



Alaska Department of Transportation & Public Facilities

Ted Stevens Anchorage International Airport

Groundwater Sampling

Fire Pit Training Area (MW-04)

Testing for Perfluorinated Compounds (PFOS and PFOA)

December 2016

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1.0 Introduction

The Anchorage International Airport is submitting this letter report to summarize sampling activities conducted near the Fire Pit Training Area on November 2nd, 2016. Monitoring Well MW-04 was installed and sampled for polyfluorinated compounds (PFOS and PFOA) at the request of the Alaska Department of Environmental Conservation (ADEC) via correspondence on April 22nd, 2016. PFOS and PFOA compounds have been identified as an emerging environmental contaminant by the US Environmental Protection Agency.

Environmental Management, Inc. (EMI) oversaw the installation of MW-04 on September 8th, 2016 (Attachment 1).

2.0 Site Description

The Ted Stevens Anchorage International Airport (ANC) is located in Southcentral Alaska in the westernmost area of the Municipality of Anchorage and is bordered by Cook Inlet on the west. Fire training compliance activities are held 1-2 times per year, depending on the number of new firefighters needing to be trained, at a compound located on the southwest side of the airport property, south of the service road and of the east/west runway 07R/25L (Figure 1).

2.1 Conceptual Site Model

Unconsolidated deposits, chiefly glacial drift, underlie the land surface of the ANC area. The glacial drift consists of till, outwash-stream deposits, and estuarine and lake sediments. The fire pit is located approximately 1.5 miles from Cook Inlet. Prior studies indicate that the groundwater underlying the fire pit travels in a northwest direction, toward the 7R/25L runway. The nearest drinking water well, at the Clitheroe Center, is approximately 1 mile to the northwest. There is no public access to the area surrounding the fire pit, and the drainage area is within the secured airport area for approximately 1 mile downstream of the fire pit. MW-04 is located near a culvert containing any drainage from the fire pit area (Figure 2). The location of MW-04 was determined based on location near the drainage, and was determined to be located far enough from the fire pit to allow for representative PFOS/PFAS entry into the groundwater given the typical northwesterly flow direction.

Groundwater level was approximately 72 feet below ground surface at the time of the installation of MW-04 (Attachment 2), with an elevation above sea level of approximately 22 feet.

2.2 Facility Use

Fire training is an occasionally coordinated, joint effort with Anchorage Fire Department and ANC fire fighters. Multi-agency coordination is done to allow as many individuals to comply with similar training requirements as possible while minimizing the number of local burns and costly burn facility sites required in Anchorage.

The annual live fire training exercises are generally conducted two times in the early to mid-summer months. Prior to training exercises ANC fire fighter representatives notify ANC Environmental if they

need water removed, or added, to the fire pit. If an excess amount of water occurs after spring snowmelt (too much to safely conduct fire training) it is pumped from the fire pit into storage tanks and into the aeration pond. After fire training is completed for the year the stored water is pumped back into the fire pit for evaporation over the summer months.

Air quality open burn permits are obtained as required and notices provided to the appropriate agencies.

Typical fires set at the facility are fueled by clean diesel fuel #1. An average of 350 to 450 gallons of fuel is used for each fire practice drill. The fuel is distributed to the main fire pit through spigots filled from an underground piping system. The piping originates at a manifold a safe distance away from the pit, where a fuel truck connects to it. Fuel flowage from the spigots out onto the surface of the water can be remotely controlled as demand dictates. After the correct amount of fuel is distributed throughout the pit, it is ignited. Once the fuel has been ignited, fire crews subsequently practice their training drills to extinguish simulated aircraft fires.

Extinguishing material during the training exercises consists primarily of water; aqueous film forming foam (AFFF) is also used based on the training needs of the department, the amount of which is tracked. Training with AFFF is needed to simulate an actual event and to experience the material handling, response, and fire extinguishing qualities of this fire-fighting agent. Approximately 5,000 gallons of water is used each day to extinguish the training fires. This water does not accumulate very quickly in the fire pit due to an increase in the evaporation rate from heat generated during the burns and the large surface area.

AFFF is a formulation of an organic fluorocarbon, as a surfactant, with a solubilizing radical group, which acts as a detergent. It is a liquid with 60% or more water content. Generally the product is mixed with water to a concentration of 3% by volume of AFFF to water. When the AFFF is sprayed on a surface area it forms a surface film to reduce the availability of oxygen, which serves to extinguish the flames. While most of the hydrocarbon materials used in the training exercises is oxidized, the application of foam fire-fighting agents and water prevents complete combustion of the fuels from occurring. The result may be water containing insoluble free phase fuel, emulsified fuel, dissolved hydrocarbons, and combusted materials such as soot particles. Any residual fuel is given time to re-surface and undergo more complete combustion in following burns. This should also help reduce the amounts of emulsified fuel in the remaining water column.

3.0 Field Activities

3.1 Monitoring Well Installation

Authorization to proceed with well installation was received by AIA on July 26th, 2016 in the form of Notice to Proceed No. 13, Agreement No. 2511032. Work was completed on September 8th, 2016. EMI and its subcontractor, Discovery Drilling of Anchorage, Alaska, completed the installation work.

More details about the installation are in Attachment 2, "Report for Monitoring Well MW-04 Installation".

