

# Groundwater Treatment Maintenance and Analytical Sampling Report Delta Western Haines, AK

June 2016

# 1.0 INTRODUCTION

This report presents a summary of methods and procedures followed during the collection and analysis of groundwater samples from the groundwater treatment system at the Tesoro Station in Haines Alaska. This report includes laboratory results from samples collected May and November of 2015.

This report was prepared in accordance with State of Alaska ADEC *18 AAC 75 Article 3 (October 2008),* and the *ADEC Draft Field Sampling Guidance) May 2010.* All field-sampling protocols were documented and the data is considered scientifically valid.

# 2.0 SITE HISTORY

In the summer of 2012, ChemTrack installed a bioswale treatment system with a groundwater collection system at the Tesoro Station in Haines. This system allows for the surface water and groundwater to have separate migration pathways. The surface water flows into the bioswale system while the groundwater is directed into a 6-Ft diameter groundwater manhole that collects and treats the groundwater. A groundwater treatment system was installed in the groundwater manhole in the spring of 2013. The treatment system ensures that the groundwater from the site meet the established cleanup levels prior to discharging into the sanitary sewer. Sampling of the groundwater treatment system influent and effluent occurs biannually as outlined in the May 2014 Sampling and Analysis Plan and a sample report is submitted annually.

# 3.0 PROJECT PERSONNEL

Monitoring and sampling activities were completed by Imre Manyoky.

#### 4.0 PROJECT LOCATION

The Tesoro Station is located at 900 Main St Haines, AK 99827.

## 5.0 PROJECT SCOPE AND OBJECTIVES

- Inspect treatment system
- Remove buildup of iron bacteria and clean out system
- Collect laboratory samples before and after the water passes through the treatment system to provide adequate data to evaluate the system.
- Remove the used carbon and replace with new activated carbon

# 6.0 SITE INSPECTIONS

The spring site inspection and sampling event occurred on May 27<sup>th</sup>, 2015. Upon arrival onsite, the flow rate was observed to be inconsistent due to the buildup of iron bacteria which reduced the flow rate throughout the system. Prior to clearing out the system, the flow rate was recorded at 0.35 gallons per minute (GPM). The buildup of iron bacteria was removed periodically from the system and flushed with water for three hours. After removing the iron bacteria from the system, the flow rate was restored to 0.50 GPM. Water samples were collected from the intake and discharge of the groundwater treatment system. After water samples were collected, the spent carbon was removed and containerized. Both granular active carbon (GAC) units were replenished with fresh/clean carbon. The sump pump was inspected due to the initial groundwater elevations. The pump was found to have a blown o-ring causing low efficiency flow and indicated a suspected blockage in the effluent line to the sewer. From the pump to the effluent line was cleaned out and the obstruction was removed as well as the o-ring in the pump replaced. The pump then restored to a better efficiency keeping the groundwater levels acceptable within the manholes. The three remaining monitoring wells onsite were inspected. No groundwater samples were collected from the monitoring wells due to insufficient water within wells.

The fall site inspection and sampling event occurred on November 19<sup>th</sup>, 2015. Once onsite, it was observed that the GAC primary unit was again congested with iron bacteria slowing the flow rate though the treatment system. The discharge flow rate of the GAC system was recorded at 0.33 GPM and the groundwater had elevated to 1.5 ft below ground surface (BGS). The groundwater level was reduced by periodically removing iron deposits from the GAC units over a 24 hour period. The flow rate increased to 0.66 GPM and laboratory samples were then collected from the intake and discharge of the system. After sample collection was complete, the used carbon was removed and containerized and replaced with new carbon. The spent carbon was sampled for waste characterization, one primary and a duplicate. In order to simplify the routine maintenance performed by Delta Western personnel, a pressure sensor was installed within the manhole. A warning light was mounted above ground to alert personnel if water levels are becoming elevated. Again all three of the monitoring wells had insufficient water to collect any laboratory samples.

# 7.0 SAMPLE ANALYTICAL METHODS, CONTAINERS, and HOLDING TIMES

Samples were analyzed by TestAmerica and SGS Laboratories (Anchorage, State of Alaska ADEC-approved laboratories) using ADEC required analytical methods. The following table presents a summary of analytes, analytical methods, Method Detection Limits, and Practical Quantitation Limit.

Table 1: Groundwater Analytes, Methods, MDL/PQL, Containers, Holding Times									
Analyte	Analytical Method	MDL* ug/L	PQL** ug/L	Container	Holding Times				
DRO/RRO	AK 102/103	80	800	Two 350 ml Amber Glass TLC	HCl to pH <2 $4^{\circ}$ +				
GRO		10	100	Three 40 ml VOA,	2°C 14 days to				
BTEX	EFA 0200	0.7	5	TLS	exilaci				
РАН	EPA 8270	1	10	1 Liter Amber Glass TLS	4° ± 2°C, Ascorbic acid, dark, 7 days to extract				
*Method D	etection Limit	**Practica	I Quantitation I	Limit Volatile Orgar	nic Analysis(VOA)				

# 8.0 SAMPLE RESULTS

Samples were collected before and after the water passed through the groundwater treatment system. Samples identified as 'MH-A' and 'MH-A1' were collected from the groundwater inflow prior to treatment. Samples identified as 'MH-B' were collected from the water after it had passed through the groundwater treatment system.

During the spring and fall 2015 sampling events, samples were analyzed for Gasoline Range Organics (GRO), Diesel Range Organics (DRO), Residual Range Organics (RRO), Benzene, Toluene, Ethylbenzene, Xylenes (BTEX). In addition, one sampling event each year includes the following analytes; Total Aromatic Hydrocarbons (TAH), Polynuclear Aromatic Hydrocarbons (PAH) and Total Aqueous Hydrocarbons (TAqH). These sampling procedures are consistent with the May 2014 Sampling and Analysis Plan.

Table 2 below includes a summary of laboratory analytical results of water samples collected in May of 2015.

Table 2: Analytical Data May 2015 - Groundwater Treatment System										
Samples	<b>MH- A</b> (mg/L)	MH-A-1 (duplicate of MH-A) (mg/L)	<b>MH-B</b> (mg/L)	ADEC Table C Groundwater Cleanup Levels 18 AAC 75.345 (mg/L)						
DRO	ND<0.58	ND<0.58	ND<0.58	1.5						
RRO	0.52	0.41	0.4	1.1						
GRO	2.1	2.2	ND<0.1	2.2						
Benzene	0.210	0.210	ND<0.001	0.005						
Ethylbenzene	0.51	0.54	ND<0.001	0.7						
Toluene	0.210	0.220	ND<0.001	1.0						
Total Xylenes	0.490	0.520	ND<0.003	10						
	ND= Not	<b>Detected at Labo</b>	oratory Detection	on Limit						

Tables 3 and 4 below include a summary of laboratory analytical results of water samples collected in November of 2015.

	Table 3: Analytical Data November 2015 - Groundwater Treatment System								
	Samples	MH- A	MH-A (duplicate of l	. <b>1</b> MH-A)	MH-I (ma/L	B	ADI Clean	EC Table C Groundwater up Levels (18 AAC 75.345)	)
		0.609		) 1		526	(mg/L)		
	BRO	0.090		+		116		1.0	
	GBO	3.92	3 85	40	ND<0	100		22	
	Benzene	0.257	0.260	)	ND<0.0	004		0.005	
E	thylbenzene	0.106	0.104	1	ND<0.0	001		0.7	
	Toluene	0.396	0.393	3	ND<0.0	001		1.0	
Т	otal Xylenes	0.839	0.825	5	ND<0.0	001		10	
			ND= Not Detec	ted at	Laboratory	y Deteo	ction Limi	t	
	Table	4: PAH Ana	lytical Data No	vemb	er 2015 -	Grour	ndwater 1	reatment System	
	Samples		MH-A (mg/L)	M (dup N (	I <b>H- A1</b> blicate of /IH-A) mg/L)	<b>N</b> (r	<b>IH-B</b> ng/L)	ADEC Cleanup Level for Marine Water Uses Water Quality Standards 18 AAC 70 (mg/L)	
	<b>TAH</b> 1.9160		1.9160	1.8950		0.0054		0.010	
	TAq	Н	1.9244	1	.9065	0.	0064		
	Acenaphthene		ND<0.00005	ND<	0.00005	ND<0.00005			
	Acenapht	hyene	ND<0.00005	ND<	0.00005	ND<0.00005			
	Anthrac	ene	ND<0.00005	ND<0.00005		ND<0.00005			
	Benzo-a-an	thracene	ND<0.00005	ND<0.00005		ND<	0.00005		
	Benzo-a-p	oyrene	ND<0.00005	ND<0.00005		ND<0.00005			
	Benzo-b-flur	oanthene	ND<0.00005	ND<0.00005		ND<0.00005			
	Benzo-k-flur	oanthene	ND<0.00005	ND<	0.00005	ND<	0.00005		
	Benzo[g-h-i]	perlyrene	ND<0.00005	ND<	0.00005	ND<	0.00005		
	Chryse	ene	ND<0.00005	ND<	0.00005	ND<	0.00005	0.015	
	Dibenzo-a-h-a	anthracene	ND<0.00005	ND<	0.00005	ND<0.00005			
	Fluore	ene	ND<0.00005	ND<	0.00005	ND<	0.00005		
	Fluoranthrene		ND<0.00005	ND<	0.00005	ND<	0.00005		
	Ideno-123-cd-pyrene		ND<0.00005	ND<	0.00005	ND<	0.00005		
	Naphthalene		0.00561	0.	00775	ND<	0.0005		
	1-Methylnap	hthalene	0.000816	0.	00118	ND<	0.00005		
	2-Methylnap	hthalene	0.00124	0.	00178	ND<	0.00005		
	Phenant	hrene	ND<0.00005	ND<	0.00005	ND<	0.00005		
	Pyrer	ne	ND<0.00005	ND<	0.00005	ND<	0.00005		
	-	N	D= Not Detecte	d at l	aboratory	/ Dete	ction I in	nit	

Table 5: Analytical Data November 2015 – Spent Granular Active Carbon								
Samples	HTSC1 (mg/Kg)	HTTSC2 (duplicate of HTSC1) (mg/Kg)	ADEC Soil Clean Up Levels Table B1 &B2 Migration to Groundwater Under 40 inch Zone (18 AAC 75.341) (mg/Kg)					
DRO	453	307	250					
RRO	107	76.0	11,000					
GRO	ND<11.3	ND<11.2	300					
Benzene	1.02	1.08	0.025					
Ethylbenzene	ND<0.113	0.115	6.9					
Toluene	0.328	0.399	6.5					
Total Xylenes	0.363	0.473	63					
	ND= Not De	etected at Laborate	bry Detection Limit					

9.0

#### DATA VALIDATION AND LABORATORY QUALITY CONTROL DOCUMENTATION

#### 9.1 Laboratory Reports and Data Quality

A review of the laboratory data indicates that all samples arrived intact and property labeled. Samples were properly preserved, extracted and analyzed within the required holding times.

#### 9.2 Laboratory Review Checklist

See attached Laboratory Data Review Checklist.

#### 10.0 DISCUSSION OF RESULTS

The analytical results confirm that the groundwater prior to treatment GRO and Benzene are above established clean up levels. For all analytes tested, the post treatment samples were well below the established cleanup levels, indicating that the system is functioning properly. The iron bacteria continues to buildup and slow the flow rate through the system. With routine cleanings and the addition of the pressure sensor warning system, no significant problems are anticipated.

CONTRACTOR	S QUALITY CONTROL REPORT (CQC)	
Report #: 1	Date: 27-May-15 Wednesday	
CONTRACT NO. AND NAME OF CONTRACTOR:	DESCRIPTION AND LOCATION OF THE WORK:	
Contract No.:	Job# 6083	
11711 S Gambell St	Location Haines Tesoro Station	
Anchorage, Alaska 99515		
WEATHER: Sunny, and partly cloudy, 65-70 degrees	i	
NAME OF CONTRACTOR/SUBCONTRACTORS WITH AREA OF RESPONSIBILITY FOR	VORK PERFORMED TODAY:	
Contractor's/Subcontractor's Name:	Area of Responsibility:	
a. Chemirack	Groundwater Well	
1. WORK PERFORMED TODAY:		
On site at 8:30, inspected system, measured flow rate. Flow rate was inconsistant fl	ictuating between .355 GPM.	
Goundwater was backed up from the clogged GAC units.		
Groundwater collection pipes were flushed out by releasing the water periodically	nd uncloggin the units as the collected the bio iron residue.	
After water level was reduced to the level of the pipe invert and iron in the collecti hours.	n pipe was suffiecent flushed out, the GAC units were clean out and the system v	vas left running for 3
Groundwater samples were collected in the evening; an unfiltered sample form the shortly after the source sample was collected.	source was collected with a duplicate sample, a sample from the treated water w	vas also collected
Met with maintenance supervisor for the bioswale vegatation and explained the re	sons for the selected plants and maintenance needed.	
Monitoring wells did not contain adaquate water for sampling, groundwater was o	ly sampled from the well.	
2. FUTURE WORK PLANS:		
Replace GAC in filter units, flush groundwater collection pipes with chlorine.		
3. TYPE AND RESULTS OF INSPECTION: (Indicate whether P-Preparatory, I-Initial, o	F-Follow-up and include satisfactory work completed or deficiencies with action	to be taken.)
4. SAMPLING REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RE	ULTS OF TESTS:	
Type of Test Performed: n/a	Results: n/a Spec Section Covered: Comments:	
5. VERBAL INSTRUCTIONS RECEIVED: (List any instructions given by Government p	rsonnel on construction deficiencies, re-testing required, etc., with action to be t	aken.)
6. REMARKS: (Cover any conflicts in plans, specifications or instructions: acceptable	ity of incoming materials; offsite surveillance activities; progress of work, delays,	cause and extent
thereof; days of no work with reasons for same, site visitors.)		
Some of the tubing and drums maybe due for replacement next fall, materials shou	d be procured for next sampling event and installed as needed.	
7. SAFETY: (Include any infractions of approved safety plan, safety manual, or instr	ctions from Government personnel. Specify corrective action taken.)	
8. EQUIPMENT TYPE:	Usage Location & Utiliza	ation
a. Pickup Truck (Dully)	day site/mob	
b		
d.	·	
9. PERSONNEL:	Hrs CostCode	
a. Imre	7 HRS onsite	
b		
10. MATERIALS BROUGHT ON SITE:	Material Desciption	
a. Sampling Jars		
1 27-May	15 Round Manus	
REPORT # DATE	the second states /	

