:01			
1,2-Dichloroethane		EPA 8260B	ND		0.50	ug/l	1x	7L01004	12/01/07 00:00	12/01/07 19:08	
Ethanol			ND		100	"	"	"	"	"	
Ethyl tert-butyl ethe	er		ND		0.50	"	"	"	"		
Methyl tert-butyl et	her	"	ND		0.50	"	"	"		"	
n-Propylbenzene		"	ND		1.0	"	"	"		"	
1,2,4-Trimethylbenz	zene		ND		1.0	"	"	"	"		
1,3,5-Trimethylbenz	zene	"	ND		1.0	"	"	"	"	"	
Surrogate(s):	Dibromofluoromethane			103%		75 - 130 %	"			"	
	1,2-Dichloroethane-d4			104%		60 - 150 %	"			"	
	Toluene-d8			100%		75 - 120 %	"			"	
	4-Bromofluorobenzene			96%		55 - 130 %	"			"	

TestAmerica Portland

Darrell Auvil, Project Manager

**Amended Report** 

Page 7 of 16

without the written approval of the laboratory.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full,

www.testamericainc.com



THE LEADER IN ENVIRONMENTAL TESTING

**Amended Report** 

Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106

Beaverton, OR 97005

Project Name: Project Number: Project Manager:

NuStar Vancouver Annex 1126-06 John Foxwell

Report Created: 12/12/07 13:46

	Gasoline Hy	drocarbor	-	° <b>PH-Gx M</b> FestAmerica		Laboi	ratory Qu	ality (	Contr	ol Resul	ts			
QC Batch: 7110982	Water I	Preparation	n Method: E	CPA 5030B										
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits	s) Analyzed	Notes
Blank (7110982-BLK1)								Extr	acted:	11/27/07 12	2:56			
Gasoline Range Hydrocarbons	NW TPH-Gx	ND		80.0	ug/l	1x							11/27/07 15:56	
Surrogate(s): 4-BFB		Recovery:	90.8%	Lim	nits: 50-150%	"							11/27/07 15:56	
LCS (7110982-BS1)								Extr	acted:	11/27/07 12	2:56			
Gasoline Range Hydrocarbons	NW TPH-Gx	409		80.0	ug/l	1x		500	81.8%	(70-130)			11/27/07 15:01	
Surrogate(s): 4-BFB		Recovery:	97.1%	Lim	nits: 50-150%	"							11/27/07 15:01	
LCS Dup (7110982-BSD1)								Extr	acted:	11/27/07 12	2:56			
Gasoline Range Hydrocarbons	NW TPH-Gx	445		80.0	ug/l	1x		500	89.1%	(70-130)	8.47%	(35)	11/27/07 15:29	
Surrogate(s): 4-BFB		Recovery:	99.5%	Lim	nits: 50-150%	"							11/27/07 15:29	
Duplicate (7110982-DUP1)				QC Source:	PQK0862-0	3		Extr	acted:	11/27/07 12	2:56			
Gasoline Range Hydrocarbons	NW TPH-Gx	ND		80.0	ug/l	1x	ND				NR	(35)	11/27/07 18:17	
Surrogate(s): 4-BFB		Recovery:	91.7%	Lim	uits: 50-150%	"							11/27/07 18:17	
Duplicate (7110982-DUP2)				QC Source:	PQK0852-04	1		Extr	acted:	11/27/07 12	2:56			
Gasoline Range Hydrocarbons	NW TPH-Gx	526		80.0	ug/l	1x	544				3.39%	6 (35)	11/27/07 23:43	
Surrogate(s): 4-BFB		Recovery:	159%	Lim	nits: 50-150%	"							11/27/07 23:43	2

TestAmerica Portland

Darrell Auvil, Project Manager

**Amended Report** 

without the written approval of the laboratory.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full,



Page 8 of 16



THE LEADER IN ENVIRONMENTAL TESTING

Amended Report

Ash Creek Associates, Inc.	Project Name:	NuStar Vancouver Annex	
9615 SW Allen Blvd. Suite 106	Project Number:	1126-06	Report Created:
Beaverton, OR 97005	Project Manager:	John Foxwell	12/12/07 13:46

#### Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method with Acid/Silica Gel Cleanup - Laboratory Quality Control Results TestAmerica Portland QC Batch: 7111160 Water Preparation Method: EPA 3510 Fuels Spike % (Limits) % RPD Source Analyte Method Result MDL* MRL Units Dil (Limits) Analyzed Notes Result Blank (7111160-BLK1) Extracted: 11/30/07 14:15 NWTPH-Dx ND 0.250 11/30/07 16:20 Diesel Range Organics 1x --------mg/l ---------.. " .. .. Heavy Oil Range Hydrocarbons ND ----0.500 -----------------Surrogate(s): 1-Chlorooctadecane Recovery: 104% Limits: 50-150% " 11/30/07 16:20 LCS (7111160-BS1) Extracted: 11/30/07 14:15 Diesel Range Organics NWTPH-Dx 2.78 0.250 mg/l $1 \mathbf{x}$ 2.50 111% (50-150) 11/30/07 15:41 -------.. 0.500 .. .. .. .. Heavy Oil Range Hydrocarbons 1.94 ----1.50 129% ------Limits: 50-150% 11/30/07 15:41 Surrogate(s): 1-Chlorooctadecane Recoverv: 107% " LCS Dup (7111160-BSD1) Extracted: 11/30/07 14:15 NWTPH-Dx 2.77 0.250 1x 111% 0.0851% (50) 11/30/07 16:00 Diesel Range Organics -------2.50 (50-150) mg/l ., .. .. 4.12% " Heavy Oil Range Hydrocarbons 0.500 1.50 124% 1.86 -------" 11/30/07 16:00 Limits: 50-150% Surrogate(s): 1-Chlorooctadecane Recovery: 105%

TestAmerica Portland

And W. Amil

Amended Report

Darrell Auvil, Project Manager





THE LEADER IN ENVIRONMENTAL TESTING

**Amended Report** 

Project Manager:

Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106

Beaverton, OR 97005

NuStar Vancouver Annex Project Name:

Project Number: 1126-06 John Foxwell

Report Created: 12/12/07 13:46

#### Volatile Organic Compounds by EPA Method 8260B - Laboratory Quality Control Results TestAmerica Morgan Hill

QC Bate	h: 7L01004	Water P	reparation	Method: EP	A 5030B	P/T									
Analyte		Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (7L010	04-BLK1)								Extr	acted:	12/01/07 00	:00			
Benzene		EPA 8260B	ND		1.0	ug/l	1x							12/01/07 11:56	
Toluene			ND		2.0	"								"	
Ethylbenzene			ND		2.0	"								"	
Xylenes (total)			ND		6.0	"								"	
1,2-Dichloroethane			ND		2.0	"								"	
Isopropylbenzene			ND		2.0	"								"	
Naphthalene			ND		5.0	"	"							"	
tert-Amyl methyl et	her		ND		0.50	"								"	
tert-Butyl alcohol			ND		20	"								"	
Di-isopropyl ether			ND		0.50	"								"	
1,2-Dibromoethane	(EDB)		ND		0.50	"								"	
1,2-Dichloroethane			ND		0.50	"								"	
Ethanol			ND		100	"								"	
Ethyl tert-butyl ethe	r		ND		0.50	"								"	
Methyl tert-butyl eth	ner		ND		0.50	"								"	
n-Propylbenzene			ND		1.0	"								"	
1,2,4-Trimethylbenz	ene		ND		1.0	"								"	
1,3,5-Trimethylbenz			ND		1.0	"								"	
	Dibromofluoromethane			101%		75-130%	"							"	
Surrogate(s):	1,2-Dichloroethane-d4		Recovery:	101%	Lin	nits: 60-150%	"							12/01/07 11:56	5
0 ()	Toluene-d8			102%		75-120%	"							"	
	4-Bromofluorobenzene			96%		55-130%	"							"	
LCS (7L0100	4-BS1)								Extr	acted:	12/01/07 00	:00			
Benzene		EPA 8260B	10.4		1.0	ug/l	1x		10.0	104%	(75-120)			12/01/07 10:23	
Toluene			11.1		2.0	"			"	111%	(80-120)			"	
Ethylbenzene			11.7		2.0	"			"	117%	(80-125)			"	
Xylenes (total)			35.4		6.0	"			30.0	118%				"	
1,2-Dichloroethane			11.2		2.0	"			10.0	112%	(65-130)			"	
Isopropylbenzene			11.1		2.0	"			"	111%	(75-120)			"	
Naphthalene			9.80		5.0	"			"	98%	(65-125)			"	
tert-Amyl methyl et	ner		10.9		0.50				"	109%	(75-125)			"	
tert-Butyl alcohol			236		20				200	118%	(80-120)			"	
Di-isopropyl ether			10.2		0.50				10.0	102%	(70-130)			"	
1,2-Dibromoethane	(EDB)		11.2		0.50				"	112%	(75-130)			"	
1,2-Dichloroethane			11.2		0.50	"				112%	(65-130)			"	
Ethanol			265		100	"			200	133%	(50-150)			"	
Ethyl tert-butyl ethe	r	"	10.8		0.50				10.0	108%	(75-130)			"	
,											()				

