

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

**January 2017**

## **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. Included in this report are laboratory results from samples collected June and November of 2016.

This report was prepared in accordance with State of Alaska ADEC 18 AAC 75 Article 3 (November 2016), and the *ADEC Field Sampling Guidance (March 2016)*. 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 and a groundwater collection system at the Tesoro Station in Haines. These two systems allow for the surface water and groundwater to have separate pathways. The surface water flows into the bioswale system while the groundwater is directed into a 6-Ft diameter manhole for treatment. The groundwater treatment system ensures that the groundwater from the site meets 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.

The groundwater is collected in 6-inch diameter perforated pipes and delivered to the manhole. Inside the manhole are four each 30-gallon Granulated Activated Carbon (GAC) filters. The groundwater is gravity fed through the first two primary units (GAC#1 and GAC#2) connected in series, then through the last two polisher GAC units (GAC#3 and GAC#4) connected in parallel, and then into the manhole. A submersible pump removes the treated groundwater from the manhole and discharges into the sanitary sewer. The pump's float switch keeps the treated groundwater level at 2-6 inches above the manhole base.

### **3.0 PROJECT PERSONNEL**

Monitoring and sampling activities were completed by Steven McCain and Chris McDonnell.

### **4.0 PROJECT LOCATION**

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

### **5.0 PROJECT SCOPE AND OBJECTIVES**

- Inspect the three remaining monitoring wells and collect groundwater samples from each
- Inspect the bioswale and groundwater treatment systems
- Collect groundwater laboratory samples, before and after treatment, to evaluate the system.
- Remove any buildup of iron bacteria and clean out system
- Remove the spent carbon and replace with new activated carbon

### **6.0 SITE INSPECTIONS**

The spring site inspection and sampling event occurred on June 25<sup>th</sup>, 2016. The bioswale was inspected first and was found to be in excellent condition. Evidence of mowing and maintenance was visible and the vegetation appeared healthy. The asphalt surface appeared to be intact and in good condition, with breeches (soil sample locations) patched with new asphalt. Surface water runoff, from the highway and from this site, was flowing towards the bioswale rockswales without any ponding noted. The rockswales appeared to be in good condition, with minimal sediment buildup.

Upon initial inspection of the groundwater treatment system, water was flowing through the filters by gravity. The pump was not in operation, water was above the float and the ground fault circuit interrupter (GFCI) was tripped. After further inspection, the pump impellers were found to have iron bacteria buildup preventing them from spinning freely. The buildup was removed, and full function to the pump was restored. The flowrate effluent from the GACs was measured at 1.0 gallon per minute (GPM), prior to cleaning out the system. The interior of the manhole, the manhole base/floor, and GAC exterior surfaces were cleaned of iron bacteria buildup. The 6-inch diameter collection pipes and cleanouts were inspected and flushed, neither groundwater nor obstructions were noted. Water samples were collected from the intake and discharge of the groundwater treatment system. After water samples were collected, the spent carbon was removed from the in-series primary GAC#1 and GAC#2 and containerized. The carbon from the in-parallel polisher GAC#3 and GAC#4 had the top approximately 6-inches of carbon with iron bacteria buildup removed and containerized. The remaining carbon was then transferred into both primary GACs and both polisher GACs were replenished with fresh/clean carbon. The

flowrate effluent from the GACs was measured at 0.21 GPM, after cleaning out the system (the next morning, after system stabilized).

All three remaining monitoring wells (MW13, MW14 and MW15) onsite were inspected and found to have minimal water present. MW15's well cap was damaged; it was repaired and the bentonite swell at the surface was cleared. The monitoring wells were revisited again 24 hours later and were found to have zero recharge. 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 2<sup>nd</sup>, 2016. Once onsite, it was observed that the GAC primary unit was again congested with iron bacteria, slowing the flow rate through the treatment system. Flowing by gravity, the discharge flow rate of the GAC system was recorded at 0.128 GPM. The pump was found to be in working order and the treated water was well below the pump float switch inside the manhole. The groundwater was maintaining a level of 2-6 inches above the manhole floor. The 6-inch perforated groundwater pipes and cleanouts were flushed clean using a 'Hotsy' hot water pressure washer. Laboratory samples were then collected from the intake and discharge of the treatment system. After sample collection was complete, the spent carbon was removed from the in-series primary GAC#1 and GAC#2 and containerized. The carbon from the in-parallel polisher GAC#3 and GAC#4 had the top approximately 6-inches of iron bacteria buildup removed. The remaining carbon was then transferred from GAC#3 and GAC#4 into both primary GACs, and both polisher GACs were replenished with fresh/clean carbon. The flow rate increased to 0.273 GPM at the effluent from the GAC system.

All three of the monitoring wells were inspected and found to have minimal water. They were measured and rechecked in 24 hours for recharge. Again, 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° ± 2°C 14 days to extract
GRO	EPA 8260	10	100	Three 40 ml VOA, TLS	
BTEX		0.7	5		
PAH	EPA 8270	1	10	1 Liter Amber Glass TLS	4° ± 2°C, Ascorbic acid, dark, 7 days to extract
*Method Detection Limit		**Practical Quantitation Limit		Volatile Organic Analysis(VOA)	

## 8.0 SAMPLE RESULTS

Samples were collected before and after the water passed through the groundwater treatment system. Samples identified as 'MHA-1' and 'MHA-2'(duplicate) were collected from the groundwater inflow prior to treatment. Samples identified as 'MHA-3' were collected from the water after it had passed through the groundwater treatment system.

During the spring and fall 2016 sampling events, samples were analyzed for Gasoline Range Organics (GRO) and Benzene, Toluene, Ethylbenzene, Xylenes (BTEX). In addition, the spring sampling event included the following analyses; Diesel Range Organics (DRO), Residual Range Organics (RRO), 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 and 3 (on the following page) below includes a summary of laboratory analytical results of groundwater samples collected in June of 2016.

<b>Table 2: Analytical Data June 2016 - Groundwater Treatment System</b>				
<b>Analyte</b>	<b>MHA-1 (mg/L)</b>	<b>MHA-2 (duplicate of MHA-1) (mg/L)</b>	<b>MHA-3 (mg/L)</b>	<b>ADEC Table C Groundwater Cleanup Levels 18 AAC 75.345 (mg/L)</b>
DRO	ND<0.38	ND<0.38	ND<0.38	1.5
RRO	ND<0.38	ND<0.38	ND<0.38	1.1
GRO	1.7	1.9	ND<0.10	2.2
Benzene	0.13	0.15	0.00077	0.0046
Ethylbenzene	0.064	0.067	ND<0.001	0.015
Toluene	0.043	0.049	ND<0.001	1.1
Total Xylenes	0.46	0.51	ND<0.003	0.19
<b>ND= Not Detected at Laboratory Detection Limit</b>				

<b>Table 3: PAH Analytical Data June 2016 - Groundwater Treatment System</b>				
<b>Analyte</b>	<b>MHA-1 (ug/L)</b>	<b>MHA-2 (duplicate of MHA-1) (ug/L)</b>	<b>MHA-3 (ug/L)</b>	<b>ADEC Cleanup Level for Marine Water Uses Water Quality Standards 18 AAC 70 (ug/L)</b>
<b>TAH</b>	0.697	0.776	0.0058	1309.6
<b>TAqH</b>	0.712	0.788	0.007	5770.13
Acenaphthene	ND<0.091	ND<0.09	ND<0.09	530
Acenaphthylene	ND<0.091	ND<0.09	ND<0.09	260
Anthracene	ND<0.091	ND<0.09	ND<0.09	434
Benzo-a-anthracene	ND<0.091	ND<0.09	ND<0.09	0.12
Benzo-a-pyrene	ND<0.091	ND<0.09	ND<0.09	0.034
Benzo-b-fluoroanthene	ND<0.091	ND<0.09	ND<0.09	0.34
Benzo[g-h-i]perylene	ND<0.091	ND<0.09	ND<0.09	0.264
Benzo-k-fluoroanthene	ND<0.091	ND<0.09	ND<0.09	0.804
Chrysene	ND<0.091	ND<0.09	ND<0.09	2.04
Dibenzo-a-h-anthracene	ND<0.091	ND<0.09	ND<0.09	0.034
Fluoranthrene	ND<0.091	ND<0.09	ND<0.09	2604
Fluorene	ND<0.091	ND<0.09	ND<0.09	290
Ideno-123-cd-pyrene	ND<0.091	ND<0.09	ND<0.09	0.194
1-Methylnaphthalene	1.4	1.1	ND<0.09	11
2-Methylnaphthalene	1.9	1.4	ND<0.09	36
Naphthalene	10	8.1	ND<0.09	1.7
Phenanthrene	ND<0.091	ND<0.09	ND<0.09	170
Pyrene	ND<0.091	ND<0.09	ND<0.09	120
<b>ND= Not Detected at Laboratory Detection Limit</b>				

Tables 4 below includes a summary of laboratory analytical results of groundwater samples collected in November of 2016.

<b>Table 4: Analytical Data November 2016 - Groundwater Treatment System</b>				
<b>Analyte</b>	<b>MHA-1 (mg/L)</b>	<b>MHA-2 (duplicate of MHA-1) (mg/L)</b>	<b>MHA-3 (mg/L)</b>	<b>ADEC Table C Groundwater Cleanup Levels (18 AAC 75.345) (mg/L)</b>
GRO	0.231	0.214	ND<0.100	2.2
Benzene	0.0176	0.0178	ND<0.0004	0.0046
Ethylbenzene	0.01	0.0102	ND<0.001	0.015
Toluene	0.0125	0.0125	ND<0.001	1.1
Total Xylenes	0.0819	0.0822	ND<0.003	0.19
<b>ND= Not Detected at Laboratory Detection Limit</b>				

## **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**

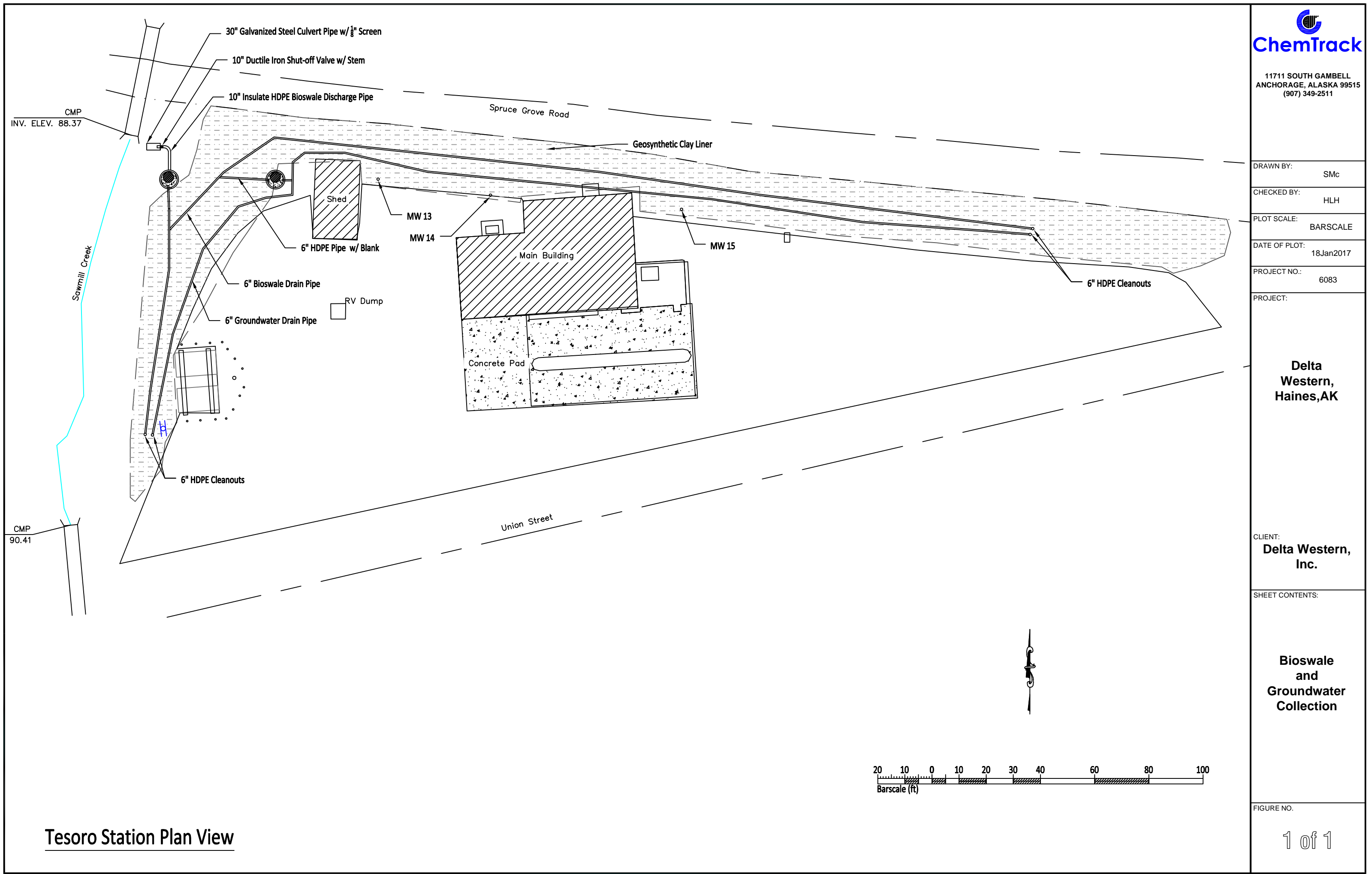
See attached Laboratory Data Review Checklist.