CONTRACTOR'S QUALITY CONTROL REPORT (CQC)							
	Report #:	2	C	vate: 28-I	Mav-15	Thursday	
	·····						
CONTRACT NO. AN	ID NAME OF CONTRACTOR:		DESCI		CATION OF 1	THE WORK:	
	ChemTrack Alaska, Inc.			Job Name	Tesoro Stat	ion Groundwater System	
	11711 S.Gambell St.			Location	Haines Teso	pro Station	
	Anchorage, Alaska 99515						
WEATHER:	Sunny, 70-80 degrees.						
NAME OF CONTRA	CTOR/SUBCONTRACTORS WITH AREA OF RESPONSIBIL	ITY FOR WORK P	ERFORMED TODAY:				
	Contractor's/Subcontractor's	Name:			Area	of Responsibility:	
a.	ChemTrack				Gr	oundwater Well	
b.							
1. WORK PERFORM	NED TODAY:						
On site at 8:30, Shi	ut off water flow into system and dismantaled units.						
Removed spent GA	C from units and place into trash bags for transport.						
Replaced GAC in a	13 units placed one 35 lb mah into each units units and	nining were reas	symbled				
Spent Carbon was	transported to the lower wharehouse at the Old Petro N	larine Station, tra	ash bags were placed	in a 55 gallon st	eel salvage d	rum and labled "used GAC, 5-28-15"	
250' garden hose v GPM, the groundw	vas borrowed from the truck rack facility and connected ater pipes 1 gallon of concentrated bleach was added to	to the city water o the collection s	was place in the clear ystem as the water w	in out at the east as flowing, blead	end of the b h was addec	oioswale, the water was flowing at a rate of 6 d over a period of an hour.	
Water was flowing bottom of the mar	into the collection pipes for 4 more hours after the blea hole.	ch was added, a	total of app. 1800 ga	lons was added	to the systen	n; water level was backed up to 5' above the	
Submersible pump	stopped working, water was left backed up overnight.						
2. FUTURE WORK	PLANS:						
Tomorrow							
Borrow 2" pump fr	om truck rack facility and pump down backed up water.	Test system. Ord	der new sump pump i	rom AIH Juneau	and request	shipment to Haines. Site inspection with Bruce	
ADEC CS PM).	ITS OF INSPECTION: (Indicate whether D. Dreparatory )	Initial or E Follo	w up and include sati	sfactory work co	malated or	deficiencies with action to be taken )	
S. TIPE AND RESU			w-up and include sat	STACLOLY WOLK CC	inpieted of t	denciencies with action to be taken.	
4. SAMPLING REQ	UIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED	AND RESULTS C	OF TESTS:				
	Type of Test Performed: n/a	Re	sults: n/a	Spec Secti	on Covered:	Comments:	
5. VERBAL INSTRU	CTIONS RECEIVED: (List any instructions given by Gover	nment personne	l on construction defi	ciencies, re-testi	ng required,	etc., with action to be taken.)	
6. REMARKS: (Cov	er any conflicts in plans, specifications or instructions: a	cceptability of ir	coming materials; of	fsite surveillance	activities; pi	rogress of work, delays, cause and extent thereof;	
days of no work w	th reasons for same, site visitors.)	. ,	0 /		<i>,</i>		
Some of the tubing	and drums maybe due for replacement next fall, mater	ials should be pro	ocured for next samp	ling event and in	stalled as ne	eded.	
7. SAFETY: (Includ	e any infractions of approved safety plan, safety manual	, or instructions	from Government pe	rsonnel. Specify	corrective a	ction taken.)	
	DE-		lleage			Location & Utilization	
a. EQUIPIVIENT TT	re: Pickup Truck (Dully)		day		site/moh		
b.			udy		31(0)1100		
с.							
d.							
9. PERSONNEL			Hrs			CostCode	
a. b	Imre	_	10			Billable HRS	
10. MATERIALS BR	OUGHT ON SITE:		Material Desciptio	n			
a.	3x35lb Bags of GAC		•				
				CONTRACT	OR'S AUTHO	DRIZED REPRESENTATIVE	
				~7	$\cap A$	$\sim$	
	2	28-May-15		Xm	o YM	aug )	
	REPORT #	DATE		0.	,	$\sim 0$	
						<u> </u>	

	CONTRA	CTOR'S QUALITY CONTROL	REPORT (CQC)		
	Report #: 3		Date: 29	)-May-15	Friday
CONTRACT NO. AND NAME OF CONTRA	ACTOR:		DESCRIPTION AND LC	CATION OF TH	IE WORK:
Contrac	t No.:		Jop#	6083	
ChemTr	ack Alaska, Inc.		Job Nam	e Tesoro Stati	on Groundwater System
11711 9	Gambell St.		Location	Haines Teso	pro Station
Anchora	ige, Alaska 99515				
WEATHER:	Sunny 80 degrees.				
NAME OF CONTRACTOR/SUBCONTRAC	TORS WITH AREA OF RESPONSIBILITY F	OR WORK PERFORMED TO	DAY:		
	Contractor's/Subcontractor's Nam	e:		Area	of Responsibility:
a.	ChemTrack			Gro	oundwater Well
b.					
1. WORK PERFORMED TODAY:					
On site at 5:30, Picked up 2" pump from	truck rack facility and pumped water le	vel down, Approximately 3	500 gallons was remo	ved with the 2	" pump.
Sump pump was insepcted and would p into the 2" gas power pump, the debris	ump water at low efficency due to a blo was forced out the outlet of the 1' line.	wn out O ring, this indicate	d that the 1" line may	be clogged. Th	ne 1" line was flushed out by plumbing the line
After flushing the 1' line, the submersab	le pump was able to discharge the wate	r. A replacement pump wa	s ordered from the Ju	neau AIH and w	vill be shipped to Haines via Seaplanes.
Site inspection with Bruce went well, he management plan may need to be draft	did not have any concerns about the sy ed for the site to be transfered the site t	stem. Bruce mentioned the to the IC unit. Tranfer of the	e site closure with inst e site to the IC unit wo	ututional contr ould reduce AD	ols may be granted, a maintence and EC billing to Delta Western.
2. FUTURE WORK PLANS:					
Tomorrow					
Replace submersable pump before Dem	iob				
3. TYPE AND RESULTS OF INSPECTION:	(Indicate whether P-Preparatory, I-Initia	al. or E-Follow-up and inclu	de satisfactory work o	ompleted or de	eficiencies with action to be taken.)
		,	,		,
4. SAMPLING REQUIRED BY PLANS AND	O/OR SPECIFICATIONS PERFORMED AND	RESULTS OF TESTS:			
Type of Test Perform	ned: n/a	Results:	n/a Spec Sec	tion Covered:	Comments:
5. VERBAL INSTRUCTIONS RECEIVED: (	ist any instructions given by Governme	nt personnel on constructio	on deficiencies, re-test	ing required, e	tc., with action to be taken.)
<b>6. REMARKS:</b> (Cover any conflicts in pla days of no work with reasons for same,	ins, specifications or instructions: accep site visitors.)	tability of incoming materi	als; offsite surveillance	e activities; pro	gress of work, delays, cause and extent thereof;
7. SAFETY: (Include any infractions of a	pproved safety plan, safety manual, or in	nstructions from Governme	ent personnel. Specify	corrective act	ion taken.)
8. EQUIPMENT TYPE:		Usage	2		Location & Utilization
a. Pickup Truck (Dully	J	day		site/mob	
b.					
9. PERSONNEL:		Hrs			CostCode
a. Imre		7			Billable HRS
b. 10. MATERIALS BROUGHT ON SITE:		Material De	sciption		
a. Sampling Jars					
·			CONTRAC	TOR'S AUTHOR	RIZED REPRESENTATIVE
					2.5
3	29	-May-15	Son	~ Ma	well)
REPORT #		DATE	<i>v</i> ·	, 2	-0

		COI	NTRACTOR'S Q	UALITY CONTROL	REPORT (	CQC)			
		Report #:	3		Date:	29-1	May-15	Friday	
		Report #.	5		Date.	29-1	viay-15	riiudy	
CONTRACT NO. AN	ND NAME OF CONTRACTOR:				DESCRIP	TION AND I	LOCATION OF	THE WORK:	
	Contract No.: ChemTrack Alaska, Inc.					JOD#	Tesoro Stati	on Groundwater System	
	11711 S.Gambell St.					Location	Haines Teso	ro Station	
	Anchorage, Alaska 9951	5							
WEATHER:	Sunny 70 de	egrees.							
NAME OF CONTRA	ACTOR/SUBCONTRACTORS WITH ARE/	A OF RESPONSIB	ILITY FOR WOF	RK PERFORMED T	ODAY:				
	Contractor's	s/Subcontractor	's Name:				Area	of Responsibility:	
a.		ChemTrack			_		Gro	undwater Well	
b. 1. WORK PERFORM	MED TODAY:								
Picked up pump fr	om Seaplanes and installed pump in g	roundwater man	hole and tester	d.					
packed gear for de	emob								
2. FUTURE WORK	PLANS:								
Replace submersal	hle numn hefore Demoh								
3 TYPE AND RESU	ILTS OF INSPECTION: (Indicate whether	preparatory	I-Initial or E-E	ollow-up and inclu	udo satisfa	ictory work	completed o	deficiencies with action to be taken )	
S. TIPE AND RESO	indicate whether	er reparatory,					completed of	denciencies with action to be taken.	
4. SAMPLING REQ	UIRED BY PLANS AND/OR SPECIFICAT	IONS PERFORM	ED AND RESULT	TS OF TESTS:					
	Type of Test Performed:	n/a		Results:	n/a	Spec Secti	on Covered:	Comments:	
5. VERBAL INSTRU	ICTIONS RECEIVED: (List any instruction	ons given by Gov	ernment persor	nnel on construct	ion deficie	ncies, re-te	sting required	l, etc., with action to be taken.)	
6. REMARKS: (Cov	ver any conflicts in plans, specifications	s or instructions:	acceptability of	of incoming mate	rials; offsit	e surveillan	ce activities;	progress of work, delays, cause and extent	:
thereof; days of no	o work with reasons for same, site visit	ors.)							
	1	1					6		
7. SAFETY: (Includ	le any infractions of approved safety p	lan, safety manu	al, or instructio	ons from Governm	ient perso	nnel. Speci	ty corrective	action taken.)	
8 FOLIIDMENT TV	DE.			الدعم				Location & Litilization	
a.	Pickup Truck (Dully)			dav			site/mob		
b.			-			_	5100,1100		
с.			_			-			
d.			_			_			
				Hrs				CostCode	
a.	Imre			4.5				Billable HRS	
b.						_			
с.			_			-			
d.			_			_			
e.			_			_			
10. MATERIALS BR	ROUGHT ON SITE:		_	Material Des	ciption	_			
a.	Sampling Jars							_	
						CONTRAC	TOR'S AUTH	DRIZED REPRESENTATIVE	
							-	0/0	
	3		29-May 15	5		Ra	$-\mathcal{N}$	lours)	
	REPORT #		DATE	,	_	1 Acres	$\sim r$	23/1	
	-							$\mathcal{U}$	



THE LEADER IN ENVIRONMENTAL TESTING

# **ANALYTICAL REPORT**

# TestAmerica Laboratories, Inc.

TestAmerica Anchorage 2000 West International Airport Road Suite A10 Anchorage, AK 99502-1119 Tel: (907)563-9200

# TestAmerica Job ID: 230-511-1

Client Project/Site: Haines Tesoro Station

# For:

Chem Track 11711 S. Gambell Anchorage, Alaska 99515

Attn: Imre Manyoky



Authorized for release by: 6/11/2015 8:35:33 AM

Kelly Garretts, Project Manager II (253)248-4961 kelly.garretts@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

LINKS Review your project results through TOTOLACCESS Have a Question? Ask The Expert Visit us at: Www.testamericainc.com

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3

5

# Qualifiers

#### GC Semi VOA

Qualifier	Qualifier Description
В	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
Х	Surrogate is outside control limits

# Glossary

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

# 1 2 3 4 5 6 7 8 9 10 11 12 13 14

# Job ID: 230-511-1

### Laboratory: TestAmerica Anchorage

#### Narrative

Job Narrative 230-511-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 6/3/2015 4:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.3° C.

#### **Receipt Exceptions**

A trip blank was submitted for analysis with these samples; however, it was not listed on the Chain of Custody (COC) and insufficent volume was received for both AK101 and 8260.

The single trip blank vial lost due to laboratory error Sample was canceled for the required test codes.

Trip Blank (230-511-4)

#### GC/MS VOA

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

#### GC VOA

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

#### GC Semi VOA

Method AK102 & 103: Surrogate recovery for the following sample was outside the upper control limit: MHA (230-511-1). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

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

#### Organic Prep

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

#### VOA Prep

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

# **Detection Summary**

#### Client: Chem Track Project/Site: Haines Tesoro Station

## **Client Sample ID: MHA**

# Lab Sample ID: 230-511-1

Lab Sample ID: 230-511-2

Lab Sample ID: 230-511-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D Method	Prep Type
Benzene	210		1.0		ug/L	1	8260C	Total/NA
Ethylbenzene	51		1.0		ug/L	1	8260C	Total/NA
Toluene	210		1.0		ug/L	1	8260C	Total/NA
Xylenes, Total	490		3.0		ug/L	1	8260C	Total/NA
C6-C10 AK	2100		100		ug/L	1	AK101	Total/NA
C25-C36	520	JB	8000	380	ug/L	1	AK102 & 103	Total/NA

## **Client Sample ID: MHA1**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	210		1.0		ug/L	1	_	8260C	Total/NA
Ethylbenzene	54		1.0		ug/L	1		8260C	Total/NA
Toluene	220		1.0		ug/L	1		8260C	Total/NA
Xylenes, Total	520		3.0		ug/L	1		8260C	Total/NA
C6-C10 AK	2200		100		ug/L	1		AK101	Total/NA
C25-C36	410	JB	8000	380	ug/L	1		AK102 & 103	Total/NA

# Client Sample ID: MHB

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
C25-C36	400	JB	8000	380	ug/L	1	_	AK102 & 103	Total/NA

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This Detection Summary does not include radiochemical test results.