TestAmerica Portland

Darrell Auvil, Project Manager

**Amended Report** 

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

Page 10 of 16



THE LEADER IN ENVIRONMENTAL TESTING

**Amended Report** 

Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106

Beaverton, OR 97005

Project Name: Project Number: Project Manager:

1126-06

NuStar Vancouver Annex John Foxwell

Report Created: 12/12/07 13:46

## Volatile Organic Compounds by EPA Method 8260B - Laboratory Quality Control Results

Γ	est/	America	N	lorga	n F	lill	
---	------	---------	---	-------	-----	------	--

QC Batc	h: 7L01004	Water P	reparation	Method: E	PA 5030B	P/T									
Analyte		Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (7L0100	4-BS1)								Extr	acted:	12/01/07 00	):00			
n-Propylbenzene		EPA 8260B	11.2		1.0	ug/l	1x		10.0	112%	(70-130)			12/01/07 10:23	
1,2,4-Trimethylbenz	ene	"	11.9		1.0	"			"	119%	(80-130)				
1,3,5-Trimethylbenz	ene	"	11.8		1.0	"			"	118%	"				
	Dibromofluoromethane			102%		75-130%	"							"	
Surrogate(s):	1,2-Dichloroethane-d4		Recovery:	99%	Lin	nits: 60-150%	"							12/01/07 10:23	
	Toluene-d8			104%		75-120%	"							"	
	4-Bromofluorobenzene			104%		55-130%	"							"	
Matrix Spike	(7L01004-MS1)				QC Source:	MQK0821-01	l		Extr	acted:	12/01/07 00	):00			
Benzene		EPA 8260B	23.4		1.0	ug/l	1x	12.2	10.0	112%	(80-120)			12/01/07 13:29	
Toluene		"	12.9		2.0	"		1.03	"	119%	(80-125)				
Ethylbenzene		"	13.1		2.0	"		1.05	"	121%	(75-130)				
Xylenes (total)			38.2		6.0	"		1.53	30.0	122%	(75-125)				
1,2-Dichloroethane			11.6		2.0	"		ND	10.0	116%	(65-145)				
Isopropylbenzene		"	36.1		2.0	"		26.3	"	98%	(55-130)				
Naphthalene		"	11.4		5.0	"		0.680	"	107%	(50-140)				
tert-Amyl methyl etl	ner		13.1		0.50	"		ND	"	131%	(75-140)				
tert-Butyl alcohol		"	391		20	"		133	200	129%	(80-125)				M7
Di-isopropyl ether		"	11.6		0.50	"		ND	10.0	116%	(75-135)				
1,2-Dibromoethane	(EDB)	"	12.0		0.50	"		ND	"	120%	(80-135)				
1,2-Dichloroethane		"	11.6		0.50	"		ND	"	116%	(65-145)				
Ethanol		"	313		100	"		ND	200	156%	(50-150)				M7
Ethyl tert-butyl ethe	r	"	12.3		0.50	"		ND	10.0	123%	(80-135)				
Methyl tert-butyl eth	ier	"	46.6		0.50	"		33.9	"	126%	(75-145)				
n-Propylbenzene		"	50.6		1.0	"		43.4	"	72%	(65-135)			"	
1,2,4-Trimethylbenz	ene	"	13.4		1.0	"		0.650	"	127%	(55-150)			"	
1,3,5-Trimethylbenz	ene	"	12.6		1.0	"		0.200	"	124%	(60-140)			"	
	Dibromofluoromethane			104%		75-130%	"							"	
Surrogate(s):	1,2-Dichloroethane-d4		Recovery:	94%	Lin	nits: 60-150%	"							12/01/07 13:29	
	Toluene-d8			106%		75-120%	"							"	
	4-Bromofluorobenzene			104%		55-130%	"							"	