## **10.0 DISCUSSION OF RESULTS**

The analytical results confirm that the groundwater prior to treatment had Benzene, ethylbenzene, Total Xylenes and Naphthalene 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 of the groundwater collection pipes and GAC units, no significant problems are anticipated.

## **11.0 RECOMMENDATIONS**

Since the installation of the Bioswale in 2012, the three remaining monitoring wells onsite have not had sufficient water in the wells to be sampled. It is assumed that the groundwater at the site is being drained and treated, therefore the monitoring wells should not have groundwater present. It is recommended that remaining monitoring wells MW13, MW14 and MW15 be decommissioned.





11711 SOUTH GAMBELL  
ANCHORAGE, ALASKA 99515  
(907) 349-2511

DRAWN BY:	SMc
CHECKED BY:	HLH
PLOT SCALE:	BARSCALE
DATE OF PLOT:	18Jan2017
PROJECT NO.:	6083
PROJECT:	<div><div>Delta Western, Haines,AK</div></div>
CLIENT:	<div>Delta Western, Inc.</div>
SHEET CONTENTS:	<div>Bioswale and Groundwater Collection</div>
FIGURE NO.	1 of 1

Tesoro Station Plan View

**Total Aromatic Hydrocarbons and Total Aqueous Hydrocarbons  
Calculations Table**

Sample ID	MHA-1			MHA-2			MHA-3		
Date Collected	27-Jun-16			27-Jun-16			27-Jun-16		
Laboratory	Test America			Test America			Test America		
Work Order #	590-3771-1			590-3771-1			590-3771-1		
Analyte	Result [ug/L]	MRL [ug/L]	Calculated Value [mg/L]	Result [ug/L]	MRL [ug/L]	Calculated Value [mg/L]	Result [ug/L]	MRL [ug/L]	Calculated Value [mg/L]
Benzene	130	2	0.13	150	2	0.15	0.77	0.20	0.00077
Toluene	43	10	0.043	49	1	0.049	ND	1.00	0.001
Ethylbenzene	64	10	0.064	67	1	0.067	ND	1.00	0.001
P & M -Xylene	310	20	0.31	350	20	0.35	ND	2.00	0.002
o-Xylene	150	10	0.15	160	10	0.16	ND	1.00	0.001
Acenaphthene	ND	0.091	0.000091	ND	0.09	0.00009	ND	0.09	0.00009
Acenaphthylene	ND	0.091	0.000091	ND	0.09	0.00009	ND	0.09	0.00009
Anthracene	ND	0.091	0.000091	ND	0.09	0.00009	ND	0.09	0.00009
Benzo(a)Anthracene	ND	0.091	0.000091	ND	0.09	0.00009	ND	0.09	0.00009
Benzo[a]pyrene	ND	0.091	0.000091	ND	0.09	0.00009	ND	0.09	0.00009
Benzo[b]Fluoranthene	ND	0.091	0.000091	ND	0.09	0.00009	ND	0.09	0.00009
Benzo[k]fluoranthene	ND	0.091	0.000091	ND	0.09	0.00009	ND	0.09	0.00009
Benzo[g,h,i]perylene	ND	0.091	0.000091	ND	0.09	0.00009	ND	0.09	0.00009
Chrysene	ND	0.091	0.000091	ND	0.09	0.00009	ND	0.09	0.00009
Dibenzo[a,h]anthracene	ND	0.091	0.000091	ND	0.09	0.00009	ND	0.09	0.00009
Fluorene	ND	0.091	0.000091	ND	0.09	0.00009	ND	0.09	0.00009
Fluoranthene	ND	0.091	0.000091	ND	0.09	0.00009	ND	0.09	0.00009
Indeno[1,2,3-c,d] pyrene	ND	0.091	0.000091	ND	0.09	0.00009	ND	0.09	0.00009
Naphthalene	10	0.091	0.01	8.1	0.09	0.0081	ND	0.09	0.00009
1-Methylnaphthalene	1.4	0.091	0.0014	1.1	0.09	0.0011	ND	0.09	0.00009
2-Methylnaphthalene	1.9	0.091	0.0019	1.4	0.09	0.0014	ND	0.09	0.00009
Phenanthrene	ND	0.091	0.000091	ND	0.09	0.00009	ND	0.09	0.00009
Pyrene	ND	0.091	0.000091	ND	0.09	0.00009	ND	0.09	0.00009
	TAH		0.697	TAH		0.776	TAH		0.0058
	TAqH		0.712	TAqH		0.788	TAqH		0.007

ND is Not Detected above the MRL

MRL is the laboratory Method Reporting Limit

Delta Western, Inc. Haines

January 2017



Photo. Number	001
Description	Removing top ~6-inches of iron bacteria carbon from polisher filters for disposal
Direction of View	View down
Date	6/26/2016
Contractor/ Photographer	CT/Steven McCain

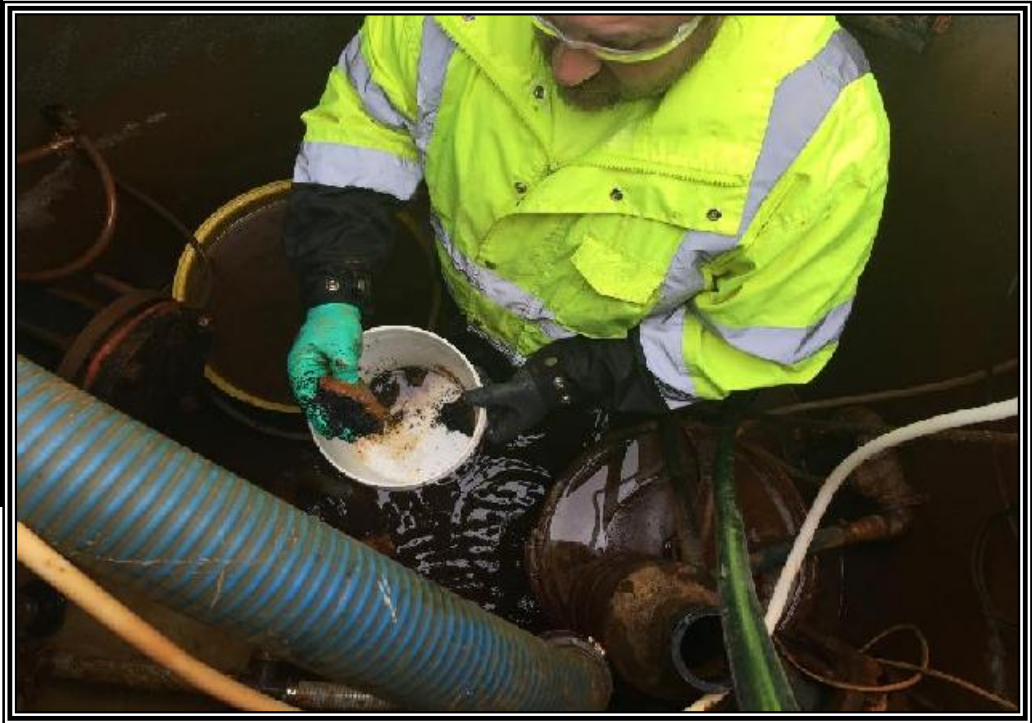


Photo. Number	002
Description	Removing top ~6-inches of iron bacteria carbon from polisher filters for disposal
Direction of View	View down
Date	6/26/2016
Contractor/ Photographer	CT/Steven McCain



<b>Photo. Number</b>	003
<b>Description</b>	View of manhole and healthy vegetation
<b>Direction of View</b>	View to the north
<b>Date</b>	6/26/2016
<b>Contractor/ Photographer</b>	CT/Steven McCain



<b>Photo. Number</b>	004
<b>Description</b>	Water sample collection from effluent
<b>Direction of View</b>	View down
<b>Date</b>	6/27/2016
<b>Contractor/ Photographer</b>	CT/Chris McDonnell





25 JUN 16 Sat

Meet Chris @ 6:15 hrs, check in AkAir to Teneau  
 @ 6:30 @ 7:55 Flight. Check in Wings. Walk to Darrin  
 Diner, flight pushed back a hour, Takeoff @ 13:30  
 15:00 hrs  
 9kg way 1st, meet Fred G, drive to Tesoro, he  
 has rental w/ pickup Dodge, Keys to Blog, No Cooler!  
 Inspect BWSide, vegetation looks good &  
 flourishing, some larger bush - taller, wonder how  
 roots effect buried infiltration 6" pipe.  
 Rock swales look good. Concrete & asphalt  
 AOK, open Groundwater manhole; inspect  
 some Iron Bacteria coating, but not thick  
 Small sheen noted but appears organic  
 Attempt to Trigger float on pump, note that  
 water is above float! GFCI was Tripped.  
 Reset, pump humming & vibrating, no water  
 @ effluent to sewer system. Able to blow  
 air back from outlet to pump (bubbles), so  
 hose not clogged w/ obstruction. Pull pump  
 Remove base cover, clean iron build up from  
 impellers, replace, flow! Call Wings again,  
 they located cooler w/ sample jars 796-2472  
 will send Tomorrow morning flight. Borrow  
 DW garden hose & pressure washer, clean iron  
 coating on hoses, valves, outside GACs etc.  
 Pump running well, Xtra water from hose

inflow → 
 11" wtr level above bottom of inner  
 6" inflow

Flushing out manhole. Measure Flow  
 rate Thru GACs, 5gal @ 4min 55 sec  
 ~ approx. 1 gpm. Shut down 18:00 hrs.  
 Check in @ Aspen Suites Rm 14 meet Domy  
 Turner, dinner @ Fireweed Pizza  
 Check pump ~ 20:00 hrs, below high float  
 so not running, appears AOK!, measure 1 gal  
 @ 1 min 20 sec slower? Trigger float, pump AOK  
 6 hrs 30 min onsite

26 JUN 16 Sun

6:00 hrs check w/ Wings, cloudy but still  
 sched. to fly. Pump AOK, flow rate effluent  
 from both GACs 1 gal @ 2 min 10 sec (n.p. 4 gal)  
 much slower. Begin flushing/rinsing air  
 lines; valve/fittings from 6" inflow  
 to 1 1/2" tubing (flex hose w/ 2" camlocks)  
 Check three monitoring wells. Both full  
 water, 1 bailer full each, into 5 gal  
 bucket. No water after 1 bailer. Will  
 wait for recharge (18:00 hrs).  
 Close valve from 6" inflow, stop flowing  
 Thru gravity filters. Drain inside manhole  
 w/ pump. Open GACs. All 3 have thin  
 layer iron bacteria, but very thin  
 Empty 1st GAC into Trash bag & disconnect  
 & remove from manhole for  
 working room

Rite in the Rain



Clean out base of manhole (carbon)  
 Empty 2<sup>nd</sup> GAC; Top 1/2 of Finish GAC's  
 Fill 1<sup>st</sup> ~ 1/2 Full, 2<sup>nd</sup> ~ Full  
 3:4 → each new Carbon 54 lbs in  
 felt bag, re-plumb/connect hoses  
 to each GAC. Begin filling  
 by opening 6" inflow valve to  
 1<sup>st</sup> GAC. All air relief's working  
 AOK. Follow thru to last GAC's  
 will allow to flow/stabilize;  
 check flow rate. 17:40 hrs  
 1 gal / 1 min 19 seconds (6.78 gpm) 21:40 hrs  
 Decon Tools, wash/shower; launder clothes  
 Work on Daily Report - Laptop keeps dying  
 Suspect power cord (intermittent) 18:45  
 on site

27 JUN 16 08:40 hrs Cooler made it! Finally  
 pickup cooler. Check manhole, water level  
 below pump float trigger. Measure flow  
 rate @ 1 gal / 4 min 44 sec → ~ 6.21 gpm  
 Inspect monitoring wells, both dry - no recharge  
 so no samples collected.  
 Repair cap; bentonite swell, inspect cleanouts.  
 No obstructions nor water noted. Seems dry -  
 dryer than usual in Haines. Low groundwater  
 also. Check out of Aspen Suites.  
 Collect samples, one from 6" collection

Pipe - inflow to gravity Treatment  
 System, Sample port. Collect a  
 duplicate from same. Collect  
 sample from two each final GACs,  
 running in parallel. ~ 1/2 from each  
 outlet.