3.2 Well Development

The well was developed over a 2 day period, and approximately 4 hours in total. An HDPE Teflon-free bailer was used to continuously remove water from the well until water conditions and turbidity decreased.

3.3 Well Sampling

In total, 3 volumes of the well was purged (approximately 4.5 gallons) using an HDPE Teflon-free bailer prior to sampling activities. Approximately 1 hour later, sampling was conducted, ensuring that any suspended particles had a chance to settle. The purge water which was stored in buckets, was poured back into the well following the completion of sampling activities.

An HDPE Teflon-free bailer was filled in its entirety, and two laboratory-provided sample containers (one sample, one duplicate) were filled with the contents of that one bailer. The sample containers were labeled, and added to a laboratory-provided cooler with laboratory-provided ice, and promptly shipped via overnight delivery to the laboratory (Attachment 3).

3.4 Sample Results

The two samples (one sample and one duplicate: S-01-A and S-02-A) were analyzed for PFOS and PFOA. S-01-A was non-detect for PFOA, and 1.3 ng/L for PFOS. S-02-A had a detection of 2.1 ng/L for PFOA and 2.6 ng/L for PFOS (Attachment 3).

3.5 Field Quality Assurance

Field quality assurance consisted of proper decontamination, and collection of appropriate quality assurance samples.

3.6 Decontamination

A new HDPE Latex-free bailer was used for sampling purposes, and disposed of. PFOS/PFAS-containing materials were not used in collection containers, sampling equipment, or in the clothing of the sampler. Disposable and/or dedicated sampling equipment was used.

3.7 Record Keeping.

A sample custody record (chain of custody) was maintained for all samples from the time they were collected until the time they were analyzed. The sample custody record accompanied the samples during transport and shipping and were signed and dated by each individual having custody of the samples.

3.8 Quality Assurance Samples.

One duplicate sample was provided for the one sample that was collected.

3.9 Analytical Procedures

Analytical procedures for the water sample included the following:

- EPA 537 for PFOS/PFOA

Figure 1: Fire Pit Area Vicinity Map

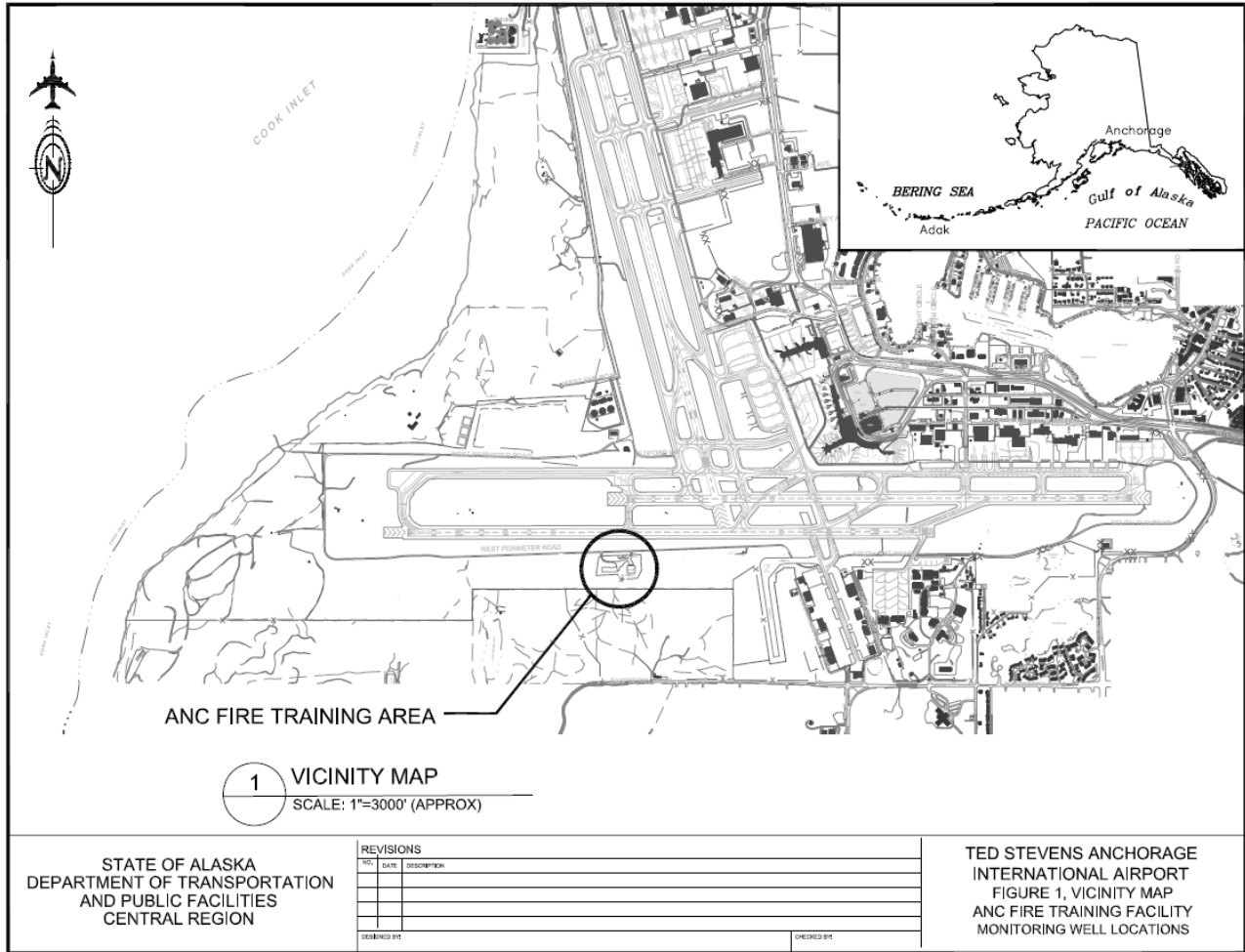
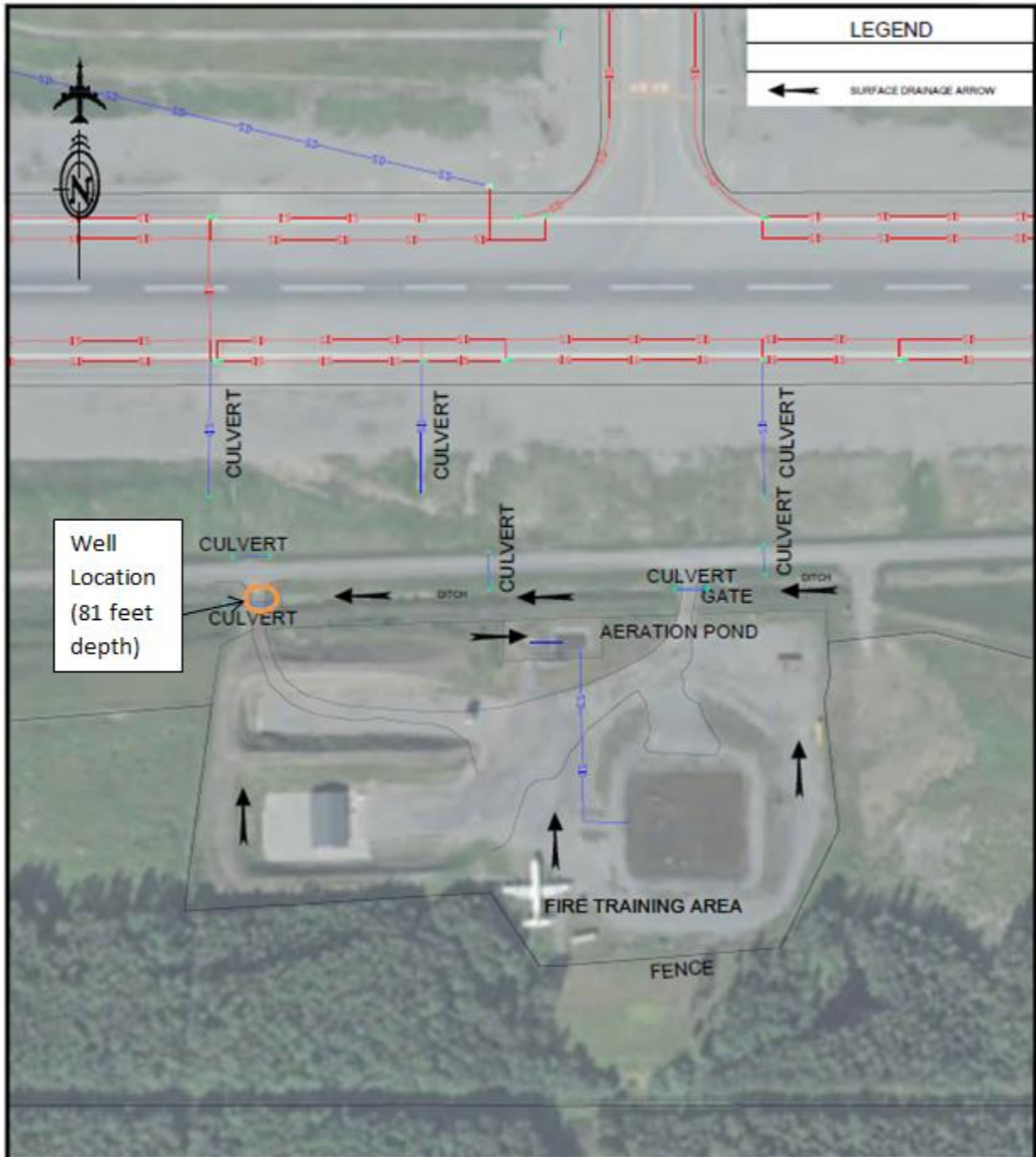


Figure 2: Monitoring Well (MW-04) Vicinity Map





TRAINING
TEL (907) 272-8852
FAX (907) 272-0319
TOLL FREE IN AK (800) 458-2580

CONSULTING & ENGINEERING
TEL (907) 272-9336
FAX (907) 272-4159

November 7, 2016

Ted Stevens Anchorage International Airport
Airport Environmental Office
Attn: Scott Lytle
PO Box 196960
Anchorage, Alaska 99519

RE: Fire Pit Training Area, Anchorage, Alaska; ADEC File No. 2100.38.028.26

Subj: Report for Monitoring Well MW-04 Installation

Environmental Management, Inc. (EMI) is pleased to provide this report documenting our monitoring well installation activities at the Fire Pit Training Area (2100.38.028.26) at the Ted Stevens Anchorage International Airport (TSAIA) in Anchorage, Alaska. The purpose of the well installation was for future perfluorinated compounds (PFC) testing. Well development and sampling was not included in the scope.