# **Client Sample Results**

Client Sample ID: MHA Date Collected: 05/27/15 17: Date Received: 06/03/15 16:	45 50						Lab Sam	ple ID: 230- Matrix	-511-1 : Water
Method: 8260C - Volatile O	rganic Compo	unds by G	C/MS			_			
Analyte	Result	Qualifier		MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	210		1.0		ug/L			06/08/15 17:27	1
Ethylbenzene	51		1.0		ug/L			06/08/15 17:27	1
loluene	210		1.0		ug/L			06/08/15 17:27	1
Kylenes, Total	490		3.0		ug/L			06/08/15 17:27	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)			70 - 130					06/08/15 17:27	1
4-Bromofluorobenzene (Surr)	109		70 - 130					06/08/15 17:27	1
Dibromofluoromethane (Surr)	115		70 - 130					06/08/15 17:27	1
Toluene-d8 (Surr)	103		70 - 130					06/08/15 17:27	1
Method: AK101 - Alaska - C	Gasoline Rang	e Organics	s (GC)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10 AK	2100		100		ug/L			06/10/15 21:08	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
a,a,a-Trifluorotoluene	90		60 - 120					06/10/15 21:08	1
Method: AK102 & 103 - Ala	ska - Diesel Ra	ange Orga	nics & Resid	ual Ran	ge Organ	nics (C	SC)		
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C10-C25			6400	520			06/06/15 00:33	06/06/15 20:34	,

C10-C25	ND		6400	580	ug/L	 06/06/15 09:33	06/06/15 20:34	1
C25-C36	520	JB	8000	380	ug/L	06/06/15 09:39	06/07/15 23:03	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
Surrogate C35 (Surr)	%Recovery 124	$\frac{\textbf{Qualifier}}{X}$	Limits 60 - 120			<b>Prepared</b> 06/06/15 09:39	Analyzed 06/07/15 23:03	Dil Fac

#### **Client Sample ID: MHA1** Date Collected: 05/27/15 18:15

# Date Received: 06/03/15 16:50

Analyte	Result	Qualifier		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	210			1.0		ug/L			06/08/15 17:54	1
Ethylbenzene	54			1.0		ug/L			06/08/15 17:54	1
Toluene	220			1.0		ug/L			06/08/15 17:54	1
Xylenes, Total	520			3.0		ug/L			06/08/15 17:54	1
Surrogate	%Recovery	Qualifier	Lim	its				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		70 -	130					06/08/15 17:54	1
4-Bromofluorobenzene (Surr)	108		70 -	130					06/08/15 17:54	1
Dibromofluoromethane (Surr)	115		70 -	130					06/08/15 17:54	1
Toluene-d8 (Surr)	104		70 -	130					06/08/15 17:54	1
Method: AK101 - Alaska - (	Gasoline Rang	e Organics	s (GC)							
	•		• •							

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C6-C10 AK	2200		100	 ug/L			06/10/15 21:40	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene			60 - 120				06/10/15 21:40	1

#### TestAmerica Anchorage

Lab Sample ID: 230-511-2

Matrix: Water

# **Client Sample Results**

Client: Chem Track Project/Site: Haines Tesoro Station

#### TestAmerica Job ID: 230-511-1

Lab Sample	ID: 230-511-2
	Matrix: Water

#### Client Sample ID: MHA1 Date Collected: 05/27/15 18:15 Date Received: 06/03/15 16:50

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C10-C25	ND		6400	580	ug/L		06/06/15 09:33	06/06/15 21:04	
C25-C36	410	JB	8000	380	ug/L		06/06/15 09:39	06/07/15 23:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
C35 (Surr)	115		60 - 120				06/06/15 09:39	06/07/15 23:33	1
o-Terphenyl	78		60 - 120				06/06/15 09:33	06/06/15 21:04	1
Client Sample ID: MHB							Lab Sam	ple ID: 230-	-511-3
Date Collected: 05/27/15 18:35 Date Received: 06/03/15 16:50								Matrix	Wate
Method: 8260C - Volatile Orga	nic Compo	unds by G	C/MS						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.0		ug/L			06/08/15 18:22	1
Ethylbenzene	ND		1.0		ug/L			06/08/15 18:22	1
Toluene	ND		1.0		ug/L			06/08/15 18:22	1
Xylenes, Total	ND		3.0		ug/L			06/08/15 18:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
1,2-Dichloroethane-d4 (Surr)	104		70 - 130					06/08/15 18:22	1
4-Bromofluorobenzene (Surr)	107		70 - 130					06/08/15 18:22	1
Dibromofluoromethane (Surr)	114		70 - 130					06/08/15 18:22	1
Toluene-d8 (Surr)	105		70 - 130					06/08/15 18:22	
Method: AK101 - Alaska - Gas	oline Rang	e Organics	s (GC)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10 AK	ND		100		ug/L			06/10/15 22:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
a,a,a-Trifluorotoluene	92		60 - 120					06/10/15 22:11	1
Method: AK102 & 103 - Alaska	- Diesel Ra	ange Orga	nics & Resid	ual Ran	ge Orgar	nics (C	GC)		
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C10-C25	ND		6400	580	ug/L		06/06/15 09:33	06/06/15 21:34	1
C25-C36	400	JB	8000	380	ug/L		06/06/15 09:39	06/08/15 00:03	
	% Basawary	Qualifier	l imits				Prepared	Analyzed	Dil Fa
Surrogate	%Recovery	Quanner	Emito					, <b>, _</b>	
Surrogate       C35 (Surr)	100		60 - 120				06/06/15 09:39	06/08/15 00:03	

Prep Type: Total/NA

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

Matrix: Water						Prep Type: Total/NA			
		Percent Surrogate Recovery (Acceptance Limits)							
		12DCE	BFB	DBFM	TOL				
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	(70-130)	(70-130)				
230-511-1	MHA	101	109	115	103				
230-511-2	MHA1	101	108	115	104				
230-511-3	MHB	104	107	114	105				
490-79431-A-2 MS	Matrix Spike	102	109	97	104				
490-79431-A-2 MSD	Matrix Spike Duplicate	102	109	98	104				
LCS 490-254358/3	Lab Control Sample	104	107	101	105				
LCSD 490-254358/4	Lab Control Sample Dup	103	110	99	106				
MB 490-254358/6	Method Blank	106	107	114	105				

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane (Surr)

TOL = Toluene-d8 (Surr)

#### Method: AK101 - Alaska - Gasoline Range Organics (GC) Matrix: Water

			Percent Surrogate Recovery (Acceptance Limits)
		TFT2	
Lab Sample ID	Client Sample ID	(60-120)	
230-511-1	MHA	90	
230-511-2	MHA1	89	
230-511-3	МНВ	92	
_CS 490-254835/3	Lab Control Sample	97	
_CSD 490-254835/9	Lab Control Sample Dup	98	
VB 490-254835/5	Method Blank	92	

TFT = a,a,a-Trifluorotoluene

#### Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC) Matrix: Water Prep Type: Total/NA

			Percent Surrogate Recovery (Acceptance Limits)
		ОТРН	
Lab Sample ID	Client Sample ID	(60-120)	
230-511-1	MHA	83	
230-511-2	MHA1	78	
230-511-3	MHB	92	
LCS 490-254144/2-A	Lab Control Sample	80	
LCSD 490-254144/3-A	Lab Control Sample Dup	92	
MB 490-254144/1-A	Method Blank	100	
Surrogate Legend			
OTPH = o-Terphenyl			

_			Parcent Surrogate Pacovery (Accentance Limits)
		C35 (Surr)	Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	(60-120)	
230-511-1	MHA	124 X	
230-511-2	MHA1	115	
230-511-3	МНВ	100	
LCS 490-254149/2-A	Lab Control Sample	99	
LCSD 490-254149/3-A	Lab Control Sample Dup	98	
MB 490-254149/1-A	Method Blank	109	
Surrogate Legend			
C35 (Surr) = C35 (Surr	)		

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

Lab Sample ID: MB 490-2 Matrix: Water Analysis Batch: 254358	54358/6		-	-					C	lie	ent San	nple ID: M Prep Ty	ethod pe: To	l Blank otal/NA
· ·····, · ··· · · · · · · · · · · · ·		ΜВ	МВ											
Analyte	Re	sult	Qualifier	RI	-	MDL	Unit		D	P	repared	Analy	zed	Dil Fac
Benzene		ND		1.0	)		ug/L					06/08/15	12:52	1
Ethylbenzene		ND		1.(	)		ug/L					06/08/15	12:52	1
Toluene		ND		1.0	)		ug/L					06/08/15	12:52	1
Xylenes, Total		ND		3.0	)		ug/L					06/08/15	12:52	1
		MR	MR											
Surrogate	%Reco	vorv	Qualifier	l imite						P	ronarod	Δnalv	70d	Dil Fac
1 2-Dichloroethane-d4 (Surr)		106	Quanner	-2000000000000000000000000000000000000	-						eparea		12:52	1
4-Bromofluorobenzene (Surr)		107		70 - 130								06/08/15	12:52	1
Dibromofluoromethane (Surr)		114		70 - 130								06/08/15	12:52	1
Toluene-d8 (Surr)		105		70 - 130								06/08/15	12:52	
		100		10-100									12.02	,
Lab Sample ID: LCS 490-2 Matrix: Water	254358/3							Cli	ent S	ar	nple IC	): Lab Cor Prep Ty	ntrol S	Sample
Analysis Batch: 254358												перту	pc. rc	
Analysis Baton: 204000				Spike	LCS	LCS	5					%Rec.		
Analyte				Added	Result	Qua	lifier	Unit	I	D	%Rec	Limits		
Benzene				50.0	46.7			ug/L		_	93	80 - 121		
Ethylbenzene				50.0	47.5			ug/L			95	80 - 130		
Toluene				50.0	46.2			ug/L			92	80 - 126		
								0						
	LCS	LCS												
	%Recovery	Qua	lifier	Limits										
1,2-Dichloroethane-d4 (Surr)	104			70-130										
4-Bromofluorobenzene (Surr)	107			70-130										
Dibromofiluorometnane (Surr)	101			70-130										
Toluene-d8 (Surr)	105			70-130										
Lab Sample ID: LCSD 490	254259/4							liont S	ampl			h Control	Samn	
Matrix: Wator	-234330/4							ment d	ampi	e		Drop Tv	Dannp	
Analysis Batch: 25/358												Fiebily	pe. It	
Analysis Datch. 204000				Spike	LCSD	LCS	D					%Rec.		RPD
Analyte				Added	Result	Qua	lifier	Unit	ſ	D	%Rec	Limits	RPD	) Limit
Benzene				50.0	49.2			ua/L		_	98	80 - 121		5 17
Ethvlbenzene				50.0	50.5			ua/L			101	80 - 130	6	6 15
Toluene				50.0	48.6			ua/L			97	80 - 126	5	5 15
								- 0						
	LCSD	LCS	D											
Surrogate	%Recovery	Qua	lifier	Limits										
1,2-Dichloroethane-d4 (Surr)	103			70 - 130										
4-Bromofluorobenzene (Surr)	110			70 - 130										
Dibromofluoromethane (Surr)	99			70 - 130										
Toluene-d8 (Surr)	106			70 - 130										
Lab Sample ID: 490-79431 Matrix: Water	-A-2 MS								(	CI	ient Sa	ample ID: Prep Ty	Matrix pe: To	c Spike otal/NA
Analysis Batch: 254358														
	Sample	Sam	ple	Spike	MS	MS						%Rec.		

-	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	ND		50.0	39.9		ug/L		80	75 - 133	 

**Client Sample ID: Matrix Spike Duplicate** 

Prep Type: Total/NA

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

Lab Sample ID: 490-7943 Matrix: Water Analysis Batch: 254358	1-A-2 MS						C	lient Sa	mple ID: Matrix Spike Prep Type: Total/NA
	Sample	Sample	Spike	MS	MS				%Rec.
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
Ethylbenzene	ND		50.0	46.2		ug/L		92	79 - 139
Toluene	ND		50.0	41.1		ug/L		82	75 - 136
	MS	MS							
Surrogate	%Recovery	Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	102		70 - 130						
4-Bromofluorobenzene (Surr)	109		70 - 130						
Dibromofluoromethane (Surr)	97		70 - 130						
Toluene-d8 (Surr)	104		70 - 130						

#### Lab Sample ID: 490-79431-A-2 MSD Matrix: Water Analysis Batch: 254358

Analysis Dalch. 204000											
	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzene	ND		50.0	40.1		ug/L		80	75 - 133	0	17
Ethylbenzene	ND		50.0	46.1		ug/L		92	79 - 139	0	15
Toluene	ND		50.0	41.3		ug/L		83	75 - 136	1	15
	MSD	MSD									
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	102		70 - 130								
4-Bromofluorobenzene (Surr)	109		70 - 130								
Dibromofluoromethane (Surr)	98		70 - 130								
Toluene-d8 (Surr)	104		70 - 130								

#### Method: AK101 - Alaska - Gasoline Range Organics (GC)

Lab Sample ID: MB 490-28 Matrix: Water Analysis Batch: 254835	54835/5							Cli	ent San	nple ID: Meth Prep Type:	nod Blank Total/NA
	M	з мв									
Analyte	Resu	It Qualifier	RL	I	MDL	Unit		D F	repared	Analyzed	Dil Fac
C6-C10 AK	N	0	100			ug/L				06/10/15 20:	37 1
	M	B MB									
Surrogate	%Recover	y Qualifier	Limits					F	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	9	2	60 - 120							06/10/15 20:	37 1
_ Lab Sample ID: LCS 490-2	254835/3						Cli	ent Sa	mple IC	): Lab Contro	ol Sample
Matrix: Water										Prep Type	Total/NA
Analysis Batch: 254835											
			Spike	LCS	LCS	;				%Rec.	
Analyte			Added	Result	Qua	lifier	Unit	D	%Rec	Limits	
C6-C10 AK			1000	745			ug/L		74	60 - 120	
	LCS LO	cs									
Surrogate	%Recovery Q	ualifier	Limits								
a,a,a-Trifluorotoluene	97		60 - 120								

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#### Method: AK101 - Alaska - Gasoline Range Organics (GC) (Continued) Lab Sample ID: LCSD 490-254835/9 Client Sample ID: Lab Control Sample Dup **Matrix: Water** Prep Type: Total/NA Analysis Batch: 254835 Spike LCSD LCSD %Rec. RPD Analyte Added **Result Qualifier** Unit D %Rec Limits RPD Limit C6-C10 AK 1000 753 ug/L 75 60 - 120 20 1 LCSD LCSD Surrogate %Recovery Qualifier Limits 60 - 120 a,a,a-Trifluorotoluene 98 Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC) Lab Sample ID: MB 490-254144/1-A Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA Analysis Batch: 254167 Prep Batch: 254144 MB MB Analyte **Result Qualifier** RL MDL Unit D Prepared Analyzed Dil Fac 6400 C10-C25 06/06/15 09:33 06/06/15 19:04 ND 580 ug/L MB MB Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 60 - 120 06/06/15 09:33 06/06/15 19:04 o-Terphenyl 100 Lab Sample ID: LCS 490-254144/2-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA Analysis Batch: 254167 **Prep Batch: 254144** Spike LCS LCS %Rec. Analyte Added **Result Qualifier** Unit %Rec Limits D C10-C25 16000 12800 ug/L 80 75 - 125 LCS LCS %Recovery Qualifier Surrogate Limits o-Terphenyl 80 60 - 120 Lab Sample ID: LCSD 490-254144/3-A **Client Sample ID: Lab Control Sample Dup Matrix: Water** Prep Type: Total/NA Analysis Batch: 254167 Prep Batch: 254144 Spike LCSD LCSD %Rec. RPD Analyte Added Result Qualifier Unit D %Rec Limits RPD Limit C10-C25 16000 14800 uq/L 93 75 - 125 15 20 LCSD LCSD Surrogate %Recovery Qualifier Limits 60 - 120 o-Terphenyl 92 Lab Sample ID: MB 490-254149/1-A **Client Sample ID: Method Blank** Matrix: Water Prep Type: Total/NA Analysis Batch: 254167 Prep Batch: 254149 MB MB Analyte **Result Qualifier** RL MDL Unit D Prepared Analyzed Dil Fac C25-C36 402 J 8000 380 ug/L 06/06/15 09:39 06/07/15 21:33 1 MB MB Surrogate Qualifier Limits Prepared Dil Fac %Recovery Analyzed 06/06/15 09:39 06/07/15 21:33 C35 (Surr) 60 - 120 109 1