All 3 samples analyze for  
 GRO, BTEX, DRO, RHO, PAH & calculate  
 TAA, TAPM. 1 Trip Blank for GRO, BTEX  
 Package samples/label

Ship: 55 gal GAC w/ Lyden to Anch.  
 Receive ADEE Bruce Wainwright's  
 authorization to transport via Email -  
 UN1362, CARBON ACTIVATED, 4.2, pg III ~ 485 lbs  
 Stage ~ 24 gal spent carbon from yesterday  
 in 55 gal steel open top @ DW Lutz Warehouse  
 Take photos @ DW Lutz Truck rack, esp  
 @ spill site, new concrete and  
 adjacent land/fencing/etc, looking  
 for property line & hot sample location.  
 Return keys to Fred G-DW, busy with  
 credit card machines down.

Measure flow rate @ 1 gal / 4 min 30 sec  
 Fris, Clover, 249 - 8945 Ed Blair etc  
 17:36 Haines - Juneau 18:10  
 19:15 Juneau - Anch 21:00

Rite in the Rain



Sample ID	MHA1	MHA2	MHA3
DATE	27 JUN 16		
TIME	11:15 am	11:40 am	12:00 noon
LOCATION	DW-Haines Tesoro		
SOURCE	Unfiltered Ground Water	Duplicate of MHA1	Manhole, Treated Ground water
EQUIPMENT	N/A		
PPE	Rubber Boots, High Vis, Nitrile		
PERSONNEL	Steven McCain, Chris McDonnell		
WEATHER	Partly Sunny, 59°F		
FIELD SCREEN	N/A		
TYPE	Grab		Grab
MATRIX	Ground Water		Ground Water
ANALYSIS	GRD-AK101, BTEX-8200, DRG/RRO-102/103, PAH-8276		GRD-AK101, BTEX-8200, DRG/RRO-102/103, PAH-8276
PRESERVATIVE	GRD-BTEX-HCL, DRG/RRO, PAH-0		GRD-BTEX-HCL, DRG/RRO, PAH-0
# and Type of Container	GRD-3ea 40ml VOA, BTEX-3ea 40ml VOA, DRG/RRO-2ea 802 Amber, PAH-2ea 802 Amber		GRD-3ea 40ml VOA, BTEX-3ea 40ml VOA, DRG/RRO-2ea 802 Amber, PAH-2ea 802 Amber
LABORATORY	Test America		Test America
Date Shipped	29 JUN 16		29 JUN 16
COC #	5903771		5903771
Sketch	N/A		N/A
Signature	SE/ML	SE/ML	SE/ML

\*Note - request lab to calculate TAH and TgH

\*Note

\*Note

TB-27 JUN 16

27 JUN 16

12:22 pm

DW-Haines Tesoro SUC

N/A Trip Blank

N/A

Rubber Boots, High Vis, Nitrile Gloves

Steven McCain, Chris McDonnell

Partly Sunny, 59°F

N/A

N/A

N/A

GRD-AK101, BTEX-8200, DRG/RRO, PAH

GRD-BTEX-HCL, DRG/RRO, PAH

GRD-3ea 40ml VOA, BTEX-3ea 40ml VOA

DRG/RRO-2ea 802 Amber, PAH-2ea 802 Amber

Test America

29 JUN 16

5903771

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

Trans DT 301W

30 JUNE 16

11:00 am

MLP Transformer Drain Tank

"Trans DT"

N/A

Rubber Boots, High Vis, Nitrile gloves

Logan Mills

SUNNY 60°F

N/A

Grab

H2O

TOTAL

Conform

N/A

1 20ml Plastic

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

TAH-EPA 624, Metals-EPA 200.8

Cyanide-4500 CNCE, Oil-Grease-EPA 1631B

TAH-HCL, Cyanide-NaOH, Metals-HNO3

Oil-G-HCL, TAH-3 40ml VOA

Cyanide-60ml Amber HORE, Metals-250ml HORE

Oil-G-2 1L Amber glass

Note - SGS could not analyze Trans DT 301W

Two distinct layers

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

Rite in the Rain

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Spokane

11922 East 1st Ave

Spokane, WA 99206

Tel: (509)924-9200

TestAmerica Job ID: 590-3771-1

Client Project/Site: Project 6313 DW Haines Tesoro

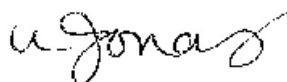
For:

Chem Track

11711 S. Gambell

Anchorage, Alaska 99515

Attn: Steven McCain



Authorized for release by:

7/5/2016 4:21:10 PM

Wendy Jonas, Project Manager I

(253)922-2310

[wendy.jonas@testamericainc.com](mailto:wendy.jonas@testamericainc.com)

### LINKS

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results through

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



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## Case Narrative

Client: Chem Track  
Project/Site: Project 6313 DW Haines Tesoro

TestAmerica Job ID: 590-3771-1

**Job ID: 590-3771-1**

**Laboratory: TestAmerica Spokane**

### Narrative

#### Receipt

The samples were received on 6/29/2016 10:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.1° C.

#### GC/MS VOA

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

#### GC/MS Semi VOA

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

#### GC Semi VOA

No analytical or quality issues were noted, other than those described 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.



## Sample Summary

Client: Chem Track  
Project/Site: Project 6313 DW Haines Tesoro

TestAmerica Job ID: 590-3771-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-3771-1	MHA-1	Water	06/27/16 11:15	06/29/16 10:10
590-3771-2	MHA-2	Water	06/27/16 11:40	06/29/16 10:10
590-3771-3	MHA-3	Water	06/27/16 12:00	06/29/16 10:10
590-3771-4	TB-27Jun16	Water	06/27/16 12:22	06/29/16 10:10

## Definitions/Glossary

Client: Chem Track  
Project/Site: Project 6313 DW Haines Tesoro

TestAmerica Job ID: 590-3771-1

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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)

# Client Sample Results

Client: Chem Track  
Project/Site: Project 6313 DW Haines Tesoro

TestAmerica Job ID: 590-3771-1

**Client Sample ID: MHA-1**

**Date Collected: 06/27/16 11:15**

**Date Received: 06/29/16 10:10**

**Lab Sample ID: 590-3771-1**

**Matrix: Water**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	130		2.0		ug/L			06/29/16 12:58	10
Ethylbenzene	43		10		ug/L			06/29/16 12:58	10
m,p-Xylene	310		20		ug/L			06/29/16 12:58	10
o-Xylene	150		10		ug/L			06/29/16 12:58	10
Toluene	64		10		ug/L			06/29/16 12:58	10
Xylenes, Total	450		30		ug/L			06/29/16 12:58	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		70 - 125		06/29/16 12:58	10
4-Bromofluorobenzene (Surr)	93		69 - 120		06/29/16 12:58	10
Dibromofluoromethane (Surr)	106		80 - 120		06/29/16 12:58	10
Toluene-d8 (Surr)	97		80 - 120		06/29/16 12:58	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	1700		1000		ug/L			06/29/16 12:58	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	93		68.7 - 141		06/29/16 12:58	10

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	10		0.091		ug/L		06/30/16 10:48	07/01/16 19:49	1
2-Methylnaphthalene	1.9		0.091		ug/L		06/30/16 10:48	07/01/16 19:49	1
1-Methylnaphthalene	1.4		0.091		ug/L		06/30/16 10:48	07/01/16 19:49	1
Acenaphthylene	ND		0.091		ug/L		06/30/16 10:48	07/01/16 19:49	1
Acenaphthene	ND		0.091		ug/L		06/30/16 10:48	07/01/16 19:49	1
Fluorene	ND		0.091		ug/L		06/30/16 10:48	07/01/16 19:49	1
Phenanthrene	ND		0.091		ug/L		06/30/16 10:48	07/01/16 19:49	1
Anthracene	ND		0.091		ug/L		06/30/16 10:48	07/01/16 19:49	1
Fluoranthene	ND		0.091		ug/L		06/30/16 10:48	07/01/16 19:49	1
Pyrene	ND		0.091		ug/L		06/30/16 10:48	07/01/16 19:49	1
Benzo[a]anthracene	ND		0.091		ug/L		06/30/16 10:48	07/01/16 19:49	1
Chrysene	ND		0.091		ug/L		06/30/16 10:48	07/01/16 19:49	1
Benzo[b]fluoranthene	ND		0.091		ug/L		06/30/16 10:48	07/01/16 19:49	1
Benzo[k]fluoranthene	ND		0.091		ug/L		06/30/16 10:48	07/01/16 19:49	1
Benzo[a]pyrene	ND		0.091		ug/L		06/30/16 10:48	07/01/16 19:49	1
Indeno[1,2,3-cd]pyrene	ND		0.091		ug/L		06/30/16 10:48	07/01/16 19:49	1
Dibenz(a,h)anthracene	ND		0.091		ug/L		06/30/16 10:48	07/01/16 19:49	1
Benzo[g,h,i]perylene	ND		0.091		ug/L		06/30/16 10:48	07/01/16 19:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	83		45 - 126	06/30/16 10:48	07/01/16 19:49	1
2-Fluorobiphenyl (Surr)	74		44 - 120	06/30/16 10:48	07/01/16 19:49	1
p-Terphenyl-d14	109		51 - 121	06/30/16 10:48	07/01/16 19:49	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.38		mg/L		06/30/16 08:50	06/30/16 11:14	1

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# Client Sample Results

Client: Chem Track  
Project/Site: Project 6313 DW Haines Tesoro

TestAmerica Job ID: 590-3771-1

**Client Sample ID: MHA-1**

**Date Collected: 06/27/16 11:15**

**Date Received: 06/29/16 10:10**

**Lab Sample ID: 590-3771-1**

**Matrix: Water**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Residual Range Organics (RRO) (C25-C36)	ND		0.38		mg/L		06/30/16 08:50	06/30/16 11:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	83		50 - 150				06/30/16 08:50	06/30/16 11:14	1
<i>n</i> -Triacontane-d62	81		50 - 150				06/30/16 08:50	06/30/16 11:14	1

**Client Sample ID: MHA-2**

**Date Collected: 06/27/16 11:40**

**Date Received: 06/29/16 10:10**

**Lab Sample ID: 590-3771-2**

**Matrix: Water**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	150		2.0		ug/L			06/29/16 13:41	10
Ethylbenzene	49		1.0		ug/L			06/29/16 11:54	1
<i>m,p</i> -Xylene	350		20		ug/L			06/29/16 13:41	10
<i>o</i> -Xylene	160		10		ug/L			06/29/16 13:41	10
Toluene	67		1.0		ug/L			06/29/16 11:54	1
Xylenes, Total	510		30		ug/L			06/29/16 13:41	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		70 - 125					06/29/16 11:54	1
1,2-Dichloroethane-d4 (Surr)	111		70 - 125					06/29/16 13:41	10
4-Bromofluorobenzene (Surr)	94		69 - 120					06/29/16 11:54	1
4-Bromofluorobenzene (Surr)	94		69 - 120					06/29/16 13:41	10
Dibromofluoromethane (Surr)	111		80 - 120					06/29/16 11:54	1
Dibromofluoromethane (Surr)	107		80 - 120					06/29/16 13:41	10
Toluene-d8 (Surr)	100		80 - 120					06/29/16 11:54	1
Toluene-d8 (Surr)	103		80 - 120					06/29/16 13:41	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	1900		1000		ug/L			06/29/16 13:41	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		68.7 - 141					06/29/16 13:41	10