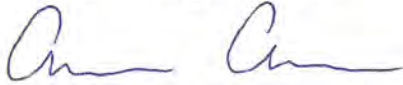
Authorization to proceed was received by the TSAIA on July 26, 2016 in the form of Notice to Proceed No. 13, Agreement No. 2511032. Work was completed on September 8, 2016. EMI and its subcontractor, Discovery Drilling of Anchorage Alaska, completed the installation work. Kenton Curtis of TSAIA Environmental was onsite during the field activities.

EMI installed Monitoring Well MW-04 at the Fire Pit Training Area. The vicinity map is included as Figure 1, and the site plan is included as Figure 2. The well was installed at a depth of 81 feet bgs. A vicinity map showing the approximate location of the new well is included as Figure 2. The static water level in the monitoring well at the time of installation was 71.75 feet below ground surface (bgs). Soil conditions consisted mostly of dry brown gravel with silt in the top 10 feet, underlain by silty loam with gravel from 10 to almost 70 feet bgs. The bottom 11 feet was a light grey clay layer which was saturated. The well was installed with a 10 feet pre-packed screen with 2 feet of sand on top of the screen. The rest of the hole was filled with bentonite to within two feet of the surface. The hole was capped with pea gravel and a flush mount cap was installed. Photographs of the well installation activities are provided in the attached Photo Page (Attachment 1). Field notes are included in Attachment 2. The well log is included as Figure 3.

Four drums of soil cuttings were generated during the well installation, the cuttings were sealed and were stored proximal to the well.

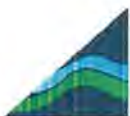
If you have any questions or wish to discuss this project further please do not hesitate to contact Shayla Marshall or the undersigned at (907) 272-9336.

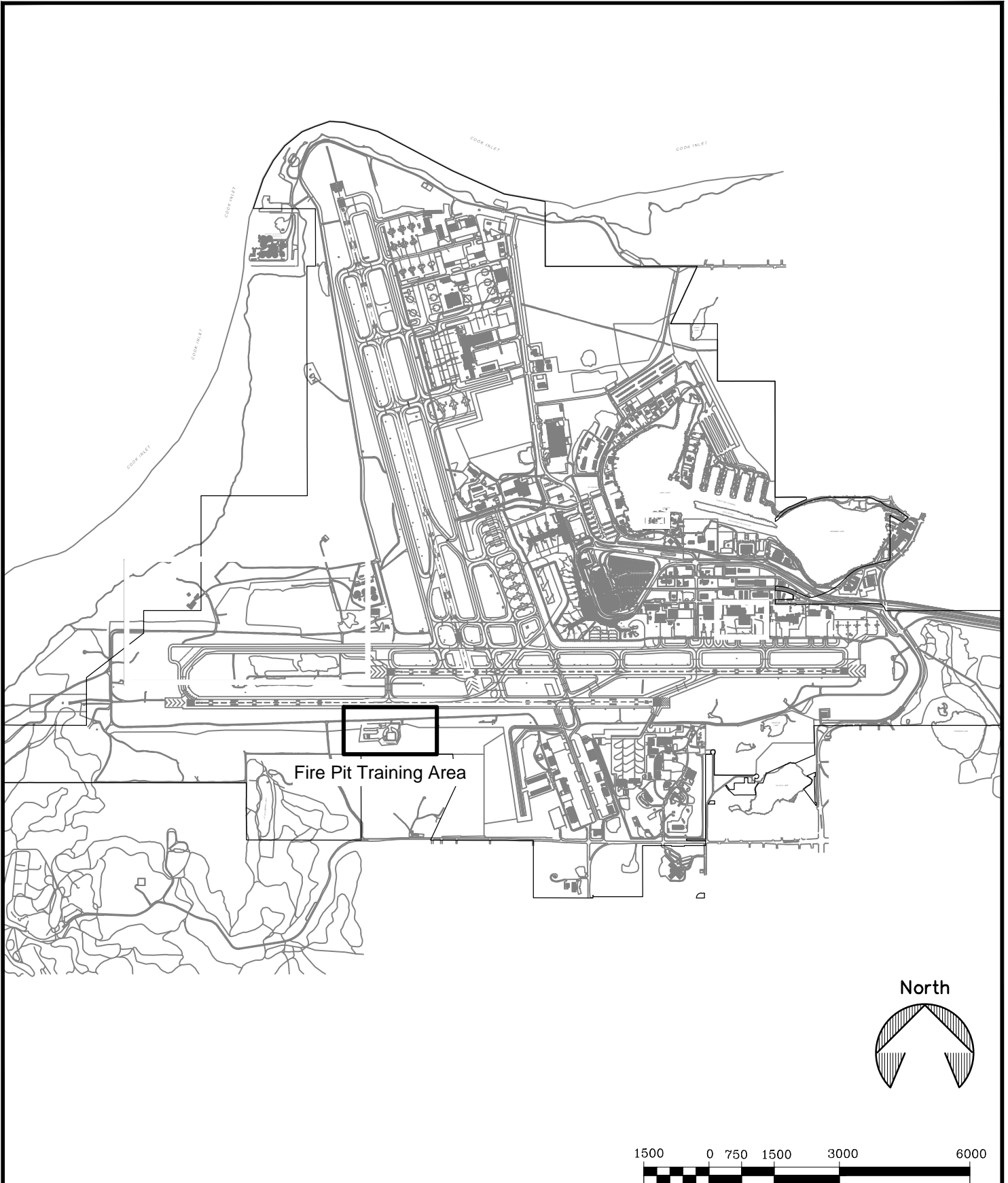
Sincerely,
Environmental Management, Inc.