TestAmerica Portland

Darrell Auvil, Project Manager

**Amended Report** 





THE LEADER IN ENVIRONMENTAL TESTING

**Amended Report** 

Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106

Beaverton, OR 97005

Project Name: Project Number:

1126-06 Project Manager: John Foxwell

**NuStar Vancouver Annex** 

Report Created: 12/12/07 13:46

## Volatile Organic Compounds by EPA Method 8260B - Laboratory Quality Control Results

TestAmerica Morgan Hill

QC Batc	h: 7L01004	Water P	reparation	Method: EF	PA 5030B	P/T									
Analyte		Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Matrix Spike D	oup (7L01004-MS	SD1)			QC Source:	MQK0821-01			Extr	acted:	12/01/07 00	:00			
Benzene		EPA 8260B	23.8		1.0	ug/l	1x	12.2	10.0	116%	(80-120)	2%	(20)	12/01/07 13:59	
Toluene			13.2		2.0	"	"	1.03	"	121%	(80-125)	2%	(25)		
Ethylbenzene		"	13.9		2.0	"	"	1.05	"	128%	(75-130)	6%	(20)		
Xylenes (total)			40.0		6.0	"	"	1.53	30.0	128%	(75-125)	4%	"		M7
1,2-Dichloroethane			12.1		2.0	"	"	ND	10.0	121%	(65-145)	4%	(25)		
Isopropylbenzene			36.8		2.0	"	"	26.3	"	105%	(55-130)	2%	(20)		
Naphthalene			12.1		5.0	"	"	0.680	"	114%	(50-140)	6%	(25)		
tert-Amyl methyl eth	ner		13.8		0.50	"	"	ND	"	138%	(75-140)	5%	"		
tert-Butyl alcohol			403		20	"	"	133	200	135%	(80-125)	3%	"		M7
Di-isopropyl ether			12.2		0.50	"	"	ND	10.0	122%	(75-135)	4%	"		
1,2-Dibromoethane (	(EDB)		12.7		0.50	"	"	ND	"	127%	(80-135)	6%	(30)		
1,2-Dichloroethane			12.1		0.50	"	"	ND	"	121%	(65-145)	4%	(25)		
Ethanol			314		100	"	"	ND	200	157%	(50-150)	0.5%	"		M7
Ethyl tert-butyl ether		"	13.1		0.50	"	"	ND	10.0	131%	(80-135)	6%	"		
Methyl tert-butyl eth	er	"	47.7		0.50	"		33.9	"	138%	(75-145)	2%	"		
n-Propylbenzene			51.7		1.0	"	"	43.4	"	82%	(65-135)	2%	"		
1,2,4-Trimethylbenz	ene		13.8		1.0	"	"	0.650	"	132%	(55-150)	3%	(35)		
1,3,5-Trimethylbenz	ene		13.3		1.0	"	"	0.200	"	131%	(60-140)	6%	(25)		
	Dibromofluoromethane	?		100%		75-130%	"							"	
Surrogate(s):	1,2-Dichloroethane-d4		Recovery:	97%	Lim	its: 60-150%	"							12/01/07 13:59	
,	Toluene-d8			106%		75-120%	"							"	
	4-Bromofluorobenzene			112%		55-130%	"							"	