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	8.1		0.090		ug/L		06/30/16 10:48	07/01/16 20:16	1
2-Methylnaphthalene	1.4		0.090		ug/L		06/30/16 10:48	07/01/16 20:16	1
1-Methylnaphthalene	1.1		0.090		ug/L		06/30/16 10:48	07/01/16 20:16	1
Acenaphthylene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:16	1
Acenaphthene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:16	1
Fluorene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:16	1
Phenanthrene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:16	1
Anthracene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:16	1
Fluoranthene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:16	1
Pyrene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:16	1
Benzo[a]anthracene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:16	1

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# Client Sample Results

Client: Chem Track  
Project/Site: Project 6313 DW Haines Tesoro

TestAmerica Job ID: 590-3771-1

**Client Sample ID: MHA-2**

**Date Collected: 06/27/16 11:40**

**Date Received: 06/29/16 10:10**

**Lab Sample ID: 590-3771-2**

**Matrix: Water**

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chrysene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:16	1
Benzo[b]fluoranthene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:16	1
Benzo[k]fluoranthene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:16	1
Benzo[a]pyrene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:16	1
Indeno[1,2,3-cd]pyrene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:16	1
Dibenz(a,h)anthracene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:16	1
Benzo[g,h,i]perylene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	68		45 - 126	06/30/16 10:48	07/01/16 20:16	1
2-Fluorobiphenyl (Surr)	60		44 - 120	06/30/16 10:48	07/01/16 20:16	1
p-Terphenyl-d14	85		51 - 121	06/30/16 10:48	07/01/16 20:16	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.38		mg/L		06/30/16 08:50	06/30/16 11:33	1
Residual Range Organics (RRO) (C25-C36)	ND		0.38		mg/L		06/30/16 08:50	06/30/16 11:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	89		50 - 150	06/30/16 08:50	06/30/16 11:33	1
n-Triacontane-d62	87		50 - 150	06/30/16 08:50	06/30/16 11:33	1

**Client Sample ID: MHA-3**

**Date Collected: 06/27/16 12:00**

**Date Received: 06/29/16 10:10**

**Lab Sample ID: 590-3771-3**

**Matrix: Water**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.77		0.20		ug/L			06/29/16 14:24	1
Ethylbenzene	ND		1.0		ug/L			06/29/16 14:24	1
m,p-Xylene	ND		2.0		ug/L			06/29/16 14:24	1
o-Xylene	ND		1.0		ug/L			06/29/16 14:24	1
Toluene	ND		1.0		ug/L			06/29/16 14:24	1
Xylenes, Total	ND		3.0		ug/L			06/29/16 14:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	112		70 - 125		06/29/16 14:24	1
4-Bromofluorobenzene (Surr)	98		69 - 120		06/29/16 14:24	1
Dibromofluoromethane (Surr)	107		80 - 120		06/29/16 14:24	1
Toluene-d8 (Surr)	102		80 - 120		06/29/16 14:24	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		100		ug/L			06/29/16 14:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		68.7 - 141		06/29/16 14:24	1

TestAmerica Spokane

# Client Sample Results

Client: Chem Track  
Project/Site: Project 6313 DW Haines Tesoro

TestAmerica Job ID: 590-3771-1

**Client Sample ID: MHA-3**

**Date Collected: 06/27/16 12:00**

**Date Received: 06/29/16 10:10**

**Lab Sample ID: 590-3771-3**

**Matrix: Water**

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:42	1
2-Methylnaphthalene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:42	1
1-Methylnaphthalene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:42	1
Acenaphthylene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:42	1
Acenaphthene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:42	1
Fluorene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:42	1
Phenanthrene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:42	1
Anthracene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:42	1
Fluoranthene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:42	1
Pyrene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:42	1
Benzo[a]anthracene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:42	1
Chrysene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:42	1
Benzo[b]fluoranthene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:42	1
Benzo[k]fluoranthene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:42	1
Benzo[a]pyrene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:42	1
Indeno[1,2,3-cd]pyrene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:42	1
Dibenz(a,h)anthracene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:42	1
Benzo[g,h,i]perylene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 20:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	82		45 - 126	06/30/16 10:48	07/01/16 20:42	1
2-Fluorobiphenyl (Surr)	74		44 - 120	06/30/16 10:48	07/01/16 20:42	1
p-Terphenyl-d14	97		51 - 121	06/30/16 10:48	07/01/16 20:42	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.38		mg/L		06/30/16 08:50	06/30/16 11:51	1
Residual Range Organics (RRO) (C25-C36)	ND		0.38		mg/L		06/30/16 08:50	06/30/16 11:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	89		50 - 150	06/30/16 08:50	06/30/16 11:51	1
n-Triacontane-d62	91		50 - 150	06/30/16 08:50	06/30/16 11:51	1

**Client Sample ID: TB-27Jun16**

**Date Collected: 06/27/16 12:22**

**Date Received: 06/29/16 10:10**

**Lab Sample ID: 590-3771-4**

**Matrix: Water**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.20		ug/L			06/29/16 12:37	1
Ethylbenzene	ND		1.0		ug/L			06/29/16 12:37	1
m,p-Xylene	ND		2.0		ug/L			06/29/16 12:37	1
o-Xylene	ND		1.0		ug/L			06/29/16 12:37	1
Toluene	ND		1.0		ug/L			06/29/16 12:37	1
Xylenes, Total	ND		3.0		ug/L			06/29/16 12:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	112		70 - 125		06/29/16 12:37	1
4-Bromofluorobenzene (Surr)	101		69 - 120		06/29/16 12:37	1

TestAmerica Spokane

# Client Sample Results

Client: Chem Track  
Project/Site: Project 6313 DW Haines Tesoro

TestAmerica Job ID: 590-3771-1

**Client Sample ID: TB-27Jun16**

**Date Collected: 06/27/16 12:22**

**Date Received: 06/29/16 10:10**

**Lab Sample ID: 590-3771-4**

**Matrix: Water**

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	111		80 - 120		06/29/16 12:37	1
Toluene-d8 (Surr)	97		80 - 120		06/29/16 12:37	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		100		ug/L			06/29/16 12:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		68.7 - 141		06/29/16 12:37	1

# QC Sample Results

Client: Chem Track  
Project/Site: Project 6313 DW Haines Tesoro

TestAmerica Job ID: 590-3771-1

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

Lab Sample ID: MB 590-7228/5

Matrix: Water

Analysis Batch: 7228

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.20		ug/L			06/29/16 09:03	1
Ethylbenzene	ND		1.0		ug/L			06/29/16 09:03	1
m,p-Xylene	ND		2.0		ug/L			06/29/16 09:03	1
o-Xylene	ND		1.0		ug/L			06/29/16 09:03	1
Toluene	ND		1.0		ug/L			06/29/16 09:03	1
Xylenes, Total	ND		3.0		ug/L			06/29/16 09:03	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		70 - 125		06/29/16 09:03	1
4-Bromofluorobenzene (Surr)	92		69 - 120		06/29/16 09:03	1
Dibromofluoromethane (Surr)	105		80 - 120		06/29/16 09:03	1
Toluene-d8 (Surr)	98		80 - 120		06/29/16 09:03	1

Lab Sample ID: LCS 590-7228/1003

Matrix: Water

Analysis Batch: 7228

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	8.89		ug/L		89	80 - 120
Ethylbenzene	10.0	9.30		ug/L		93	80 - 120
m,p-Xylene	10.0	9.40		ug/L		94	80 - 120
o-Xylene	10.0	9.28		ug/L		93	80 - 120
Toluene	10.0	8.91		ug/L		89	80 - 123

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	119		70 - 125
4-Bromofluorobenzene (Surr)	93		69 - 120
Dibromofluoromethane (Surr)	107		80 - 120
Toluene-d8 (Surr)	98		80 - 120

Lab Sample ID: LCSD 590-7228/6

Matrix: Water

Analysis Batch: 7228

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	10.0	9.00		ug/L		90	80 - 120	1	25
Ethylbenzene	10.0	9.25		ug/L		92	80 - 120	1	25
m,p-Xylene	10.0	9.74		ug/L		97	80 - 120	4	25
o-Xylene	10.0	9.41		ug/L		94	80 - 120	1	25
Toluene	10.0	9.14		ug/L		91	80 - 123	3	25

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	111		70 - 125
4-Bromofluorobenzene (Surr)	99		69 - 120
Dibromofluoromethane (Surr)	108		80 - 120
Toluene-d8 (Surr)	100		80 - 120

TestAmerica Spokane



# QC Sample Results

Client: Chem Track  
Project/Site: Project 6313 DW Haines Tesoro

TestAmerica Job ID: 590-3771-1

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

Lab Sample ID: 590-3771-D-3 MS

Matrix: Water

Analysis Batch: 7228

Client Sample ID: 590-3771-D-3 MS

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.79		10.0	10.1		ug/L		93	50 - 150
Ethylbenzene	ND		10.0	10.1		ug/L		101	50 - 150
m,p-Xylene	ND		10.0	10.5		ug/L		105	50 - 150
o-Xylene	ND		10.0	9.97		ug/L		100	50 - 150
Toluene	ND		10.0	9.81		ug/L		98	50 - 150

Surrogate	MS %Recovery	MS Qualifier	MS Limits
1,2-Dichloroethane-d4 (Surr)	117		70 - 125
4-Bromofluorobenzene (Surr)	103		69 - 120
Dibromofluoromethane (Surr)	105		80 - 120
Toluene-d8 (Surr)	98		80 - 120

Lab Sample ID: 590-3771-1 DU

Matrix: Water

Analysis Batch: 7228

Client Sample ID: MHA-1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Benzene	130		138		ug/L		3	20
Ethylbenzene	43		45.3		ug/L		4	20
m,p-Xylene	310		312		ug/L		2	20
o-Xylene	150		154		ug/L		4	20
Toluene	64		64.9		ug/L		1	20
Xylenes, Total	450		466		ug/L		3	20

Surrogate	DU %Recovery	DU Qualifier	DU Limits
1,2-Dichloroethane-d4 (Surr)	112		70 - 125
4-Bromofluorobenzene (Surr)	95		69 - 120
Dibromofluoromethane (Surr)	108		80 - 120
Toluene-d8 (Surr)	99		80 - 120

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

Lab Sample ID: MB 590-7233/5

Matrix: Water

Analysis Batch: 7233

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		100		ug/L			06/29/16 09:03	1

Surrogate	MB %Recovery	MB Qualifier	MB Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	92		68.7 - 141		06/29/16 09:03	1

TestAmerica Spokane

# QC Sample Results

Client: Chem Track  
Project/Site: Project 6313 DW Haines Tesoro

TestAmerica Job ID: 590-3771-1

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

Lab Sample ID: LCS 590-7233/1004

Matrix: Water

Analysis Batch: 7233

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

			Spike	LCS	LCS				%Rec.		
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits		
Gasoline Range Organics [C6 - C10]			990	873		ug/L	-	88	60 - 120		
Surrogate	LCS	LCS									
	%Recovery	Qualifier	Limits								
4-Bromofluorobenzene (Surr)	99		68.7 - 141								

Lab Sample ID: LCSD 590-7233/1011

Matrix: Water

Analysis Batch: 7233

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analysis Data: 1200											
Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline Range Organics [C6 - C10]			990	797		ug/L	-	80	60 - 120	9	20
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits								
4-Bromofluorobenzene (Surr)	96		68.7 - 141								

Lab Sample ID: 590-3771-3 MS

Matrix: Water

Analysis Batch: 7233

Client Sample ID: MHA-3

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Gasoline Range Organics [C6 - C10]	ND		990	926		ug/L		91	55.6 - 126		
Surrogate	MS %Recovery	MS Qualifier	Limits								
4-Bromofluorobenzene (Surr)	97		68.7 - 141								

Lab Sample ID: 590-3771-1 DU

Matrix: Water

Analysis Batch: 7233

Client Sample ID: MHA-1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Gasoline Range Organics [C6 - C10]	1700		1810		ug/L	-	5	35
Surrogate	DU %Recovery	DU Qualifier	Limits					
4-Bromofluorobenzene (Surr)	95		68.7 - 141					