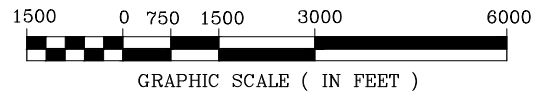
Aaron Acena
Environmental Scientist

- Encl: Figure 1 – Vicinity Map
Figure 2 – Fire Pit Training Area Well Locations
Figure 3 – Well Log
Attachment 1 – Photo Log
Attachment 2 – Field Notes





Source: Airport Drawing provided by AK DOT on 1/18/2012



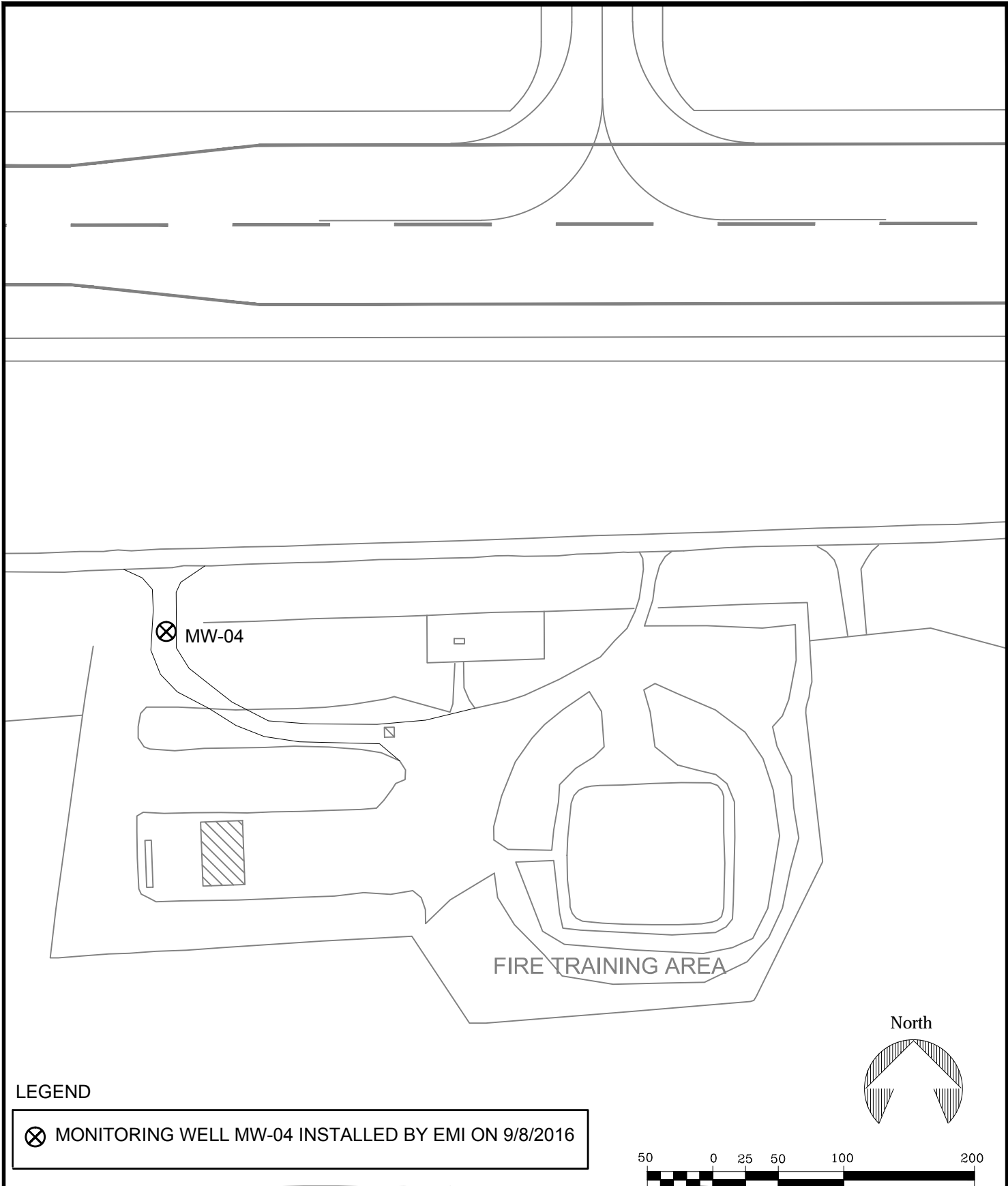
VICINITY MAP

TSAIA ENVIRONMENTAL
MONITORING SERVICES
ANCHORAGE, AK



PREPARED: SIM
DRAWN: SIM
REVIEWED: LAH
DATE: 8/4/16

FIGURE
1



LEGEND

⊗ MONITORING WELL MW-04 INSTALLED BY EMI ON 9/8/2016

Source: Airport Drawing provided by AK DOT on 1/18/2012



GRAPHIC SCALE (IN FEET)