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# Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC) (Continued)

Lab Sample ID: LCS 490-2 Matrix: Water Analysis Batch: 254167	54149/2-A		Spike	LCS	LCS	Clie	nt Saı	mple ID	: Lab Cor Prep Ty Prep Ba %Rec.	ntrol Sa pe: Tot atch: 28	ample al/NA 54149
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits		
C25-C36			16000	13000		ug/L		81	75 - 125		
	LCS	LCS									
Surrogate	%Recovery	Qualifier	Limits								
C35 (Surr)	99		60 - 120								
_											
Lab Sample ID: LCSD 490- Matrix: Water Analysis Batch: 254167	-254149/3-A				C	Client Sa	ample	ID: Lat	Control Prep Tyj Prep Ba	Sample pe: Tot atch: 25	e Dup al/NA 54149
Lab Sample ID: LCSD 490- Matrix: Water Analysis Batch: 254167	-254149/3-A		Spike	LCSD	LCSD	Client Sa	ample	ID: Lat	Prep Ty Prep Ba %Rec.	Sample pe: Tot atch: 28	e Dup al/NA 54149 RPD
Lab Sample ID: LCSD 490- Matrix: Water Analysis Batch: 254167 Analyte	254149/3-A		Spike Added	LCSD Result	C LCSD Qualifier	Client Sa Unit	ample D	ID: Lak %Rec	D Control Prep Tyl Prep Ba %Rec. Limits	Sample pe: Tot atch: 28 RPD	e Dup al/NA 54149 RPD Limit
Lab Sample ID: LCSD 490- Matrix: Water Analysis Batch: 254167 Analyte C25-C36	-254149/3-A		<b>Spike</b> Added 16000	LCSD Result 12400	LCSD Qualifier	Unit ug/L	ample	<b>ID: Lat</b> <u>%Rec</u> 77	Control Prep Typ Prep Ba %Rec. Limits 75 - 125	Sample pe: Tot atch: 28 <u>RPD</u> 5	e Dup al/NA 54149 RPD Limit 20
Lab Sample ID: LCSD 490- Matrix: Water Analysis Batch: 254167 Analyte C25-C36	254149/3-A	LCSD	<b>Spike</b> Added 16000	LCSD Result 12400	LCSD Qualifier	Unit ug/L	ample	ID: Lat %Rec 77	Prep Typ Prep Ba %Rec. Limits 75 - 125	Sample pe: Tot atch: 28 <u>RPD</u> 5	e Dup al/NA 54149 RPD Limit 20
Lab Sample ID: LCSD 490- Matrix: Water Analysis Batch: 254167 Analyte C25-C36 Surrogate	254149/3-A	LCSD Qualifier	Spike Added 16000	LCSD Result 12400	C LCSD Qualifier	Unit ug/L	ample	ID: Lat %Rec 77	Prep Typ Prep Ba %Rec. Limits 75 - 125	Sample pe: Tot atch: 28 5	e Dup al/NA 54149 RPD Limit 20

# **QC** Association Summary

#### Client: Chem Track Project/Site: Haines Tesoro Station

# GC/MS VOA

#### Analysis Batch: 254358

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
230-511-1	MHA	Total/NA	Water	8260C	
230-511-2	MHA1	Total/NA	Water	8260C	
230-511-3	MHB	Total/NA	Water	8260C	
490-79431-A-2 MS	Matrix Spike	Total/NA	Water	8260C	
490-79431-A-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260C	
LCS 490-254358/3	Lab Control Sample	Total/NA	Water	8260C	
LCSD 490-254358/4	Lab Control Sample Dup	Total/NA	Water	8260C	
MB 490-254358/6	Method Blank	Total/NA	Water	8260C	

## GC VOA

#### Analysis Batch: 254835

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
230-511-1	MHA	Total/NA	Water	AK101	
230-511-2	MHA1	Total/NA	Water	AK101	
230-511-3	MHB	Total/NA	Water	AK101	
LCS 490-254835/3	Lab Control Sample	Total/NA	Water	AK101	
LCSD 490-254835/9	Lab Control Sample Dup	Total/NA	Water	AK101	
MB 490-254835/5	Method Blank	Total/NA	Water	AK101	

#### GC Semi VOA

#### Prep Batch: 254144

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
230-511-1	MHA	Total/NA	Water	AK102	
230-511-2	MHA1	Total/NA	Water	AK102	
230-511-3	MHB	Total/NA	Water	AK102	
LCS 490-254144/2-A	Lab Control Sample	Total/NA	Water	AK102	
LCSD 490-254144/3-A	Lab Control Sample Dup	Total/NA	Water	AK102	
MB 490-254144/1-A	Method Blank	Total/NA	Water	AK102	

#### Prep Batch: 254149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
230-511-1	MHA	Total/NA	Water	AK102	
230-511-2	MHA1	Total/NA	Water	AK102	
230-511-3	MHB	Total/NA	Water	AK102	
LCS 490-254149/2-A	Lab Control Sample	Total/NA	Water	AK102	
LCSD 490-254149/3-A	Lab Control Sample Dup	Total/NA	Water	AK102	
MB 490-254149/1-A	Method Blank	Total/NA	Water	AK102	

#### Analysis Batch: 254167

Lab Sample ID	Client Sample ID	Ргер Туре	Matrix	Method	Prep Batch
230-511-1	MHA	Total/NA	Water	AK102 & 103	254144
230-511-1	MHA	Total/NA	Water	AK102 & 103	254149
230-511-2	MHA1	Total/NA	Water	AK102 & 103	254144
230-511-2	MHA1	Total/NA	Water	AK102 & 103	254149
230-511-3	МНВ	Total/NA	Water	AK102 & 103	254144
230-511-3	МНВ	Total/NA	Water	AK102 & 103	254149
LCS 490-254144/2-A	Lab Control Sample	Total/NA	Water	AK102 & 103	254144
LCS 490-254149/2-A	Lab Control Sample	Total/NA	Water	AK102 & 103	254149

# GC Semi VOA (Continued)

#### Analysis Batch: 254167 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 490-254144/3-A	Lab Control Sample Dup	Total/NA	Water	AK102 & 103	254144
LCSD 490-254149/3-A	Lab Control Sample Dup	Total/NA	Water	AK102 & 103	254149
MB 490-254144/1-A	Method Blank	Total/NA	Water	AK102 & 103	254144
MB 490-254149/1-A	Method Blank	Total/NA	Water	AK102 & 103	254149

Lab Sample ID: 230-511-1

Lab Sample ID: 230-511-2

Matrix: Water

Matrix: Water

# 1 2 3 4 5 6 7 8 9 10 11 12 13

# Client Sample ID: MHA Date Collected: 05/27/15 17:45

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
otal/NA	Analysis	8260C		1	254358	06/08/15 17:27	SLM	TAL NSH
otal/NA	Analysis	AK101		1	254835	06/10/15 21:08	RRS	TAL NSH
otal/NA	Prep	AK102			254144	06/06/15 09:33	MRM	TAL NSH
otal/NA	Analysis	AK102 & 103		1	254167	06/06/15 20:34	JDJ	TAL NSH
otal/NA	Prep	AK102			254149	06/06/15 09:39	MRM	TAL NSH
otal/NA	Analysis	AK102 & 103		1	254167	06/07/15 23:03	JDJ	TAL NSH

#### Client Sample ID: MHA1 Date Collected: 05/27/15 18:15 Date Received: 06/03/15 16:50

Batch Batch Dilution Batch Prepared Method Prep Type Туре Run Factor Number or Analyzed Analyst Lab Total/NA 8260C 254358 06/08/15 17:54 SLM Analysis 1 TAL NSH Total/NA AK101 254835 06/10/15 21:40 RRS TAL NSH Analysis 1 Total/NA Prep AK102 254144 06/06/15 09:33 MRM TAL NSH Total/NA Analysis AK102 & 103 1 254167 06/06/15 21:04 JDJ TAL NSH Total/NA AK102 254149 06/06/15 09:39 MRM TAL NSH Prep Total/NA 254167 06/07/15 23:33 JDJ Analysis AK102 & 103 1 TAL NSH

#### Client Sample ID: MHB Date Collected: 05/27/15 18:35 Date Received: 06/03/15 16:50

#### Lab Sample ID: 230-511-3 Matrix: Water

Ргер Туре	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	254358	06/08/15 18:22	SLM	TAL NSH
Total/NA	Analysis	AK101		1	254835	06/10/15 22:11	RRS	TAL NSH
Total/NA	Prep	AK102			254144	06/06/15 09:33	MRM	TAL NSH
Total/NA	Analysis	AK102 & 103		1	254167	06/06/15 21:34	JDJ	TAL NSH
Total/NA	Prep	AK102			254149	06/06/15 09:39	MRM	TAL NSH
Total/NA	Analysis	AK102 & 103		1	254167	06/08/15 00:03	JDJ	TAL NSH

#### Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

#### Client: Chem Track Project/Site: Haines Tesoro Station

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	AK00975	06-30-15
Alaska (UST)	State Program	10	UST-067	06-16-15

#### Laboratory: TestAmerica Nashville

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date		
A2LA	A2LA		NA: NELAP & A2LA	12-31-15		
A2LA	ISO/IEC 17025		0453.07	12-31-15		
Alaska (UST)	State Program	10	UST-087	10-31-15		
Arizona	State Program	9	AZ0473	05-05-16		
Arkansas DEQ	State Program	6	88-0737	04-25-16		
California	State Program	9	2938	10-31-16		
Connecticut	State Program	1	PH-0220	12-31-15		
Florida	NELAP	4	E87358	06-30-15 *		
Illinois	NELAP	5	200010	12-09-15		
lowa	State Program	7	131	04-01-16		
Kansas	NELAP	7	E-10229	05-31-15 *		
Kentucky (UST)	State Program	4	19	06-30-15 *		
Kentucky (WW)	State Program	4	90038	12-31-15		
Louisiana	NELAP	6	30613	06-30-15 *		
Maryland	State Program	3	316	03-31-16		
Massachusetts	State Program	1	M-TN032	06-30-15 *		
Minnesota	NELAP	5	047-999-345	12-31-15		
Mississippi	State Program	4	N/A	06-30-15 *		
Montana (UST)	State Program	8	NA	02-24-20		
Nevada	State Program	9	TN00032	07-31-15		
New Hampshire	NELAP	1	2963	10-09-15		
New Jersey	NELAP	2	TN965	06-30-15 *		
New York	NELAP	2	11342	03-31-16		
North Carolina (WW/SW)	State Program	4	387	12-31-15		
North Dakota	State Program	8	R-146	06-30-15 *		
Ohio VAP	State Program	5	CL0033	10-16-15		
Oklahoma	State Program	6	9412	08-31-15		
Oregon	NELAP	10	TN200001	04-27-16		
Pennsylvania	NELAP	3	68-00585	06-30-15 *		
Rhode Island	State Program	1	LAO00268	12-30-15		
South Carolina	State Program	4	84009 (001)	02-28-16		
South Carolina (DW)	State Program	4	84009 (002)	12-16-17		
Tennessee	State Program	4	2008	02-23-17		
Texas	NELAP	6	T104704077	08-31-15		
USDA	Federal		S-48469	10-30-16		
Utah	NELAP	8	TN00032	07-31-15		
Virginia	NELAP	3	460152	06-14-15 *		
Washington	State Program	10	C789	07-19-15		
West Virginia DEP	State Program	3	219	02-28-16		
Wisconsin	State Program	5	998020430	08-31-15		
Wyoming (UST)	A2LA	8	453.07	12-31-15		

\* Certification renewal pending - certification considered valid.

# **Method Summary**

#### Client: Chem Track Project/Site: Haines Tesoro Station

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL NSH
AK101	Alaska - Gasoline Range Organics (GC)	ADEC	TAL NSH
AK102 & 103	Alaska - Diesel Range Organics & Residual Range Organics (GC)	ADEC	TAL NSH

#### **Protocol References:**

ADEC = Alaska Department of Environmental Conservation

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

#### Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

# Sample Summary

TestAmerica Job ID: 230-511-1

Project/Site: Haine	к es Tesoro Station		TestAmerica Job ID: 230-511						
	Client Semple ID		Collected	3					
230-511-1				06/03/15 16:50					
230-511-2	MHA1	Water	05/27/15 18:15	06/03/15 16:50					
230-511-3	МНВ	Water	05/27/15 18:35	06/03/15 16:50 5	5				
				8	8				
				9					
				1	3				

TestAmerica



511 Cháin of Custody
230-511 CF

E. First Ave., Spokane WA 99206-5302 Jimbus Ave., Beaverton, OR 97008-7145 &d Ste A10, Anchorage, AK 99502-1119

FAX 924-9290 FAX 906-9210 FAX 563-9210 509-924-9200 503-906-9200 907-563-9200

# THAN OF CLICTORY DEPORT

Work Order #:	TURNAROUND REQUEST	in Business Days *	Image: Organic & inorganic Analyses       Image: Image	TD. Petroleum Hydrocarbon Analyses	5         4         3         2         1         <1	STD.	OTHER Specify:	* Iurnaround Requests less than standard may incur Kush Charges. MATRIX # OF LOCATION/ TA AV S ON CONNENTS WO TO		W 6 02	W 6 03		(			DATE 6/3/15 FIRM 7/6-41 TIME 16:50	DATE	FIRM: TIME:	TEMP: PAGE OF	4.3 TAL-1000 (0714)
KEPUKI		hew Tack, net	<b>a</b>		IVE		ALYSES									RECEIVED BY: A P.	RECEIVED BY:	PRINT NAME:		
CHAIN OF CUSTODY	INVOICE TO:	INTE C	2	Met-PO.NUMBER:	PRESERVATI		REQUESTED AN	DAK;	7							1 DATE: 6/3/15	DATE: 4:50 001	-INNE:		
	V	nego Kej	- Mar	i med live with a k	Som Station		500	ormalia of the office o	27/15- 5-145.	6:15 and	V 6:35pm VI V					in their Tar	JOKED FIRME	FIRM:	77	
	CLIENT: Chem Trach	REPORT TO: LINCO Way	ADDRESS: 1711 5 Gran b	PHONE 17 947 2395FAX:	PROJECT NAME: 14 MAS 76			SAMPLED BY: J W Y	M HA 5/2		SHW Stor	3	 		5	RELEASED BY: FIN C MOUL	PRINT NAME: FINCE MOUCH	PRINT NAME:	20 ADDITTONAL REMARKS:	1/2015

J

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# Login Sample Receipt Checklist