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 590-7263/1-A

Matrix: Water

Analysis Batch: 7287

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 7263

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 17:36	1
2-Methylnaphthalene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 17:36	1

TestAmerica Spokane

# QC Sample Results

Client: Chem Track  
Project/Site: Project 6313 DW Haines Tesoro

TestAmerica Job ID: 590-3771-1

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: MB 590-7263/1-A

Matrix: Water

Analysis Batch: 7287

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 7263

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 17:36	1
Acenaphthylene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 17:36	1
Acenaphthene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 17:36	1
Fluorene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 17:36	1
Phenanthrene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 17:36	1
Anthracene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 17:36	1
Fluoranthene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 17:36	1
Pyrene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 17:36	1
Benzo[a]anthracene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 17:36	1
Chrysene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 17:36	1
Benzo[b]fluoranthene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 17:36	1
Benzo[k]fluoranthene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 17:36	1
Benzo[a]pyrene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 17:36	1
Indeno[1,2,3-cd]pyrene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 17:36	1
Dibenz(a,h)anthracene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 17:36	1
Benzo[g,h,i]perylene	ND		0.090		ug/L		06/30/16 10:48	07/01/16 17:36	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	107		45 - 126	06/30/16 10:48	07/01/16 17:36	1
2-Fluorobiphenyl (Surr)	97		44 - 120	06/30/16 10:48	07/01/16 17:36	1
p-Terphenyl-d14	96		51 - 121	06/30/16 10:48	07/01/16 17:36	1

Lab Sample ID: LCS 590-7263/2-B

Matrix: Water

Analysis Batch: 7287

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 7263

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	1.60	1.15		ug/L		72	52 - 121
Fluorene	1.60	1.29		ug/L		80	59 - 141
Chrysene	1.60	1.54		ug/L		96	69 - 138
Indeno[1,2,3-cd]pyrene	1.60	1.50		ug/L		94	73 - 146

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5	83		45 - 126
2-Fluorobiphenyl (Surr)	74		44 - 120
p-Terphenyl-d14	100		51 - 121

Lab Sample ID: LCS 590-7263/3-B

Matrix: Water

Analysis Batch: 7287

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 7263

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	1.60	1.23		ug/L		77	52 - 121
Fluorene	1.60	1.36		ug/L		85	59 - 141
Chrysene	1.60	1.53		ug/L		96	69 - 138
Indeno[1,2,3-cd]pyrene	1.60	1.56		ug/L		97	73 - 146

TestAmerica Spokane

# QC Sample Results

Client: Chem Track  
Project/Site: Project 6313 DW Haines Tesoro

TestAmerica Job ID: 590-3771-1

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 590-7263/3-B

Matrix: Water

Analysis Batch: 7287

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 7263

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5	81		45 - 126
2-Fluorobiphenyl (Surr)	67		44 - 120
p-Terphenyl-d14	92		51 - 121

Lab Sample ID: LCS 590-7263/4-B

Matrix: Water

Analysis Batch: 7287

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 7263

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	1.60	1.19		ug/L		75	52 - 121
Fluorene	1.60	1.36		ug/L		85	59 - 141
Chrysene	1.60	1.52		ug/L		95	69 - 138
Indeno[1,2,3-cd]pyrene	1.60	1.51		ug/L		94	73 - 146

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5	85		45 - 126
2-Fluorobiphenyl (Surr)	75		44 - 120
p-Terphenyl-d14	98		51 - 121

Lab Sample ID: LCSD 590-7263/5-A

Matrix: Water

Analysis Batch: 7287

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 7263

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	1.60	1.23		ug/L		77	52 - 121	3	30
Fluorene	1.60	1.32		ug/L		82	59 - 141	3	30
Chrysene	1.60	1.53		ug/L		96	69 - 138	1	30
Indeno[1,2,3-cd]pyrene	1.60	1.52		ug/L		95	73 - 146	1	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Nitrobenzene-d5	90		45 - 126
2-Fluorobiphenyl (Surr)	80		44 - 120
p-Terphenyl-d14	100		51 - 121

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

Lab Sample ID: MB 590-7251/1-A

Matrix: Water

Analysis Batch: 7253

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 7251

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.38		mg/L		06/30/16 08:50	06/30/16 10:37	1
Residual Range Organics (RRO) (C25-C36)	ND		0.38		mg/L		06/30/16 08:50	06/30/16 10:37	1

TestAmerica Spokane

# QC Sample Results

Client: Chem Track  
Project/Site: Project 6313 DW Haines Tesoro

TestAmerica Job ID: 590-3771-1

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

Lab Sample ID: MB 590-7251/1-A

Matrix: Water

Analysis Batch: 7253

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 7251

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	92		50 - 150	06/30/16 08:50	06/30/16 10:37	1
n-Triacontane-d62	87		50 - 150	06/30/16 08:50	06/30/16 10:37	1

Lab Sample ID: LCS 590-7251/2-A

Matrix: Water

Analysis Batch: 7253

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 7251

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics (DRO) (C10-C25)	1.61	1.49		mg/L		92	75 - 125
Residual Range Organics (RRO) (C25-C36)	1.60	1.65		mg/L		103	60 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	95		50 - 150
n-Triacontane-d62	94		50 - 150

Lab Sample ID: LCSD 590-7251/3-A

Matrix: Water

Analysis Batch: 7253

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 7251

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics (DRO) (C10-C25)	1.61	1.44		mg/L		89	75 - 125	3	20
Residual Range Organics (RRO) (C25-C36)	1.60	1.57		mg/L		98	60 - 120	5	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
o-Terphenyl	92		50 - 150
n-Triacontane-d62	91		50 - 150

TestAmerica Spokane

# Lab Chronicle

Client: Chem Track  
Project/Site: Project 6313 DW Haines Tesoro

TestAmerica Job ID: 590-3771-1

**Client Sample ID: MHA-1**

**Date Collected: 06/27/16 11:15**

**Date Received: 06/29/16 10:10**

**Lab Sample ID: 590-3771-1**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		10	43 mL	43 mL	7228	06/29/16 12:58	CBW	TAL SPK
Total/NA	Analysis	AK101		10	43 mL	43 mL	7233	06/29/16 12:58	CBW	TAL SPK
Total/NA	Prep	3510C			247.4 mL	2 mL	7263	06/30/16 10:48	EAF	TAL SPK
Total/NA	Analysis	8270D SIM		1	247.4 mL	2 mL	7287	07/01/16 19:49	NMI	TAL SPK
Total/NA	Prep	3510C			247.2 mL	2 mL	7251	06/30/16 08:50	EAF	TAL SPK
Total/NA	Analysis	AK102 & 103		1	247.2 mL	2 mL	7255	06/30/16 11:14	NMI	TAL SPK

**Client Sample ID: MHA-2**

**Date Collected: 06/27/16 11:40**

**Date Received: 06/29/16 10:10**

**Lab Sample ID: 590-3771-2**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	7228	06/29/16 11:54	CBW	TAL SPK
Total/NA	Analysis	8260C		10	43 mL	43 mL	7228	06/29/16 13:41	CBW	TAL SPK
Total/NA	Analysis	AK101		10	43 mL	43 mL	7233	06/29/16 13:41	CBW	TAL SPK
Total/NA	Prep	3510C			249.2 mL	2 mL	7263	06/30/16 10:48	EAF	TAL SPK
Total/NA	Analysis	8270D SIM		1	249.2 mL	2 mL	7287	07/01/16 20:16	NMI	TAL SPK
Total/NA	Prep	3510C			249.7 mL	2 mL	7251	06/30/16 08:50	EAF	TAL SPK
Total/NA	Analysis	AK102 & 103		1	249.7 mL	2 mL	7255	06/30/16 11:33	NMI	TAL SPK

**Client Sample ID: MHA-3**

**Date Collected: 06/27/16 12:00**

**Date Received: 06/29/16 10:10**

**Lab Sample ID: 590-3771-3**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	7228	06/29/16 14:24	CBW	TAL SPK
Total/NA	Analysis	AK101		1	43 mL	43 mL	7233	06/29/16 14:24	CBW	TAL SPK
Total/NA	Prep	3510C			249.3 mL	2 mL	7263	06/30/16 10:48	EAF	TAL SPK
Total/NA	Analysis	8270D SIM		1	249.3 mL	2 mL	7287	07/01/16 20:42	NMI	TAL SPK
Total/NA	Prep	3510C			248.9 mL	2 mL	7251	06/30/16 08:50	EAF	TAL SPK
Total/NA	Analysis	AK102 & 103		1	248.9 mL	2 mL	7255	06/30/16 11:51	NMI	TAL SPK

**Client Sample ID: TB-27Jun16**

**Date Collected: 06/27/16 12:22**

**Date Received: 06/29/16 10:10**

**Lab Sample ID: 590-3771-4**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	7228	06/29/16 12:37	CBW	TAL SPK
Total/NA	Analysis	AK101		1	43 mL	43 mL	7233	06/29/16 12:37	CBW	TAL SPK

## Laboratory References:

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

TestAmerica Spokane

# Certification Summary

Client: Chem Track  
Project/Site: Project 6313 DW Haines Tesoro

TestAmerica Job ID: 590-3771-1

## Laboratory: TestAmerica Spokane

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-071	10-31-16
Washington	State Program	10	C569	01-06-17

## Laboratory: TestAmerica Seattle

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
L-A-B	DoD ELAP		L2236	01-19-19

## Method Summary

Client: Chem Track  
Project/Site: Project 6313 DW Haines Tesoro

TestAmerica Job ID: 590-3771-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL SPK
AK101	Alaska - Gasoline Range Organics (GC/MS)	ADEC	TAL SPK
8270D SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	TAL SPK
AK102 & 103	Alaska - Diesel Range Organics & Residual Range Organics (GC)	ADEC	TAL SPK

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



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

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503-906-9200 FAX 906-9210  
907-563-9200 FAX 563-9210

7/5/2016

## CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: <u>ChemTrack Alaska, Inc.</u>		INVOICE TO: <u>Lori Novak</u> <u>- same address -</u> <u>email - lori@chemtrack.net</u>		<b>TURNAROUND REQUEST</b> in Business Days * Organic & Inorganic Analyses <input type="checkbox"/> 10 <input type="checkbox"/> 7 <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 STD. Petroleum Hydrocarbon Analyses <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 STD. <input type="checkbox"/> OTHER Specify: _____ * Turnaround Requests less than standard may incur Rush Charges.											
REPORT TO: <u>Steven McCain</u> ADDRESS: <u>11711 S. Gambell St.</u> <u>Anchorage, AK 99515</u> PHONE: <u>907-341-2511</u> FAX: <u>907-522-3154</u>		P.O. NUMBER: <u>6483-334244</u>													
PROJECT NAME: <u>DW Haines Tesoro</u>		PRESERVATIVE													
PROJECT NUMBER: <u>6483</u>		REQUESTED ANALYSES													
SAMPLED BY: <u>Steven McCain</u>															
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	GRO	AKIPI	BTX	BZG	DRD	AKIPI	RRO	AKIPI	PAH	BZG	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1 MHA-1	27JUN16 / 11:15am	X	X	X	X	X	X	X	X	X	X	W	14		
2 MHA-2	27JUN16 / 11:44 am	X	X	X	X	X	X	X	X	X	X	W	14		
3 MHA-3	27JUN16 / 12:44 noon	X	X	X	X	X	X	X	X	X	X	W	14		
4 TB-27JUN16	27JUN16 / 12:22 PM	X	X									N/A	6	Trip Blank	
5															
6															
7															
8															
9															
10															
RELEASED BY: <u>SE/LC</u>		DATE: <u>28JUN16</u>		RECEIVED BY: <u>Sheila Kratz</u>		DATE: <u>6/29/16</u>									
PRINT NAME: <u>STEVEN L. MCCAIN</u> FIRM: <u>ChemTrack</u>		TIME: <u>10:10 am</u>		PRINT NAME: <u>Sheila Kratz</u>		FIRM: <u>TADPOK</u>									
RELEASED BY:		DATE:		RECEIVED BY:		DATE:									
PRINT NAME:		TIME:		PRINT NAME:		TIME:									
ADDITIONAL REMARKS: <u>Please calculate TAH and TAGH. Email PDF &amp; Excel files to info@chemtrack.net</u>															



590-3771 Chain of Custody

TEMP: 21.0 PAGE 1 OF 1  
JL003 AL-1000 (0612)