FIRE PIT TRAINING AREA
WELL LOCATIONS

TSAIA ENVIRONMENTAL
MONITORING SERVICES
ANCHORAGE, AK



PREPARED: ADA
DRAWN: ADA
REVIEWED: SIM
DATE: 11/4/16

FIGURE
2



PROJECT: FIRE PIT TRAINING AREA WELL INSTALL

DRILLED: 9/8/16

LOCATION: TED STEVENS ANCHORAGE INTERNATIONAL AIRPORT

DRILL METHOD: HOLLOW STEM AUGER

206 EAST FIREWEED LANE, SUITE 201
ANCHORAGE, ALASKA 99503
907-272-9336 FAX:272-4159

DRILLER: DISCOVERY DRILLING RIG: CME-75

PAGE: 1 OF 1

QUALIFIED PROF: AARON ACENA

TOTAL DEPTH: 81 FEET BGS

OVERCASING: 4" MORRISON FLUSH MONUMENT IN GROUND, NO ASPHALT

BOREHOLE NUMBER: MW-04

FLUID LEVELS AT TIME OF DRILLING- PRODUCT: NA WATER: 71.75 FEET BGS

DEPTH FT.	WELL SKETCH	WELL MATERIALS	PID (PPM)	SOIL CLASS	DEPTH FT.	SOIL DESCRIPTION
		PEA GRAVEL	NA	GP		BROWN, SANDY GRAVEL, DRY
		2" PVC CASING	NA	CL		BROWN CLAY, SLIGHTLY MOIST
25					25	
		HYDRATED BENTONITE CHIPS	NA	SM		BROWN SILTY LOAM, DRY
			NA	CL		BROWN CLAY, MOIST
50			NA	SM	50	BROWN SILTY LOAM, DRY
		10/20 SILICA SAND	NA	CL		GREY CLAY, SATURATED
75		10' SCREEN 0.010 PRE-PACK			75	WATER LEVEL 71.75'
						BOTTOM OF HOLE 81'
100					100	

ATTACHMENT 1

Photo Log

**Fire Pit Training Area
Monitoring Well MW-04 Installation
Ted Stevens Anchorage International Airport (TSAIA)
Anchorage, Alaska**



Photo 1: Monitoring Well MW-04 installation site, looking south.



Photo 2: View of monitoring well site, looking east.

**Fire Pit Training Area
Monitoring Well MW-04 Installation
Ted Stevens Anchorage International Airport (TSAIA)
Anchorage, Alaska**



Photo 3: View of Monitoring Well MW-04 flush mount after installation.

ATTACHMENT 2

Field Notes

- + On site @ ANC Airport for Fire Pot
Training Area well install. With
Discovery Drilling + ANC K. Curtis, A.
Averm of EMI, Cloudy, ^{Partly} 55°F. Forecast for rain
- + Drilling started @ 1130, no soil
sampling or field screening of
soils. Briefed Disc. on limitations
due to the PFA^s. Planned depth is
100' or adjusted when groundwater
is found.

0-5' - Brown ~~Gravel~~ w/ sand, some
wood organics.

5-10' - Same as above (S.A.A.)

10'-15' - ~~Gravel~~ Silty clay, brown/l. brown,
moist. No coal.

15'-30' - S.A.A.

30'-35' - S.A.A., @ 33' depth soil is dry silty clay.

35-75' - S.A.A. No cancer. Soil is loamy looking.

75-80' - Grey moist clay, v. wet. No ~~measured~~ @ 71.75

9/8/16

ADA

- 17791
- + Will drill to 81 + set well ^{fast water}
 w/ 10' ^{best} screen set @ 77-81.
 Sand put @ top of screen (pre-pack screen)
 up to 67.4'. Bentonite will be put
 in to 2' of top. Will place
 pea gravel on top + Florida mortar to
 ground. 0.01 - prepack w/ 10/20 silica sand. 2" well
- + 1453 - casing out + well filled to top
 w/ Bentonite. Water added to chips.
- + ~3 drums of cuttings filled, will
 be sealed + left next to the well;
 TSAIA staff w/ deal w/ cuttings.
- + Well installed + final @ 4300, off site
 @ 1315.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

TestAmerica Job ID: 320-23298-1
Client Project/Site: Anchorage International Airport (PFAS)

For:
Ted Stevens Anchorage Intl Airport
PO BOX 196960
Anchorage, Alaska 99519

Attn: Kenton Curtis

Cesar C Cortes

Authorized for release by:
11/25/2016 6:18:06 PM

Cesar Cortes, Project Management Assistant I
(916)373-5600
cesar.cortes@testamericainc.com

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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

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

- 1
- 2
- 3
- 4
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Definitions/Glossary

Client: Ted Stevens Anchorage Intl Airport
Project/Site: Anchorage International Airport (PFAS)

TestAmerica Job ID: 320-23298-1

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Detection Summary

Client: Ted Stevens Anchorage Intl Airport
Project/Site: Anchorage International Airport (PFAS)