#### Client: Chem Track

#### Login Number: 511 List Number: 1 Creator: Pilch, Andrew C

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

Job Number: 230-511-1

List Source: TestAmerica Anchorage

# Login Sample Receipt Checklist

Client: Chem Track

#### Login Number: 511 List Number: 2 Creator: Ford, Easton

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

Job Number: 230-511-1

List Source: TestAmerica Nashville

List Creation: 06/05/15 11:26 AM

# Login Sample Receipt Checklist

Client: Chem Track

#### Login Number: 511 List Number: 3 Creator: Ford, Easton

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

Job Number: 230-511-1

List Source: TestAmerica Nashville

List Creation: 06/05/15 11:28 AM

# Laboratory Data Review Checklist

Completed by:	Steven McCain		
Title:	Project Manager	Date:	April 21, 2016
CS Report Name:	Haines GW System	Report Date:	June 06, 2015
Consultant Firm:	ChemTrack Alaska Inc.		
Laboratory Name	Test America	Laboratory Report Num	ber: 230-511-1
ADEC File Numb	er: AI	DEC RecKey Number:	
1. <u>Laboratory</u> a. Did an	ADEC CS approved laboratory receive Yes 🗌 No 🗍NA (Please explain.)	e and <u>perform</u> all of the s Comments:	ubmitted sample analyses?
b. If the s laborat	amples were transferred to another "ne ory, was the laboratory performing the Yes No NA (Please explain.)	twork" laboratory or sub- analyses ADEC CS appr Comments:	-contracted to an alternate oved?
2. <u>Chain of Custo</u> a. COC in	ody (COC) nformation completed, signed, and date Yes No NA (Please explain.)	ed (including released/rec Comments:	reived by)?
b. Correc	t analyses requested? Yes 🗌 No 🗍NA (Please explain.)	Comments:	
3. <u>Laboratory Sa</u> a. Sample	mple Receipt Documentation e/cooler temperature documented and w Yes No NA (Please explain.)	vithin range at receipt (4° Comments:	<sup>2</sup> ± 2° C)?
b. Sample Volatil	e preservation acceptable – acidified wa e Chlorinated Solvents, etc.)? Yes 🗌 No 🗍NA (Please explain.)	aters, Methanol preserved Comments:	l VOC soil (GRO, BTEX,

	c.	Sample condition documented – broken, leaking (Metha Yes No NA (Please explain.)	nol), zero headspace (VOC vials)? Comments:
	d.	If there were any discrepancies, were they documented? containers/preservation, sample temperature outside of a samples, etc.? Yes No NA (Please explain.)	For example, incorrect sample acceptable range, insufficient or missing Comments:
	e.	Data quality or usability affected? (Please explain.)	Comments:
		Data quality acceptable.	
<u>Cas</u>	<u>e N</u> a.	Narrative Present and understandable? ⊠Yes □ No □NA (Please explain.)	Comments:
	b.	Discrepancies, errors or QC failures identified by the lab	o? Comments:
	c.	Were all corrective actions documented? Yes No NA (Please explain.)	Comments:
	d.	What is the effect on data quality/usability according to	the case narrative? Comments:
	Ι	Data quality is acceptable.	
<u>Sam</u>	nple a.	es Results Correct analyses performed/reported as requested on CC ⊠Yes ☐ No ☐NA (Please explain.)	OC? Comments:
	b.	All applicable holding times met? ⊠Yes □ No □NA (Please explain.)	Comments:

4.

		c.	All soils reported on a dry weight basis? Yes No NA (Please explain.)	Comments:
		С	Only H2O samples were submitted to the laborate	ry.
		d.	Are the reported PQLs less than the Cleanup Le project?	vel or the minimum required detection level for the
			$\Box Yes \boxtimes No \square NA (Please explain.)$	Comments:
		N ar	AHB had a result less than the RL but greater than approximate value - the lab accuratly says there	n or eaqual to the MDL and the concentration is was no presence of DRO higher than the MDL.
		e.	Data quality or usability affected?	Comments:
		Γ	Data quality acceptable.	
6.	<u>QC</u>	<u>C Sa</u> a.	mples Method Blank	
			i. One method blank reported per matrix, a $\square$ Yes $\square$ No $\square$ NA (Please explain.)	nalysis and 20 samples? Comments:
				1
			ii. All method blank results less than PQL? ∑Yes ☐ No ☐NA (Please explain.)	Comments:
			iii. If above PQL, what samples are affected	? Comments:
			iv. Do the affected sample(s) have data flag ∑Yes ☐ No ☐NA (Please explain.)	s and if so, are the data flags clearly defined? Comments:
			v. Data quality or usability affected? (Plea	se explain.) Comments:
		b.	Laboratory Control Sample/Duplicate (LCS/LC	SD)
			<ul> <li>Organics – One LCS/LCSD reported per required per AK methods, LCS required</li> <li>□Yes ⋈ No □NA (Please explain.)</li> </ul>	matrix, analysis and 20 samples? (LCS/LCSD per SW846) Comments:

ii. Metals/Inorganics – one LCS and one sample of samples?	duplicate reported per matrix, analysis and 20
$\Box Yes \Box No \Box NA (Please explain.)$	Comments:
No metals analyzed.	
<ul> <li>iii. Accuracy – All percent recoveries (%R) report And project specified DQOs, if applicable. (Al AK102 75%-125%, AK103 60%-120%; all oth ☐Yes  No  NA (Please explain.)</li> </ul>	ed and within method or laboratory limits? K Petroleum methods: AK101 60%-120%, her analyses see the laboratory QC pages) Comments:
<ul> <li>iv. Precision – All relative percent differences (RI laboratory limits? And project specified DQOs LCS/LCSD, MS/MSD, and or sample/sample other analyses see the laboratory QC pages)</li> <li>∑Yes □ No □NA (Please explain.)</li> </ul>	PD) reported and less than method or a, if applicable. RPD reported from duplicate. (AK Petroleum methods 20%; all Comments:
Lab.control MS/MSD	
v. If %R or RPD is outside of acceptable limits, v	what samples are affected? Comments:
vi. Do the affected sample(s) have data flags? If so Yes X No NA (Please explain.)	o, are the data flags clearly defined? Comments:
vii. Data quality or usability affected? (Use commo	ent box to explain.) Comments:
N/A	
c. Surrogates – Organics Only	
i. Are surrogate recoveries reported for organic a ☐Yes ☐ No ☐NA (Please explain.)	nalyses – field, QC and laboratory samples? Comments:
<ul> <li>ii. Accuracy – All percent recoveries (%R) report And project specified DQOs, if applicable. (All analyses see the laboratory report pages)</li> </ul>	ed and within method or laboratory limits? K Petroleum methods 50-150 %R; all other
	Comments.

Method AK102&103 for recovery was outside the upper control limit for sample MHA did not contain any target analytes, re-extraction/analysis was not performed.

iii. Do the sample results with failed surrogate rea	coveries have data flags? If so, are the data
$\square$ Yes $\square$ No $\square$ NA (Please explain.)	Comments:
iv. Data quality or usability affected? (Use the co	mment box to explain.) Comments:
Data quality acceptable.	
d. Trip blank – Volatile analyses only (GRO, BTEX, Vo Soil	platile Chlorinated Solvents, etc.): <u>Water and</u>
i. One trip blank reported per matrix, analysis an (If not, enter explanation below.)	nd for each cooler containing volatile samples?
$\square$ Yes $\square$ No $\square$ NA (Please explain.)	Comments:
<ul> <li>ii. Is the cooler used to transport the trip blank ar (If not, a comment explaining why must be en ☐Yes</li></ul>	nd VOA samples clearly indicated on the COC? (tered below) Comments:
A trip blank was submitted; however, it was not listed of	on the COC.
iii. All results less than PQL? ☐Yes ☐ No ⊠NA (Please explain.)	Comments:
The single trip blank vial lost due to laboratory error.	
iv. If above PQL, what samples are affected?	Comments:
v. Data quality or usability affected? (Please exp	olain.) Comments:
Sample was canceled for the required test codes	
e. Field Duplicate	
i. One field duplicate submitted per matrix, anal ∑Yes □ No □NA (Please explain.)	ysis and 10 project samples? Comments:

Comments:

	<ul><li>iii. Precision – All relative percent differences (RP (Recommended: 30% water, 50% soil)</li></ul>	PD) less than specified DQOs?
	RPD (%) = Absolute value of: $(R_1-R_2)$	100
	$((R_1+R_2)/2)$ x	100
	Where $R_1$ = Sample Concentration $R_2$ = Field Duplicate Concentration [Yes ] No [NA (Please explain.)	Comments:
See a	attached RPD calculations	
	iv. Data quality or usability affected? (Use the con	nment box to explain why or why not.)
		Comments:
Data	quality acceptable.	
f. De		loin why)
	econtamination or Equipment Blank (If not used exp	lalli wily).
	$\square Yes \square No \square NA (Please explain.)$	Comments:
	Contamination or Equipment Blank (If not used exp ∑Yes □ No □NA (Please explain.)	Comments:
	i. All results less than PQL?	Comments:
	<ul> <li>i. All results less than PQL?</li> <li>Yes No NA (Please explain.)</li> </ul>	Comments: Comments:
	i. All results less than PQL?	Comments: Comments:
	i. All results less than PQL?	Comments: Comments:
	<ul> <li>i. All results less than PQL?</li> <li>ii. If above POL, what samples are affected?</li> </ul>	Comments: Comments:
	<ul> <li>i. All results less than PQL?</li> <li>ii. If above PQL, what samples are affected?</li> </ul>	Comments:
	<ul> <li>i. All results less than PQL?</li> <li>ii. If above PQL, what samples are affected?</li> </ul>	Comments: Comments:
	<ul> <li>i. All results less than PQL?</li> <li>ii. If above PQL, what samples are affected?</li> </ul>	Comments: Comments:
	<ul> <li>i. All results less than PQL?</li> <li>ii. If above PQL, what samples are affected?</li> <li>iii. Data quality or usability affected? (Please explain)</li> </ul>	Comments: Comments: Comments:
	<ul> <li>i. All results less than PQL?</li> <li>ii. All results less than PQL?</li> <li>iii. Yes No NA (Please explain.)</li> <li>iii. If above PQL, what samples are affected?</li> <li>iii. Data quality or usability affected? (Please explain.)</li> </ul>	Comments: Comments: Comments: ain.) Comments:
	<ul> <li>i. All results less than PQL?</li> <li>ii. All results less than PQL?</li> <li>iii. Yes No NA (Please explain.)</li> <li>iii. If above PQL, what samples are affected?</li> <li>iii. Data quality or usability affected? (Please explain.)</li> </ul>	Comments: Comments: Comments: ain.) Comments:
	i. All results less than PQL?   ii. All results less than PQL?   iii. If above PQL, what samples are affected?	Comments: Comments: Comments: ain.) Comments:
	a Flags/Qualifiers (ACOE, AFCEE, Lab Specific, et fined and appropriate)	Comments: Comments: Comments: ain.) Comments: c.)

#### DeltaWestern Haines Tesoro Groundwater Spring 2015 Sampling

Sample ID		MHA			MHA1			
Date Collected		27-May-15			27-May-15			
Laboratory		Test America			Test America			
Work Order #		230-511	-1		230-511-1			
Analyte	Result	MRL	RL Calculated Value	Result	MRL	Calculated Value	RPDs	
-	[ug/L]	[ug/L]	[mg/L]	[ug/L]	[ug/L]	[mg/L]		
Gasoline Range Organics	2100	100	2.1	2200	100	2.2	4.7%	
Diesel Range Organics	ND	6400	6.4	ND	6400	6.4	0.0%	
Residual Range Organics	520	8000	0.52	410	8000	0.41	23.7%	
Benzene	210	1	0.21	210	1	0.21	0.0%	
Toluene	210	1	0.21	220	1	0.22	4.7%	
Ethylbenzene	51	1	0.051	54	1	0.054	5.7%	
Total Xylenes	490	3	0.49	520	3	0.52	5.9%	

ND is Not Detected above the MRL

MRL is the laboratory Method Reporting Limit

RPD is Relative Percent Difference

# Haines Tesoro Station: 2015 Fall Sampling/Maintenance Event

# 1 Overview

The fall 2015 sampling/maintenance event for the Haines Tesoro Station was completed by Imre Manyoky (ISM Technical Services) and Don Turner (Turner Construction) on 11/18/15-11/20/15. Work completed included: site mobilization and demobilization, initial system inspection, reduction of elevated groundwater, collection of water quality samples, replacement of GAC, installation of a pressure sensor for elevated water level detection, debrief with facility manager.

# 2 Site Mobilization and Demobilization

On 11/17/15 Imre mobilized to Juneau, however when attempting to fly to Haines the plane had to turn back around to Juneau because of restricted visibility due to snow. Imre arrived in Haines the following day (11/18/15) at 1:30 PM and was on site at the Tesoro Station by 2:30 PM. In order to make up for lost time, Imre and Don worked late on the  $18^{th}$  and  $19^{th}$  and the work was completed on schedule. Imre demobilized on 11/20/15.

# 3 Initial Site Inspection

Initial site inspection concluded that the GAC primary unit (picture on right) was clogged with oxidized iron. Discharge flow rate of the GAC units was 0.33 GPM and the groundwater was elevated to 1.5 BGS. The primary settling unit (picture on left) had also collected a significant amount of the oxidized iron; however, the unit did not appear to be clogged or restricting the flow significantly.



# 4 Reduction of Elevated Groundwater

In order to obtain a representative groundwater sample, the groundwater level needed to be reduced to the level of the invert of the 6" collection pipe. The groundwater level was reduced by periodically removing iron deposits in the primary GAC unit over approximately a 24-hour period.



# 5 Collection of Water Quality Samples

A total of 3 water samples were collected and analyzed for DRO, RRO, GRO, BTEX and PAH's. The samples labeled MHA and MHA1 are duplicate samples and represent the untreated groundwater source. MHB is representative of the treated groundwater being discharged from the site. At the time of sampling the groundwater flowrate was 0.54 GPM. See sampling log below.

Sample ID	Date	<u>Time</u>	<u>Media</u>	#Containers	Description	<u>Analysis</u>
MHA	11/19/15	2:15 pm	Water	10	Groundwater Source	DRO, RRO, GRO, BTEX, PAH
MHA1	11/19/15	3:05 pm	Water	10	MHA Duplicate	DRO, RRO, GRO, BTEX, PAH
МНВ	11/19/15	3:45 pm	Water	10	Treated Water	DRO, RRO, GRO, BTEX, PAH



# 6 Replacement of GAC

After the water quality samples were collected, the secondary GAC units were cleaned out and replenished with new GAC. Some of GAC from the secondary GAC units was salvaged and used to fill the primary GAC unit. Since the majority of the petroleum is absorbed in the primary unit, the used GAC from the secondary units can be reused without affecting the quality of the treated water. The reused GAC is taken from the middle of the secondary units to avoid fine sediments which tend to filter out at the surface of the GAC and settle out in the bottom of the units.