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

5755 8<sup>th</sup> Street East, Tacoma, WA 98424-1317  
 11922 E. First Ave., Spokane WA 99206-5302  
 9405 SW Nimbus Ave., Beaverton, OR 97008-7145  
 2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119

253-922-2310 FAX 922-5047  
 509-924-9200 FAX 924-9290  
 503-906-9200 FAX 906-9210  
 907-563-9200 FAX 563-9210

7/5/2016

## CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: ChemTrack Alaska Inc		INVOICE TO: Lori Novak - same address - email - lori@chemtrack.net		<b>TURNAROUND REQUEST</b> in Business Days * Organic & Inorganic Analyses 10 7 5 4 3 2 1 <1 STD. Petroleum Hydrocarbon Analyses <input checked="" type="checkbox"/> 4 3 2 1 <1 STD. <b>OTHER</b> Specify: * Turnaround Requests less than standard may incur Rush Charges.			
REPORT TO: Steven McCain		P.O. NUMBER: 6023-336266					
ADDRESS: 11711 S. Gambell ST. Anchorage, AK 99515		PRESERVATIVE					
PHONE: 907-349-7511 FAX: 907-522-3156		REQUESTED ANALYSES					
PROJECT NAME: DW Haines Tesoro		PROJECT NUMBER: 6083					
SAMPLED BY: Steven McCain							
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	GRO AK-101	BTEX BZG6	DRO AK-102	RRO AK-103	PAH BZG6	
1 MHA-1	27JUN16 / 11:15 am	X	X	X	X	X	
2 MHA-2	27JUN16 / 11:46 am	X	X	X	X	X	
3 MHA-3	27JUN16 / 12:06 noon	X	X	X	X	X	
4 TB-27JUN16	27JUN16 / 12:22 pm	X	X				
5							
6							
7							
8							
9							
10							
RELEASED BY: [Signature]		DATE: 28JUN16		RECEIVED BY: [Signature]		DATE: 6/29/16	
PRINT NAME: STEVEN L. MCCAIN FIRM: ChemTrack		TIME: 10:16 am		PRINT NAME: Sheila Kozak		FIRM: TAC/DOR	
RELEASED BY:		DATE:		RECEIVED BY:		DATE:	
PRINT NAME:		TIME:		PRINT NAME:		TIME:	
ADDITIONAL REMARKS: Please calculate TAH and TAGH. Email PDF & Excel files to info@chemtrack.net							
						TEMP: 21°C	PAGE 1 OF 1

TAL-1000 (0612)

## Login Sample Receipt Checklist

Client: Chem Track

Job Number: 590-3771-1

Login Number: 3771

List Number: 1

Creator: Kratz, Sheila J

List Source: TestAmerica Spokane

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Laboratory Data Review Checklist

Completed by:

Title:  Date:

CS Report Name:  Report Date:

Consultant Firm:

Laboratory Name:  Laboratory Report Number:

ADEC File Number:  ADEC RecKey Number:

### 1. Laboratory

- a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?  
☒ Yes ☐ No ☐ NA (Please explain.)      Comments:

- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?  
☒ Yes ☐ No ☐ NA (Please explain.)      Comments:

### 2. Chain of Custody (COC)

- a. COC information completed, signed, and dated (including released/received by)?  
☒ Yes ☐ No ☐ NA (Please explain.)      Comments:

- b. Correct analyses requested?  
☒ Yes ☐ No ☐ NA (Please explain.)      Comments:

### 3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt (4° – 2°C)?  
☒ Yes ☐ No ☐ NA (Please explain.)      Comments:

- b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?  
☒ Yes ☐ No ☐ NA (Please explain.)      Comments:

- c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?  
☒ Yes ☐ No ☐ NA (Please explain.) Comments:

All samples were received in good condition, properly preserved and on ice.

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?  
☐ Yes ☐ No ☒ NA (Please explain.) Comments:

No discrepancies noted.

- e. Data quality or usability affected? (Please explain.) Comments:

Data quality acceptable.

#### 4. Case Narrative

- a. Present and understandable?  
☒ Yes ☐ No ☐ NA (Please explain.) Comments:

- b. Discrepancies, errors or QC failures identified by the lab?  
☐ Yes ☐ No ☒ NA (Please explain.) Comments:

No discrepancies noted.

- c. Were all corrective actions documented?  
☐ Yes ☐ No ☒ NA (Please explain.) Comments:

No corrective actions needed.

- d. What is the effect on data quality/usability according to the case narrative? Comments:

Data quality acceptable.

#### 5. Samples Results

- a. Correct analyses performed/reported as requested on COC?  
☒ Yes ☐ No ☐ NA (Please explain.) Comments:

- b. All applicable holding times met?  
☒ Yes ☐ No ☐ NA (Please explain.) Comments:

- c. All soils reported on a dry weight basis?  
☐ Yes ☐ No ☒ NA (Please explain.)

Comments:

No soil samples were collected.

- d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

- e. Data quality or usability affected?

Comments:

Data quality acceptable.

## 6. QC Samples

### a. Method Blank

- i. One method blank reported per matrix, analysis and 20 samples?

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

- ii. All method blank results less than PQL?

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

- iii. If above PQL, what samples are affected?

Comments:

No method blank results above PQL.

- iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

☐ Yes ☐ No ☒ NA (Please explain.)

Comments:

No affected samples in this data set.

- v. Data quality or usability affected? (Please explain.)

Comments:

Data quality acceptable.

### b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

- ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

☐ Yes ☐ No ☒ NA (Please explain.)

Comments:

No metals analyzed in this data set.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☐ Yes ☐ No ☒ NA (Please explain.)

Comments:

No affected samples in this data set.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality acceptable.

c. Surrogates – Organics Only

- i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

☐ Yes ☐ No ☒ NA (Please explain.)

Comments:

No samples with failed surrogate recoveries.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

No organics only analyses.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

iii. All results less than PQL?

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

iv. If above PQL, what samples are affected?

Comments:

Trip blank sample (TB-27Jun16) had all results <PQL. No samples affected.

v. Data quality or usability affected? (Please explain.)

Comments:

Data quality acceptable.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:



ii. Submitted blind to lab?

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration

$R_2$  = Field Duplicate Concentration

☐ Yes ☒ No ☐ NA (Please explain.)

Comments:

2-Methylnaphthalene has a RPD of 30.3% - Just at or slightly over for water.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality acceptable.

f. Decontamination or Equipment Blank (If not used explain why).

☐ Yes ☒ No ☐ NA (Please explain.)

Comments:

Clean disposable sampling spoons and gloves were used at each sampling location.

i. All results less than PQL?

☐ Yes ☐ No ☒ NA (Please explain.)

Comments:

No decontamination nor equipment blank sample.

ii. If above PQL, what samples are affected?

Comments:

No decontamination nor equipment blank sample. No samples affected.

iii. Data quality or usability affected? (Please explain.)

Comments:

Data quality acceptable.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

☐ Yes ☐ No ☒ NA (Please explain.)

Comments:

No other data flags/qualifiers.

<b>Photo. Number</b>	005
<b>Description</b>	Water sample collection influent
<b>Direction of View</b>	View down
<b>Date</b>	11/2/2016
<b>Contractor/ Photographer</b>	CT/Chris McDonnell



<b>Photo. Number</b>	006
<b>Description</b>	Water sample collection influent
<b>Direction of View</b>	View down
<b>Date</b>	11/2/2016
<b>Contractor/ Photographer</b>	CT/Chris McDonnell



Photo. Number	007
Description	Hot water high pressure 6-inch cleanouts
Direction of View	View to the northwest
Date	6/27/2016
Contractor/ Photographer	CT/Steven McCain



Photo. Number	008
Description	Removing top ~6-inches of iron bacteria carbon from polisher filters for disposal
Direction of View	View down
Date	10/16/2015
Time	1019
Contractor/ Photographer	CT/Steven McCain





11 NOV 16

Chris Mc'Donnell & Steven Mc'Lain  
check in Alaska Air Anchorage @ 18:20 Hrs  
conf. code UYI HDT Flight # 76 Take off @ 19:50 Hrs  
land Juneau ~ 21:30 pm  
Pickup luggage (gear & sample cooler)  
Check in @ Extended Stay ~ 22:00 Hrs  
Walk to Dominos Pizza (only thing open)

12 NOV 16

Check out @ 07:30 Hrs, check in Wings @ 07:45 Hrs  
Take off @ 08:30 Hrs, land Haines ~ 09:00 Hrs  
Fred Gray DW picks us up, take to Capt. Choice  
pickup rental truck Black 2005 Dodge ES665Z  
check equip/supplies staged @ DW Latak  
Warehouse (pumps, hose, auger, tote, tools, ...)  
Will pack & ship out to Anchorage  
Open Bioswale & Groundwater Manhole (over  
Bioswale flowing (Trickle), screen intact  
Groundwater system flowing (Trickle), gravity  
flow out Two GACs in parallel, Sump pump  
running AOK float switch off AOK. 11:15 Hrs  
Inspect 3 wells both 3/4 Bailer full, bail into 5 gal bucket  
Pickup supplies @ Lynden (new Activated  
carbon, tools, hose, jets, etc) ~ 11:30 Hrs  
Place GEL packs (sample cooler) in DW  
shop freezer

Unpack gear/tools/supplies  
Prep. sample jars/labels  
Inspect Muls - both <sup>ALL 3 SAC</sup> wtr, & recharge (12:35 Hrs)  
Setup Pressure Washer & garden hose to  
fortest & E cleanout 6" φ  
Check former DW storage across  
street for staged equip/supplies/GACs  
Lunch @ Bamboo Room 14:00 Hrs  
Pickup more garden hose @ DW Latak <sup>15:00 Hrs</sup>  
Purchase 3/8" φ air hose (200 ft) <sup>warehouse</sup> 15:15  
2 pack pneumatic plugs & coupler \$63.50  
on DW western account.  
2 GACs in series, running in parallel  $\rightarrow 10 \rightarrow 2 \rightarrow 1$  (3)  
flowrate @ 1.6 GPM / 7 min 50 sec  $\rightarrow 0.5454$  GPM  
1.6 GPM / 7.8333 min  $\rightarrow 0.1286$  GPM <sup>SAC III</sup>  
Pretty slow, steady. Manhole walls  
and hoses show buildup of iron  
bacteria/staining @ consistent  
level ~ 6" above bottom of manhole  
Check 6" φ invert (inflow to manhole)  
wtr level @ ~ 24" above bottom of  
inner 6" φ invert  $\rightarrow 24"$   
T.M.T. seems backed up, inspect GACs  
~ 1/4" buildup of orange iron deposits  
at top carbon, #1 and #2 in series <sup>lets in the rain</sup>



Sample ID	MHA-1	MHA-2	MHA-3	TBφ2NOV16A	TBφ2NOV16B
DATE	φ2NOV16			φ2NOV16	φ2NOV16
TIME	15:55	16:05	16:15	16:25	16:28
LOCATION	DW-Haines Tesorero			DW-Haines Tesorero	DW-Haines Tesorero
SOURCE	Manhole A, Untreated Groundwater	Duplicate of MHA-1	Manhole A, Treated Groundwater	N/A Trip Blank	Trip Blank
EQUIPMENT	None needed, water gravity flow			None	None
PPE	Rubber Boots, High-Vis Vest, Nitrile Gloves			Rubber Boots, High-Vis Vest, Nitrile Gloves	Boots, High-Vis, Nitrile Gloves
PERSONNEL	Steven McCain Chris McDermott			Steven McCain Chris McDermott	Steven McCain Chris McDermott
WEATHER	43°F overcast			43°F overcast	43°F overcast
FIELDSCREEN	N/A			N/A	N/A
TYPE	Grab		Grab		
MATRIX	Groundwater		Groundwater		
ANALYSIS	GRO-AK101 BTX-SW8200B DRO/RRO-AK102/103		GRO-AK101 BTX-SW8200B DRO-AK102 RRO-AK103	GRO-AK101 <del>BTX-SW8200B</del> SME	BTX(8200B)
PRESERVATIVE	GRO BTX DRO RRO HCL		GRO BTX DRO RRO HCL	GRO BTX SME HCL	BTX-HCL
# and type of container	GRO-3ea 4φ mL VOA BTX-3ea 4φ mL VOA DRO/RRO-2ea 25φ mL Amber		GRO-3ea 4φ mL VOA BTX-3ea 4φ mL VOA DRO/RRO-2ea 25φ mL Amber	GRO-3ea 4φ mL VOA BTX-SME	BTX-3ea 4φ mL VOA
LABORATORY	SGS			SGS	SGS
DATE SHIPPED	φ4NOV16			φ4NOV16	φ4NOV16
LOC#	1166668			1166668	1166668
Sketch	N/A	N/A	N/A	N/A	N/A
SIGNATURE	St/M	St/M	St/M	St/M	St/M