TestAmerica Job ID: 320-23298-1

Client Sample ID: S-01-A

Lab Sample ID: 320-23298-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctane Sulfonate (PFOS)	1.3	J	1.8	1.1	ng/L	1		537 (modified)	Total/NA

Client Sample ID: S-02-A

Lab Sample ID: 320-23298-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	2.1		1.8	0.69	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	2.6		1.8	1.2	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

Client: Ted Stevens Anchorage Intl Airport
 Project/Site: Anchorage International Airport (PFAS)

TestAmerica Job ID: 320-23298-1

Client Sample ID: S-01-A

Date Collected: 11/02/16 09:05

Date Received: 11/04/16 09:50

Lab Sample ID: 320-23298-1

Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	ND		1.8	0.67	ng/L		11/08/16 17:22	11/18/16 01:53	1
Perfluorooctane Sulfonate (PFOS)	1.3	J	1.8	1.1	ng/L		11/08/16 17:22	11/18/16 01:53	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOS	82		25 - 150				11/08/16 17:22	11/18/16 01:53	1
¹³ C4 PFOA	75		25 - 150				11/08/16 17:22	11/18/16 01:53	1

Client Sample ID: S-02-A

Date Collected: 11/02/16 09:05

Date Received: 11/04/16 09:50

Lab Sample ID: 320-23298-2

Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	2.1		1.8	0.69	ng/L		11/09/16 14:13	11/18/16 02:31	1
Perfluorooctane Sulfonate (PFOS)	2.6		1.8	1.2	ng/L		11/09/16 14:13	11/18/16 02:31	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOS	83		25 - 150				11/09/16 14:13	11/18/16 02:31	1
¹³ C4 PFOA	76		25 - 150				11/09/16 14:13	11/18/16 02:31	1

Isotope Dilution Summary

Client: Ted Stevens Anchorage Intl Airport
Project/Site: Anchorage International Airport (PFAS)

TestAmerica Job ID: 320-23298-1

Method: 537 (modified) - Perfluorinated Hydrocarbons

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)	
		3C4 PFOS (25-150)	3C4 PFOA (25-150)
320-23298-1	S-01-A	82	75
320-23298-2	S-02-A	83	76
LCS 320-136775/2-A	Lab Control Sample	114	123
LCS 320-136928/2-A	Lab Control Sample	112	121
LCSD 320-136775/3-A	Lab Control Sample Dup	97	102
LCSD 320-136928/3-A	Lab Control Sample Dup	112	120
MB 320-136775/1-A	Method Blank	76	90
MB 320-136928/1-A	Method Blank	113	129

Surrogate Legend

13C4 PFOS = 13C4 PFOS

13C4 PFOA = 13C4 PFOA

QC Sample Results

Client: Ted Stevens Anchorage Intl Airport
 Project/Site: Anchorage International Airport (PFAS)

TestAmerica Job ID: 320-23298-1

Method: 537 (modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-136775/1-A
Matrix: Water
Analysis Batch: 138592

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 136775

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		11/08/16 17:22	11/18/16 01:31	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.3	ng/L		11/08/16 17:22	11/18/16 01:31	1
Isotope Dilution		MB %Recovery	MB Qualifier	Limits			Prepared	Analyzed	Dil Fac
13C4 PFOS		76		25 - 150			11/08/16 17:22	11/18/16 01:31	1
13C4 PFOA		90		25 - 150			11/08/16 17:22	11/18/16 01:31	1

Lab Sample ID: LCS 320-136775/2-A
Matrix: Water
Analysis Batch: 138592

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 136775

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits	%Rec.	
Perfluorooctanoic acid (PFOA)	40.0	44.0		ng/L		110	63 - 141		
Perfluorooctane Sulfonate (PFOS)	37.1	40.3		ng/L		108	47 - 162		
Isotope Dilution		LCS %Recovery	LCS Qualifier	Limits					
13C4 PFOS		114		25 - 150					
13C4 PFOA		123		25 - 150					

Lab Sample ID: LCSD 320-136775/3-A
Matrix: Water
Analysis Batch: 138592

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 136775

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	40.0	45.3		ng/L		113	63 - 141	3	30
Perfluorooctane Sulfonate (PFOS)	37.1	41.2		ng/L		111	47 - 162	2	30
Isotope Dilution		LCSD %Recovery	LCSD Qualifier	Limits					
13C4 PFOS		97		25 - 150					
13C4 PFOA		102		25 - 150					

Lab Sample ID: MB 320-136928/1-A
Matrix: Water
Analysis Batch: 138592

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 136928

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		11/09/16 14:13	11/18/16 02:08	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.3	ng/L		11/09/16 14:13	11/18/16 02:08	1
Isotope Dilution		MB %Recovery	MB Qualifier	Limits			Prepared	Analyzed	Dil Fac
13C4 PFOS		113		25 - 150			11/09/16 14:13	11/18/16 02:08	1
13C4 PFOA		129		25 - 150			11/09/16 14:13	11/18/16 02:08	1

QC Sample Results

Client: Ted Stevens Anchorage Intl Airport
 Project/Site: Anchorage International Airport (PFAS)

TestAmerica Job ID: 320-23298-1

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCS 320-136928/2-A
Matrix: Water
Analysis Batch: 138592