The spent GAC was removed from the manhole and containerized into a 55-gallon salvage drum (steel), the drum was labeled as used GAC and staged at the lower warehouse at the old Petro Station. The spent GAC was sampled for waste characterization, samples HTSC1 and HSTC2 are duplicate samples which were taken from the top 4" of the primary GAC unit. Both samples were analyzed for DRO, RRO, GRO and BTEX. Currently three 55 gallon drums of spent GAC are staged at the lower warehouse, the third drum is only half full and it is expected that the GAC to be removed during the spring 2016 maintenance event will fill up the third drum. The replacement GAC is stored behind the bays at the leased garage, there is currently enough replacement GAC to complete the spring 2016 maintenance event. More carbon will need to ordered before the fall 2016 maintenance event. The last shipment of carbon was ordered from Carbon Resources, LLC in August 2014; 500 lbs of carbon was ordered which was estimated to be a two-year supply. See sampling log below.

Sample ID	Date	Time	<u>Media</u>	#Containers	<b>Description</b>	<u>Analysis</u>
HTSC1	11/19/15	4:10 pm	Carbon	2	Spent GAC	DRO, RRO, GRO, BTEX
HTSC2	11/19/15	4:20 pm	Carbon	2	HTSC1 Duplicate	DRO, RRO, GRO, BTEX



# 7 Installation of a Pressure Sensor for Elevated Water Level Detection

In order to simplify the routine maintenance, perform by Delta Western, a pressure sensor was installed which activates a warning light when the groundwater level is elevated. The pressure sensor was sealed into a 4" DIA section of PVC pipe and plumbed into the system. Currently the pressure switch is not hard wired into the system, the cord exits the manhole through the notch in the manhole ring and the warning light is an extension cord with a light on the end. The pressure switch may be hard wired into the system by installing an additional set of electrical leads to the junction box which supplies power to the pump. The switch can then be wired to the power supply of the pump and to the additional set of leads going to the above ground power box. The additional leads can then be wired to a warning light directly from the above ground power box. The groundwater level which activates the warning light may be adjusted by lowering the elevation of the entire unit which may require remounting the unit on the manhole wall.



# 8 Debrief with Facility Manager

Information discussed in this report was also conveyed to Fred Gray before site demobilization.



Imre Manyoky ISM Technical Services 14445 Buffalo street Anchorage, AK 99516

Work Order:	1156870
	HTS
Client:	ISM Technical Services
Report Date:	December 16, 2015

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO 17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities. The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
1	Surrogate out of control limits.
В	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
Л	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
М	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.



Matrix	Water (Surface, Eff., Ground)	<b>Technical Director</b>	Stephen C. Ede
Client Sample ID	MHA	<b>Received Date/Time</b>	11/24/2015 16:30
Project Name/#	HTS	<b>Collected Date/Time</b>	11/19/2015 14:15
Client Name	ISM Technical Services	<b>Printed Date/Time</b>	12/16/2015 8:42
SGS Ref.#	1156870001		

8260B - Sample was re-analyzed past hold due to dilutions.

8270D SIM - PAH LCSD recovery for several analytes does not meet QC criteria biased low. LCS met all criteria.

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Valatila Evola Departmen	.+								
Volatile fuels Departmen									
Gasoline Range Organics	3.92	0.100	mg/L	AK101	А		11/25/15	11/25/15	KAS
Surrogates									
4-Bromofluorobenzene (surr)	120		%	AK101	А	50-150	11/25/15	11/25/15	KAS
Semivolatile Organic Fue	els Departme	nt							
Diesel Range Organics	0.698	0.536	mg/L	AK102	G		11/30/15	12/05/15	NLL
Residual Range Organics	ND	0.446	mg/L	AK103	G		11/30/15	12/05/15	NLL
Surrogates									
5a Androstane (surr)	93.4		%	AK102	G	50-150	11/30/15	12/05/15	NLL
n-Triacontane-d62 (surr)	105		%	AK103	G	50-150	11/30/15	12/05/15	NLL
Volatile GC/MS									
Benzene	257	4.00	ug/L	SW8260B	D		12/04/15	12/04/15	D.C
Ethylbenzene	106	10.0	ug/L	SW8260B	D		12/04/15	12/04/15	D.C
o-Xylene	318	10.0	ug/L	SW8260B	D		12/04/15	12/04/15	D.C
P & M -Xylene	839	20.0	ug/L	SW8260B	D		12/04/15	12/04/15	D.C
Toluene	396	10.0	ug/L	SW8260B	D		12/04/15	12/04/15	D.C
Surrogates									
1,2-Dichloroethane-D4 (surr)	103		%	SW8260B	D	81-118	12/04/15	12/04/15	D.C
4-Bromofluorobenzene (surr)	93		%	SW8260B	D	85-114	12/04/15	12/04/15	D.C
Toluene-d8 (surr)	99		%	SW8260B	D	89-112	12/04/15	12/04/15	D.C



SGS Ref.#	1156870001		
Client Name	ISM Technical Services	Printed Date/Time	12/16/2015 8:42
Project Name/#	HTS	<b>Collected Date/Time</b>	11/19/2015 14:15
Client Sample ID	MHA	<b>Received Date/Time</b>	11/24/2015 16:30
Matrix	Water (Surface, Eff., Ground)	<b>Technical Director</b>	Stephen C. Ede

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics	GC/MS								
1-Methylnaphthalene	0.816	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
2-Methylnaphthalene	1.24	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Acenaphthene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Acenaphthylene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Anthracene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Benzo(a)Anthracene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Benzo[a]pyrene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Benzo[b]Fluoranthene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Benzo[g,h,i]perylene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Benzo[k]fluoranthene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Chrysene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Dibenzo[a,h]anthracene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Fluoranthene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Fluorene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Indeno[1,2,3-c,d] pyrene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Naphthalene	5.61	0.500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/04/15	MCM
Phenanthrene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Pyrene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Surrogates									
2-Fluorobiphenyl (surr)	64.1		%	8270D SIM	S (PAH) I	53-106	11/25/15	5 12/02/15	MCM
Terphenyl-d14 (surr)	98.5		%	8270D SIM	S (PAH) I	58-132	11/25/15	5 12/02/15	MCM



SGS Ref.# Client Name Project Name/# Client Sample ID	1156870002 ISM Technical Services HTS MHA1	Printed Date/Time Collected Date/Time Received Date/Time	12/16/2015 8:42 11/19/2015 15:05 11/24/2015 16:30
Matrix	Water (Surface, Eff., Ground)	Technical Director	Stephen C. Ede

8260B - Sample was re-analyzed past hold due to dilutions.

8270D SIM - PAH LCSD recovery for several analytes does not meet QC criteria biased low. LCS met all criteria.

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Valatila Fuela Dopartmon	<b>.</b> +								
Volatile fuels Departmen									
Gasoline Range Organics	3.85	0.100	mg/L	AK101	А		11/25/15	11/25/15	KAS
Surrogates									
4-Bromofluorobenzene (surr)	118		%	AK101	А	50-150	11/25/15	11/25/15	KAS
Semivolatile Organic Fue	els Departme	nt							
Diesel Range Organics	0.694	0.536	mg/L	AK102	G		11/30/15	12/05/15	NLL
Residual Range Organics	ND	0.446	mg/L	AK103	G		11/30/15	12/05/15	NLL
Surrogates									
5a Androstane (surr)	91.7		%	AK102	G	50-150	11/30/15	12/05/15	NLL
n-Triacontane-d62 (surr)	102		%	AK103	G	50-150	11/30/15	12/05/15	NLL
Volatile GC/MS									
Benzene	260	4.00	ug/L	SW8260B	D		12/04/15	12/04/15	D.C
Ethylbenzene	104	10.0	ug/L	SW8260B	D		12/04/15	12/04/15	D.C
o-Xylene	313	10.0	ug/L	SW8260B	D		12/04/15	12/04/15	D.C
P & M -Xylene	825	20.0	ug/L	SW8260B	D		12/04/15	12/04/15	D.C
Toluene	393	10.0	ug/L	SW8260B	D		12/04/15	12/04/15	D.C
Surrogates									
1,2-Dichloroethane-D4 (surr)	104		%	SW8260B	D	81-118	12/04/15	12/04/15	D.C
4-Bromofluorobenzene (surr)	94.3		%	SW8260B	D	85-114	12/04/15	12/04/15	D.C
Toluene-d8 (surr)	101		%	SW8260B	D	89-112	12/04/15	12/04/15	D.C



SGS Ref.#	1156870002		
Client Name	ISM Technical Services	<b>Printed Date/Time</b>	12/16/2015 8:42
Project Name/#	HTS	<b>Collected Date/Time</b>	11/19/2015 15:05
Client Sample ID	MHA1	<b>Received Date/Time</b>	11/24/2015 16:30
Matrix	Water (Surface, Eff., Ground)	<b>Technical Director</b>	Stephen C. Ede

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics	GC/MS								
1-Methylnaphthalene	1.18	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
2-Methylnaphthalene	1.78	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Acenaphthene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Acenaphthylene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Anthracene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Benzo(a)Anthracene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Benzo[a]pyrene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Benzo[b]Fluoranthene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Benzo[g,h,i]perylene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Benzo[k]fluoranthene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Chrysene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Dibenzo[a,h]anthracene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Fluoranthene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Fluorene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Indeno[1,2,3-c,d] pyrene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Naphthalene	7.75	0.500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/04/15	MCM
Phenanthrene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Pyrene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Surrogates									
2-Fluorobiphenyl (surr)	72.4		%	8270D SIM	S (PAH) I	53-106	11/25/15	5 12/02/15	MCM
Terphenyl-d14 (surr)	97.3		%	8270D SIM	S (PAH) I	58-132	11/25/15	5 12/02/15	MCM



SGS Ref.# Client Name Project Name/# Client Sample ID	1156870003 ISM Technical Services HTS MHB	Printed Date/Time Collected Date/Time Received Date/Time	12/16/2015 8:42 11/19/2015 15:45 11/24/2015 16:30
Matrix	Water (Surface, Eff., Ground)	Received Date/Time Technical Director	11/24/2015 16:30 Stephen C. Ede

8260B - Sample was re-analyzed past hold due to suspected carryover.

8270D SIM - PAH LCSD recovery for several analytes does not meet QC criteria biased low. LCS met all criteria.

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Departmer	nt								
Gasoline Range Organics	ND	0.100	mg/L	AK101	А		11/25/15	11/25/15	KAS
Surrogates									
4-Bromofluorobenzene (surr)	85.9		%	AK101	А	50-150	11/25/15	11/25/15	KAS
Semivolatile Organic Fue	els Departme	nt							
Diesel Range Organics	ND	0.536	mg/L	AK102	G		11/30/15	12/05/15	NLL
Residual Range Organics	ND	0.446	mg/L	AK103	G		11/30/15	12/05/15	NLL
Surrogates									
5a Androstane (surr)	93.6		%	AK102	G	50-150	11/30/15	12/05/15	NLL
n-Triacontane-d62 (surr)	108		%	AK103	G	50-150	11/30/15	12/05/15	NLL
Volatile GC/MS									
Benzene	ND	0.400	ug/L	SW8260B	D		12/04/15	12/04/15	D.C
Ethylbenzene	ND	1.00	ug/L	SW8260B	D		12/04/15	12/04/15	D.C
o-Xylene	ND	1.00	ug/L	SW8260B	D		12/04/15	12/04/15	D.C
P & M -Xylene	ND	2.00	ug/L	SW8260B	D		12/04/15	12/04/15	D.C
Toluene	ND	1.00	ug/L	SW8260B	D		12/04/15	12/04/15	D.C
Surrogates									
1,2-Dichloroethane-D4 (surr)	111		%	SW8260B	D	81-118	12/04/15	12/04/15	D.C
4-Bromofluorobenzene (surr)	98.8		%	SW8260B	D	85-114	12/04/15	12/04/15	D.C
Toluene-d8 (surr)	98.8		%	SW8260B	D	89-112	12/04/15	12/04/15	D.C



Matrix	Water (Surface, Eff., Ground)	<b>Technical Director</b>	Stephen C. Ede
Client Sample ID	MHB	<b>Received Date/Time</b>	11/24/2015 16:30
Project Name/#	HTS	<b>Collected Date/Time</b>	11/19/2015 15:45
SGS Ref.# Client Name	1156870003 ISM Technical Services	Printed Date/Time	12/16/2015 8:42

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics	GC/MS								
1-Methylnaphthalene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	МСМ
2-Methylnaphthalene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Acenaphthene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Acenaphthylene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Anthracene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Benzo(a)Anthracene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Benzo[a]pyrene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Benzo[b]Fluoranthene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Benzo[g,h,i]perylene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Benzo[k]fluoranthene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Chrysene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Dibenzo[a,h]anthracene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Fluoranthene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Fluorene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Indeno[1,2,3-c,d] pyrene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Naphthalene	ND	0.100	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Phenanthrene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Pyrene	ND	0.0500	ug/L	8270D SIM	S (PAH) I		11/25/15	5 12/02/15	MCM
Surrogates									
2-Fluorobiphenyl (surr)	68.4		%	8270D SIM	S (PAH) I	53-106	11/25/15	5 12/02/15	MCM
Terphenyl-d14 (surr)	98.7		%	8270D SIM	S (PAH) I	58-132	11/25/15	5 12/02/15	MCM



SGS Ref.# Client Name Project Name/# Client Sample ID	1156870004         ISM Technical Services         /#       HTS         ID       HTSC1         Soil/Solid (dry weight)	Printed Date/Time Collected Date/Time Received Date/Time	12/16/2015 8:42 11/19/2015 16:10 11/24/2015 16:30
Client Sample ID	HTSC1	Received Date/Time	11/24/2015 16:30
Matrix	Soil/Solid (dry weight)	Technical Director	Stephen C. Ede

AK101 - Surrogate recovery for 4-bromofluorobenzene (4.4%) does not meet QC criteria. Sample was analyzed twice and results confirmed.