Rite in the Rain



φ 2 Nov 16

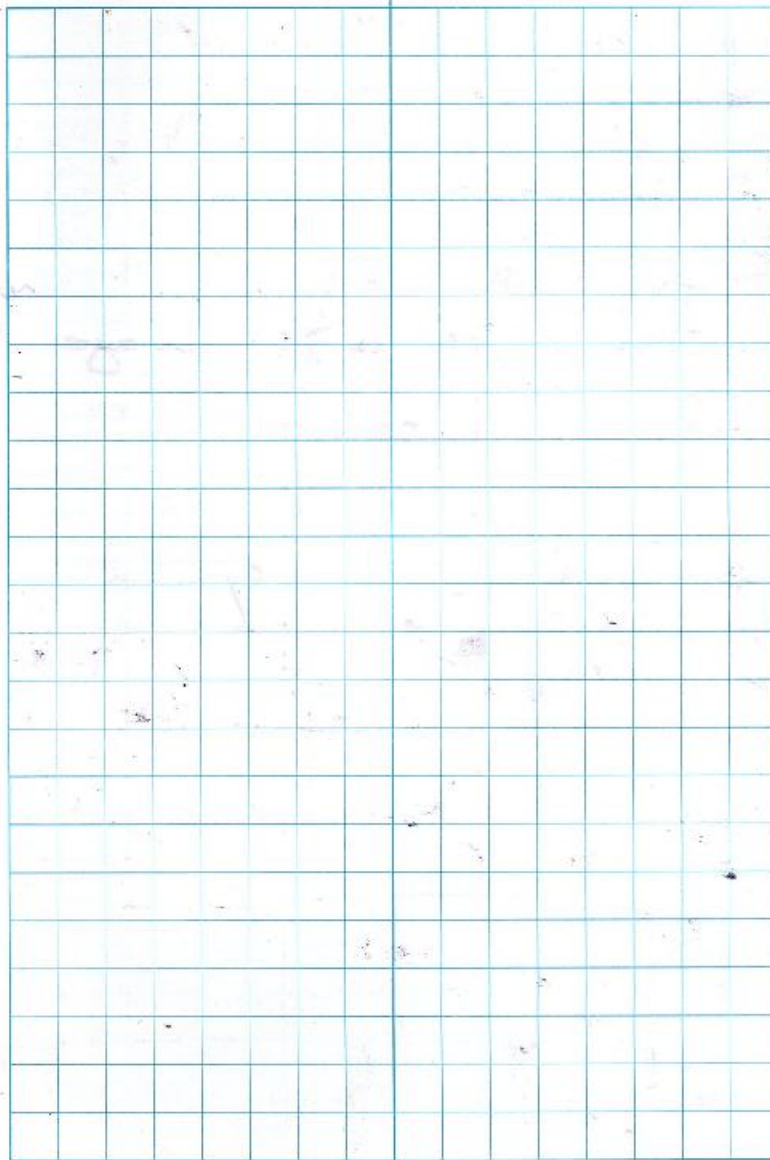
Run  $3/8"$  hose  $\rightarrow 1/2"$  hose w/ quick connects  $\rightarrow$  nozzle/jet on end down cleanouts. Work back & forth to clean out  $6"$   $\phi$  perforated groundwater intakes.

Getting dark  $\sim 18:30$  Hrs. Cleanup return. Hotsy to DW garage pack hoses, etc.  
Quit @  $\sim 19:00$  Hrs

φ 3 Nov 16

φ 7:30 Hrs check system. Appears to have been raining all night. GAC effluent flow rate @  $1$  GAC/3 min  $\phi$  sec  $\rightarrow$  groundwater not noticeably higher than  $\sim 24"$  above bottom of  $6"$   $\phi$  int.

BioBorde showing some retention possibly  
Clean out  $1\frac{1}{2}$  GACs carbon swap  $3\frac{1}{4}$  carbon into  $1\frac{1}{2}$   
New carbon  $3\frac{1}{4}$



Cheryl Fultz  
Delta Western  
PO Box 79018  
Seattle, King WA 98199

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<b>Work Order:</b>	1166668 6083 DW Haines Tesoro
<b>Client:</b>	Delta Western-Anchorage
<b>Report Date:</b>	November 14, 2016

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Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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.
!	Surrogate out of control limits.
B	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.
JL	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
M	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.



SGS Ref.# 1166668001  
Client Name Delta Western-Anchorage  
Project Name/# 6083 DW Haines Tesoro  
Client Sample ID MHA-1  
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 11/14/2016 15:26  
Collected Date/Time 11/02/2016 15:55  
Received Date/Time 11/04/2016 11:57  
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
-----------	---------	-----	-------	--------	--------------	------------------	-----------	---------------	------

**Volatile Fuels Department**

Gasoline Range Organics	0.231	0.100	mg/L	AK101	A		11/07/16	11/08/16	NRO
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**Surrogates**

4-Bromofluorobenzene (surr)	98		%	AK101	A	50-150	11/07/16	11/08/16	NRO
-----------------------------	----	--	---	-------	---	--------	----------	----------	-----

**Volatile GC/MS**

Benzene	17.6	0.400	ug/L	SW8260B	E		11/07/16	11/07/16	TJT
Ethylbenzene	10.0	1.00	ug/L	SW8260B	E		11/07/16	11/07/16	TJT
o-Xylene	22.9	1.00	ug/L	SW8260B	E		11/07/16	11/07/16	TJT
P & M -Xylene	59.0	2.00	ug/L	SW8260B	E		11/07/16	11/07/16	TJT
Toluene	12.5	1.00	ug/L	SW8260B	E		11/07/16	11/07/16	TJT

**Surrogates**

1,2-Dichloroethane-D4 (surr)	107		%	SW8260B	E	81-118	11/07/16	11/07/16	TJT
4-Bromofluorobenzene (surr)	102		%	SW8260B	E	85-114	11/07/16	11/07/16	TJT
Toluene-d8 (surr)	99.7		%	SW8260B	E	89-112	11/07/16	11/07/16	TJT





SGS Ref.# 1166668002  
Client Name Delta Western-Anchorage  
Project Name/# 6083 DW Haines Tesoro  
Client Sample ID MHA-2  
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 11/14/2016 15:26  
Collected Date/Time 11/02/2016 16:05  
Received Date/Time 11/04/2016 11:57  
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<b><u>Volatile Fuels Department</u></b>									
Gasoline Range Organics	0.214	0.100	mg/L	AK101	A		11/07/16	11/08/16	NRO
<b><u>Surrogates</u></b>									
4-Bromofluorobenzene (surr)	98.1		%	AK101	A	50-150	11/07/16	11/08/16	NRO
<b><u>Volatile GC/MS</u></b>									
Benzene	17.8	0.400	ug/L	SW8260B	E		11/07/16	11/07/16	TJT
Ethylbenzene	10.2	1.00	ug/L	SW8260B	E		11/07/16	11/07/16	TJT
o-Xylene	22.8	1.00	ug/L	SW8260B	E		11/07/16	11/07/16	TJT
P & M -Xylene	59.4	2.00	ug/L	SW8260B	E		11/07/16	11/07/16	TJT
Toluene	12.5	1.00	ug/L	SW8260B	E		11/07/16	11/07/16	TJT
<b><u>Surrogates</u></b>									
1,2-Dichloroethane-D4 (surr)	107		%	SW8260B	E	81-118	11/07/16	11/07/16	TJT
4-Bromofluorobenzene (surr)	101		%	SW8260B	E	85-114	11/07/16	11/07/16	TJT
Toluene-d8 (surr)	99.3		%	SW8260B	E	89-112	11/07/16	11/07/16	TJT



SGS Ref.# 1166668003  
Client Name Delta Western-Anchorage  
Project Name/# 6083 DW Haines Tesoro  
Client Sample ID MHA-3  
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 11/14/2016 15:26  
Collected Date/Time 11/02/2016 16:15  
Received Date/Time 11/04/2016 11:57  
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
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**Volatile Fuels Department**

Gasoline Range Organics	ND	0.100	mg/L	AK101	A		11/07/16	11/08/16	NRO
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**Surrogates**

4-Bromofluorobenzene (surr)	95		%	AK101	A	50-150	11/07/16	11/08/16	NRO
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**Volatile GC/MS**

Benzene	ND	0.400	ug/L	SW8260B	E		11/07/16	11/07/16	TJT
Ethylbenzene	ND	1.00	ug/L	SW8260B	E		11/07/16	11/07/16	TJT
o-Xylene	ND	1.00	ug/L	SW8260B	E		11/07/16	11/07/16	TJT
P & M -Xylene	ND	2.00	ug/L	SW8260B	E		11/07/16	11/07/16	TJT
Toluene	ND	1.00	ug/L	SW8260B	E		11/07/16	11/07/16	TJT

**Surrogates**

1,2-Dichloroethane-D4 (surr)	108		%	SW8260B	E	81-118	11/07/16	11/07/16	TJT
4-Bromofluorobenzene (surr)	102		%	SW8260B	E	85-114	11/07/16	11/07/16	TJT
Toluene-d8 (surr)	99.4		%	SW8260B	E	89-112	11/07/16	11/07/16	TJT



SGS Ref.# 1166668004  
Client Name Delta Western-Anchorage  
Project Name/# 6083 DW Haines Tesoro  
Client Sample ID TB02NOV16A+B  
Matrix Water (Surface, Eff., Ground)


Printed Date/Time 11/14/2016 15:26  
Collected Date/Time 11/02/2016 16:25  
Received Date/Time 11/04/2016 11:57  
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<b><u>Volatile Fuels Department</u></b>									
Gasoline Range Organics	ND	0.100	mg/L	AK101	A		11/07/16	11/08/16	NRO
<b><u>Surrogates</u></b>									
4-Bromofluorobenzene (surr)	97.8		%	AK101	A	50-150	11/07/16	11/08/16	NRO
<b><u>Volatile GC/MS</u></b>									
Benzene	ND	0.400	ug/L	SW8260B	E		11/07/16	11/07/16	TJT
Ethylbenzene	ND	1.00	ug/L	SW8260B	E		11/07/16	11/07/16	TJT
o-Xylene	ND	1.00	ug/L	SW8260B	E		11/07/16	11/07/16	TJT
P & M -Xylene	ND	2.00	ug/L	SW8260B	E		11/07/16	11/07/16	TJT
Toluene	ND	1.00	ug/L	SW8260B	E		11/07/16	11/07/16	TJT
<b><u>Surrogates</u></b>									
1,2-Dichloroethane-D4 (surr)	107		%	SW8260B	E	81-118	11/07/16	11/07/16	TJT
4-Bromofluorobenzene (surr)	103		%	SW8260B	E	85-114	11/07/16	11/07/16	TJT
Toluene-d8 (surr)	99.5		%	SW8260B	E	89-112	11/07/16	11/07/16	TJT



## e-SAMPLE RECEIPT FORM

1166668		 1 1 6 6 6 6 8	
Review Criteria	Y/N (yes/no)	Exceptions Noted below	
Were Custody Seals intact? Note # & location	<input checked="" type="checkbox"/>	<input type="checkbox"/> exemption permitted if sampler hand carries/delivers.	
COC accompanied samples?	<input checked="" type="checkbox"/>	2F	
<input type="checkbox"/> **exemption permitted if chilled & collected <8hrs ago or chilling not required (i.e., waste, oil)	<input checked="" type="checkbox"/>	Cooler ID: 1 @ 4.9 °C Therm ID: D3	
Temperature blank compliant* (i.e., 0-6 °C after CF)?	<input type="checkbox"/>	Cooler ID: @ °C Therm ID:	
	<input type="checkbox"/>	Cooler ID: @ °C Therm ID:	
	<input type="checkbox"/>	Cooler ID: @ °C Therm ID:	
	<input type="checkbox"/>	Cooler ID: @ °C Therm ID:	
*If >6°C, were samples collected <8 hours ago?	<input type="checkbox"/>		
If <0°C, were sample containers ice free?	<input type="checkbox"/>		
If samples received <u>without</u> 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 temp blank nor cooler temp can be obtained, note "ambient" or "chilled".			
Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.			
Note: Refer to form F-083 "Sample Guide" for hold times.			
Were samples received within hold time?	<input checked="" type="checkbox"/>		
Do samples <b>match COC</b> ** (i.e., sample IDs, dates/times collected)?	<input checked="" type="checkbox"/>		
**Note: If times differ <1hr, record details & login per COC.			
Were analyses requested unambiguous?	<input checked="" type="checkbox"/>		
<input type="checkbox"/> ***Exemption permitted for metals (e.g., 200.8/6020A).	<input type="checkbox"/>		
Were proper containers (type/mass/volume/preservative***) used?	<input checked="" type="checkbox"/>		
<b>IF APPLICABLE</b>			
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="checkbox"/>		
Were all VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	<input checked="" type="checkbox"/>		
Were all soil VOAs field extracted with MeOH+BFB?	<input type="checkbox"/>		
<b>Note to Client:</b> Any "no" answer above indicates non-compliance with standard procedures and may impact data quality.			
Additional notes (if applicable):			
Sample jar 3G had a broken lid which was replaced in the lab.			