TestAmerica Portland

Darrell Auvil, Project Manager

**Amended Report** 

without the written approval of the laboratory.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full,

Page 12 of 16



THE LEADER IN ENVIRONMENTAL TESTING

**Amended Report** 

Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106

Beaverton, OR 97005

Project Name: Project Number: Project Manager:

1126-06 John Foxwell

NuStar Vancouver Annex

Report Created: 12/12/07 13:46

#### Volatile Organic Compounds by EPA Method 8260B - Laboratory Quality Control Results TestAmerica Morgan Hill

QC Batc	h: 7L04004	Water P	reparation	Method: EP	A 5030B	P/T									
Analyte		Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Note
Blank (7L040	04-BLK1)								Extra	acted:	12/04/07 08	:53			
Benzene		EPA 8260B	ND		1.0	ug/l	1x							12/04/07 10:50	
Toluene		"	ND		2.0	"								"	
Ethylbenzene		"	ND		2.0	"								"	
Xylenes (total)		"	ND		6.0	"								"	
1,2-Dichloroethane		"	ND		2.0	"								"	
Isopropylbenzene		"	ND		2.0	"	"							"	
Naphthalene		"	ND		5.0	"								"	
tert-Amyl methyl eth	ner	"	ND		0.50	"								"	
tert-Butyl alcohol		"	ND		20	"								"	
Di-isopropyl ether		"	ND		0.50	"								"	
1,2-Dibromoethane	(EDB)	"	ND		0.50	"								"	
1,2-Dichloroethane			ND		0.50	"								"	
Ethanol		"	ND		100	"								"	
Ethyl tert-butyl ether		"	ND		0.50	"								"	
Methyl tert-butyl eth		"	ND		0.50	"									
n-Propylbenzene			ND		1.0	"								"	
1,2,4-Trimethylbenz	ene		ND		1.0	"								"	
1,3,5-Trimethylbenz			ND		1.0	"								"	
1,5,5-Trinieuryioenz	Dibromofluoromethane		ND	90%	1.0	75-130%	"							"	
Surrogate(s):	1,2-Dichloroethane-d4		Recovery:	96%	I in	uits: 60-150%	"							12/04/07 10:50	า
Surroguie(s).	Toluene-d8		Recovery.	90% 92%	Lin	75-120%	"							"	,
	4-Bromofluorobenzene			88%		55-130%	"							"	
	v														
LCS (7L04004	4-BS1)								Extra	acted:	12/04/07 08	:53			
Benzene		EPA 8260B	9.67		1.0	ug/l	1x		10.0	97%	(75-120)			12/04/07 09:17	
Toluene		"	9.61		2.0	"			"	96%	(80-120)			"	
Ethylbenzene		"	10.2		2.0	"			"	102%	(80-125)			"	
Xylenes (total)		"	30.8		6.0	"			30.0	103%				"	
1,2-Dichloroethane		"	9.34		2.0	"	"		10.0	93%	(65-130)			"	
Isopropylbenzene		"	9.36		2.0	"	"			94%	(75-120)			"	
tert-Amyl methyl eth	ner	"	9.50		0.50	"			"	95%	(75-125)			"	
Naphthalene			9.50		5.0	"				95%	(65-125)			"	
tert-Butyl alcohol		"	197		20	"			200	98%	(80-120)			"	
Di-isopropyl ether		"	9.53		0.50	"			10.0	95%	(70-130)			"	
1,2-Dibromoethane	(EDB)	"	9.88		0.50	"				99%	(75-130)			"	
1,2-Dichloroethane	-		9.34		0.50	"				93%	(65-130)			"	
Ethanol		"	232		100	"			200	116%	(50-150)			"	
Ethyl tert-butyl ether		"	9.74		0.50	"			10.0	97%	(75-130)			"	
											(				

TestAmerica Portland

Darrell Auvil, Project Manager

**Amended Report** 



THE LEADER IN ENVIRONMENTAL TESTING

Amended Report

Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106

Beaverton, OR 97005

Project Name: Project Number: Project Manager:

er: 1126-06 Per: John Foxwell

Report Created: 12/12/07 13:46

Volatile Organic Compounds by EPA Method 8260B - Laboratory Quality Control Results TestAmerica Morgan Hill