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 136928

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorooctanoic acid (PFOA)	40.0	43.8		ng/L		109	63 - 141
Perfluorooctane Sulfonate (PFOS)	37.1	41.2		ng/L		111	47 - 162
		LCS	LCS				
Isotope Dilution		%Recovery	Qualifier	Limits			
13C4 PFOS		112		25 - 150			
13C4 PFOA		121		25 - 150			

Lab Sample ID: LCSD 320-136928/3-A
Matrix: Water
Analysis Batch: 138592

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 136928

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Perfluorooctanoic acid (PFOA)	40.0	45.5		ng/L		114	63 - 141	4	30
Perfluorooctane Sulfonate (PFOS)	37.1	42.7		ng/L		115	47 - 162	4	30
		LCSD	LCSD						
Isotope Dilution		%Recovery	Qualifier	Limits					
13C4 PFOS		112		25 - 150					
13C4 PFOA		120		25 - 150					

QC Association Summary

Client: Ted Stevens Anchorage Intl Airport
 Project/Site: Anchorage International Airport (PFAS)

TestAmerica Job ID: 320-23298-1

LCMS

Prep Batch: 136775

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23298-1	S-01-A	Total/NA	Water	3535	
MB 320-136775/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-136775/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-136775/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Prep Batch: 136928

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23298-2	S-02-A	Total/NA	Water	3535	
MB 320-136928/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-136928/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-136928/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 138592

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23298-1	S-01-A	Total/NA	Water	537 (modified)	136775
320-23298-2	S-02-A	Total/NA	Water	537 (modified)	136928
MB 320-136775/1-A	Method Blank	Total/NA	Water	537 (modified)	136775
MB 320-136928/1-A	Method Blank	Total/NA	Water	537 (modified)	136928
LCS 320-136775/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	136775
LCS 320-136928/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	136928
LCSD 320-136775/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	136775
LCSD 320-136928/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	136928

Lab Chronicle

Client: Ted Stevens Anchorage Intl Airport
Project/Site: Anchorage International Airport (PFAS)

TestAmerica Job ID: 320-23298-1

Client Sample ID: S-01-A

Date Collected: 11/02/16 09:05

Date Received: 11/04/16 09:50

Lab Sample ID: 320-23298-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			278.8 mL	0.50 mL	136775	11/08/16 17:22	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			138592	11/18/16 01:53	SBC	TAL SAC

Client Sample ID: S-02-A

Date Collected: 11/02/16 09:05

Date Received: 11/04/16 09:50

Lab Sample ID: 320-23298-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			272.6 mL	0.5 mL	136928	11/09/16 14:13	ERW	TAL SAC
Total/NA	Analysis	537 (modified)		1			138592	11/18/16 02:31	SBC	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Certification Summary

Client: Ted Stevens Anchorage Intl Airport
 Project/Site: Anchorage International Airport (PFAS)

TestAmerica Job ID: 320-23298-1

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Alaska (UST)	State Program	10	UST-055	12-18-16
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17
Illinois	NELAP	5	200060	03-17-17
Kansas	NELAP	7	E-10375	10-31-17
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-29-17
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-16
Wyoming	State Program	8	8TMS-L	01-29-17

Method Summary

Client: Ted Stevens Anchorage Intl Airport
Project/Site: Anchorage International Airport (PFAS)

TestAmerica Job ID: 320-23298-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Perfluorinated Hydrocarbons	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



Sample Summary

Client: Ted Stevens Anchorage Intl Airport
Project/Site: Anchorage International Airport (PFAS)

TestAmerica Job ID: 320-23298-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-23298-1	S-01-A	Water	11/02/16 09:05	11/04/16 09:50
320-23298-2	S-02-A	Water	11/02/16 09:05	11/04/16 09:50

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15



320-23298 Chain of Custody

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

SAMPLE ID: 5-01-6

SAMPLED BY: *Kenneth Brown*

DATE: 11/4/2016

TIME: 9:10 AM

LOCATION: *Antelope Valley*

PRESERVE: _____

ANALYST: _____

CLIENT: _____

Lot# 533

(800) 233-8425 www.easvial.com

SAMPLE ID: 5-01-7

SAMPLED BY: *Kenneth Brown*

DATE: 11/4/2016

TIME: 9:05 AM

LOCATION: *Antelope Valley*

PRESERVE: _____

ANALYST: _____

CLIENT: _____

Lot# 533

(800) 233-8425 www.easvial.com

SAMPLE ID: 5-01-A

SAMPLED BY: *Kenneth Brown*

DATE: 11/4/2016

TIME: 9:05 AM

LOCATION: *Antelope Valley*

PRESERVE: _____

ANALYST: _____

CLIENT: _____

Lot# 533

(800) 233-8425 www.easvial.com

SAMPLE ID: 5-01-B

SAMPLED BY: *Kenneth Brown*

DATE: 11/4/2016

TIME: 9:05 AM

LOCATION: *Antelope Valley*

PRESERVE: _____

ANALYST: _____

CLIENT: _____

Lot# 533

(800) 233-8425 www.easvial.com

Rec'd 11/4/16
 9:50 am
 Troy Moran
 City of CA / A.A. IL

Login Sample Receipt Checklist

Client: Ted Stevens Anchorage Intl Airport

Job Number: 320-23298-1

Login Number: 23298

List Source: TestAmerica Sacramento

List Number: 1

Creator: Turpen, Troy

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