## Taylor, Forest (Anchorage)

---

**From:** lorin mills [lorin@chemtrack.net]  
**Sent:** Friday, November 04, 2016 3:22 PM  
**To:** Taylor, Forest (Anchorage)  
**Cc:** Steven McCain; Harmony; info; Cheryl Fultz  
**Subject:** RE: Bioswale Sampling analysis

Hi Forest,

I ran across a mistake on the COC. The biannual sampling plan calls for GRO and BTEX two times per year, and DRO, RRO, and PAH one time per year. As the full spectrum was collected and analyzed earlier this year, this sampling event should have omitted DRO/RRO.

Can you make a note to not analyze the DRO/RRO samples we submitted today? The GRO and BTEX results are the only analytes we need for this sampling event.

Thanks and sorry for the confusion.

**Lorin Mills**  
Environmental Scientist  
ChemTrack Alaska, Inc.  
p. 907.349.2511 x0  
c. 907.230.9959  
f. 907.522.3150  
e. [Lorin@chemtrack.net](mailto:Lorin@chemtrack.net)

---

**From:** Taylor, Forest (Anchorage) [<mailto:Forest.Taylor@sgs.com>]  
**Sent:** Friday, November 4, 2016 2:25 PM  
**To:** Cheryl Fultz  
**Cc:** Steven McCain; Harmony; info  
**Subject:** RE: Bioswale Sampling analysis

Cheryl,

We received no containers for the PAH analysis.

Forest

---

**From:** Cheryl Fultz [<mailto:CherylF@DeltaWestern.com>]  
**Sent:** Friday, November 04, 2016 2:24 PM  
**To:** Taylor, Forest (Anchorage)  
**Cc:** Steven McCain; Harmony; info  
**Subject:** Bioswale Sampling analysis  
**Importance:** High

Forest,  
Just to Confirm:

## Taylor, Forest (Anchorage)

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**From:** Cheryl Fultz [CherylF@DeltaWestern.com]  
**Sent:** Friday, November 04, 2016 2:27 PM  
**To:** Taylor, Forest (Anchorage)  
**Cc:** Steven McCain; Harmony; info  
**Subject:** RE: Bioswale Sampling analysis

Right,  
We can leave those off and we will explain to ADEC if needed. I am thinking the BTEX will be enough

Cheryl Fultz  
Compliance Specialist  
Delta Western, Inc  
[cherylF@deltawestern.com](mailto:cherylF@deltawestern.com)  
206-357-1728 -p  
206-669-4161- C



--

**From:** Taylor, Forest (Anchorage) [mailto:Forest.Taylor@sgs.com]  
**Sent:** Friday, November 4, 2016 3:25 PM  
**To:** Cheryl Fultz <[CherylF@DeltaWestern.com](mailto:CherylF@DeltaWestern.com)>  
**Cc:** Steven McCain <[steven@chemtrack.net](mailto:steven@chemtrack.net)>; Harmony <[harmony@chemtrack.net](mailto:harmony@chemtrack.net)>; info <[info@chemtrack.net](mailto:info@chemtrack.net)>  
**Subject:** RE: Bioswale Sampling analysis

Cheryl,

We received no containers for the PAH analysis.

Forest

---

**From:** Cheryl Fultz [mailto:[CherylF@DeltaWestern.com](mailto:CherylF@DeltaWestern.com)]  
**Sent:** Friday, November 04, 2016 2:24 PM  
**To:** Taylor, Forest (Anchorage)  
**Cc:** Steven McCain; Harmony; info  
**Subject:** Bioswale Sampling analysis  
**Importance:** High

Forest,  
Just to Confirm:

<b>Table 1: Groundwater Analytes, Methods, MDL/PQL, Containers, Hold</b>				
<b>Analyte</b>	<b>Analytical Method</b>	<b>MDL* ug/L</b>	<b>PQL** ug/L</b>	<b>Container</b>
DRO/RRO	AK 102/103	80	800	Two 350 ml Amber Glass TLC
GRO	EPA 8260	10	100	Three 40 ml VOA, TLS
BTEX		0.7	5	
PAH	EPA 8270	1	10	1 Liter Amber Glass TLS
<b>*Method Detection Limit</b>		<b>**Practical Quantitation Limit</b>		<b>Volatile Organics</b>

Cheryl Fultz  
 Compliance Specialist  
 Delta Western, Inc  
[cherylf@deltawestern.com](mailto:cherylf@deltawestern.com)  
 206-357-1728 –p  
 206-669-4161- C




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**SGS**

1166668

**Returned Bottles Inventory**Name of  
individual  
returning  
bottles:

Cheryl Foltz

Date

Received:

11/04/16

Client Name:

Delta Western

Received by:

JRP

Project Name:

6083 Dw Haines Tesoro

SGS PM:

HDPE/Nalgene:	1-L					
	500-ml					
	250-ml or 8-oz					
	125-ml or 4-oz					
	60-ml or 2-oz					
	other					
amber glass:	1-L					
	500-ml					
	250-ml or 8-oz	4				
	125-ml or 4-oz with or without septa					
	40-ml VOA vial	12				
	other					
Subtotal:		16				

Note: Returned bottles (regardless of size/pres.) are billed back at \$4/bottle **unless otherwise quoted**.

Amount to Invoice Client \$:

64

WO#:

1166668



## Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1166668001-A	HCL to pH < 2	OK			
1166668001-B	HCL to pH < 2	OK			
1166668001-C	HCL to pH < 2	OK			
1166668001-D	HCL to pH < 2	OK			
1166668001-E	HCL to pH < 2	OK			
1166668001-F	HCL to pH < 2	OK			
1166668001-G	HCL to pH < 2	OK			
1166668001-H	HCL to pH < 2	OK			
1166668002-A	HCL to pH < 2	OK			
1166668002-B	HCL to pH < 2	OK			
1166668002-C	HCL to pH < 2	OK			
1166668002-D	HCL to pH < 2	OK			
1166668002-E	HCL to pH < 2	OK			
1166668002-F	HCL to pH < 2	OK			
1166668002-G	HCL to pH < 2	OK			
1166668002-H	HCL to pH < 2	OK			
1166668003-A	HCL to pH < 2	OK			
1166668003-B	HCL to pH < 2	OK			
1166668003-C	HCL to pH < 2	OK			
1166668003-D	HCL to pH < 2	OK			
1166668003-E	HCL to pH < 2	OK			
1166668003-F	HCL to pH < 2	OK			
1166668003-G	HCL to pH < 2	OK			
1166668003-H	HCL to pH < 2	OK			
1166668004-A	HCL to pH < 2	OK			
1166668004-B	HCL to pH < 2	OK			
1166668004-C	HCL to pH < 2	OK			
1166668004-D	HCL to pH < 2	OK			
1166668004-E	HCL to pH < 2	OK			
1166668004-F	HCL to pH < 2	OK			

### 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.

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

DM- The container was received damaged.

FR- The container was received frozen and not usable for Bacteria or BOD analyses.

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.

## Laboratory Data Review Checklist

Completed by: Steven McCain

Title: Project Engineer Date: January 18, 2017

CS Report Name: 6083 Haines Delta Western Report Date: November 14, 2016

Consultant Firm: ChemTrack Alaska Inc.

Laboratory Name: SGS Laboratory Laboratory Report Number: 1166668

ADEC File Number: 1508.38.020 ADEC RecKey Number: 25489

### 1. Laboratory

- a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?  
☒ Yes ☐ No ☐ NA (Please explain.)      Comments:

- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?  
☒ Yes ☐ No ☐ NA (Please explain.)      Comments:

### 2. Chain of Custody (COC)

- a. COC information completed, signed, and dated (including released/received by)?  
☒ Yes ☐ No ☐ NA (Please explain.)      Comments:

- b. Correct analyses requested?  
☒ Yes ☐ No ☐ NA (Please explain.)      Comments:

DRO/RRO analysis was not needed and was requested to remove and not analyze.

### 3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt (4° – 2°C)?  
☒ Yes ☐ No ☐ NA (Please explain.)      Comments:

- b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?  
☒ Yes ☐ No ☐ NA (Please explain.)      Comments:

- c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?  
☒ Yes ☐ No ☐ NA (Please explain.) Comments:

All samples were received in good condition, properly preserved and on ice.

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?  
☐ Yes ☐ No ☒ NA (Please explain.) Comments:

No discrepancies noted.

- e. Data quality or usability affected? (Please explain.) Comments:

Data quality acceptable.

#### 4. Case Narrative

- a. Present and understandable?  
☒ Yes ☐ No ☐ NA (Please explain.) Comments:

- b. Discrepancies, errors or QC failures identified by the lab?  
☒ Yes ☐ No ☐ NA (Please explain.) 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:

Data quality acceptable.

#### 5. Samples Results

- a. Correct analyses performed/reported as requested on COC?  
☒ Yes ☐ No ☐ NA (Please explain.) Comments:

- b. All applicable holding times met?  
☒ Yes ☐ No ☐ NA (Please explain.) Comments:

- c. All soils reported on a dry weight basis?  
☐ Yes ☐ No ☒ NA (Please explain.)

Comments:

No soil samples were collected.

- d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

- e. Data quality or usability affected?

Comments:

Data quality acceptable.

## 6. QC Samples

### a. Method Blank

- i. One method blank reported per matrix, analysis and 20 samples?

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

- ii. All method blank results less than PQL?

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

- iii. If above PQL, what samples are affected?

Comments:

No method blank results above PQL.

- iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

☐ Yes ☐ No ☒ NA (Please explain.)

Comments:

No affected samples in this data set.

- v. Data quality or usability affected? (Please explain.)

Comments:

Data quality acceptable.

### b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:



- ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

☐ Yes ☐ No ☒ NA (Please explain.)

Comments:

No metals analyzed in this data set.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☐ Yes ☐ No ☒ NA (Please explain.)

Comments:

No affected samples in this data set.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality acceptable.

c. Surrogates – Organics Only

- i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

☐ Yes ☐ No ☒ NA (Please explain.)

Comments:

No samples with failed surrogate recoveries.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

No organics only analyses.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

iii. All results less than PQL?

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

iv. If above PQL, what samples are affected?

Comments:

Trip blank sample (TB02NOV16A+B) had all results <PQL. No samples affected.

v. Data quality or usability affected? (Please explain.)

Comments:

Data quality acceptable.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

ii. Submitted blind to lab?

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration

$R_2$  = Field Duplicate Concentration

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

R1=MHA-1 and duplicate R2=MHA-2.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality acceptable.

f. Decontamination or Equipment Blank (If not used explain why).

☐ Yes ☒ No ☐ NA (Please explain.)

Comments:

Clean disposable sampling spoons and gloves were used at each sampling location.

i. All results less than PQL?

☐ Yes ☐ No ☒ NA (Please explain.)

Comments:

No decontamination nor equipment blank sample.

ii. If above PQL, what samples are affected?

Comments:

No decontamination nor equipment blank sample. No samples affected.

iii. Data quality or usability affected? (Please explain.)

Comments:

Data quality acceptable.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

☐ Yes ☐ No ☒ NA (Please explain.)

Comments:

No other data flags/qualifiers.