QC Batch: 7L04004 Water Preparation Method: EPA 5030B P/T Source Spike 0/ % RPD Analyte Method Result MDL* MRL Units Dil (Limits) Analyzed Notes (Limits) REC Result Amt LCS (7L04004-BS1) Extracted: 12/04/07 08:53 EPA 8260B 12/04/07 09.17 10.0 1.0 1x 10.0 100% n-Propylbenzene --ug/l ---(70 - 130)---1,2,4-Trimethylbenzene .. 10.6 1.0 106% (80-130) ---------... 104% 1,3,5-Trimethylbenzene 10.4 1.0 ... -------" .. Dibromofluoromethane 94% 75-130% 1,2-Dichloroethane-d4 87% Limits: 60-150% 12/04/07 09:17 Surrogate(s): Recovery: " 92% Toluene-d8 75-120% 4-Bromofluorobenzene 97% 55-130% OC Source: POK0883-02 Extracted: 12/04/07 08:53 Matrix Spike (7L04004-MS1) Benzene EPA 8260B 10.1 1x 0.140 10.0 99% (80-120) 12/04/07 11:21 1.0 ug/l --------Toluene 9.85 2.0 ND ., 98% (80-125) ... ----------Ethylbenzene 10.4 2.0 ND 104% (75-130) Xylenes (total) 30.9 6.0 0.230 30.0 102% (75-125) . 1,2-Dichloroethane 9.53 2.0 ND 10.0 95% (65-145) ____ 2.0 ND 94% Isopropylbenzene 945 (55-130)--tert-Amyl methyl ether 10.6 0.50 ND 106% (75-140) Naphthalene 5.0 0.110 ., 95% (50-140) 9.61 tert-Butyl alcohol 20 217 98% (80-125) 199 200 Di-isopropyl ether 9.85 0.50 ND 10.0 98% (75-135) 0.50 ND 1,2-Dibromoethane (EDB) 9.95 100% (80-135) ., 1,2-Dichloroethane 9.53 0.50 ND 95% (65-145)100 Ethanol 197 ND 200 98% (50-150)---Ethyl tert-butyl ether 10.2 0.50 ND 10.0 102% (80-135) Methyl tert-butyl ether 93.3 0.50 83.4 99% (75-145) 1.0 ND n-Propylbenzene 9.88 99% (65 - 135)---1,2,4-Trimethylbenzene 10.6 1.0 ND 106% (55-150)1,3,5-Trimethylbenzene 10.3 1.0 ND (60-140) 103% " . Dibromofluoromethane 92% 75-130% Surrogate(s): 1,2-Dichloroethane-d4 Recovery: 93% Limits: 60-150% 12/04/07 11:21 Toluene-d8 93% 75-120% 55-130% " 4-Bromofluorobenzene 96%

TestAmerica Portland

Darrell Auvil, Project Manager

Danel W. Amil

Amended Report

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

Page 14 of 16



THE LEADER IN ENVIRONMENTAL TESTING

**Amended Report** 

Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106

Beaverton, OR 97005

Project Name: Project Number:

1126-06 Project Manager: John Foxwell

**NuStar Vancouver Annex** 

Report Created: 12/12/07 13:46

#### Volatile Organic Compounds by EPA Method 8260B - Laboratory Quality Control Results TestAmerica Morgan Hill

QC Bate	h: 7L04004	Water P	reparation	Method: EI	PA 5030B 1	P/T									
Analyte		Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Matrix Spike I	Dup (7L04004-MS	D1)			QC Source:	PQK0883-02			Extr	acted:	12/04/07 08	:53			
Benzene		EPA 8260B	10.0		1.0	ug/l	1x	0.140	10.0	99%	(80-120)	0.6%	(20)	12/04/07 11:52	
Toluene		"	9.78		2.0	"	"	ND	"	98%	(80-125)	0.7%	(25)		
Ethylbenzene		"	10.3		2.0	"	"	ND	"	103%	(75-130)	1%	(20)		
Xylenes (total)		"	30.6		6.0	"	"	0.230	30.0	101%	(75-125)	1%	"		
1,2-Dichloroethane		"	9.48		2.0	"	"	ND	10.0	95%	(65-145)	0.5%	(25)		
Isopropylbenzene		"	9.37		2.0	"	"	ND	"	94%	(55-130)	0.9%	(20)		
tert-Amyl methyl etl	her	"	10.6		0.50	"	"	ND	"	106%	(75-140)	0.3%	(25)		
Naphthalene		"	9.94		5.0	"	"	0.110	"	98%	(50-140)	3%	"	"	
tert-Butyl alcohol		"	196		20	"	"	2.17	200	97%	(80-125)	1%	"	"	
Di-isopropyl ether		"	9.70		0.50	"	"	ND	10.0	97%	(75-135)	2%	"	"	
1,2-Dibromoethane	(EDB)	"	10.0		0.50	"	"	ND	"	100%	(80-135)	0.9%	(30)		
1,2-Dichloroethane		"	9.48		0.50	"	"	ND	"	95%	(65-145)	0.5%	(25)		
Ethanol		"	218		100	"	"	ND	200	109%	(50-150)	10%	"	"	
Ethyl tert-butyl ethe	r	"	10.1		0.50	"	"	ND	10.0	101%	(80-135)	1%	"	"	
Methyl tert-butyl eth	ner	"	93.1		0.50	"	"	83.4	"	97%	(75-145)	0.2%	"	"	
n-Propylbenzene		"	10.0		1.0	"	"	ND	"	100%	(65-135)	2%	"	"	
1,2,4-Trimethylbenz	zene	"	10.6		1.0	"	"	ND	"	106%	(55-150)	0.3%	(35)	"	
1,3,5-Trimethylbenz	zene	"	10.4		1.0	"	"	ND	"	104%	(60-140)	1%	(25)	"	
	Dibromofluoromethane			93%		75-130%	"							"	
Surrogate(s):	1,2-Dichloroethane-d4		Recovery:	90%	Limi	ts: 60-150%	"							12/04/07 11:52	
	Toluene-d8			94%		75-120%	"							"	
	4-Bromofluorobenzene			97%		55-130%	"							"	

TestAmerica Portland

Darrell Auvil, Project Manager

**Amended Report** 



without the written approval of the laboratory.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full,



#### THE LEADER IN ENVIRONMENTAL TESTING

Ash Creek Associates, Inc.

9615 SW Allen Blvd. Suite 106 Beaverton, OR 97005

**NuStar Vancouver Annex** Project Name: Project Number:

**Amended Report** 

1126-06 John Foxwell

Report Created: 12/12/07 13:46

Page 16 of 16

#### Notes and Definitions

Project Manager:

#### Report Specific Notes:

- M7 The MS and/or MSD were above the acceptance limits. See Blank Spike (LCS). ZX Due to sample matrix effects, the surrogate recovery was outside the acceptance limits. Laboratory Reporting Conventions:
- DET Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only. Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate). ND NR/NA Not Reported / Not Available Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight. dry Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported wet on a Wet Weight Basis. RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries). RPD MRL METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table. MDL* METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. -*MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results. Dil Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data. Reporting -Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and Limits percent solids, where applicable.
- Electronic Electronic Signature added in accordance with TestAmerica's Electronic Reporting and Electronic Signatures Policy. Signature Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland		The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full.
Quell W. Amil	Amended Report	of custody document. This analytical report shall not be reproduced except in fait, without the written approval of the laboratory.
Darrell Auvil, Project Manager		



#### **CHAIN OF CUSTODY RECORD**

Client Name:Ash Creek AssociatesAddress:9615 SW Allen Blvd #106City/State/Zip:Beaverton, OR 97005

Telephone Number:

Fax No.: 503.924.4707

503.924.4704

PQK0883

Project Manager: John Foxwell

Project Name: NuStar Vancouver Annex (S.T.O.P.)