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	ND	11.3	mg/Kg	AK101	В		11/19/15	11/30/15	CRD
Surrogates									
4-Bromofluorobenzene (surr)	4.4	!	%	AK101	В	50-150	11/19/15	11/30/15	CRD
Semivolatile Organic Fue	ls Departme	ent							
Diesel Range Organics	453	47.2	mg/Kg	AK102	А		11/25/15	12/01/15	NLL
Residual Range Organics	107	47.2	mg/Kg	AK103	А		11/25/15	12/01/15	NLL
Surrogates									
5a Androstane (surr)	80.3		%	AK102	А	50-150	11/25/15	12/01/15	NLL
n-Triacontane-d62 (surr)	89.8		%	AK103	А	50-150	11/25/15	12/01/15	NLL
Volatile GC/MS									
Benzene	1020	56.5	ug/Kg	SW8260B	В		11/19/15	12/02/15	ST
Ethylbenzene	ND	113	ug/Kg	SW8260B	В		11/19/15	12/02/15	ST
o-Xylene	182	113	ug/Kg	SW8260B	В		11/19/15	12/02/15	ST
Toluene	328	113	ug/Kg	SW8260B	В		11/19/15	12/02/15	ST
P & M -Xylene	363	226	ug/Kg	SW8260B	В		11/19/15	12/02/15	ST
Surrogates									
1,2-Dichloroethane-D4 (surr)	113		%	SW8260B	В	71-136	11/19/15	12/02/15	ST
4-Bromofluorobenzene (surr)	56.7		%	SW8260B	В	55-151	11/19/15	12/02/15	ST
Toluene-d8 (surr)	93.5		%	SW8260B	В	85-116	11/19/15	12/02/15	ST



SGS Ref.#	1156870004		
Client Name	ISM Technical Services	<b>Printed Date/Time</b>	12/16/2015 8:42
Project Name/#	HTS	<b>Collected Date/Time</b>	11/19/2015 16:10
Client Sample ID	HTSC1	<b>Received Date/Time</b>	11/24/2015 16:30
Matrix	Soil/Solid (dry weight)	<b>Technical Director</b>	Stephen C. Ede

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Solids									
Total Solids	42.2		%	SM21 2540G	А			11/25/15	MEV



SGS Ref.# Client Name Project Name/# Client Sample ID	1156870005 ISM Technical Services HTS HTTSC2	Printed Date/Time Collected Date/Time Received Date/Time	12/16/2015 8:42 11/19/2015 16:20 11/24/2015 16:30
Matrix	Soil/Solid (dry weight)	Technical Director	Stephen C. Ede

AK101 - Surrogate recovery for 4-bromofluorobenzene (2.3%) does not meet QC criteria. Sample was analyzed twice and results confirmed.

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Departmen	<b>+</b>								
voiaciie ideis bepaicmen									
Gasoline Range Organics	ND	11.2	mg/Kg	AK101	В		11/19/15	11/30/15	CRD
Surrogates									
4-Bromofluorobenzene (surr)	2.3	!	%	AK101	В	50-150	11/19/15	11/30/15	CRD
Semivolatile Organic Fue	els Departm	ent							
Diesel Range Organics	307	47.5	mg/Kg	AK102	А		11/25/15	12/01/15	NLL
Residual Range Organics	76.0	47.5	mg/Kg	AK103	А		11/25/15	12/01/15	NLL
Surrogates									
5a Androstane (surr)	81.9		%	AK102	А	50-150	11/25/15	12/01/15	NLL
n-Triacontane-d62 (surr)	89.7		%	AK103	А	50-150	11/25/15	12/01/15	NLL
Volatile GC/MS									
Benzene	1080	56.2	ug/Kg	SW8260B	В		11/19/15	12/02/15	ST
Ethylbenzene	115	112	ug/Kg	SW8260B	В		11/19/15	12/02/15	ST
o-Xylene	233	112	ug/Kg	SW8260B	В		11/19/15	12/02/15	ST
Toluene	399	112	ug/Kg	SW8260B	В		11/19/15	12/02/15	ST
P & M -Xylene	473	225	ug/Kg	SW8260B	В		11/19/15	12/02/15	ST
Surrogates									
1,2-Dichloroethane-D4 (surr)	119		%	SW8260B	В	71-136	11/19/15	12/02/15	ST
4-Bromofluorobenzene (surr)	60.1		%	SW8260B	В	55-151	11/19/15	12/02/15	ST
Toluene-d8 (surr)	102		%	SW8260B	В	85-116	11/19/15	12/02/15	ST



Matrix	Soil/Solid (dry weight)	<b>Technical Director</b>	Stephen C. Ede
Client Sample ID	HTTSC2	<b>Received Date/Time</b>	11/24/2015 16:30
Project Name/#	HTS	Collected Date/Time	11/19/2015 16:20
Client Name	ISM Technical Services	Printed Date/Time	12/16/2015 8:42
SGS Ref.#	1156870005		

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Solids									
Total Solids	42.0		%	SM21 2540G	А			11/25/15	MEV



Matrix	Soil/Solid (dry weight)	<b>Technical Director</b>	Stephen C. Ede
Client Sample ID	TB Soil	<b>Received Date/Time</b>	11/24/2015 16:30
Project Name/#	HTS	<b>Collected Date/Time</b>	11/19/2015 16:20
Client Name	ISM Technical Services	Printed Date/Time	12/16/2015 8:42
SGS Ref.#	1156870006		

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Departmen	t								
Gasoline Range Organics	ND	2.46	mg/Kg	AK101	А		11/19/15	11/25/15	KAS
Surrogates									
4-Bromofluorobenzene (surr)	98.2		%	AK101	А	50-150	11/19/15	11/25/15	KAS
Volatile GC/MS									
Benzene	ND	12.3	ug/Kg	SW8260B	А		11/19/15	12/02/15	ST
Ethylbenzene	ND	24.6	ug/Kg	SW8260B	А		11/19/15	12/02/15	ST
o-Xylene	ND	24.6	ug/Kg	SW8260B	А		11/19/15	12/02/15	ST
Toluene	ND	24.6	ug/Kg	SW8260B	А		11/19/15	12/02/15	ST
P & M -Xylene	ND	49.3	ug/Kg	SW8260B	А		11/19/15	12/02/15	ST
Surrogates									
1,2-Dichloroethane-D4 (surr)	116		%	SW8260B	А	71-136	11/19/15	12/02/15	ST
4-Bromofluorobenzene (surr)	115		%	SW8260B	А	55-151	11/19/15	12/02/15	ST
Toluene-d8 (surr)	98.8		%	SW8260B	А	85-116	11/19/15	12/02/15	ST



Matrix	Water (Surface, Eff., Ground)	<b>Technical Director</b>	Stephen C. Ede
Client Sample ID	TB Water	<b>Received Date/Time</b>	11/24/2015 16:30
Project Name/#	HTS	<b>Collected Date/Time</b>	11/19/2015 16:20
Client Name	ISM Technical Services	<b>Printed Date/Time</b>	12/16/2015 8:42
SGS Ref.#	1156870007		

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	ND	0.100	mg/L	AK101	А		11/25/15	11/25/15	KAS
Surrogates									
4-Bromofluorobenzene (surr)	84.7		%	AK101	А	50-150	11/25/15	11/25/15	KAS
Volatile GC/MS									
Benzene	ND	0.400	ug/L	SW8260B	В		12/03/15	12/03/15	ST
Ethylbenzene	ND	1.00	ug/L	SW8260B	В		12/03/15	12/03/15	ST
o-Xylene	ND	1.00	ug/L	SW8260B	В		12/03/15	12/03/15	ST
P & M -Xylene	ND	2.00	ug/L	SW8260B	В		12/03/15	12/03/15	ST
Toluene	ND	1.00	ug/L	SW8260B	В		12/03/15	12/03/15	ST
Surrogates									
1,2-Dichloroethane-D4 (surr)	104		%	SW8260B	В	81-118	12/03/15	12/03/15	ST
4-Bromofluorobenzene (surr)	98.1		%	SW8260B	В	85-114	12/03/15	12/03/15	ST
Toluene-d8 (surr)	102		%	SW8260B	В	89-112	12/03/15	12/03/15	ST

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				•		tSm lechnica	[ MCE PHON	PROJECT PROJECT	0: E-MAII Marry 8 (La) 2 M		SAMPLE IDENTIFICATION	MHA	MHA	MHB	HTSCI	HTTS CZ 1	TB WW 8-73-25 1	TB 1363046 1		id By: (1)	~ Mundell	d By: (2)	d By: (3)		0 (4) (4) (4) (4)		<sup>2</sup> otter Drive Anchorage, AK 99518 isiness Drive Wilmington, NC 284(
C	J	?				CLIENT:	CONTACT: -	ection NAME:	U) REPORTS T		RESERVED for lab use	0A-J	(Ľ) A - J	2 JA 7	0 A-B	ect C H-B	4 9 5	J よ つ	)	Relinquish	n p	Relinquishe دن ۲	tio C Relinquishe	S	Relinquishe		[ ] 200 W.   [ ] 5500 Bt

F083-Kit\_Request\_and\_COC\_Templates-Blank Revised 2013-03-24

1222



# 1156870



# SAMPLE RECEIPT FORM

Review Criteria:	Yes	N/A	No	<b>Comments/Action Taken:</b>
Were <b>custody seals</b> intact? Note # & location, if applicable.	$\checkmark$			Exemption permitted if sampler hand carries/delivers.
COC accompanied samples?	$\checkmark$			1F
<b>Temperature blank</b> compliant* (i.e., 0-6°C after CF)?	ЦЦ			Exemption permitted if chilled & collected <8 hrs ago.
If >6 °C, were samples collected <8 hours ago?			Н	Proceed per client.
If $<0$ °C, were all sample containers ice free?		V		
Cooler ID: $\frac{1}{2}$ $\frac{(u)}{2}$ $\frac{7.1}{1}$ W/ Inerm.ID: $\frac{71}{1}$				
Cooler ID: @ w/ Therm ID:				
Cooler ID: @ w/ Therm ID:				
Cooler ID: a w/ Therm.ID:				
If samples are received without a temperature blank, the "cooler				
temperature" will be documented in lieu of the temperature blank &				
"COOLER TEMP" will be noted to the right. In cases where neither a				Note: Identify containers received at non-compliant temperature Use form FS-0029 if more space is needed
Delivery method (specify all that apply): V Client (hand carried)				comperature: esegerm 15 002) if more space is needed.
USPS Usynden UK Air UAlert Courier				
$\Box UPS \qquad \Box FedEx \qquad \Box RAVN \qquad \Box C\&D Delivery$				
Carlile Pen Air Warp Speed Other:				
$\rightarrow$ For WO# with airbills, was the WO# & airbill				
info recorded in the Front Counter eLog?		$\checkmark$		
	Var	NT/A	No	
	res	N/A		Notes Defer to form E 002 "Sample Cuide" for hold times
Were samples received within hold time?		H	H	<i>Note:</i> If times differ <1hr, record details and login per COC.
Were analyses requested unambiguous?		H	H	
Were samples in <b>good condition</b> (no leaks/cracks/breakage)?				
Packing material used (specify all that apply): Bubble Wrap				Broken lid on 1F.
Separate plastic bags Vermiculite Other:				
Were <b>proper containers</b> (type/mass/volume/preservative*) used?	$\checkmark$			Exemption permitted for metals (e.g., 200.8/6020A).
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	$\checkmark$			
Were all VOA vials <b>free of headspace</b> (i.e., bubbles <u>&lt;6 mm</u> )?				
Were all soil VOAs field extracted with MeOH+BFB?				
For preserved waters (other than VOA vials, LL-Mercury or				
microbiological analyses), was <b>pH verified and compliant</b> ?			H	
For special handling (a.g. "MI" soils foreign soils lab filter for				
dissolved lab extract for volatiles Ref Lab limited volume)				Limited volume for water TB and sample one
were bottles/nanerwork flagged (e.g. sticker)?				8260 btex.
For <b>RUSH/SHORT Hold Time</b> , were COC/Bottles flagged				
accordingly? Was Rush/Short HT email sent, if applicable?			$\square$	Short Hold PAH SIMS
For SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP, were				
containers / paperwork flagged accordingly?		$\checkmark$		
For any question answered "No," has the PM been notified and	_		_	SRF Completed by: EDJ
the problem resolved (or paperwork put in their bin)?		$\checkmark$		PM notified:
Was <b>PEER REVIEW</b> of <i>sample numbering/labeling completed</i> ?	$\checkmark$			Peer Reviewed by: VDL
Additional notes (if applicable):				

Note to Client: Any "no" answer above indicates non-compliance with standard procedures and may impact data quality.



# Sample Containers and Preservatives

Container Id	$\frac{Preservative}{Preservative}$	Container Condition	Container Id	<u>Preservative</u>	Container Condition
1156870001-A	HCL to $pH < 2$	OK			
1156870001-С	HCL to $pH < 2$	OK			
1156870001-C	HCL to $pH < 2$	OK			
1156870001-D	HCL to $pH < 2$	OK			
1156870001-E	HCL to $pH < 2$	OK DM			
1156870001-F	HCL to $pH < 2$				
1156870001-U	HCL to $pH < 2$	OK			
1156870001-П	$HCL \text{ to } pH \leq 2$	OK			
11568/0001-1	No Preservative Required	OK			
11568/0001-J	No Preservative Required	OK			
11568/0002-A	HCL to $pH < 2$	OK			
11568/0002-В	HCL to $pH < 2$	OK			
11568/0002-С	HCL to $pH < 2$	OK			
1156870002-D	HCL to $pH < 2$	OK			
1156870002-Е	HCL to $pH < 2$	OK			
1156870002-F	HCL to $pH < 2$	OK			
1156870002-G	HCL to $pH < 2$	OK			
1156870002-Н	HCL to $pH < 2$	OK			
1156870002-I	No Preservative Required	ОК			
1156870002-J	No Preservative Required	OK			
1156870003-A	HCL to pH < 2	OK			
1156870003-В	HCL to pH < 2	OK			
1156870003-С	HCL to $pH < 2$	OK			
1156870003-D	HCL to $pH < 2$	OK			
1156870003-Е	HCL to $pH < 2$	OK			
1156870003-F	HCL to $pH < 2$	ОК			
1156870003-G	HCL to $pH < 2$	OK			
1156870003-Н	HCL to $pH < 2$	OK			
1156870003-I	No Preservative Required	OK			
1156870003-J	No Preservative Required	OK			
1156870004-A	No Preservative Required	OK			
1156870004-В	Methanol field pres. 4 C	OK			
1156870005-A	No Preservative Required	OK			
1156870005-В	Methanol field pres. 4 C	OK			
1156870006-A	Methanol field pres. 4 C	OK			
1156870007-A	HCL to pH < 2	ОК			
1156870007-В	HCL to pH < 2	OK			
1156870007-С	HCL to pH < 2	OK			

Container Id

Preservative

Container Condition

Container Id

Preservative

Container Condition

#### Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

BU - The container was received with headspace greater than 6mm.