Analytical Lab: Test America Report To: John Foxwell

Page: 1 of 1

Project Number: 1126-02

Sampler Name: Ashleigh Fines

								P	rese	erva	tive				N	/latr	ix	Ana	alyz	e					Ana	ilyze	e Fo	or:						
Sample ID / Description	Date Sampled	Time Sampled	No. of Containers Shipped	Grab	Composite	Field Fittered	lce HNO (Boot Laboli)	HCI (Blue Label)	NaOH ( Orange Label)	H ₂ SO ₄ Plastic (Yellow Label)	H ₂ SO ₄ Glass(Yellow Label)	None (Black Label)	Other ( Specify)	Groundwater	Wastewater	Studae	Soil	Other (specify):		NWTPH-Dy w/silica del cleanin			8260 Oxygenates & RBCA								RUSH TAT (Pre-Schedule)	Standard TAT	Fax Results	Send QC with report
<u>MW-</u> 1	11/26/07	1045	7					5	$\langle $	Ι	Π		Τ	x	Τ		Τ		Γ	X	-1		x							T	T	X	Π	-
MW-2	11/26/07	1245	7					)>	$\langle$	Π			T	x	Τ		Τ	Γ	Γ	X		x	x					Τ	Τ	T	T	x		
MW-3	11/26/07	1124	7					>	<					x	Τ	Τ	Τ	Τ		X		x	x						T	T	T	Тx	Π	
MW-4	11/26/07	1201	7					>	<	$\square$			1	x	Ţ					×		x	x								T	x	$\square$	
							┝╋╸		+			╉	╉		╈	╞	┢	┢		┢	╉	+	+					╀	+	+			┝╌╋	-
Special Instructions: Relinquished by: Name/Company Ashleigh Fines, Ash Creek Associates Relinquished by: Name/Company	Date 11/26/2 Date	007	17(	5	Recei H. c Recei	ved b	h	me/	/Cor	mpai	ny	ent:	× 1	ł	112	)ate	<u>6</u> 7		7(	ime	>			Tem	pe	ratu	re l		n Re	ecei	4. ( Y		N	
Relinquished by: Name/Company	Date	9	Tir		Recei				V						C	Date	:		T	ime														
Relinquished by: Name/Company	Date		Tie	ne	Recei	vod b		mol	Con							Date		┢		ime		-												

# TestAmerica Sample Receipt Checklist

Received by:	Unpacked by:	Logged-in by:	Work Order Ng PQK0063
1section A) Date: 11 2 4 67	*(section B) Date: 11 2 4 / C +	Date: 11/24/0	Client: <u>FSh Creek</u>
Time: 1765	Initials.	Initials:	Project: <u>NuStav VanCouvev</u> Anne X Temperature out of range:
Initials:()		NA (oil/air samples, ES	Not enough ice No ice ice Meited Win 4 Hours Other:°C
A <u>Custody Seals</u> : (# Signature: Y N Dated: None	) 	om:	B <u>Sample Status</u> : (If N circled, see NOD)
Container Type:		TA Courier Senvoy	General: Intact?
#Cooler #Box(s)		UPS Fed Ex	# Containers Match COC? N none given
None (None (	#Other:)	Client TDP	IDs Match COC? Y N For Analyses Requested:
Gel Ice		DHL SDS	Correct Type & Preservation?     Y     N       Adequate Volume?     (Y)     N
None		<del>Mid-Valley</del> GS/TA	Within Hold Time? N Volatiles/ Oil Quality:
Packing Material: Bubble B		GS/Senvoy Other:	VOAs/ Syringes free of Headspace?
Styrofoar None(	n Cubbies Other:)		TB on COC? (not provided) Y N NA Metals:
			HNO3 Preserved? Y N NA Dissolved Metais Filtered? Y N NA
Temperature Blank	°C not provided	1	FED EX/ UPS: Was the tracking paper keepable? YES NO
All preserved bo All preserved ac	ottles checked Y N	NA = voas/soils/all unp.) NA = voas/soils/all unp.)	If circled NO, what is the Tracking number? FED EX Goldstreak UPS DHL Other:
Comments:		Project M	Managers:
		ewed	(Initial/Date)