# **Laboratory Data Review Checklist**

Completed by:	Steven McCain		
Title:	Project Manager	Date:	April 21, 2016
CS Report Name:	Delta Western Haines	Report Date:	December 16, 2015
Consultant Firm:	ChemTrack Alaska Inc.		
Laboratory Name	SGS	Laboratory Report Nur	mber: 1156870
ADEC File Numb	er:	ADEC RecKey Number:	
1. <u>Laboratory</u> a. Did an	ADEC CS approved laboratory rece Yes No NA (Please explain.)	vive and <u>perform</u> all of the s Comments:	submitted sample analyses?
b. If the s laborat	amples were transferred to another " cory, was the laboratory performing t Yes No NA (Please explain.)	network" laboratory or sub he analyses ADEC CS app Comments:	o-contracted to an alternate proved?
2. <u>Chain of Custo</u> a. COC i	ody (COC) nformation completed, signed, and d Yes No NA (Please explain.)	ated (including released/re Comments:	ceived by)?
b. Correc	t analyses requested? Yes 🗌 No 🗍NA (Please explain.)	Comments:	
3. <u>Laboratory Sa</u> a. Sample	mple Receipt Documentation e/cooler temperature documented and Yes ⊠ No □NA (Please explain.)	d within range at receipt (4 Comments:	° ± 2° C)?
Samples	were shipped VIA Alaska Air and an	rrived at the lab in Anchora	age with a temp of 7.1
b. Sample Volatil	e preservation acceptable – acidified le Chlorinated Solvents, etc.)? Yes 🗌 No 🗍NA (Please explain.)	waters, Methanol preserve Comments:	ed VOC soil (GRO, BTEX,
All samp	oles arrived with required preservatio	n.	

c.	Sample condition documented – broken, leaking (Methe Yes No NA (Please explain.)	anol), zero headspace (VOC vials)? Comments:
	One sample arrived with a broken lid but none of the volu	ime was lost.
d.	If there were any discrepancies, were they documented containers/preservation, sample temperature outside of samples, etc.? Xes No NA (Please explain.)	? For example, incorrect sample acceptable range, insufficient or missing Comments:
e.	Data quality or usability affected? (Please explain.)	Comments:
Case a.	Narrative Present and understandable? ∑Yes ☐ No ☐NA (Please explain.)	Comments:
b.	Discrepancies, errors or QC failures identified by the la Yes No NA (Please explain.)	b? Comments:
c.	Were all corrective actions documented? Yes No NA (Please explain.)	Comments:
d.	What is the effect on data quality/usability according to	the case narrative? Comments:
<u>Samp</u> a.	les Results Correct analyses performed/reported as requested on Co ∑Yes ☐ No ☐NA (Please explain.)	OC? Comments:
b.	All applicable holding times met? Yes No NA (Please explain.)	Comments:

4.

c.	All soils reported on a dry weight basis? Yes No NA (Please explain.)	Comments:
d.	Are the reported PQLs less than the Cleanup Level or project?	the minimum required detection level for the
	Yes No NA (Please explain.)	Comments:
e.	Data quality or usability affected?	Comments:
	amples	
a.	Method Blank i. One method blank reported per matrix, analysi Yes No NA (Please explain.)	is and 20 samples? Comments:
	ii. All method blank results less than PQL? ∑Yes ☐ No ☐NA (Please explain.)	Comments:
	iii. If above PQL, what samples are affected?	Comments:
	iv. Do the affected sample(s) have data flags and i ∑Yes □ No □NA (Please explain.)	if so, are the data flags clearly defined? Comments:
_	v. Data quality or usability affected? (Please exp	plain.) Comments:
]	Data Quality Acceptable	
b.	Laboratory Control Sample/Duplicate (LCS/LCSD)	
	<ul> <li>i. Organics – One LCS/LCSD reported per matri required per AK methods, LCS required per SV</li> <li>□Yes ⋈ No □NA (Please explain.)</li> </ul>	x, analysis and 20 samples? (LCS/LCSD W846) Comments:

	ii. Metals/Inorganics – one LCS and one sample d	uplicate reported per matrix, analysis and 20
	$\Box Yes \Box No \Box NA (Please explain.)$	Comments:
	<ul> <li>iii. Accuracy – All percent recoveries (%R) reporte And project specified DQOs, if applicable. (AK AK102 75%-125%, AK103 60%-120%; all othe</li> <li>∑Yes ☐ No ☐NA (Please explain.)</li> </ul>	ed and within method or laboratory limits? Petroleum methods: AK101 60%-120%, er analyses see the laboratory QC pages) Comments:
	iv. Precision – All relative percent differences (RPI laboratory limits? And project specified DQOs, LCS/LCSD, MS/MSD, and or sample/sample d other analyses see the laboratory QC pages)	D) reported and less than method or if applicable. RPD reported from uplicate. (AK Petroleum methods 20%; all
	Yes No NA (Please explain.)	Comments:
	v. If %R or RPD is outside of acceptable limits, w	hat samples are affected? Comments:
	vi. Do the affected sample(s) have data flags? If so ☐Yes	, are the data flags clearly defined? Comments:
	vii. Data quality or usability affected? (Use commen	nt box to explain.) Comments:
N/A		
c. Su	rrogates – Organics Only	
	i. Are surrogate recoveries reported for organic ar Yes No NA (Please explain.)	nalyses – field, QC and laboratory samples? Comments:
	ii. Accuracy – All percent recoveries (%R) reporte And project specified DQOs, if applicable. (AK analyses see the laboratory report pages)	ed and within method or laboratory limits? Petroleum methods 50-150 %R; all other
	$\square$ Yes $\square$ No $\square$ NA (Please explain.)	Comments:

<ul> <li>iii. Do the sample results with failed surr flags clearly defined?</li> <li>∑Yes □ No □NA (Please explain.)</li> </ul>	ogate recoveries have data flags? If so, are the data Comments:
AK101 - Surrogate recovery for 4-bromofluoro was analyzed twice and results confirmed.	obenzene (2.3%) does not meet QC criteria. Sample
iv. Data quality or usability affected? (U	se the comment box to explain.) Comments:
Data quality acceptable.	
<ul> <li>d. Trip blank – Volatile analyses only (GRO, B <u>Soil</u></li> </ul>	TEX, Volatile Chlorinated Solvents, etc.): Water and
<ul> <li>i. One trip blank reported per matrix, ar (If not, enter explanation below.)</li> <li>☑Yes □ No □NA (Please explain.)</li> </ul>	alysis and for each cooler containing volatile samples? Comments:
<ul> <li>ii. Is the cooler used to transport the trip (If not, a comment explaining why m ∑Yes ☐ No ☐NA (Please explain.)</li> </ul>	blank and VOA samples clearly indicated on the COC? ust be entered below) Comments:
iii. All results less than PQL? ∑Yes □ No □NA (Please explain.)	Comments:
iv. If above PQL, what samples are affec	eted? Comments:
v. Data quality or usability affected? (Pl	ease explain.) Comments:
Data quality acceptable.	
e. Field Duplicate	
i. One field duplicate submitted per ma Yes No NA (Please explain.)	trix, analysis and 10 project samples? Comments:

Comments:

i	iii. Precision – All relative percent differences (RF (Recommended: 30% water, 50% soil)	PD) less than specified DQOs?
	RPD (%) = Absolute value of: $(R_1-R_2)$	
	$\frac{1}{((R_1+R_2)/2)}$ x	100
[	Where $R_1$ = Sample Concentration $R_2$ = Field Duplicate Concentration $\square$ Yes $\square$ No $\square$ NA (Please explain.)	Comments:
See at	tached RPD calculations	
i	v. Data quality or usability affected? (Use the con	nment box to explain why or why not.)
		Comments:
Data c	uality acceptable.	
f. Dec	ontamination or Equipment Blank (If not used exp	llain why).
	Yes No NA (Please explain.)	Comments:
	Yes No NA (Please explain.)	Comments:
i	Yes No NA (Please explain.)	Comments:
i	<ul> <li>∐ No ∐NA (Please explain.)</li> <li>i. All results less than PQL?</li> <li>∑Yes ☐ No ☐NA (Please explain.)</li> </ul>	Comments:
i	<ul> <li>∐ No ∐NA (Please explain.)</li> <li>i. All results less than PQL?</li> <li>∑Yes ☐ No ☐NA (Please explain.)</li> </ul>	Comments: Comments:
i [	<ul> <li>∐ No ∐NA (Please explain.)</li> <li>i. All results less than PQL?</li> <li>∑Yes ☐ No ☐NA (Please explain.)</li> </ul>	Comments: Comments:
i [	<ul> <li>∑Yes □ No □NA (Please explain.)</li> <li>i. All results less than PQL?</li> <li>∑Yes □ No □NA (Please explain.)</li> </ul>	Comments: Comments:
i [ i	<ul> <li>Yes No NA (Please explain.)</li> <li>All results less than PQL?</li> <li>Yes No NA (Please explain.)</li> <li>If above PQL, what samples are affected?</li> </ul>	Comments:
i [ i	<ul> <li>Yes No NA (Please explain.)</li> <li>All results less than PQL?</li> <li>Yes No NA (Please explain.)</li> <li>If above PQL, what samples are affected?</li> </ul>	Comments: Comments:
i [ i	<ul> <li>Yes No NA (Please explain.)</li> <li>All results less than PQL?</li> <li>Yes No NA (Please explain.)</li> <li>If above PQL, what samples are affected?</li> </ul>	Comments: Comments:
i [ i	<ul> <li>∐ No ∐ NA (Please explain.)</li> <li>i. All results less than PQL?</li> <li>∑Yes ☐ No ☐NA (Please explain.)</li> <li>ii. If above PQL, what samples are affected?</li> </ul>	Comments: Comments:
i [ i	<ul> <li>∐ No ∐NA (Please explain.)</li> <li>i. All results less than PQL?</li> <li>☑ Yes □ No □NA (Please explain.)</li> <li>ii. If above PQL, what samples are affected?</li> <li>iii. Data quality or usability affected? (Please explain.)</li> </ul>	Comments: Comments: ain.)
i [ i	<ul> <li>∐ No ∐ NA (Please explain.)</li> <li>i. All results less than PQL?</li> <li>☑ Yes □ No □ NA (Please explain.)</li> <li>ii. If above PQL, what samples are affected?</li> <li>iii. Data quality or usability affected? (Please explain.)</li> </ul>	Comments: Comments: Comments: ain.) Comments:
i [ i	<ul> <li>∐ No ∐NA (Please explain.)</li> <li>i. All results less than PQL?</li> <li>☑ Yes ☐ No ☐NA (Please explain.)</li> <li>ii. If above PQL, what samples are affected?</li> <li>iii. Data quality or usability affected? (Please explain.)</li> </ul>	Comments: Comments: Comments: ain.) Comments:
i [ i i i i	<ul> <li>∐ No ∐ NA (Please explain.)</li> <li>i. All results less than PQL?</li> <li>☑ Yes □ No □ NA (Please explain.)</li> <li>ii. If above PQL, what samples are affected?</li> <li>iii. Data quality or usability affected? (Please explain.)</li> <li>Flags/Qualifiers (ACOE, AFCEE, Lab Specific. et al.)</li> </ul>	Comments: Comments: Comments: ain.) Comments:
i [	<ul> <li>∐ Yes ∐ No ∐NA (Please explain.)</li> <li>i. All results less than PQL?</li> <li>☑ Yes ☐ No ☐NA (Please explain.)</li> <li>ii. If above PQL, what samples are affected?</li> <li>iii. Data quality or usability affected? (Please explain.)</li> <li>Flags/Qualifiers (ACOE, AFCEE, Lab Specific, et ined and appropriate?</li> </ul>	Comments: Comments: Comments: ain.) Comments: tc.)

#### DeltaWestern Haines Tesoro Groundwater Fall 2015 Sampling

Sample ID	МНА		MHA1		МНВ			MHA		
Date Collected	19-Nov-15		19-Nov-15		19-Nov-15			and		
Laboratory	SGS		SGS		SGS		duplicate			
Work Order #	1161834		1161834		1161834		MHA1			
Analyte	Result	MRL	Calculated Value	Result	MRL	Calculated Value	Result	MRL	Calculated Value	PPDe
Analyte	[ua/L]	[ua/L]	[ma/L]	[ua/L]	[ua/L]	[mg/L]	[ua/L]	[ua/L]	[mg/L]	ICI D3
Gasoline Range Organics	3.92	1	0.00392	3.85	1	0.00385	ND	1	0.001	1.8%
Diesel Range Organics	0.698	0.536	0.000698	0.694	0.536	0.000694	ND	0.536	0.000536	0.6%
Residual Range Organics	ND	0.446	0.000446	ND	0.446	0.000446	ND	0.446	0.000446	0.0%
Benzene	257	0.4	0.257	260	0.4	0.26	ND	0.4	0.0004	1.2%
Toluene	396	1	0.396	393	1	0.393	ND	1	0.001	0.8%
Ethylbenzene	106	1	0.106	104	1	0.104	ND	1	0.001	1.9%
P & M -Xylene	839	2	0.839	825	2	0.825	ND	2	0.002	1.7%
o-Xylene	318	1	0.318	313	1	0.313	ND	1	0.001	1.6%
Acenaphthylene	ND	0.05	0.00005	ND	0.05	0.00005	ND	0.05	0.00005	0.0%
Acenaphthene	ND	0.05	0.00005	ND	0.05	0.00005	ND	0.05	0.00005	0.0%
Fluorene	ND	0.05	0.00005	ND	0.05	0.00005	ND	0.05	0.00005	0.0%
Phenanthrene	ND	0.05	0.00005	ND	0.05	0.00005	ND	0.05	0.00005	0.0%
Anthracene	ND	0.05	0.00005	ND	0.05	0.00005	ND	0.05	0.00005	0.0%
Fluoranthene	ND	0.05	0.00005	ND	0.05	0.00005	ND	0.05	0.00005	0.0%
Pyrene	ND	0.05	0.00005	ND	0.05	0.00005	ND	0.05	0.00005	0.0%
Benzo(a)Anthracene	ND	0.05	0.00005	ND	0.05	0.00005	ND	0.05	0.00005	0.0%
Chrysene	ND	0.05	0.00005	ND	0.05	0.00005	ND	0.05	0.00005	0.0%
Benzo[b]Fluoranthene	ND	0.05	0.00005	ND	0.05	0.00005	ND	0.05	0.00005	0.0%
Benzo[k]fluoranthene	ND	0.05	0.00005	ND	0.05	0.00005	ND	0.05	0.00005	0.0%
Benzo[a]pyrene	ND	0.05	0.00005	ND	0.05	0.00005	ND	0.05	0.00005	0.0%
Indeno[1,2,3-c,d] pyrene	ND	0.05	0.00005	ND	0.05	0.00005	ND	0.05	0.00005	0.0%
Dibenzo[a,h]anthracene	ND	0.05	0.00005	ND	0.05	0.00005	ND	0.05	0.00005	0.0%
Benzo[g,h,i]perylene	ND	0.05	0.00005	ND	0.05	0.00005	ND	0.05	0.00005	0.0%
Naphthalene	5.61	0.1	0.00561	7.75	0.1	0.00775	ND	0.1	0.0001	32.0%
1-Methylnaphthalene	0.816	0.05	0.000816	1.18	0.05	0.00118	ND	0.05	0.00005	36.5%
2-Methylnaphthalene	1.24	0.05	0.00124	1.78	0.05	0.00178	ND	0.05	0.00005	35.8%
	TAH Total 1.9160		TAH Total 1.8950		TAH Total 0.0054					
	TAqH Total 1.9244		TAqH Total 1.9065		TAqH Total 0.0064					

ND is Not Detected above the MRL

MRL is the laboratory Method Reporting Limit

RPD is Relative Percent Difference